Use these links to rapidly review the document
Table of contents
Merrimack Pharmaceuticals, Inc. Index to consolidated financial statements

As filed with the Securities and Exchange Commission on October 26, 2011

Registration No. 333-175427

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

AMENDMENT NO. 3
TO
FORM S-1
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

MERRIMACK PHARMACEUTICALS, INC.
(Exact name of registrant as specified in its charter)

Delaware	**2834**	**04-3210530**
(State or other jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification Number)

One Kendall Square, Suite B7201
Cambridge, MA 02139
(617) 441-1000
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Robert J. Mulroy
President and Chief Executive Officer
Merrimack Pharmaceuticals, Inc.
One Kendall Square, Suite B7201
Cambridge, Massachusetts 02139
(617) 441-1000
(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

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Approximate date of commencement of proposed sale to public: As soon as practicable after this Registration Statement is declared effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box. o

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. o

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. o

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer o	Accelerated filer o	Non-accelerated filer ☒ (Do not check if a smaller reporting company)	Smaller reporting company o

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

Subject to completion, dated October 26, 2011

Prospectus

shares

Common stock

This is an initial public offering of common stock by Merrimack Pharmaceuticals, Inc. Merrimack is selling shares of common stock. The estimated initial public offering price is between $ and $ per share.

Prior to this offering, there has been no public market for our common stock. We have applied for listing of our common stock on The NASDAQ Global Market under the symbol "MACK."

	Per share	Total
Initial public offering price	$	$
Underwriting discounts and commissions	$	$
Proceeds to Merrimack, before expenses	$	$

We have granted the underwriters an option for a period of 30 days to purchase up to additional shares of common stock.

Investing in our common stock involves a high degree of risk. See "Risk factors" beginning on page 12.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed on the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The underwriters expect to deliver the shares of common stock to investors on or about , 2011.

J.P. Morgan

BofA Merrill Lynch

Cowen and Company **Oppenheimer & Co.**

, 2011

Table of contents

We have not authorized anyone to provide you with information other than that contained in this prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give to you. We are offering to sell, and seeking offers to buy, shares of our common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus or any sale of our common stock. Our business, financial conditions, results of operations and prospects may have changed since that date.

No action is being taken in any jurisdiction outside the United States to permit a public offering of our common stock or possession or distribution of this prospectus in that jurisdiction. Persons who come into possession of this prospectus in jurisdictions outside the United States are required to inform themselves about and to observe any restrictions as to this offering and the distribution of this prospectus applicable to that jurisdiction.

Prospectus summary

This summary highlights information contained elsewhere in this prospectus. This summary does not contain all of the information you should consider before investing in our common stock. You should read this entire prospectus carefully, especially the "Risk factors" section and our consolidated financial statements and the related notes appearing at the end of this prospectus, before making an investment decision.

Our company overview

We are a biopharmaceutical company discovering, developing and preparing to commercialize innovative medicines paired with companion diagnostics for the treatment of serious diseases, with an initial focus on cancer. Our mission is to provide patients, physicians and the healthcare system with the medicines, tools and information to transform the approach to care from one based on the identification and treatment of symptoms to one focused on the diagnosis and treatment of illness through a more precise mechanistic understanding of disease. We seek to accomplish our mission by applying our proprietary systems biology-based approach to biomedical research, which we call Network Biology. Our vision is to apply Network Biology to become a global healthcare enterprise that is founded on leading science and driven to deliver integrated healthcare solutions that improve both the quality of patient outcomes and the efficiency of care.

Network Biology is an interdisciplinary approach to drug discovery and development that enables us to build functional and predictive computational models of biological systems based on quantitative, kinetic, multiplexed biological data. It provides our scientists with insights into how the complex molecular interactions that occur within cell signaling pathways, or networks, regulate cell decisions and how dysfunction within these networks leads to disease. We apply Network Biology throughout the research and development process, including for target identification, lead compound design and optimization, diagnostic discovery, *in vitro* and *in vivo* predictive development and the design of clinical trial protocols. We believe that drug discovery and development using Network Biology is more efficient and productive than traditional approaches.

We currently have four targeted therapeutic oncology candidates in clinical development and a fifth that we expect to enter clinical development by early 2012, subject to our obtaining regulatory clearance. Additionally, we have multiple product candidates in preclinical development and an active Network Biology driven discovery effort. We own global commercialization rights to all of our product candidates other than rights in Taiwan to MM-398 and worldwide rights to MM-121, which we have partnered with Sanofi and have a right to co-promote in the United States. Our most advanced product candidates are:

- **MM-398:** MM-398 is a novel, stable nanotherapeutic encapsulation, or enclosed sphere carrying an active drug, of the marketed chemotherapy drug irinotecan. MM-398 recently achieved its primary efficacy endpoints in Phase 2 clinical trials in pancreatic and gastric cancer. In an open label, single arm Phase 2 clinical trial of MM-398 as a monotherapy in 40 metastatic pancreatic cancer patients who had previously failed treatment with gemcitabine, patients treated with MM-398 achieved median overall survival of 22.4 weeks. Additionally, 20% of the patients in this Phase 2 trial survived for more than one year, and we observed a disease control rate, meaning patients exhibited stable disease or partial or complete

response to treatment, of 47.5% at six weeks. There are currently no approved treatments for gemcitabine refractory metastatic pancreatic cancer, nor is there a consensus on standard of care treatment for such patients.

We plan to initiate a pivotal Phase 3 clinical trial of MM-398 for the treatment of patients with metastatic pancreatic cancer who have previously failed treatment with gemcitabine by the end of 2011. The trial is expected to enroll approximately 250 patients and is designed to compare the efficacy of MM-398 as a monotherapy against the combination of the chemotherapy drugs fluorouracil, or 5-FU, and leucovorin, a regimen often used by physicians to treat this patient population. We believe that MM-398 has potential uses in a number of other indications, including colorectal cancer, lung cancer, gastric cancer and glioma. There are multiple ongoing Phase 1 and Phase 2 clinical trials of MM-398.

In July 2011, the U.S. Food and Drug Administration, or FDA, granted MM-398 orphan drug designation for the treatment of pancreatic cancer. In the United States, orphan drug designation is granted to a drug intended to treat a rare disease or condition, which is generally defined as a disease or condition that affects fewer than 200,000 individuals in the United States. If MM-398 receives the first FDA approval for the disease for which it has such designation, it is entitled to orphan drug exclusivity, which means that the FDA may not approve any other applications to market the same drug for the same indication, except in limited circumstances, for seven years.

- **MM-121:** MM-121 is a fully human monoclonal antibody that targets ErbB3, a cell surface receptor, or protein attached to the cell membrane that mediates communication inside and outside the cell, that our Network Biology approach identified as a potentially important target in a range of cancers. A monoclonal antibody is a type of protein normally produced by cells of the immune system that binds to just one epitope, or chemical structure, on a protein or other structure. MM-121 is designed to inhibit cancer growth directly, restore sensitivity to drugs to which a tumor has become resistant and delay the development of resistance of a tumor to other agents. In collaboration with Sanofi, we are testing MM-121 in combination with both chemotherapies and other targeted agents across a wide spectrum of solid tumors, including lung, breast and ovarian cancers.

  We partnered MM-121 with Sanofi after we initiated Phase 1 clinical development of this product candidate. Sanofi paid us an upfront license fee of $60 million and is responsible for all of the development and manufacturing costs under the collaboration. We are entitled to tiered royalties and aggregate clinical, regulatory and sales milestones of up to $470 million, of which we have already received $10 million for achieving a clinical milestone.

- **MM-111:** MM-111 is a bispecific antibody designed to target cancer cells that are characterized by overexpression of the ErbB2 cell surface receptor, also referred to as HER2. A bispecific antibody is a type of antibody that is able to bind simultaneously to two distinct proteins or epitopes. Our Network Biology approach identified that ligand-induced signaling through the complex of ErbB2 (HER2) and ErbB3 is a more powerful and widespread promoter of tumor growth and survival than previously appreciated. We believe that MM-111 is potentially applicable across a broad range of solid tumors. We are conducting multiple Phase 1 clinical trials of MM-111 in monotherapy and combination therapy settings.

- **MM-302:** MM-302 is a nanotherapeutic encapsulation of doxorubicin with attached antibodies that are designed to target MM-302 to cells that overexpress the ErbB2 (HER2)

receptor. We believe that MM-302 has the potential to retain the safety profile of liposomal doxorubicin, in particular with respect to cardiac safety, and achieve better efficacy than either free doxorubicin or liposomal doxorubicin in ErbB2 (HER2) positive tumors. We are conducting a Phase 1 clinical trial of MM-302 in patients with advanced ErbB2 (HER2) positive breast cancer.

- **MM-151:** MM-151 is an oligoclonal therapeutic consisting of a mixture of three fully human monoclonal antibodies designed to bind to non-overlapping epitopes of the epidermal growth factor receptor, or EGFR. EGFR is also know as ErbB1. An oligoclonal therapeutic is a mixture of two or more distinct monoclonal antibodies. We have designed MM-151 to block signal amplification that occurs within the ErbB cell signaling network, which we believe may result in greater efficacy than currently marketed EGFR (ErbB1) inhibitors. We submitted an investigational new drug application, or IND, to the FDA for MM-151 in July 2011. In August 2011, the FDA responded to our IND and, among other things, is requiring that we submit additional preclinical data from our ongoing toxicology studies before we can initiate a Phase 1 clinical trial. Subject to our providing all of the information that the FDA has requested and a decision by the FDA to allow us to proceed, we expect to be able to initiate a Phase 1 clinical trial of MM-151 by early 2012.

We are developing companion diagnostics for use with each of our therapeutic oncology product candidates. We use Network Biology in our programs to identify biomarkers and develop them into companion diagnostic agents. We believe that companion diagnostics will allow us to improve the efficiency and productivity of our clinical development and enhance the efficacy and pharmacoeconomic benefit of our therapeutics.

We manufacture drug substance for use in our clinical trials and research and development efforts for all of our product candidates using current good manufacturing practices, or cGMP, at our 4,000 square foot multi-product facility. We have capacity to produce Phase 2 material for our antibody product candidates and commercial material for our nanotherapeutics.

Our strategy

Our goal is to build a global healthcare enterprise founded on a leading understanding of complex biology through the use of our Network Biology approach. Key elements of our strategy to achieve this goal are:

- Strengthen and expand our core Network Biology capabilities by continuing to invest in the technologies, methods and know-how that comprise our ability to explore, model and understand complex biology.

- Foster an integrated, multidisciplinary model of drug discovery, clinical development, manufacturing and commercialization, which is essential to our productivity, innovation and retention of knowledge across all of our processes from research through manufacturing.

- Develop a companion diagnostic for each of our therapeutic oncology product candidates so as to guide their use and enhance their benefit for patients and the healthcare system.

- Establish a focused sales and marketing organization, as we expect to retain commercial rights in the United States and Europe for our oncology product candidates, other than MM-121.

Advantages of Network Biology

We believe that Network Biology is a critical, biological data-based tool to discover important insights into biology and develop better medicines by allowing us to move beyond one dimensional measures of molecular activity, such as protein expression levels or gene mutation status, to an understanding of the system dynamics that govern cellular decisions. In oncology, Network Biology provides us with a detailed understanding of active signaling networks within a tumor cell that we use to guide the design of targeted therapeutics that we believe will appropriately disrupt the activity of these networks.

Specifically, we have used Network Biology to:

- Generate data suggesting that, although cancer occurs as a result of a myriad of environmental and genetic factors, it may be characterized as a disease of addiction to a relatively limited number of cell signaling networks that are used for growth and survival.
- Enhance our understanding of the significant signaling pathways used for survival, such as the ErbB pathway, to design novel therapeutics and therapeutic approaches that we believe will be clinically effective.
    - Our insight into the importance of the ErbB3 receptor as a highly sensitive target led to our development of MM-121 despite ErbB3 being largely ignored as a drug target by the broader scientific community.
    - Our understanding of the importance of ligand-induced signaling in the context of overexpressed proteins, particularly the interaction of ErbB2 (HER2) with ErbB3 and its ligand, heregulin, led to the development of MM-111, a novel bispecific antibody therapeutic.
    - Our computational modeling revealed the importance of inhibiting the binding of a full range of EGFR (ErbB1) ligands as a solution for preventing EGFR (ErbB1) cell survival signaling and led to the development of MM-151.
- Create and implement strategies for predicting response to our drugs based on the molecular and physical characteristics of tumors and tumor cells.
    - By profiling the levels of five proteins, we were able to successfully and accurately predict response to MM-121 in 20 different xenograft tumor models. This profile forms the basis for our development plans for a companion diagnostic for MM-121.
    - By building computational models of the key variables involved in the transport and deposition of nanotherapeutics in and around tumors, we are developing a strategy for imaging tumors to identify which are likely to respond to treatment.
- Move our products through preclinical development at a pace, cost and success rate that we believe compares favorably to industry benchmarks.

We believe that Network Biology gives us the ability to:

- Improve the productivity of the drug development process: We believe that Network Biology can produce more precisely targeted therapeutics, increase the productivity of biomedical research and increase the probability of approval for new drugs. We believe that Network

Biology improves our decision making throughout the research and development process by providing our scientists with tools to simulate hypotheses in computer models and then test these hypotheses in preclinical and clinical settings.

- Improve patient care: We believe that integrated medicines consisting of a diagnostic paired with a therapeutic will enable physicians to deliver the right drug to the right set of patients at the right time, which will improve patient outcomes, reduce the overall costs of treating and caring for cancer patients and provide a basis for seeking favorable reimbursement of approved drugs from payors because of the benefits to patients.

- Address therapeutic areas beyond cancer: We believe that our Network Biology approach is applicable to a broad range of therapeutic areas beyond cancer, including bone and joint conditions, infectious disease, inflammation, central nervous system disease and other areas of medicine with high unmet needs.

Risks associated with our business

Our business is subject to a number of risks of which you should be aware before making an investment decision. These risks are discussed more fully in the "Risk factors" section of this prospectus immediately following this prospectus summary. In particular:

- We currently have no commercial products, and we have not received regulatory approval for, nor have we generated commercial revenue from, any of our products.

- We depend heavily on the success of our five most advanced product candidates. All of our product candidates are still in preclinical and clinical development. Clinical trials of our product candidates may not be successful. If we are unable to obtain required regulatory approvals of, commercialize, obtain and maintain patent protection for or gain sufficient market acceptance by physicians, patients and healthcare payors of our product candidates, or experience significant delays in doing so, our business will be materially harmed and our ability to generate revenue will be materially impaired.

- If we are unable to successfully develop companion diagnostics for our therapeutic product candidates, or experience significant delays in doing so, we may not receive marketing approval for or realize the full commercial potential of our therapeutics.

- We may depend on collaborations with third parties for the development and commercialization of our product candidates. If those collaborations are not successful, we may not be able to capitalize on the market potential of these product candidates. In particular, the successful development and commercialization of MM-121 depends substantially on our collaboration with Sanofi.

- Notwithstanding our large investment to date and anticipated future expenditures in Network Biology, we have not yet developed, and may never successfully develop, any marketed products using this approach.

- We have incurred significant losses since our inception and will need substantial additional funding. We expect to incur losses for the foreseeable future and may never achieve or maintain profitability. Our net loss was $61.5 million for the nine months ended September 30, 2011, $50.2 million for the year ended December 31, 2010, $49.1 million for

the year ended December 31, 2009 and $45.6 million for the year ended December 31, 2008. As of September 30, 2011, we had an accumulated deficit of $332.7 million.

Our corporate information

We were incorporated under the laws of the Commonwealth of Massachusetts in 1993 under the name Immtek, Inc. We changed our name to Atlantic BioPharmaceuticals, Inc. in 1995. In 2001, we acquired Merrimack Pharmaceuticals, Inc., a Delaware corporation, and changed our name to Merrimack Pharmaceuticals, Inc. In October 2010, we reincorporated in the State of Delaware. As a result, we are now a Delaware corporation with the name Merrimack Pharmaceuticals, Inc. Our principal executive offices are located at One Kendall Square, Suite B7201, Cambridge, Massachusetts 02139 and our telephone number is (617) 441-1000. Our website address is *www.merrimackpharma.com*. The information contained on, or that can be accessed through, our website is not a part of this prospectus. We have included our website address in this prospectus solely as an inactive textual reference.

In this prospectus, unless otherwise stated or the context otherwise requires, references to "Merrimack," "we," "us," "our" and similar references refer to Merrimack Pharmaceuticals, Inc. and its subsidiaries. The Merrimack logo is our trademark. The other trademarks, trade names and service marks appearing in this prospectus are the property of their respective owner.

This prospectus includes statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties. Industry publications and third party research, surveys and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. While we believe these industry publications and third party research, surveys and studies are reliable, we have not independently verified such data. This prospectus also includes data based on our own internal estimates and research. While we believe that our internal company research is reliable and that our internal estimates are reasonable, no independent source has verified such research or estimates.

The offering

Common stock offered by us	shares
Common stock to be outstanding after this offering	shares
Over-allotment option	The underwriters have an option for a period of 30 days to purchase up to additional shares of our common stock to cover over-allotments.
Use of proceeds	We will use approximately $4.3 million of the net proceeds from this offering to pay accrued dividends on our series B convertible preferred stock. We expect to use the balance of the net proceeds from this offering to fund the clinical development of our most advanced product candidates, including MM-398, MM-111, MM-302 and MM-151, to fund research and development of our preclinical product candidates and for other general corporate purposes. See "Use of proceeds." Sanofi is responsible for all development and manufacturing costs under our collaboration for the development and commercialization of MM-121.
Risk factors	You should read the "Risk factors" section of this prospectus for a discussion of factors to consider carefully before deciding to invest in shares of our common stock.
Proposed NASDAQ Global Market symbol	MACK

The number of shares of our common stock to be outstanding after this offering is based on 11,414,049 actual shares of our common stock outstanding as of September 30, 2011 and 66,254,763 additional shares of our common stock issuable upon the automatic conversion of all outstanding shares of our preferred stock upon the closing of this offering.

The number of shares of our common stock to be outstanding after this offering excludes:

- 17,521,906 shares of our common stock issuable upon the exercise of stock options outstanding as of September 30, 2011 at a weighted average exercise price of $2.48 per share;
- 1,051,560 additional shares of our common stock available for future issuance as of September 30, 2011 under our 2008 stock incentive plan;
- 3,500,000 additional shares of our common stock that will be available for future issuance, as of the closing of this offering, under our 2011 stock incentive plan;
- 1,500,000 additional shares of our common stock that will be available for future issuance, as of the closing of this offering, under our 2011 employee stock purchase plan; and

- 3,240,225 shares of our common stock issuable upon the exercise of warrants outstanding as of September 30, 2011 at a weighted average exercise price of $2.98 per share.

Unless otherwise indicated, all information in this prospectus assumes:

- no exercise of the outstanding options or warrants described above;
- no exercise by the underwriters of their option to purchase up to additional shares of our common stock to cover over-allotments;
- the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 66,254,763 shares of our common stock upon the closing of this offering;
- that the warrant outstanding as of September 30, 2011 held by General Electric Capital Corporation to purchase 1,033 shares of our series C convertible preferred stock at an exercise price of $1.889 per share automatically becomes a warrant to purchase 1,033 shares of our common stock at an exercise price of $1.889 per share upon the closing of this offering;
- that the warrant outstanding as of September 30, 2011 held by Hercules Technology Growth Capital, Inc. to purchase 302,143 shares of our series D convertible preferred stock at an exercise price of $3.50 per share automatically becomes a warrant to purchase 302,143 shares of our common stock at an exercise price of $3.50 per share upon the closing of this offering; and
- the restatement of our restated certificate of incorporation and the amendment and restatement of our bylaws upon the closing of this offering.

Summary consolidated financial information

You should read the following summary consolidated financial data together with our consolidated financial statements and the related notes appearing at the end of this prospectus and the "Selected consolidated financial data" and "Management's discussion and analysis of financial condition and results of operations" sections of this prospectus. We have derived the consolidated statements of operations data for the years ended December 31, 2008, 2009 and 2010 from our audited consolidated financial statements included in this prospectus. We have derived the consolidated statements of operations data for the nine months ended September 30, 2010 and 2011 and the consolidated balance sheet data as of September 30, 2011 from our unaudited consolidated financial statements included in this prospectus. The unaudited consolidated financial data include, in the opinion of our management, all adjustments, consisting only of normal recurring adjustments, that are necessary for a fair statement of our financial position and results of operations for these periods. Our historical results for any prior period are not necessarily indicative of results to be expected in any future period, and our results for any interim period are not necessarily indicative of results to be expected for a full fiscal year.

(in thousands, except per share data)	Year ended December 31, 2008	2009(1)	2010(2)	Nine months ended September 30, 2010(2)	2011(2)
				(unaudited)	
Consolidated statements of operations data:					
Research and development revenues	$ 365	$ 2,148	$ 20,305	$ 13,996	$ 21,638
Operating expenses:					
Research and development	34,528	37,658	58,278	41,860	73,101
General and administrative	8,836	12,178	11,381	8,555	11,239
Contingent consideration	—	—	(178)	37	—
Total operating expenses	43,364	49,836	69,481	50,452	84,340
Loss from operations	(42,999)	(47,688)	(49,176)	(36,456)	(62,702)
Other income and expenses:					
Interest income	1,243	81	74	54	51
Interest expense	(4,403)	(4,909)	(3,726)	(3,638)	(12)
Other, net	607	41	2,669	12	1,208
Net loss before income taxes and non-controlling interest	(45,552)	(52,475)	(50,159)	(40,028)	(61,455)
Benefit from income taxes	—	3,402	—	—	—
Net loss	(45,552)	(49,073)	(50,159)	(40,028)	(61,455)
Less net loss attributable to non-controlling interest	—	—	(55)	(19)	(348)
Net loss attributable to Merrimack Pharmaceuticals, Inc.	$ (45,552)	$ (49,073)	$ (50,104)	$ (40,009)	$ (61,107)
Net loss per share available to common stockholders—basic and diluted(3)	$ (8.17)	$ (7.28)	$ (5.57)	$ (3.94)	$ (5.92)
Weighted-average common shares used in computing net loss per share available to common stockholders—basic and diluted	6,199	7,387	10,994	10,970	11,292
Pro forma net loss per share available to common stockholders—basic and diluted (unaudited)(4)			$		$
Weighted-average common shares used in computing pro forma net loss per share available to common stockholders—basic and diluted (unaudited)(5)					

(1) In 2009, we acquired Hermes BioSciences, Inc. See Note 6 to our consolidated financial statements.

(2) In 2010 and 2011, we consolidated Silver Creek Pharmaceuticals, Inc. for financial reporting purposes.

(3) The numerator in the calculation of net loss per share available to common stockholders—basic and diluted includes unaccreted dividends on our convertible preferred stock.

(4) The numerator in the calculation of pro forma net loss per share available to common stockholders—basic and diluted has been adjusted to remove gains and losses resulting from re-measurement of the preferred stock warrant liabilities.

(5) Weighted-average common shares used in computing pro forma net loss per share available to common stockholders—basic and diluted is calculated assuming the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 66,254,763 shares of our common stock upon the closing of this offering and adjusted to reflect additional shares of common stock related to preferred stock dividends of approximately $4,263,000.

The pro forma balance sheet data set forth below give effect to:

- the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 66,254,763 shares of our common stock upon the closing of this offering;
- the reclassification of convertible preferred stock warrant liability to common stock warrants for warrants to purchase our preferred stock that will automatically become warrants to purchase an aggregate of 303,176 shares of our common stock upon the closing of this offering; and
- the accrual of series B convertible preferred stock dividends of approximately $4,263,000.

The pro forma as adjusted balance sheet data set forth below give further effect to:

- our issuance and sale of shares of our common stock in this offering at an assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us; and
- our use of approximately $4,263,000 of the net proceeds from this offering to pay accrued dividends on our series B convertible preferred stock.

As of September 30, 2011 (in thousands)	Actual	Pro forma	Pro forma as adjusted
		(unaudited)	
Consolidated balance sheet data:			
Cash and cash equivalents	$ 59,232	$ 59,232	$
Total assets	89,252	89,252	
Deferred revenue	75,516	75,516	
Convertible preferred stock warrants liability	1,394	—	
Total liabilities	95,065	97,934	
Non-controlling interest	679	679	
Convertible preferred stock	268,220	—	
Total stockholders' deficit	$ (274,712)	$ (9,361)	$

Risk factors

Risks related to our financial position and need for additional capital

We have incurred significant losses since our inception. We expect to incur losses for the foreseeable future and may never achieve or maintain profitability.

Since inception, we have incurred significant operating losses. Our net loss was $61.5 million for the nine months ended September 30, 2011, $50.2 million for the year ended December 31, 2010, $49.1 million for the year ended December 31, 2009 and $45.6 million for the year ended December 31, 2008. As of September 30, 2011, we had an accumulated deficit of $332.7 million. To date, we have financed our operations primarily through private placements of our preferred stock, collaborations and, to a lesser extent, through government grants, the monetization of tax credits and equipment lease financings. We have devoted substantially all of our efforts to research and development, including clinical trials. We have not completed development of any therapeutic product candidates or companion diagnostics. We expect to continue to incur significant expenses and increasing operating losses for at least the next several years. We anticipate that our expenses will increase substantially as we:

- initiate or continue our clinical trials of our five most advanced product candidates;
- continue the research and development of our other product candidates;
- seek to discover additional product candidates;
- seek regulatory approvals for our product candidates that successfully complete clinical trials;
- establish a sales, marketing and distribution infrastructure and scale up manufacturing capabilities to commercialize products for which we may obtain regulatory approval; and
- add operational, financial and management information systems and personnel, including personnel to support our product development and planned commercialization efforts.

To become and remain profitable, we must succeed in developing and eventually commercializing products with significant market potential. This will require us to be successful in a range of challenging activities, including discovering product candidates, completing preclinical testing and clinical trials of our product candidates, obtaining regulatory approval for these product candidates and manufacturing, marketing and selling those products for which we may obtain regulatory approval. We are only in the preliminary stages of some of these activities. We may never succeed in these activities and may never generate revenues that are significant or large enough to achieve profitability. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable would depress the value of our company and could impair our ability to raise capital, expand our business, diversify our product offerings or continue our operations. A decline in the value of our company could also cause you to lose all or part of your investment.

We will need substantial additional funding. If we are unable to raise capital when needed, we would be forced to delay, reduce or eliminate our product development programs or commercialization efforts.

We expect our research and development expenses to increase in connection with our ongoing activities, particularly as we continue the research, development and clinical trials of, and seek

regulatory approval for, our product candidates. In addition, subject to obtaining regulatory approval of any of our product candidates, we expect to incur significant commercialization expenses for product sales, marketing, manufacturing and distribution. We will need substantial additional funding in connection with our continuing operations. If we are unable to raise capital when needed or on attractive terms, we would be forced to delay, reduce or eliminate our research and development programs or commercialization efforts.

We expect that the net proceeds from this offering, together with our existing cash and cash equivalents, anticipated interest income and anticipated milestone payments and research and development and manufacturing funding under our collaboration agreement with Sanofi related to MM-121, will enable us to fund our operating expenses and capital expenditure requirements through at least . Our future capital requirements will depend on many factors, including:

- the progress and results of the clinical trials of our five most advanced product candidates;
- the success of our collaborations with Sanofi related to MM-121 and PharmaEngine, Inc., or PharmaEngine, related to MM-398;
- the scope, progress, results and costs of preclinical development, laboratory testing and clinical trials for our other product candidates;
- the costs, timing and outcome of regulatory review of our product candidates;
- the costs of commercialization activities, including product sales, marketing, manufacturing and distribution;
- the costs of preparing, filing and prosecuting patent applications and maintaining, enforcing and defending intellectual property-related claims;
- the extent to which we acquire or invest in businesses, products and technologies; and
- our ability to establish and maintain additional collaborations on favorable terms, particularly marketing and distribution arrangements for oncology product candidates outside the United States and Europe.

Conducting preclinical testing and clinical trials is a time-consuming, expensive and uncertain process that takes years to complete, and we may never generate the necessary data required to obtain regulatory approval and achieve product sales. In addition, our product candidates, if approved, may not achieve commercial success. Our commercial revenues, if any, will be derived from sales of products that we do not expect to be commercially available for several years, if at all. Accordingly, we will need to continue to rely on additional financing to achieve our business objectives.

Raising additional capital may cause dilution to our existing stockholders, restrict our operations or require us to relinquish rights to our technologies or product candidates.

Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of equity offerings, debt financings, collaborations, strategic alliances, licensing arrangements and other marketing and distribution arrangements. We do not have any committed external source of funds, other than our collaboration with Sanofi for the development and commercialization of MM-121, which is terminable by Sanofi for convenience upon 180 days' prior written notice. To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be

diluted, and the terms of these securities may include liquidation or other preferences that adversely affect your rights as a stockholder. Debt financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. If we raise additional funds through marketing and distribution arrangements or other collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates or to grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Risks related to the development and commercialization of our product candidates

We depend heavily on the success of our five most advanced product candidates. All of our product candidates are still in preclinical and clinical development. Clinical trials of our product candidates may not be successful. If we are unable to commercialize our product candidates, or experience significant delays in doing so, our business will be materially harmed.

We have invested a significant portion of our efforts and financial resources in the acquisition of rights to MM-398 and the development of our four other most advanced product candidates for the treatment of various types of cancer. All of our therapeutic product candidates are still in preclinical and clinical development. Our ability to generate product revenues, which we do not expect will occur for at least the next several years, if ever, will depend heavily on the successful development and eventual commercialization of these product candidates. The success of our product candidates, which include both our therapeutic product candidates and companion diagnostic candidates, will depend on several factors, including the following:

- successful completion of preclinical studies and clinical trials;
- receipt of marketing approvals from the FDA and similar regulatory authorities outside the United States for our product candidates, including our companion diagnostics;
- establishing commercial manufacturing capabilities, either by building such facilities ourselves or making arrangements with third party manufacturers;
- launching commercial sales of the product, whether alone or in collaboration with others;
- acceptance of the product by patients, the medical community and third party payors;
- effectively competing with other therapies;
- a continued acceptable safety profile of the product following approval; and
- qualifying for, maintaining, enforcing and defending intellectual property rights and claims.

If we do not achieve one or more of these factors in a timely manner or at all, we could experience significant delays or an inability to successfully commercialize our product candidates, which would materially harm our business.

If clinical trials of our product candidates fail to demonstrate safety and efficacy to the satisfaction of the FDA or similar regulatory authorities outside the United States or do not otherwise produce positive results, we may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development and commercialization of our product candidates.

Before obtaining regulatory approval for the sale of our product candidates, we must conduct extensive clinical trials to demonstrate the safety and efficacy of our product candidates in humans. Clinical testing is expensive, difficult to design and implement, can take many years to complete and is uncertain as to outcome. A failure of one or more of our clinical trials can occur at any stage of testing. The outcome of preclinical testing and early clinical trials may not be predictive of the success of later clinical trials, and interim results of a clinical trial do not necessarily predict final results.

For example, the favorable results from a Phase 2 clinical trial of MM-398 in patients with metastatic pancreatic cancer may not be predictive of success in our planned Phase 3 clinical trial of MM-398 for the same indication, in particular because the trials have different efficacy endpoints and the Phase 2 trial was a single arm study that did not compare MM-398 to other therapies. Our planned Phase 3 trial is being designed to compare the efficacy of MM-398 against a combination of 5-FU and leucovorin based on an expected efficacy endpoint of statistically significant difference in overall survival. In addition, preclinical and clinical data are often susceptible to varying interpretations and analyses, and many companies that have believed their product candidates performed satisfactorily in preclinical studies and clinical trials have nonetheless failed to obtain marketing approval of their products.

We may experience numerous unforeseen events during, or as a result of, clinical trials that could delay or prevent our ability to receive regulatory approval or commercialize our product candidates, including:

- regulators or institutional review boards may not authorize us or our investigators to commence a clinical trial or conduct a clinical trial at a prospective trial site;
- clinical trials of our product candidates may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical trials or abandon product development programs;
- the number of patients required for clinical trials of our product candidates may be larger than we anticipate, enrollment in these clinical trials may be slower than we anticipate or patients may drop out of these clinical trials at a higher rate than we anticipate;
- our third party contractors may fail to comply with regulatory requirements or meet their contractual obligations to us in a timely manner, or at all;
- we might have to suspend or terminate clinical trials of our product candidates for various reasons, including a finding that the patients are being exposed to unacceptable health risks;
- regulators or institutional review boards may require that we or our investigators suspend or terminate clinical research for various reasons, including noncompliance with regulatory requirements;
- the cost of clinical trials of our product candidates may be greater than we anticipate;

- the supply or quality of our product candidates or other materials necessary to conduct clinical trials of our product candidates may be insufficient or inadequate; and

- our product candidates may have undesirable side effects or other unexpected characteristics, causing us or our investigators to suspend or terminate the trials.

For example, due to a lack of efficacy in clinical trials, we suspended internal development of our product candidate MM-093, a potential therapeutic for autoimmune diseases. We subsequently terminated our development program for this product candidate and licensed it to a third party.

If we are required to conduct additional clinical trials or other testing of our product candidates beyond those that we currently contemplate, if we are unable to successfully complete clinical trials of our product candidates or other testing, if the results of these trials or tests are not positive or are only modestly positive or if there are safety concerns, we may:

- be delayed in obtaining marketing approval for our product candidates;

- not obtain marketing approval at all;

- obtain approval for indications that are not as broad as intended;

- have the product removed from the market after obtaining marketing approval;

- be subject to additional post-marketing testing requirements; or

- be subject to restrictions on how the product is distributed or used.

In particular, it is possible that the FDA may not consider the results of our planned Phase 3 clinical trial of MM-398 for the treatment of patients with metastatic pancreatic cancer, once completed, to be sufficient for approval of MM-398 for this indication. In general, the FDA suggests two adequate and well-controlled clinical trials to demonstrate effectiveness because a conclusion based on two persuasive studies will be more secure. Although the FDA has informed us that our planned pivotal Phase 3 clinical trial of MM-398, plus supportive Phase 2 data obtained to date, could potentially provide sufficient safety and effectiveness data for the treatment of patients with metastatic pancreatic cancer, the FDA has further advised us that whether one or two adequate and well controlled clinical trials will be required will be a review issue in connection with an NDA submission. Even if we achieve favorable results in our planned pivotal Phase 3 clinical trial, the FDA may nonetheless require that we conduct additional clinical trials, possibly using a different design. In addition, if we are unable to demonstrate comparability between MM-398 Phase 1 and Phase 2 clinical material manufactured by PharmaEngine and the material produced by us for use in our Phase 3 clinical trial of MM-398, we may be required to complete additional studies, including clinical studies, which could delay the development and approval, if any, of MM-398.

Our product development costs will also increase if we experience delays in testing or approvals. We do not know whether any clinical trials will begin as planned, will need to be restructured or will be completed on schedule, or at all. For example, in August 2011, the FDA informed us that, before initiating a Phase 1 clinical trial of MM-151, among other things, we need to submit additional preclinical data from our ongoing toxicology studies. In particular, the FDA has requested data on the formation of antibodies against MM-151 in the test animals included in our ongoing toxicology studies. As a result, our IND for MM-151 is on clinical hold

until we provide all of the information that the FDA has requested and the FDA notifies us that we may initiate the Phase 1 clinical trial.

Significant clinical trial delays also could shorten any periods during which we may have the exclusive right to commercialize our product candidates or allow our competitors to bring products to market before we do and impair our ability to commercialize our product candidates and may harm our business and results of operations.

If serious adverse or inappropriate side effects are identified during the development of our product candidates, we may need to abandon our development of some of our product candidates.

All of our product candidates are still in preclinical or clinical development and their risk of failure is high. It is impossible to predict when or if any of our product candidates will prove effective or safe in humans or will receive regulatory approval. Currently marketed therapies for solid tumors are generally limited to some extent by their toxicity. Use of our product candidates as monotherapies in clinical trials also has resulted in adverse events consistent in nature with other marketed therapies. When used in combination with other marketed therapies, our product candidates may exacerbate adverse events associated with the marketed therapy. If our product candidates result in undesirable side effects or have characteristics that are unexpected, we may need to abandon their development.

If we experience delays in the enrollment of patients in our clinical trials, our receipt of necessary regulatory approvals could be delayed or prevented.

We may not be able to initiate or continue clinical trials for our product candidates if we are unable to locate and enroll a sufficient number of eligible patients to participate in these trials as required by the FDA or other regulatory authorities. In addition, many of our competitors have ongoing clinical trials for product candidates that could be competitive with our product candidates, and patients who would otherwise be eligible for our clinical trials may instead enroll in clinical trials of our competitors' product candidates.

Enrollment delays in our clinical trials may result in increased development costs for our product candidates, which would cause the value of the company to decline and limit our ability to obtain additional financing. Our inability to enroll a sufficient number of patients for any of our current or future clinical trials would result in significant delays or may require us to abandon one or more clinical trials altogether.

If we are unable to successfully develop companion diagnostics for our therapeutic product candidates, or experience significant delays in doing so, we may not realize the full commercial potential of our therapeutics.

An important component of our business strategy is to develop *in vitro* or *in vivo* companion diagnostics for each of our therapeutic product candidates. There has been limited success to date industry wide in developing companion diagnostics, in particular *in vitro* companion diagnostics. To be successful, we will need to address a number of scientific, technical and logistical challenges.

Although we have developed prototype assays for some *in vitro* diagnostic candidates, all of our companion diagnostic candidates are in preclinical development or clinical feasibility testing. We have limited experience in the development of diagnostics and may not be successful in developing appropriate diagnostics to pair with any of our therapeutic product

candidates that receive marketing approval. The FDA and similar regulatory authorities outside the United States regulate *in vitro* companion diagnostics as medical devices and *in vivo* companion diagnostics as drugs. In each case, companion diagnostics require separate regulatory approval prior to commercialization. Given our limited experience in developing diagnostics, we expect to rely in part on third parties for their design and manufacture. If we, or any third parties that we engage to assist us, are unable to successfully develop companion diagnostics for our therapeutic product candidates, or experience delays in doing so, the development of our therapeutic product candidates may be adversely affected, our therapeutic product candidates may not receive marketing approval and we may not realize the full commercial potential of any therapeutics that receive marketing approval. As a result, our business would be harmed, possibly materially.

Even if any of our product candidates, including our five most advanced product candidates, receive regulatory approval, they may fail to achieve the degree of market acceptance by physicians, patients, healthcare payors and others in the medical community necessary for commercial success.

If any of our product candidates, including our five most advanced product candidates, receive marketing approval, they may nonetheless not gain sufficient market acceptance by physicians, patients, healthcare payors and others in the medical community. If these products do not achieve an adequate level of acceptance, we may not generate significant product revenues and we may not become profitable. The degree of market acceptance of our product candidates, if approved for commercial sale, will depend on a number of factors, including:

- the prevalence and severity of any side effects;
- efficacy and potential advantages compared to alternative treatments;
- the price we charge for our product candidates;
- convenience and ease of administration compared to alternative treatments;
- the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies;
- our ability to successfully develop companion diagnostics that effectively identify patient populations likely to benefit from treatment with our therapeutic products;
- the strength of marketing and distribution support; and
- sufficient third party coverage or reimbursement.

If we are unable to establish sales and marketing capabilities or enter into agreements with third parties to sell and market our product candidates, we may not be successful in commercializing our product candidates.

We do not have a sales or marketing infrastructure and have no experience in the sale, marketing or distribution of therapeutic products. To achieve commercial success for any approved product, we must either develop a sales and marketing organization or outsource these functions to third parties. Our current plan for our oncology products, other than MM-121, for which we receive marketing approval is to market and sell these products ourselves in the United States and Europe and to establish distribution or other marketing arrangements with third parties for these products in the rest of the world. We plan to co-promote MM-121 in the United States with Sanofi, which otherwise holds worldwide commercialization rights to this product candidate.

There are risks involved with both establishing our own sales and marketing capabilities and entering into arrangements with third parties to perform these services. For example, recruiting and training a sales force is expensive and time-consuming and could delay any product launch. If the commercial launch of a product candidate for which we recruit a sales force and establish marketing capabilities is delayed or does not occur for any reason, we would have prematurely or unnecessarily incurred these commercialization expenses. This may be costly, and our investment would be lost if we cannot retain or reposition our sales and marketing personnel.

Establishing effective sales, marketing and distribution capabilities and infrastructure in Europe may be particularly difficult for us. We have no prior experience in these areas. In addition, there are complex regulatory, tax, labor and other legal requirements imposed by both the European Union and many of the individual countries in Europe with which we will need to comply. Many U.S.-based biopharmaceutical companies have found the process of marketing their own products in Europe to be very challenging.

We also may not be successful entering into arrangements with third parties to sell and market our product candidates or doing so on terms that are favorable to us. We likely will have little control over such third parties, and any of them may fail to devote the necessary resources and attention to sell and market our products effectively. If we do not establish sales and marketing capabilities successfully, either on our own or in collaboration with third parties, we will not be successful in commercializing our product candidates.

We face substantial competition, which may result in others discovering, developing or commercializing products before or more successfully than we do.

The development and commercialization of new therapeutic and diagnostic products is highly competitive. We face competition with respect to our current product candidates, and will face competition with respect to any products that we may seek to develop or commercialize in the future, from major pharmaceutical companies, specialty pharmaceutical companies and biotechnology companies worldwide. Several large pharmaceutical and biotechnology companies currently market and sell products for the treatment of the solid tumor indications for which we are developing our product candidates. Potential competitors also include academic institutions, government agencies and other public and private research organizations that conduct research, seek patent protection and establish collaborative arrangements for research, development, manufacturing and commercialization. Many of these competitors are attempting to develop therapeutics for our target indications.

We are developing our product candidates for the treatment of solid tumors. There are a variety of available therapies marketed for solid tumors. In many cases, these drugs are administered in combination to enhance efficacy. Some of these drugs are branded and subject to patent protection, and others are available on a generic basis, including the active ingredients in MM-398 and MM-302. Many of these approved drugs are well established therapies and are widely accepted by physicians, patients and third party payors. This may make it difficult for us to achieve our business strategy of replacing existing therapies with our product candidates.

There are also a number of products in late stage clinical development to treat solid tumors. Our competitors may develop products that are more effective, safer, more convenient or less

costly than any that we are developing or that would render our product candidates obsolete or non-competitive. Our competitors may also obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours.

Many of our competitors have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved products than we do. Mergers and acquisitions in the pharmaceutical, biotechnology and diagnostic industries may result in even more resources being concentrated among a smaller number of our competitors. Smaller or early stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These third parties compete with us in recruiting and retaining qualified scientific and management personnel, establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

If we are able to commercialize any product candidates, the products may become subject to unfavorable pricing regulations, third party reimbursement practices or healthcare reform initiatives, thereby harming our business.

The regulations that govern marketing approvals, pricing and reimbursement for new therapeutic and diagnostic products vary widely from country to country. Some countries require approval of the sale price of a product before it can be marketed. In many countries, the pricing review period begins after marketing or product licensing approval is granted. In some foreign markets, prescription pharmaceutical pricing remains subject to continuing governmental control even after initial approval is granted. As a result, we might obtain regulatory approval for a product in a particular country, but then be subject to price regulations that delay our commercial launch of the product and negatively impact the revenues we are able to generate from the sale of the product in that country. Adverse pricing limitations may hinder our ability to recoup our investment in one or more product candidates, even if our product candidates obtain regulatory approval.

Our ability to commercialize any products successfully also will depend in part on the extent to which reimbursement for these products and related treatments will be available from government health administration authorities, private health insurers and other organizations. Government authorities and third party payors, such as private health insurers and health maintenance organizations, decide which medications they will pay for and establish reimbursement levels. A primary trend in the U.S. healthcare industry and elsewhere is cost containment. Government authorities and these third party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. Increasingly, third party payors are requiring that companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. We cannot be sure that reimbursement will be available for any product that we commercialize and, if reimbursement is available, what the level of reimbursement will be. Reimbursement may impact the demand for, or the price of, any product for which we obtain marketing approval. Obtaining reimbursement for our products may be particularly difficult because of the higher prices often associated with products administered under the supervision of a physician. If reimbursement is not available or is available only to limited levels, we may not be able to successfully commercialize any product candidate that we successfully develop.

There may be significant delays in obtaining reimbursement for approved products, and coverage may be more limited than the purposes for which the product is approved by the FDA or regulatory authorities in other countries. Moreover, eligibility for reimbursement does not imply that any product will be paid for in all cases or at a rate that covers our costs, including research, development, manufacture, sale and distribution. Interim payments for new products, if applicable, may also not be sufficient to cover our costs and may not be made permanent. Payment rates may vary according to the use of the product and the clinical setting in which it is used, may be based on payments allowed for lower cost products that are already reimbursed, and may be incorporated into existing payments for other services. Net prices for products may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors and by any future relaxation of laws that presently restrict imports of products from countries where they may be sold at lower prices than in the United States. Third party payors often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement policies. Our inability to promptly obtain coverage and profitable payment rates from both government funded and private payors for new products that we develop could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize products and our overall financial condition.

Product liability lawsuits against us could cause us to incur substantial liabilities and to limit commercialization of any products that we may develop.

We face an inherent risk of product liability exposure related to the testing of our product candidates in human clinical trials and will face an even greater risk if we commercially sell any products that we may develop. If we cannot successfully defend ourselves against claims that our product candidates or products caused injuries, we will incur substantial liabilities. Regardless of merit or eventual outcome, liability claims may result in:

- decreased demand for any product candidates or products that we may develop;
- injury to our reputation and significant negative media attention;
- withdrawal of patients from clinical trials;
- significant costs to defend the related litigation;
- substantial monetary awards to patients;
- loss of revenue; and
- the inability to commercialize any products that we may develop.

We currently hold $5.0 million in product liability insurance coverage, which may not be adequate to cover all liabilities that we may incur. Insurance coverage is increasingly expensive. We may not be able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liability that may arise.

We may expend our limited resources to pursue a particular product candidate or indication and fail to capitalize on product candidates or indications that may be more profitable or for which there is a greater likelihood of success.

Because we have limited financial and managerial resources, we focus on research programs and product candidates for specific indications. As a result, we may forego or delay pursuit of opportunities with other product candidates or other indications that later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs and product candidates for specific indications may not yield any commercially viable products.

We have based our research and development efforts on our Network Biology approach. Notwithstanding our large investment to date and anticipated future expenditures in Network Biology, we have not yet developed, and may never successfully develop, any marketed products using this approach. As a result of pursuing our Network Biology approach, we may fail to address or develop product candidates or indications based on other scientific approaches that may offer greater commercial potential or for which there is a greater likelihood of success.

We also may not be successful in our efforts to identify or discover additional product candidates through our Network Biology approach. Research programs to identify new product candidates require substantial technical, financial and human resources. These research programs may initially show promise in identifying potential product candidates, yet fail to yield product candidates for clinical development.

If we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through collaboration, licensing or other royalty arrangements in cases in which it would have been advantageous for us to retain sole development and commercialization rights.

We plan to establish separately funded companies for the development of product candidates using our Network Biology approach in some areas outside the oncology field. These companies may not be successful in the development and commercialization of any product candidates.

We plan to apply our Network Biology approach to multiple additional disease areas outside the oncology field. We expect to do so in some cases through the establishment of separately funded companies. For example, we have established a company called Silver Creek Pharmaceuticals, Inc., or Silver Creek, to develop product candidates in the field of regenerative medicine using Network Biology. Silver Creek has received separate funding from investors other than us. Although Silver Creek is currently majority owned by us, in the future we may not be the majority owner of or control Silver Creek or other companies that we establish. If in the future we do not control Silver Creek or any future similar company that we establish, Silver Creek or such other companies could take actions that we do not endorse or with which we disagree, such as using Network Biology in a way that reflects adversely on us. In addition, these companies may have difficulty raising additional funds and could encounter any of the risks in developing and commercializing product candidates to which we are subject.

If we fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could have a material adverse effect on the success of our business.

We are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. Our operations involve the use of hazardous and flammable materials, including chemicals and radioactive and biological materials. Our operations also produce hazardous waste products. We generally contract with third parties for the disposal of these materials and wastes. We also store certain low level radioactive waste at our facilities until the materials can be properly disposed of. We cannot eliminate the risk of contamination or injury from these materials. In the event of contamination or injury resulting from our use of hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. We also could incur significant costs associated with civil or criminal fines and penalties.

Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us in connection with our storage or disposal of biological, hazardous or radioactive materials.

In addition, we may be required to incur substantial costs to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations may impair our research, development or production efforts. Failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions.

Risks related to our dependence on third parties

The successful development and commercialization of MM-121 depends substantially on our collaboration with Sanofi. If Sanofi is unable to further develop or commercialize MM-121, or experiences significant delays in doing so, our business will be materially harmed.

MM-121 is one of our most clinically advanced product candidates. In 2009, we entered into a collaboration and license agreement with Sanofi for the development and commercialization of MM-121. Prior to this collaboration, we did not have a history of working together with Sanofi. The collaboration involves a complex allocation of rights, provides for milestone payments to us based on the achievement of specified development, regulatory and commercial sale milestones and provides us with royalty-based revenue if MM-121 is successfully commercialized. We cannot predict the success of the collaboration.

Under our collaboration agreement, Sanofi has significant control over the conduct and timing of development and commercialization efforts with respect to MM-121. Although we and Sanofi have approved a global development plan, Sanofi may change its development plans for MM-121. We have little control over the amount and timing of resources that Sanofi devotes to the development or commercialization of MM-121. If Sanofi fails to devote sufficient financial and other resources to the development or commercialization of MM-121, the development and commercialization of MM-121 would be delayed or could fail. This would

result in a delay in our receiving milestone payments or royalties with respect to MM-121 or in our not receiving such milestone payments or royalties at all.

If we do not satisfy various conditions under our collaboration and license agreement with Sanofi, we will not realize all of the anticipated benefits under the agreement and our business would be materially harmed.

Our collaboration and license agreement with Sanofi contains a number of conditions that we must satisfy in order to receive milestone payments and royalties. For example, Sanofi has agreed to pay us royalties on sales of products containing MM-121 if issued patents cover the manufacture, use or sale of such products. However, if we do not file the original patent application from which an issued patent claims priority by the later of December 31, 2014 or the receipt of regulatory approval for MM-121 in the United States or the European Union, the royalties, if any, that we will receive with respect to sales of products covered by such issued patent will be significantly less than the royalties we would expect to receive had we met such filing deadline. If we do not meet this deadline or achieve any of the other milestones or deadlines contained in the agreement, we will not receive all of the payments or revenues that we might otherwise receive under the agreement had we met such deadlines or achieved such milestones.

If we lose Sanofi as a collaborator in the development or commercialization of MM-121, it would materially harm our business.

Sanofi has the right to terminate our agreement for the development and commercialization of MM-121, in whole or with respect to specified territories, at any time and for any reason, upon 180 days' prior written notice. Sanofi also has the right to terminate our agreement if we fail to cure a material breach of our agreement within a specified cure period, or fail to diligently pursue a cure if such a breach is not curable within such period.

If Sanofi terminates our agreement at any time, whether on the basis of our uncured material breach or for any other reason, it would delay or prevent our development of MM-121 and materially harm our business and could accelerate our need for additional capital. In particular, we would have to fund the clinical development and commercialization of MM-121 on our own, seek another collaborator or licensee for such clinical development and commercialization or abandon the development and commercialization of MM-121.

The successful development and commercialization of MM-398 currently depend on our collaboration with PharmaEngine. If PharmaEngine does not provide clinical trial data to us, our business may be materially harmed.

We have a collaboration with PharmaEngine for the development of MM-398. Under this collaboration, PharmaEngine has rights to commercialize MM-398 in Taiwan, while we hold commercialization rights in all other countries, including the United States. PharmaEngine also has the opportunity to participate in the development of MM-398, for which we are reimbursing their costs. We cannot predict the success of the collaboration. The collaboration involves an allocation of rights, provides for milestone payments by us to PharmaEngine based on the achievement of specified milestones and provides for us to pay PharmaEngine royalties on sales of MM-398 in Europe and specified Asian countries if MM-398 is successfully commercialized in Europe and such specified Asian countries.

We rely on PharmaEngine to provide data and information to us from trials they have conducted and are currently conducting. This information is necessary for our development of MM-398 in the United States. If PharmaEngine does not provide this information to us, our development of MM-398 could be significantly delayed and our costs could increase significantly.

We may depend on collaborations with third parties for the development and commercialization of our product candidates. If those collaborations are not successful, we may not be able to capitalize on the market potential of these product candidates.

Our business plan is to enter into distribution and other marketing arrangements for our oncology products in areas of the world outside of the United States and Europe. In addition, depending on our capital requirements, development and commercialization costs, need for additional therapeutic expertise and other factors, it is possible that we will enter into broader development and commercialization arrangements with respect to either oncology product candidates in addition to MM-121 or product candidates in other therapeutic areas in the United States or Europe or other territories. In particular, while we expect to apply our Network Biology approach to some other disease areas through arrangements similar to Silver Creek, it is also possible that we will seek to enter into licensing agreements or other types of collaborations for the application of our Network Biology approach.

Our likely collaborators for any distribution, marketing, licensing or broader collaboration arrangements include large and mid-size pharmaceutical companies, regional and national pharmaceutical companies and biotechnology companies. We will have limited control over the amount and timing of resources that our collaborators dedicate to the development or commercialization of our product candidates. Our ability to generate revenues from these arrangements will depend on our collaborators' abilities to successfully perform the functions assigned to them in these arrangements.

Collaborations involving our product candidates, including our collaboration with Sanofi, pose the following risks to us:

- collaborators have significant discretion in determining the efforts and resources that they will apply to these collaborations;
- collaborators may not pursue development and commercialization of our product candidates or may elect not to continue or renew development or commercialization programs based on clinical trial results, changes in their strategic focus or available funding, or external factors such as an acquisition that diverts resources or creates competing priorities;
- collaborators may delay clinical trials, provide insufficient funding for a clinical trial program, stop a clinical trial or abandon a product candidate, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing;
- collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our products or product candidates if the collaborators believe that competitive products are more likely to be successfully developed or can be commercialized under terms that are more economically attractive;
- a collaborator with marketing and distribution rights to one or more products may not commit sufficient resources to their marketing and distribution;

- collaborators may not properly maintain or defend our intellectual property rights or may use our proprietary information in such a way as to invite litigation that could jeopardize or invalidate our proprietary information or expose us to potential litigation;

- disputes may arise between us and the collaborators that result in the delay or termination of the research, development or commercialization of our product candidates or that result in costly litigation or arbitration that diverts management attention and resources; and

- collaborations may be terminated and, if terminated, may result in a need for additional capital to pursue further development or commercialization of the applicable product candidates.

Collaboration agreements may not lead to development or commercialization of product candidates in the most efficient manner or at all. In addition, there have been a significant number of recent business combinations among large pharmaceutical companies that have resulted in a reduced number of potential future collaborators. If a present or future collaborator of ours were to be involved in a business combination, the continued pursuit and emphasis on our product development or commercialization program could be delayed, diminished or terminated.

If we are not able to establish additional collaborations, we may have to alter our development plans.

Our product development programs and the potential commercialization of our product candidates will require substantial additional cash to fund expenses. For some of our product candidates, we may decide to collaborate with pharmaceutical and biotechnology companies for the development and potential commercialization of those product candidates.

We face significant competition in seeking appropriate collaborators. Collaborations are complex and time-consuming to negotiate and document. We may also be restricted under existing collaboration agreements from entering into agreements on certain terms with other potential collaborators. We may not be able to negotiate collaborations on acceptable terms, or at all. If that were to occur, we may have to curtail the development of a particular product candidate, reduce or delay its development program or one or more of our other development programs, delay its potential commercialization or reduce the scope of our sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to increase our expenditures to fund development or commercialization activities on our own, we may need to obtain additional capital, which may not be available to us on acceptable terms or at all. If we do not have sufficient funds, we will not be able to bring our product candidates to market and generate product revenue.

We rely on third parties to conduct our clinical trials, and those third parties may not perform satisfactorily, including failing to meet deadlines for the completion of such trials.

We do not independently conduct clinical trials of our product candidates. We rely on third parties, such as contract research organizations, clinical data management organizations, medical institutions and clinical investigators, to perform this function. Our reliance on these third parties for clinical development activities reduces our control over these activities but does not relieve us of our responsibilities. We remain responsible for ensuring that each of our clinical trials is conducted in accordance with the general investigational plan and protocols for

the trial. Moreover, the FDA requires us to comply with standards, commonly referred to as good clinical practices, for conducting, recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of patients in clinical trials are protected. Furthermore, these third parties may also have relationships with other entities, some of which may be our competitors. If these third parties do not successfully carry out their contractual duties, meet expected deadlines or conduct our clinical trials in accordance with regulatory requirements or our stated protocols, we will not be able to obtain, or may be delayed in obtaining, regulatory approvals for our product candidates and will not be able to, or may be delayed in our efforts to, successfully commercialize our product candidates.

We also rely on other third parties to store and distribute supplies for our clinical trials. Any performance failure on the part of our existing or future distributors could delay clinical development or regulatory approval of our product candidates or commercialization of our products, producing additional losses and depriving us of potential product revenue.

Risks related to the manufacturing of our product candidates

We have limited experience in manufacturing our product candidates. We will need to upgrade and expand our manufacturing facility and augment our manufacturing personnel and processes in order to meet our business plans. If we fail to do so, we may not have sufficient drug product to meet our clinical development and commercial requirements.

We have a manufacturing facility located at our corporate headquarters in Cambridge, Massachusetts. We manufacture drug substance at this facility that we use for research and development purposes and for clinical trials of our product candidates. We do not have experience in manufacturing products at commercial scale. Our current facility may not be sufficient to permit manufacturing of our antibody product candidates for Phase 3 clinical trials or commercial sale. In order to meet our business plan, which contemplates our internally manufacturing drug substance for most of our clinical trials and, over the long-term, for a significant portion of our commercial requirements, we will need to upgrade and expand our manufacturing facilities, add manufacturing personnel and ensure that validated processes are consistently implemented in our facilities. The upgrade and expansion of our facilities will require additional regulatory approvals. In addition, it will be costly and time-consuming to expand our facilities and recruit necessary additional personnel. If we are unable to expand our manufacturing facilities in compliance with regulatory requirements or to hire additional necessary manufacturing personnel, we may encounter delays or additional costs in achieving our research, development and commercialization objectives, including in obtaining regulatory approvals of our product candidates, which could materially damage our business and financial position.

If our sole clinical manufacturing facility is damaged or destroyed or production at this facility is otherwise interrupted, our business and prospects would be negatively affected.

If the manufacturing facility at our corporate headquarters or the equipment in it is damaged or destroyed, we may not be able to quickly or inexpensively replace our manufacturing capacity or replace it at all. In the event of a temporary or protracted loss of this facility or equipment, we might not be able to transfer manufacturing to a third party. Even if we could transfer manufacturing to a third party, the shift would likely be expensive and

time-consuming, particularly since the new facility would need to comply with the necessary regulatory requirements and we would need FDA approval before selling any products manufactured at that facility. Such an event could delay our clinical trials or, if our product candidates are approved by the FDA, reduce our product sales.

Currently, we maintain insurance coverage against damage to our property and equipment and to cover business interruption and research and development restoration expenses. If we have underestimated our insurance needs with respect to an interruption in our clinical manufacturing of our product candidates, we may not be able to cover our losses.

Any other interruption of production at our manufacturing facility also could damage our business. For example, in 2009, we experienced a viral contamination at this facility that required that we shut the facility entirely for decontamination. Because of this contamination, the FDA placed a partial clinical hold on our MM-121 IND until we submitted supporting documentation to the FDA regarding our decontamination procedures. Although we were able to resolve this issue, with the FDA lifting the partial clinical hold in April 2010, other companies have experienced similar contamination problems, and we could experience a similar problem in the future that is more difficult to resolve and could lead to a clinical hold.

We expect to continue to contract with third parties for at least some aspects of the production of our product candidates for clinical trials and for our products if they are approved for marketing. This increases the risk that we will not have sufficient quantities of our product candidates or products or such quantities at an acceptable cost, which could delay, prevent or impair our development or commercialization efforts.

We currently rely on third party manufacturers for some aspects of the production of our product candidates for preclinical testing and clinical trials, including fill-finish and labeling activities. In addition, while we believe that our existing manufacturing facilities, or additional facilities that we will be able to build, will be sufficient to meet our requirements for manufacturing a significant portion of drug substance for our research and development activities, we may need to rely on third party manufacturers for some of these requirements, particularly later stage clinical trials of our antibody product candidates, and, at least in the near term, for commercial supply of any product candidates for which we obtain marketing approval.

We do not have any agreements with third party manufacturers for the clinical or commercial supply of any of our product candidates, and we may be unable to conclude such agreements or to do so on acceptable terms. Reliance on third party manufacturers entails additional risks, including:

- reliance on the third party for regulatory compliance and quality assurance;
- the possible breach of the manufacturing agreement by the third party; and
- the possible termination or nonrenewal of the agreement by the third party at a time that is costly or inconvenient for us.

Third party manufacturers may not be able to comply with cGMP or Quality System Regulation, or QSR, or similar regulatory requirements outside the United States. Our failure, or the failure of our third party manufacturers, to comply with applicable regulations could result in sanctions being imposed on us, including fines, injunctions, civil penalties, delays, suspension or

withdrawal of approvals, license revocation, seizures or recalls of products, operating restrictions and criminal prosecutions, any of which could significantly and adversely affect supplies of our products.

Any products that we may develop may compete with other product candidates and products for access to manufacturing facilities. There are a limited number of manufacturers that operate under cGMP or QSR regulations and that might be capable of manufacturing for us.

We currently rely on single suppliers for the resins, media and filters that we use for our manufacturing process. We purchase these materials from our suppliers on a purchase order basis and do not have long-term supply agreements in place. Any performance failure or refusal to supply on the part of our existing or future suppliers could delay clinical development, marketing approval or commercialization of our products. If our current suppliers cannot perform as agreed, we may be required to replace one or more of these suppliers. Although we believe that there are a number of potential long-term replacements to each supplier, we may incur added costs and delays in identifying and qualifying any such replacements.

We likely will rely upon third party manufacturers to provide us with necessary reagents and instruments to develop, test and manufacture our *in vitro* companion diagnostics. Currently, many reagents are marketed as Research Use Only, or RUO, products under FDA regulations. In June 2011, the FDA issued a draft guidance that outlined the FDA's intention to impose additional restrictions on the provision of RUO products. If this guidance is finalized, we may experience difficulty securing the reagents that we need.

Our potential future dependence upon others for the manufacture of our product candidates may adversely affect our future profit margins and our ability to commercialize any products that receive regulatory approval on a timely and competitive basis.

One of our fill-finish contractors received a warning letter from the FDA, which impacted our clinical trials of MM-121 and may impact or delay our clinical trials of MM-111.

Recently, a third party contractor that we have used to fill and package both MM-121 and MM-111 experienced FDA inspection issues with its quality control processes that resulted in a formal warning letter from the FDA. Following a review by Sanofi and us, some MM-121 was pulled from clinical trial sites and replaced with MM-121 that was filled by a different contractor. This restocking is complete and resulted in a few patients missing one or two doses of MM-121. The MM-111 that is currently being used in our clinical trials was also filled and packaged by this same contractor. The FDA recently inquired about the effect of this contractor's quality issues on MM-111 clinical trial materials. We have responded to the FDA's inquiry with the results of our hazard analysis, and we have not received any further inquiry from the FDA. It is possible that the FDA could delay or halt our MM-111 clinical trials.

Risks related to our intellectual property

If we fail to comply with our obligations in our intellectual property licenses with third parties, we could lose license rights that are important to our business.

We are a party to a number of intellectual property license agreements with third parties, including with respect to MM-398, MM-121 and MM-111, and expect to enter into additional license agreements in the future. Our existing license agreements impose, and we expect that our future license agreements will impose, various diligence, milestone payment, royalty, insurance and other obligations on us. If we fail to comply with these obligations, our licensors may have the right to terminate these agreements, in which event we might not be able to develop and market any product that is covered by these agreements. Termination of these licenses or reduction or elimination of our licensed rights may result in our having to negotiate new or reinstated licenses with less favorable terms. The occurrence of such events could materially harm our business.

If we are unable to obtain and maintain patent protection for our technology and products, or if our licensors are unable to obtain and maintain patent protection for the technology or products that we license from them, our competitors could develop and commercialize technology and products similar or identical to ours, and our ability to successfully commercialize our technology and products may be adversely affected.

Our success depends in large part on our and our licensors' ability to obtain and maintain patent protection in the United States and other countries with respect to our proprietary technology and products. In some circumstances, we may not have the right to control the preparation, filing and prosecution of patent applications, or to maintain the patents, covering technology or products that we license from third parties. Therefore, we cannot be certain that these patents and applications will be prosecuted and enforced in a manner consistent with the best interests of our business. In addition, if third parties who license patents to us fail to maintain such patents, or lose rights to those patents, the rights we have licensed may be reduced or eliminated.

We have sought to protect our proprietary position by filing patent applications in the United States and abroad related to our novel technologies and products that are important to our business. This process is expensive and time-consuming, and we may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. Under our collaboration agreement with Sanofi, we are obligated, at our expense, to use commercially reasonable efforts to file and prosecute patent applications, and maintain patents, covering MM-121 in specified jurisdictions, and these patent rights are licensed to Sanofi.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain, involves complex legal and factual questions and has in recent years been the subject of much litigation. As a result, the issuance, scope, validity, enforceability and commercial value of our and our licensors' patent rights are highly uncertain. Our and our licensors' pending and future patent applications may not result in patents being issued which protect our technology or products or which effectively prevent others from commercializing competitive technologies and products. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our patents

or narrow the scope of our patent protection. The laws of foreign countries may not protect our rights to the same extent as the laws of the United States. Publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing, or in some cases not at all. Therefore, we cannot be certain that we or our licensors were the first to make the inventions claimed in our owned and licensed patents or pending patent applications, or that we or our licensors were the first to file for patent protection of such inventions. Assuming the other requirements for patentability are met, currently, in the United States, the first to make the claimed invention is entitled to the patent, while outside the United States, the first to file a patent application is entitled to the patent. In 2013, under the recently enacted America Invents Act, the United States will be moving to a first to file system. We may become involved in opposition or interference proceedings challenging our patent rights or the patent rights of others. An adverse determination in any such proceeding could reduce the scope of, or invalidate, our patent rights, allow third parties to commercialize our technology or products and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third party patent rights.

Even if our owned and licensed patent applications issue as patents, they may not issue in a form that will provide us with any meaningful protection, prevent competitors from competing with us or otherwise provide us with any competitive advantage. Our competitors may be able to circumvent our owned or licensed patents by developing similar or alternative technologies or products in a non-infringing manner. The issuance of a patent is not conclusive as to its scope, validity or enforceability, and our owned and licensed patents may be challenged in the courts or patent offices in the United States and abroad. Such challenges may result in patent claims being narrowed, invalidated or held unenforceable, which could limit our ability to stop or prevent us from stopping others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and products. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

We may become involved in lawsuits to protect or enforce our patents, which could be expensive, time-consuming and unsuccessful.

Competitors may infringe our patents. To counter infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time-consuming. In addition, in an infringement proceeding, a court may decide that a patent of ours is invalid or unenforceable, or may refuse to stop the other party from using the technology at issue on the grounds that our patents do not cover the technology in question. An adverse result in any litigation proceeding could put one or more of our patents at risk of being invalidated or interpreted narrowly. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation.

Third parties may initiate legal proceedings alleging that we are infringing their intellectual property rights, the outcome of which would be uncertain and could have a material adverse effect on the success of our business.

Our commercial success depends upon our ability and the ability of our collaborators to develop, manufacture, market and sell our product candidates and use our proprietary technologies without infringing the proprietary rights of third parties. We may become party to, or threatened with, future adversarial proceedings or litigation regarding intellectual property rights with respect to our products and technology, including interference proceedings before the U.S. Patent and Trademark Office. Third parties may assert infringement claims against us based on existing patents or patents that may be granted in the future. If we are found to infringe a third party's intellectual property rights, we could be required to obtain a license from such third party to continue developing and marketing our products and technology. However, we may not be able to obtain any required license on commercially reasonable terms or at all. Even if we were able to obtain a license, it could be non-exclusive, thereby giving our competitors access to the same technologies licensed to us. We could be forced, including by court order, to cease commercializing the infringing technology or product. In addition, we could be found liable for monetary damages. A finding of infringement could prevent us from commercializing our product candidates or force us to cease some of our business operations, which could materially harm our business. Claims that we have misappropriated the confidential information or trade secrets of third parties can have a similar negative impact on our business.

For example, we are aware of issued U.S. patents held by Genentech, Inc., or Genentech, broadly covering methods of producing certain types of recombinant antibodies and related compositions for antibody production that may be relevant to our development and commercialization of MM-121, MM-302 and MM-151. These patents expire in 2018. Genentech has asserted infringement claims against several pharmaceutical and biotechnology companies based on these patents. If these patents were determined to be valid and cover our product candidates, we would need to obtain a license to the patented technology, which may cause us to incur licensing related costs. However, a license to these patents may not be available on commercially reasonable terms, or at all. Our failure to obtain a license to these patents could delay or prevent our development and commercialization of our product candidates in the United States.

We may be subject to claims that our employees have wrongfully used or disclosed alleged trade secrets of their former employers.

Many of our employees were previously employed at universities or other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although we try to ensure that our employees do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that we or these employees have used or disclosed intellectual property, including trade secrets or other proprietary information, of any such employee's former employer. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management.

We are currently engaged in three ongoing opposition proceedings to European patents in the European Patent Office. If we are not successful in these proceedings, we may not be able to commercialize some of our product candidates without infringing patents held by third parties.

We are currently engaged in three ongoing opposition proceedings to European patents in the European Patent Office to narrow or invalidate the claims of patents owned by third parties. For more information, see "Business—Legal proceedings." We have obtained favorable interim decisions in two of the oppositions and a favorable preliminary, non-binding opinion in the third. However, the ultimate outcome of all three oppositions remains uncertain. If we are not ultimately successful in these proceedings, and the issued claims of the patents we are opposing were determined to be valid and construed to cover MM-121 or MM-111, we may not be able to commercialize MM-121 or MM-111 in some or all European countries without infringing such patents. If we infringe a valid claim of these patents, we would need to obtain a license to the patented technology, which may cause us to incur licensing-related costs. For example, under our collaboration agreement with Sanofi, we are obligated to pay all licensing costs for specified third party patent rights that we or Sanofi may in the future license for the development and commercialization of MM-121, including the patent rights that are the subject of two of these opposition proceedings. However, a license to the patents that are the subject of these opposition proceedings may not be available on commercially reasonable terms or at all. As a result, we could be liable for monetary damages or we may be forced to delay, suspend, forego or cease commercializing these product candidates in some or all countries in Europe if we were found to infringe a valid claim of these patents. In addition, even if we are ultimately successful in these European opposition proceedings, such results would be limited to our activities in Europe.

We are also aware of issued or pending counterparts to some of these European patents in the United States that may be relevant to our development and commercialization of MM-121. If these patents were determined to be valid and construed to cover MM-121, our development and commercialization of MM-121 in the United States could be delayed or prevented.

Intellectual property litigation could cause us to spend substantial resources and distract our personnel from their normal responsibilities.

Even if resolved in our favor, litigation or other legal proceedings relating to intellectual property claims may cause us to incur significant expenses, and could distract our technical and management personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Such litigation or proceedings could substantially increase our operating losses and reduce our resources available for development activities. We may not have sufficient financial or other resources to adequately conduct such litigation or proceedings. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their substantially greater financial resources. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace.

If we are unable to protect the confidentiality of our trade secrets, our business and competitive position would be harmed.

In addition to our patented technology and products, we rely on trade secrets, including unpatented know-how, technology and other proprietary information, to maintain our competitive position. We seek to protect these trade secrets, in part, by entering into non-disclosure and confidentiality agreements with parties that have access to them, such as our employees, corporate collaborators, outside scientific collaborators, sponsored researchers, contract manufacturers, consultants, advisors and other third parties. We also enter into confidentiality and invention or patent assignment agreements with our employees and consultants. In addition, any of these parties may breach the agreements and disclose our proprietary information, and we may not be able to obtain adequate remedies for such breaches. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, some courts inside and outside the United States are less willing or unwilling to protect trade secrets. If any of our trade secrets were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent them from using that technology or information to compete with us. If any of our trade secrets were to be disclosed to or independently developed by a competitor, our competitive position would be harmed.

Risks related to regulatory approval of our product candidates

If we are not able to obtain required regulatory approvals, we will not be able to commercialize our product candidates, and our ability to generate revenue will be materially impaired.

Our product candidates, including our five most advanced product candidates, and the activities associated with their development and commercialization, including their design, testing, manufacture, safety, efficacy, recordkeeping, labeling, storage, approval, advertising, promotion, sale and distribution, are subject to comprehensive regulation by the FDA and other regulatory agencies in the United States and by comparable authorities in other countries. Failure to obtain regulatory approval for a product candidate will prevent us from commercializing the product candidate. We have not received regulatory approval to market any of our product candidates in any jurisdiction. We have only limited experience in filing and supporting the applications necessary to gain regulatory approvals and expect to rely on third party contract research organizations to assist us in this process. Securing FDA approval requires the submission of extensive preclinical and clinical data and supporting information to the FDA for each therapeutic indication to establish the product candidate's safety and efficacy. Securing FDA approval also requires the submission of information about the product manufacturing process to, and inspection of manufacturing facilities by, the FDA. Our product candidates may not be effective, may be only moderately effective or may prove to have undesirable or unintended side effects, toxicities or other characteristics that may preclude our obtaining regulatory approval or prevent or limit commercial use.

The process of obtaining regulatory approvals is expensive, may take many years if additional clinical trials are required, if approval is obtained at all, and can vary substantially based upon a variety of factors, including the type, complexity and novelty of the product candidates involved. Changes in regulatory approval policies during the development period, changes in or the enactment of additional statutes or regulations, or changes in regulatory review for each

submitted product application, may cause delays in the approval or rejection of an application. The FDA has substantial discretion in the approval process and may refuse to accept any application or may decide that our data is insufficient for approval and require additional preclinical, clinical or other studies. In addition, varying interpretations of the data obtained from preclinical and clinical testing could delay, limit or prevent regulatory approval of a product candidate. Any regulatory approval we ultimately obtain may be limited or subject to restrictions or post-approval commitments that render the approved product not commercially viable.

If we pursue development of a companion diagnostic to identify patients who are likely to benefit from a therapeutic product, failure to obtain approval for the diagnostic may prevent or delay approval of the therapeutic product.

We are attempting to develop companion diagnostics to identify patients who are likely to benefit from our therapeutic product candidates. All of our companion diagnostic candidates are in preclinical development or clinical feasibility testing. We have very limited experience in the development of diagnostics and, even with the help of third parties with greater experience, may fail to obtain the required diagnostic product marketing approval, which could prevent or delay approval of the therapeutic product.

In July 2011, the FDA issued draft guidance that stated that if safe and effective use of a therapeutic depends on an *in vitro* diagnostic, then the FDA generally will not approve the therapeutic unless the FDA approves or clears this "*in vitro* companion diagnostic device" at the same time that the FDA approves the therapeutic. The approval or clearance of the *in vitro* diagnostic most likely will occur through the FDA's Center for Devices and Radiological Health Office of In Vitro Diagnostic Device Evaluation and Safety, or OIVD. It is unclear whether the FDA will finalize this guidance in its current format, or when it will do so. Even if the FDA does finalize the guidance, it is unclear how it will interpret the guidance. Even with the issuance of the draft guidance, the FDA's expectations for *in vitro* companion diagnostics remain unclear in some respects. The FDA's developing expectations will affect our *in vitro* companion diagnostics. In particular, the FDA may limit our ability to use retrospective data, otherwise disagree with our approaches to trial design, biomarker qualification, clinical and analytical validity and clinical utility, or make us repeat aspects of the trial or initiate new trials.

Because our companion diagnostic candidates are at an early stage of development, we have yet to seek a meeting with the FDA to discuss any of our companion diagnostic tests and therefore cannot yet know what the FDA will require for any of these tests. For three of our five most advanced product candidates, MM-121, MM-111 and MM-151, we are attempting to develop an *in vitro* companion diagnostic that will help identify patients likely to benefit from the therapy. Whether the FDA will consider these *in vitro* diagnostics to be "*in vitro* companion diagnostic devices" that require simultaneous approval or clearance with the therapeutics under the draft guidance will depend on whether the FDA views the diagnostics to be essential to the safety and efficacy of these therapeutics.

For our two other most advanced product candidates, MM-398 and MM-302, although we are investigating possible *in vitro* companion diagnostics, we are currently developing *in vivo* companion diagnostics in the form of imaging agents that may help identify patients likely to benefit from the therapy. Imaging agents are regulated as drugs by the FDA's Center for Drug Evaluation and Research and, as such, are generally subject to the regulatory requirements

applicable to other new drug candidates. Although the FDA has not issued guidance with respect to the simultaneous approval of *in vivo* diagnostics and therapeutics, it is possible that the FDA will apply a standard similar to *in vitro* diagnostics.

Based on the FDA's past practice with companion diagnostics, if we are successful in developing a companion diagnostic for any of our five most advanced product candidates, we would expect that FDA approval of an *in vitro* companion diagnostic, and possibly an *in vivo* companion diagnostic, would be required for approval and subsequent commercialization of each such therapeutic product candidate. We are not aware of any currently available diagnostics that, if necessary, would otherwise allow us to proceed with the approval and subsequent commercialization of our product candidates despite a delay in or failure of our attempts to develop companion diagnostics.

If we fail to obtain or maintain orphan drug exclusivity for MM-398, we will have to rely on other rights and protections for this product candidate.

We have obtained orphan drug designation in the United States for MM-398 for the treatment of pancreatic cancer. Under the Orphan Drug Act, the FDA may designate a product as an orphan drug if it is a drug intended to treat a rare disease or condition, which is generally defined as a patient population of fewer than 200,000 individuals in the United States.

In the United States, the company that first obtains FDA approval for a designated orphan drug for the specified rare disease or condition receives orphan drug marketing exclusivity for that drug for a period of seven years. This orphan drug exclusivity prevents the FDA from approving another application, including a full new drug application, or NDA, to market the same drug for the same orphan indication, except in limited circumstances. For purposes of small molecule drugs, the FDA defines the term "same drug" to mean a drug that contains the same active molecule and that is intended for the same use as the approved orphan drug. Orphan drug exclusivity may be lost if the FDA determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the drug to meet the needs of patients with the rare disease or condition.

Even if we obtain orphan drug exclusivity for a product, that exclusivity may not effectively protect the product from competition because different drugs can be approved for the same condition. Even after an orphan drug is approved, the FDA can subsequently approve the same drug for the same condition if the FDA concludes that the later drug is clinically superior in that it is shown to be safer, more effective or makes a major contribution to patient care.

Our therapeutic product candidates for which we intend to seek approval as biological products may face competition sooner than expected.

With the enactment of the Biologics Price Competition and Innovation Act of 2009, or BPCIA, as part of the Health Care and Education Reconciliation Act of 2010, or the Health Care Reform Law, an abbreviated pathway for the approval of biosimilar and interchangeable biological products was created. The new abbreviated regulatory pathway establishes legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as "interchangeable" based on their similarity to existing brand product. Under the BPCIA, an application for a biosimilar product cannot be approved by the FDA until 12 years after the original branded product was approved under a biologics license application, or BLA. The new law is complex and is only beginning to be interpreted and implemented by the FDA. As a result, its ultimate impact, implementation and meaning is subject to uncertainty. While it is uncertain when any such processes may be fully adopted by the FDA, any such processes could have a material adverse effect on the future commercial prospects for our biological products.

We believe that any of our products approved as a biological product under a BLA should qualify for the 12-year period of exclusivity. However:

- the U.S. Congress could amend the BPCIA to significantly shorten this exclusivity period as proposed by President Obama;
- a potential competitor could seek and obtain approval of its own BLA during our exclusivity period instead of seeking approval of a biosimilar version; and
- the FDA could consider a particular product candidate, such as MM-302, which contains both drug and biological product components, to be a drug subject to review pursuant to an NDA, and therefore eligible for a significantly shorter marketing exclusivity period as provided under the Drug Price Competition and Patent Term Restoration Act of 1984, or the Hatch-Waxman Act.

Moreover, the extent to which a biosimilar, once approved, will be substituted for any one of our reference products in a way that is similar to traditional generic substitution for non-biological products is not yet clear and will depend on a number of marketplace and regulatory factors that are still developing.

Failure to obtain regulatory approval in international jurisdictions would prevent us from marketing our products abroad.

We intend to market our products both within and outside the United States. In particular, we plan to market and sell ourselves any products for which we receive marketing approval in the European Union, rather than relying on third parties for these capabilities. This may increase the risks described below with respect to our compliance with foreign regulations.

In order to market and sell our products in the European Union and many other jurisdictions, we must obtain separate regulatory approvals and comply with numerous and varying regulatory requirements. The approval procedure varies among countries and can involve additional testing. The time required to obtain approval in foreign countries may differ substantially from that required to obtain FDA approval. The regulatory approval process outside the United States generally includes all of the risks associated with obtaining FDA approval. In addition, in many countries outside the United States, it is required that the product be approved for reimbursement before the product can be approved for sale in that country. We may not obtain approvals from regulatory authorities outside the United States on a timely basis, if at all. Approval by the FDA does not ensure approval by regulatory authorities in other countries or jurisdictions, and approval by one regulatory authority outside the United States does not ensure approval by regulatory authorities in other countries or jurisdictions or by the FDA. We may not be able to file for regulatory approvals and may not receive necessary approvals to commercialize our products in any market.

Any product for which we obtain marketing approval could be subject to restrictions or withdrawal from the market and we may be subject to penalties if we fail to comply with regulatory requirements or if we experience unanticipated problems with our products, when and if any of them are approved.

Any product for which we obtain marketing approval, along with the manufacturing processes, post-approval clinical data, labeling, advertising and promotional activities for such product, will be subject to continual requirements of and review by the FDA and other regulatory

authorities. These requirements include submissions of safety and other post-marketing information and reports, registration and listing requirements, cGMP or QSR requirements relating to quality control, quality assurance and corresponding maintenance of records and documents, requirements regarding the distribution of samples to physicians and recordkeeping. Even if regulatory approval of a product is granted, the approval may be subject to limitations on the indicated uses for which the product may be marketed or to the conditions of approval, or contain requirements for costly post-marketing testing and surveillance to monitor the safety or efficacy of the product. Later discovery of previously unknown problems with our products, manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may result in actions such as:

- restrictions on such products, manufacturers or manufacturing processes;
- restrictions on the marketing of a product;
- restrictions on product distribution;
- requirements to conduct post-marketing clinical trials;
- warning or untitled letters;
- withdrawal of the products from the market;
- refusal to approve pending applications or supplements to approved applications that we submit;
- recall of products;
- fines, restitution or disgorgement of profits or revenue;
- suspension or withdrawal of regulatory approvals;
- refusal to permit the import or export of our products;
- product seizure; or
- injunctions or the imposition of civil or criminal penalties.

Our relationships with customers and payors will be subject to applicable anti-kickback, fraud and abuse and other healthcare laws and regulations, which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm and diminished profits and future earnings.

Healthcare providers, physicians and others play a primary role in the recommendation and prescription of any products for which we obtain marketing approval. Our future arrangements with third party payors and customers may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we market, sell and distribute our products for which we obtain marketing approval. Restrictions under applicable federal and state healthcare laws and regulations, include the following:

- the federal healthcare anti-kickback statute prohibits, among other things, persons from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or

indirectly, in cash or in kind, to induce or reward either the referral of an individual for, or the purchase, order or recommendation of, any good or service, for which payment may be made under federal healthcare programs such as Medicare and Medicaid;

- the federal False Claims Act imposes criminal and civil penalties, including civil whistleblower or qui tam actions, against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, claims for payment that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government;

- the federal Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act, imposes criminal and civil liability for executing a scheme to defraud any healthcare benefit program and also imposes obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information;

- the federal false statements statute prohibits knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement in connection with the delivery of or payment for healthcare benefits, items or services;

- the federal transparency requirements under the Health Care Reform Law requires manufacturers of drugs, devices, biologics and medical supplies to report to the Department of Health and Human Services information related to physician payments and other transfers of value and physician ownership and investment interests; and

- analogous state laws and regulations, such as state anti-kickback and false claims laws, may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third party payors, including private insurers, and some state laws require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government in addition to requiring manufacturers to report information related to payments to physicians and other health care providers or marketing expenditures.

Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices may not comply with current or future statutes, regulations or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, damages, fines, exclusion from government funded healthcare programs, such as Medicare and Medicaid, and the curtailment or restructuring of our operations. If any of the physicians or other providers or entities with whom we expect to do business with are found to be not in compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusions from government funded healthcare programs.

Recently enacted and future legislation may increase the difficulty and cost for us to obtain marketing approval of and commercialize our product candidates and affect the prices we may obtain.

In the United States and some foreign jurisdictions, there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our ability to profitably sell any products for which we obtain marketing approval.

In the United States, the Medicare Prescription Drug, Improvement, and Modernization Act of 2003, or the Medicare Modernization Act, changed the way Medicare covers and pays for pharmaceutical products. The legislation expanded Medicare coverage for drug purchases by the elderly and introduced a new reimbursement methodology based on average sales prices for physician administered drugs. In addition, this legislation provided authority for limiting the number of drugs that will be covered in any therapeutic class. Cost reduction initiatives and other provisions of this legislation could decrease the coverage and price that we receive for any approved products. While the Medicare Modernization Act applies only to drug benefits for Medicare beneficiaries, private payors often follow Medicare coverage policy and payment limitations in setting their own reimbursement rates. Therefore, any reduction in reimbursement that results from the Medicare Modernization Act may result in a similar reduction in payments from private payors.

More recently, in March 2010, President Obama signed into law the Health Care Reform Law, a sweeping law intended to broaden access to health insurance, reduce or constrain the growth of healthcare spending, enhance remedies against fraud and abuse, add new transparency requirements for health care and health insurance industries, impose new taxes and fees on the health industry and impose additional health policy reforms. Effective October 1, 2010, the Health Care Reform Law revises the definition of "average manufacturer price" for reporting purposes, which could increase the amount of Medicaid drug rebates to states. Further, the new law imposes a significant annual fee on companies that manufacture or import branded prescription drug products. Substantial new provisions affecting compliance have also been enacted, which may affect our business practices with health care practitioners. We will not know the full effects of the Health Care Reform Law until applicable federal and state agencies issue regulations or guidance under the new law. Although it is too early to determine the effect of the Health Care Reform Law, the new law appears likely to continue the pressure on pharmaceutical pricing, especially under the Medicare program, and may also increase our regulatory burdens and operating costs.

Legislative and regulatory proposals have been made to expand post-approval requirements and restrict sales and promotional activities for pharmaceutical products. We are not sure whether additional legislative changes will be enacted, or whether the FDA regulations, guidance or interpretations will be changed, or what the impact of such changes on the marketing approvals of our product candidates, if any, may be. In the area of companion diagnostics, FDA officials indicated last year that the agency planned to issue two guidances in this area. The FDA issued one draft guidance in July 2011. The FDA has yet to issue a second draft guidance and may decide not to issue a second draft guidance or finalize the existing draft guidance. The FDA's issuance of a final guidance, or issuance of additional draft guidance, could affect our development of *in vitro* companion diagnostics and the applicable regulatory

requirements. In addition, increased scrutiny by the U.S. Congress of the FDA's approval process may significantly delay or prevent marketing approval, as well as subject us to more stringent product labeling and post-marketing testing and other requirements.

Risks related to employee matters and managing growth

Our future success depends on our ability to retain our chief executive officer and other key executives and to attract, retain and motivate qualified personnel.

We are highly dependent on Robert J. Mulroy, our President and Chief Executive Officer, and the other principal members of our executive and scientific teams. Although we have formal employment agreements with each of our executive officers, these agreements do not prevent our executives from terminating their employment with us at any time. We do not maintain "key person" insurance for any of our executives or other employees. The loss of the services of any of these persons could impede the achievement of our research, development and commercialization objectives.

Recruiting and retaining qualified scientific, clinical, manufacturing and sales and marketing personnel will also be critical to our success. We may not be able to attract and retain these personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for similar personnel. We also experience competition for the hiring of scientific and clinical personnel from universities and research institutions. In addition, we rely on consultants and advisors, including scientific and clinical advisors, to assist us in formulating our research and development and commercialization strategy. Our consultants and advisors may be employed by employers other than us and may have commitments under consulting or advisory contracts with other entities that may limit their availability to us.

We expect to expand our development, regulatory and sales and marketing capabilities, and as a result, we may encounter difficulties in managing our growth, which could disrupt our operations.

We expect to experience significant growth in the number of our employees and the scope of our operations, particularly in the areas of drug development, regulatory affairs and sales and marketing. To manage our anticipated future growth, we must continue to implement and improve our managerial, operational and financial systems, expand our facilities and continue to recruit and train additional qualified personnel. Due to our limited financial resources and the limited experience of our management team in managing a company with such anticipated growth, we may not be able to effectively manage the expansion of our operations or recruit and train additional qualified personnel. The physical expansion of our operations may lead to significant costs and may divert our management and business development resources. Any inability to manage growth could delay the execution of our business plans or disrupt our operations.

We have entered into and may continue to enter into or seek to enter into business combinations and acquisitions which may be difficult to integrate, disrupt our business, divert management attention or dilute stockholder value.

As part of our business strategy, we may enter into business combinations and acquisitions. Although we acquired Hermes BioSciences, Inc., or Hermes, in October 2009, we have limited

experience in making acquisitions. In addition, acquisitions are typically accompanied by a number of risks, including:

- the difficulty of integrating the operations and personnel of the acquired companies;
- the potential disruption of our ongoing business and distraction of management;
- potential unknown liabilities and expenses;
- the failure to achieve the expected benefits of the combination or acquisition;
- the maintenance of acceptable standards, controls, procedures and policies; and
- the impairment of relationships with employees as a result of any integration of new management and other personnel.

If we are not successful in completing acquisitions that we may pursue in the future, we would be required to reevaluate our business strategy and we may have incurred substantial expenses and devoted significant management time and resources in seeking to complete the acquisitions. In addition, with future acquisitions, we could use substantial portions of our available cash as all or a portion of the purchase price. As we did for the acquisition of Hermes, we could also issue additional securities as consideration for these acquisitions, which could cause our stockholders to suffer significant dilution.

Risks related to our common stock and this offering

After this offering, our executive officers, directors and principal stockholders will maintain the ability to control all matters submitted to stockholders for approval.

Upon the closing of this offering, our executive officers, directors and stockholders who owned more than 5% of our outstanding common stock before this offering will, in the aggregate, beneficially own shares representing approximately % of our capital stock. As a result, if these stockholders were to choose to act together, they would be able to control all matters submitted to our stockholders for approval, as well as our management and affairs. For example, these persons, if they choose to act together, will control the election of directors and approval of any merger, consolidation or sale of all or substantially all of our assets. This concentration of voting power could delay or prevent an acquisition of our company on terms that other stockholders may desire.

Provisions in our corporate charter documents and under Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our corporate charter and our bylaws that will become effective upon the closing of this offering may discourage, delay or prevent a merger, acquisition or other change in control of us that stockholders may consider favorable, including transactions in which you might otherwise receive a premium for your shares. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock, thereby depressing the market price of our common stock. In addition, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors. Because

our board of directors is responsible for appointing the members of our management team, these provisions could in turn affect any attempt by our stockholders to replace current members of our management team. Among others, these provisions:

- establish a classified board of directors such that not all members of the board are elected at one time;
- allow the authorized number of our directors to be changed only by resolution of our board of directors;
- limit the manner in which stockholders can remove directors from the board;
- establish advance notice requirements for stockholder proposals that can be acted on at stockholder meetings and nominations to our board of directors;
- require that stockholder actions must be effected at a duly called stockholder meeting and prohibit actions by our stockholders by written consent;
- limit who may call stockholder meetings;
- authorize our board of directors to issue preferred stock without stockholder approval, which could be used to institute a "poison pill" that would work to dilute the stock ownership of a potential hostile acquirer, effectively preventing acquisitions that have not been approved by our board of directors; and
- require the approval of the holders of at least 75% of the votes that all our stockholders would be entitled to cast to amend or repeal certain provisions of our charter or bylaws.

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which prohibits a person who owns in excess of 15% of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired in excess of 15% of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner.

If you purchase shares of common stock in this offering, you will suffer immediate dilution of your investment.

The initial public offering price of our common stock is substantially higher than the net tangible book value per share of our common stock. Therefore, if you purchase shares of our common stock in this offering, you will pay a price per share that substantially exceeds our net tangible book value per share after this offering. To the extent outstanding options or warrants are exercised, you will incur further dilution. Based on an assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, you will experience immediate dilution of $ per share, representing the difference between our pro forma net tangible book value per share after giving effect to this offering and the assumed initial public offering price. In addition, purchasers of common stock in this offering will have contributed approximately % of the aggregate price paid by all purchasers of our stock but will own only approximately % of our common stock outstanding after this offering.

An active trading market for our common stock may not develop.

Prior to this offering, there has been no public market for our common stock. The initial public offering price for our common stock will be determined through negotiations with the underwriters. Although we have applied for listing of our common stock on The NASDAQ Global Market, an active trading market for our shares may never develop or be sustained following this offering. If an active market for our common stock does not develop, it may be difficult for you to sell shares you purchase in this offering without depressing the market price for the shares or at all.

If our stock price is volatile, purchasers of our common stock could incur substantial losses.

Our stock price is likely to be volatile. The stock market in general and the market for biotechnology companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. As a result of this volatility, investors may not be able to sell their common stock at or above the initial public offering price. The market price for our common stock may be influenced by many factors, including:

- the success of competitive products or technologies;
- results of clinical trials of our product candidates or those of our competitors;
- regulatory or legal developments in the United States and other countries;
- developments or disputes concerning patents or other proprietary rights;
- the recruitment or departure of key personnel;
- variations in our financial results or those of companies that are perceived to be similar to us;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors and issuance of new or changed securities analysts' reports or recommendations;
- general economic, industry and market conditions; and
- the other factors described in this "Risk factors" section.

We have broad discretion in the use of the net proceeds from this offering and may not use them effectively.

We will use approximately $4.3 million of the net proceeds from this offering to pay accrued dividends on our series B convertible preferred stock. Our management will have broad discretion in the application of the balance of the net proceeds from this offering and could spend the proceeds in ways that do not improve our results of operations or enhance the value of our common stock. The failure by our management to apply these funds effectively could result in financial losses that could have a material adverse effect on our business, cause the price of our common stock to decline and delay the development of our product candidates. Pending their use, we may invest the net proceeds from this offering in a manner that does not produce income or that loses value.

Because we do not anticipate paying any cash dividends on our common stock in the foreseeable future, capital appreciation, if any, will be your sole source of gain.

We have never declared or paid cash dividends on our common stock. We currently intend to retain all of our future earnings, if any, to finance the growth and development of our business. In addition, the terms of existing or any future debt agreements may preclude us from paying dividends. As a result, capital appreciation, if any, of our common stock will be your sole source of gain for the foreseeable future.

A significant portion of our total outstanding shares are restricted from immediate resale but may be sold into the market in the near future. This could cause the market price of our common stock to drop significantly, even if our business is doing well.

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares intend to sell shares, could reduce the market price of our common stock. After this offering, we will have outstanding shares of common stock based on the number of shares outstanding as of September 30, 2011. This includes the shares that we are selling in this offering, which may be resold in the public market immediately without restriction, unless purchased by our affiliates. Of the remaining shares, shares are currently restricted as a result of securities laws or lock-up agreements but will be able to be sold after the offering as described in the "Shares eligible for future sale" section of this prospectus. Moreover, after this offering, holders of an aggregate of up to shares of our common stock, including shares of our common stock issuable upon exercise of outstanding warrants, will have rights, subject to some conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders. We also intend to register all shares of common stock that we may issue under our equity compensation plans. Once we register these shares, they can be freely sold in the public market upon issuance, subject to volume limitations applicable to affiliates and the lock-up agreements described in the "Underwriting" section of this prospectus.

Special note regarding forward-looking statements

This prospectus contains forward-looking statements that involve substantial risks and uncertainties. All statements, other than statements of historical facts, contained in this prospectus, including statements regarding our strategy, future operations, future financial position, future revenues, projected costs, prospects, plans and objectives of management, are forward-looking statements. The words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "predict," "project," "target," "potential," "will," "would," "could," "should," "continue" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words.

The forward-looking statements in this prospectus include, among other things, statements about:

- our plans to develop and commercialize our most advanced product candidates and companion diagnostics;
- our ongoing and planned discovery programs, preclinical studies and clinical trials;
- our collaboration with Sanofi related to MM-121;
- our ability to establish and maintain additional collaborations;
- the timing of and our ability to obtain and maintain regulatory approvals for our product candidates;
- the rate and degree of market acceptance and clinical utility of our products;
- our intellectual property position;
- our commercialization, marketing and manufacturing capabilities and strategy;
- the potential advantages of our Network Biology approach to drug research and development;
- the potential use of our Network Biology approach in fields other than oncology; and
- our estimates regarding expenses, future revenues, capital requirements and needs for additional financing.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the cautionary statements included in this prospectus, particularly in the "Risk factors" section, that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make.

You should read this prospectus and the documents that we reference in this prospectus and have filed as exhibits to the registration statement of which this prospectus is a part completely and with the understanding that our actual future results may be materially different from what we expect. We do not assume any obligation to update any forward-looking statements.

Use of proceeds

We estimate that the net proceeds from our issuance and sale of shares of our common stock in this offering will be approximately $ million, assuming an initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us but prior to the payment of accrued dividends on our series B convertible preferred stock. If the underwriters exercise their over-allotment option in full, we estimate that the net proceeds from this offering will be approximately $ million.

A $1.00 increase (decrease) in the assumed initial public offering price of $ per share would increase (decrease) the net proceeds from this offering by approximately $ million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions.

As of , 2011, we had cash and cash equivalents of approximately $ million. We will use approximately $4.3 million of the net proceeds from this offering to pay accrued dividends on our series B convertible preferred stock. We currently estimate that we will use the balance of the net proceeds from this offering, together with our cash and cash equivalents as of , 2011, as follows:

- approximately $ million to fund our ongoing clinical program for MM-398, including approximately $17.0 million to $22.0 million of external costs for our planned Phase 3 clinical trial in metastatic pancreatic cancer, and to seek marketing approval and begin commercialization activities for MM-398 in the United States;
- approximately $ million to fund our ongoing clinical program for MM-111;
- approximately $ million to fund our ongoing clinical program for MM-302;
- approximately $ million to fund our preclinical and clinical programs for MM-151;
- approximately $ million to fund other research and development efforts, including beginning human clinical trials for new compounds; and
- the balance, if any, to fund working capital, capital expenditures and other general corporate purposes, which may include the acquisition or licensing of other products, businesses or technologies.

This expected use of the net proceeds from this offering and our existing cash and cash equivalents represents our intentions based upon our current plans and business conditions. The amounts and timing of our actual expenditures may vary significantly depending on numerous factors, including the progress of our development and commercialization efforts, the status of and results from clinical trials, as well as any collaborations that we may enter into with third parties for our product candidates, and any unforeseen cash needs. As a result,

our management will retain broad discretion over the allocation of the net proceeds from this offering. We have no current understandings, agreements or commitments for any material acquisitions or licenses of any products, businesses or technologies.

Based on our planned use of the net proceeds from this offering and our existing cash and cash equivalents described above, we expect that such funds will be sufficient to enable us to complete the planned Phase 3 clinical trial of MM-398 in metastatic pancreatic cancer and, if the results of this Phase 3 clinical trial are favorable, to seek marketing approval and begin commercialization activities for MM-398 in the United States. However, it is possible that we will not achieve the progress that we expect because the actual costs and timing of development, particularly clinical trials, are difficult to predict, subject to substantial risks and delays and often vary depending on the particular indication and development strategy. Sanofi is responsible for all development and manufacturing costs under our collaboration for the development and commercialization of MM-121. We do not expect that the net proceeds from this offering and our existing cash and cash equivalents will be sufficient to enable us to fund the completion of development of any of our other product candidates.

Pending our use of the net proceeds from this offering, we intend to invest the net proceeds in a variety of capital preservation investments, including short-term, investment grade, interest bearing instruments and U.S. government securities.

Dividend policy

We have never declared or paid cash dividends on our common stock. We currently intend to retain all of our future earnings, if any, to finance the growth and development of our business. We do not intend to pay cash dividends to holders of our common stock in the foreseeable future.

Capitalization

The following table sets forth our cash and cash equivalents and capitalization as of September 30, 2011:

- on an actual basis;
- on a pro forma basis to give effect to:
    - the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 66,254,763 shares of our common stock upon the closing of this offering;
    - the reclassification of convertible preferred stock warrant liability to common stock warrants for warrants to purchase our preferred stock that will automatically become warrants to purchase an aggregate of 303,176 shares of our common stock upon the closing of this offering; and
    - the accrual of series B convertible preferred stock dividends of approximately $4,263,000; and
- on a pro forma as adjusted basis to give further effect to:
    - our issuance and sale of shares of our common stock in this offering at an assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us; and
    - our use of approximately $4,263,000 of the net proceeds from this offering to pay accrued dividends on our series B convertible preferred stock.

Our capitalization following the closing of this offering will be adjusted based on the actual initial public offering price and other terms of this offering determined at pricing. You should read this table together with our consolidated financial statements and the related notes appearing at the end of this prospectus and the "Management's discussion and analysis of financial condition and results of operations" section of this prospectus.

As of September 30, 2011 (in thousands, except par values amounts)	Actual	Pro forma	Pro forma as adjusted
		(unaudited)	
Cash and cash equivalents	$ 59,232	$ 59,232	$
Convertible preferred stock warrants liability	$ 1,394	$ —	$
Accrued dividends	—	4,263	
Non-controlling Interest	$ 679	$ 679	$
Convertible preferred stock, $0.01 par value per share:			
Series B convertible preferred stock: 6,000 shares authorized, 3,874 shares issued and outstanding, actual; no shares authorized, issued or outstanding, pro forma and pro forma as adjusted	14,046	—	
Series C convertible preferred stock: 15,100 shares authorized, 14,423 shares issued and outstanding, actual; no shares authorized, issued or outstanding, pro forma and pro forma as adjusted	24,454	—	
Series D convertible preferred stock: 11,500 shares authorized, 8,086 shares issued and outstanding, actual; no shares authorized, issued or outstanding, pro forma and pro forma as adjusted	28,267	—	
Series E convertible preferred stock: 15,000 shares authorized, 14,991 shares issued and outstanding, actual; no shares authorized, issued or outstanding, pro forma and pro forma as adjusted	64,531	—	
Series F convertible preferred stock: 15,680 shares authorized, 11,776 shares issued and outstanding, actual; no shares authorized, issued or outstanding, pro forma and pro forma as adjusted	59,973	—	
Series G convertible preferred stock: 11,000 shares authorized, 11,000 shares issued and outstanding, actual; no shares authorized, issued or outstanding, pro forma and pro forma as adjusted	76,949	—	
Total convertible preferred stock	268,220	—	
Stockholders' deficit:			
Common stock, $0.01 par value per share: 138,500 shares authorized, 11,414 shares issued and outstanding, actual; 200,000 shares authorized, 77,669 shares issued and outstanding, pro forma; and 200,000 shares authorized, shares issued and outstanding, pro forma as adjusted	114	777	
Additional paid-in capital	51,452	314,746	
Common stock warrants	6,445	7,839	
Accumulated deficit	(332,723)	(332,723)	
Total stockholders' deficit	(274,712)	(9,361)	
Total capitalization	$ (5,813)	$ (8,682)	$

A $1.00 increase (decrease) in the assumed initial public offering price of $ per share would increase (decrease) each of cash and cash equivalents, additional paid-in capital, total stockholders' (deficit) equity and total capitalization on a pro forma as adjusted basis by approximately $ million, assuming that the number of shares offered by us, as set forth on

the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions.

The table above does not include:

- 17,521,906 shares of our common stock issuable upon the exercise of stock options outstanding as of September 30, 2011 at a weighted average exercise price of $2.48 per share;
- 1,051,560 additional shares of our common stock available for future issuance as of September 30, 2011 under our 2008 stock incentive plan;
- 3,500,000 additional shares of our common stock available for future issuance, as of the closing of this offering, under our 2011 stock incentive plan;
- 1,500,000 additional shares of our common stock available for future issuance, as of the closing of this offering, under our 2011 employee stock purchase plan; and
- 3,240,225 shares of our common stock issuable upon the exercise of warrants outstanding as of September 30, 2011 at a weighted average exercise price of $2.98 per share.

Dilution

If you invest in our common stock in this offering, your ownership interest will be diluted immediately to the extent of the difference between the public offering price per share of our common stock and the pro forma net tangible book value per share of our common stock after this offering.

Our historical net tangible book value as of September 30, 2011 was $ million, or $ per share of our common stock. Historical net tangible book value per share represents the amount of our total tangible assets less total liabilities, divided by the number of shares of our common stock outstanding.

Our pro forma net tangible book value as of September 30, 2011 was $ million, or $ per share of our common stock. Pro forma net tangible book value per share represents the amount of our total tangible assets less our total liabilities, divided by the pro forma number of shares of our common stock outstanding after giving effect to the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 66,254,763 shares of our common stock upon the closing of this offering, the reclassification of convertible preferred stock warrant liability to common stock warrants for warrants to purchase our preferred stock that will automatically become warrants to purchase an aggregate of 303,176 shares of our common stock upon the closing of this offering and the accrual of series B convertible preferred stock dividends of approximately $4,263,000.

After giving effect to our issuance and sale of shares of our common stock in this offering at an assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, and our use of approximately $4,263,000 of the net proceeds from this offering to pay accrued dividends on our series B convertible preferred stock, our pro forma net tangible book value as of September 30, 2011 would have been $ million, or $ per share. This represents an immediate increase in pro forma net tangible book value per share of $ to existing stockholders and immediate dilution of $ in pro forma net tangible book value per share to new investors purchasing common stock in this offering.

Dilution per share to new investors is determined by subtracting pro forma net tangible book value per share after this offering from the initial public offering price per share paid by new investors. The following table illustrates this dilution on a per share basis:

Assumed initial public offering price per share		$
Historical net tangible book value per share as of September 30, 2011	$	
Increase attributable to the conversion of outstanding preferred stock, reclassification of preferred stock warrants and payment of accrued dividends		
Pro forma net tangible book value per share as of September 30, 2011		
Increase in net tangible book value per share attributable to new investors		
Pro forma net tangible book value per share after this offering		
Dilution per share to new investors		$

A $1.00 increase (decrease) in the assumed initial public offering price of $ per share would increase (decrease) our pro forma net tangible book value by approximately $, our pro forma net tangible book value per share by approximately $ and dilution per share to new investors by approximately $, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions.

If the underwriters exercise their over-allotment option or if any additional shares are issued in connection with outstanding options or warrants, you will experience further dilution.

The following table summarizes, on a pro forma basis as of September 30, 2011, the total number of shares purchased from us, the total consideration paid, or to be paid, and the average price per share paid, or to be paid, by existing stockholders and by new investors in this offering at an assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, before deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. As the table shows, new investors purchasing shares in this offering will pay an average price per share substantially higher than our existing stockholders paid.

	Shares purchased		Total consideration		Average price per share
	Number	Percent	Amount	Percent	
Existing stockholders		%	$	%	$
New investors					
Total		100%	$	100%	

A $1.00 increase (decrease) in the assumed initial public offering price of $ per share would increase (decrease) the total consideration paid by new investors by $ million and increase (decrease) the percentage of total consideration paid by new investors by approximately %, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same.

The table above is based on actual shares outstanding as of September 30, 2011 and 66,254,763 additional shares of our common stock issuable upon the automatic conversion of all outstanding shares of our preferred stock upon the closing of this offering.

The table above excludes:

- 17,521,906 shares of our common stock issuable upon the exercise of stock options outstanding as of September 30, 2011 at a weighted average exercise price of $2.48 per share;
- 1,051,560 additional shares of our common stock available for future issuance as of September 30, 2011 under our 2008 stock incentive plan;
- 3,500,000 additional shares of our common stock available for future issuance, as of the closing of this offering, under our 2011 stock incentive plan;
- 1,500,000 additional shares of our common stock available for future issuance, as of the closing of this offering, under our 2011 employee stock purchase plan; and

- 3,240,225 shares of our common stock issuable upon the exercise of warrants outstanding as of September 30, 2011 at a weighted average exercise price of $2.98 per share.

If the underwriters exercise their over-allotment option in full, the following will occur:

- the percentage of shares of our common stock held by existing stockholders will decrease to approximately % of the total number of shares of our common stock outstanding after this offering; and

- the number of shares of our common stock held by new investors will increase to , or approximately % of the total number of shares of our common stock outstanding after this offering.

Selected consolidated financial data

You should read the following selected consolidated financial data together with our consolidated financial statements and the related notes appearing at the end of this prospectus and the "Management's discussion and analysis of financial condition and results of operations" section of this prospectus. We have derived the consolidated statements of operations data for the years ended December 31, 2008, 2009 and 2010 and the consolidated balance sheet data as of December 31, 2009 and 2010 from our audited consolidated financial statements included in this prospectus. We have derived the consolidated statements of operations data for the years ended December 31, 2006 and 2007 and the consolidated balance sheet data as of December 31, 2006, 2007 and 2008 from our audited consolidated financial statements not included in this prospectus. We have derived the consolidated statements of operations data for the nine months ended September 30, 2010 and 2011 and the consolidated balance sheet data as of September 30, 2011 from our unaudited consolidated financial statements included in this prospectus. The unaudited consolidated financial data include, in the opinion of our management, all adjustments, consisting only of normal recurring adjustments, that are necessary for a fair statement of our financial position and results of operations for these periods. Our historical results for any prior period are not necessarily indicative of results to be expected in any future period, and our results for any interim period are not necessarily indicative of results to be expected for a full fiscal year.

(in thousands, except per share amounts)	Year ended December 31,					Nine months ended September 30,	
	2006	2007	2008	2009(1)	2010(2)	2010(2)	2011(2)
						(unaudited)	
Consolidated statement of operations							
Research and development revenues	$ 94	$ 344	$ 365	$ 2,148	$ 20,305	$ 13,996	$ 21,638
Operating expenses:							
Research and development	21,047	26,109	34,528	37,658	58,278	41,860	73,101
General and administrative	5,597	6,482	8,836	12,178	11,381	8,555	11,239
Contingent consideration	—	—	—	—	(178)	37	—
Total operating expenses	26,644	32,591	43,364	49,836	69,481	50,452	84,340
Loss from operations	(26,550)	(32,247)	(42,999)	(47,688)	(49,176)	(36,456)	(62,702)
Other income and expenses:							
Interest income	2,778	2,305	1,243	81	74	54	51
Interest expense	(1,223)	(1,710)	(4,403)	(4,909)	(3,726)	(3,638)	(12)
Other, net	(183)	(37)	607	41	2,669	12	1,208
Net loss before income taxes and non-controlling interest	(25,178)	(31,689)	(45,552)	(52,475)	(50,159)	(40,028)	(61,455)
Benefit from income taxes	—	—	—	3,402	—	—	—
Net loss before non-controlling interest	(25,178)	(31,689)	(45,552)	(49,073)	(50,159)	(40,028)	(61,455)
Less net loss attributable to non-controlling interest	—	—	—	—	(55)	(19)	(348)
Net loss attributable to Merrimack Pharmaceuticals, Inc.	(25,178)	(31,689)	(45,552)	(49,073)	(50,104)	(40,009)	(61,107)
Net loss per share available to common stockholders—basic and diluted(3)	$ (4.84)	$ (6.01)	$ (8.17)	$ (7.28)	$ (5.57)	$ (3.94)	$ (5.92)
Weighted-average common shares used in computing net loss per share available to common stockholders—basic and diluted	6,147	6,177	6,199	7,387	10,994	10,970	11,292
Pro forma net loss per share available to common stockholders—basic and diluted (unaudited)(4)					$		$
Weighted-average common shares used in computing pro forma net loss per share available to common stockholders—basic and diluted (unaudited)(5)							

(1) In 2009, we acquired Hermes BioSciences, Inc. See Note 6 to our consolidated financial statements.

(2) In 2010 and 2011, we consolidated Silver Creek Pharmaceuticals, Inc. for financial reporting purposes.

(3) The numerator in the calculation of net loss per share available to common stockholders—basic and diluted includes unaccreted dividends on our convertible preferred stock.

(4) The numerator in the calculation of pro forma net loss per share available to common stockholders—basic and diluted has been adjusted to remove gains and losses resulting from re-measurement of the preferred stock warrant liabilities.

(5) Weighed-average common shares used in computing pro forma net loss per share available to common stockholders—basic and diluted is calculated assuming the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 66,254,763 shares of our common stock upon the closing of this offering and adjusted to reflect additional shares of common stock related to preferred stock dividends of approximately $4,263,000.

(in thousands)	As of December 31, 2006	2007	2008	2009	2010	As of September 30, 2011 (unaudited)
Consolidated balance sheet data						
Cash and cash equivalents	$ 19,887	$ 40,286	$ 44,974	$ 58,387	$ 30,713	$ 59,232
Total assets	61,400	67,312	50,867	82,156	57,577	89,252
Deferred revenue	—	—	—	60,937	73,782	75,516
Convertible preferred stock warrants liability	1,061	1,082	568	578	652	1,394
Total liabilities	12,277	45,996	72,596	141,645	85,257	95,065
Non-controlling interest	—	—	—	—	1,027	679
Convertible preferred stock	130,280	132,739	132,739	131,273	191,257	268,220
Total stockholders deficit	$ (81,157)	$ (111,423)	$ (154,468)	$ (190,762)	$ (219,964)	$ (274,712)

Management's discussion and analysis of financial condition and results of operations

You should read the following discussion and analysis of our financial condition and results of operations together with our consolidated financial statements and the related notes appearing at the end of this prospectus. Some of the information contained in this discussion and analysis or set forth elsewhere in this prospectus, including information with respect to our plans and strategy for our business and related financings, includes forward-looking statements that involve risks and uncertainties. You should read the "Risk factors" section of this prospectus for a discussion of important factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Overview

We are a biopharmaceutical company discovering, developing and preparing to commercialize innovative medicines consisting of novel therapeutics paired with companion diagnostics. Our mission is to provide patients, physicians and the healthcare system with the medicines, tools and information to transform the approach to care from one based on the identification and treatment of symptoms to one focused on the diagnosis and treatment of illness through a more precise mechanistic understanding of disease. We seek to accomplish our mission by applying our proprietary systems-based approach to biomedical research, which we call Network Biology. Our initial focus is in the field of oncology. We have four programs in clinical development, the most advanced of which is expected to enter a pivotal Phase 3 clinical trial by the end of 2011.

We have devoted substantially all of our resources to our drug discovery and development efforts, including advancing our Network Biology approach, conducting clinical trials for our product candidates, protecting our intellectual property and providing general and administrative support for these operations. We have not generated any revenue from product sales and, to date, have financed our operations primarily through private placements of our convertible preferred stock, collaborations and, to a lesser extent, through government grants, the monetization of tax credits and equipment lease financings. Through September 30, 2011, we have received $268.2 million from the sale of convertible preferred stock and warrants and $112.6 million of upfront license fees, milestone payments, reimbursement of research and development costs and manufacturing services and other payments from our collaborations. We expect that the net proceeds from this offering, together with our existing cash and cash equivalents, anticipated interest income and anticipated milestone payments and research and development and manufacturing funding under our collaboration with Sanofi related to MM-121, will enable us to fund our operating expenses and capital expenditure requirements through at least .

We have never been profitable and, as of September 30, 2011, we had an accumulated deficit of $332.7 million. Our net loss was $61.5 million for the nine months ended September 30, 2011, $50.2 million for the year ended December 31, 2010, $49.1 million for the year ended December 31, 2009 and $45.6 million for the year ended December 31, 2008. We expect to continue to incur significant expenses and increasing operating losses for at least the next several years. We expect our research and development expenses to increase in connection with

our ongoing activities, particularly as we continue the research, development and clinical trials of our product candidates, including multiple simultaneous clinical trials for certain product candidates, some of which we expect will be entering late stage clinical development. In addition, subject to obtaining regulatory approval of any of our product candidates, we expect to incur significant commercialization expenses for product sales, marketing, manufacturing and distribution. We will need substantial additional funding to support the continuation of our operating activities. Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of equity offerings, debt financings, collaborations, strategic alliances, licensing arrangements and other marketing and distribution arrangements. We may be unable to raise capital when needed or on attractive terms, which would force us to delay, limit, reduce or terminate our research and development programs or commercialization efforts. We will need to generate significant revenues to achieve profitability, and we may never do so.

Strategic partnerships, licenses and collaborations

Sanofi

In September 2009, we entered into a license and collaboration with Sanofi for the development and commercialization of MM-121. Under this agreement, we granted Sanofi an exclusive, royalty-bearing, worldwide right and license to develop and commercialize MM-121 in exchange for payment by Sanofi of an upfront license fee of $60.0 million, up to $410.0 million in potential development and regulatory milestone payments, of which we have already received $10.0 million, up to $60.0 million in potential sales milestone payments and tiered, escalating royalties beginning in the sub-teen double digits based on net sales of MM-121 in the United States and beginning in the high single digits based on net sales of MM-121 outside the United States. We have the option to co-promote and commercialize MM-121 in the United States and the right, but not the obligation, to participate in the development of MM-121 through Phase 2 proof of concept trials, which we are currently conducting. If we co-promote MM-121 in the United States, we will be responsible for paying our sales force costs and a specified percentage of direct medical affairs, marketing and promotion costs for MM-121 in the United States and will be eligible to receive tiered, escalating royalties beginning in the high teens based on net sales of MM-121 in the United States. We are also entitled to an increase in the royalty rate if a diagnostic product is actually used with MM-121 in the treatment of solid tumor indications. Sanofi is responsible for all development and manufacturing costs for MM-121. Although Sanofi is responsible for manufacturing MM-121 under the agreement, we are currently manufacturing MM-121 and plan to continue doing so until material is needed for Phase 3 clinical trials, at which time we expect Sanofi will assume primary responsibility for all manufacturing of MM-121. Sanofi reimburses us for internal time at a designated full-time equivalent rate per year and reimburses us for direct costs and services related to the development and manufacturing of MM-121.

The timing of cash received from Sanofi differs from revenue recognized for financial statement purposes. We recognize revenue for development services as incurred and recognize revenue for the upfront payment, milestone payments and manufacturing services using the contingency-adjusted performance model over the expected development period, which is currently estimated to be 12 years from the effective date of our agreement with Sanofi. During the years ended December 31, 2009 and 2010, and the nine months ended

September 30, 2010 and 2011, we recognized revenue based on the following components of the Sanofi agreement:

	Year ended December 31,		Nine months ended September 30,	
(in thousands)	**2009**	**2010**	**2010**	**2011**
Upfront payment	$ 694	$ 5,000	$ 3,750	$ 3,750
Milestone payment	—	949	741	625
Development services	1,410	13,279	8,642	15,976
Manufacturing services and other	—	630	477	1,214
Total	**$ 2,104**	**$ 19,858**	**$ 13,610**	**$ 21,565**

GTC Biotherapeutics, Inc.

During 2008 and 2009, our product candidate MM-093 failed to achieve the primary endpoint in Phase 2 clinical trials for rheumatoid arthritis, psoriasis and uveitis. In July 2009, we entered into a license agreement with GTC Biotherapeutics, Inc., or GTC, for the development and commercialization of MM-093. Under this agreement, we granted GTC an exclusive worldwide license to research, develop, manufacture and commercialize MM-093 for the treatment of autoimmune diseases in exchange for GTC returning approximately 662,000 shares of our series C convertible preferred stock. In addition, we are eligible to receive from GTC potential development milestone payments of up to $52.5 million, sales milestone payments of up to $8.0 million and tiered royalties based on a percentage of net sales of MM-093 ranging from the mid-single digits to the low double digits. GTC is responsible for all development and commercialization costs for MM-093. We assigned a fair value of $1.5 million for the shares returned to us and are recognizing this as revenue over the expected development term, which is currently estimated to be 19 years from the effective date of our agreement with GTC. We have not received any milestone or royalty payments from GTC.

During the years ended December 31, 2009 and 2010, and the nine months ended September 30, 2010 and 2011, we recognized revenue based on the following component of the GTC agreement:

	Year ended December 31,		Nine months ended September 30,	
(in thousands)	**2009**	**2010**	**2010**	**2011**
Upfront consideration	$ 37	$ 76	$ 57	$ 57

Silver Creek Pharmaceuticals, Inc.

We have established a subsidiary named Silver Creek Pharmaceuticals, Inc., or Silver Creek. Silver Creek's mission is to apply our Network Biology approach to the discovery and development of innovative therapeutics in the field of regenerative medicine. In August 2010, we acquired 12,000,000 shares of Silver Creek's series A convertible preferred stock in exchange for our grant to Silver Creek of various exclusive and non-exclusive technology licenses. In August and December 2010, Silver Creek issued an aggregate of 4,189,904 additional shares of series A convertible preferred stock at a price per share of $1.00 to other investors for an

aggregate purchase price of approximately $4,165,000, net of issuance costs. As of December 31, 2010 and September 30, 2011, we owned approximately 74% of the outstanding capital stock of Silver Creek and consolidated Silver Creek for financial reporting.

In the future, we may consider forming additional businesses or business units to apply our Network Biology approach to multiple additional disease areas outside the oncology field. We expect to do so in some cases, as with Silver Creek, through the establishment of separately funded companies.

Financial obligations related to the license and development of MM-398

In September 2005, Hermes BioSciences, Inc., or Hermes, which we acquired in October 2009, entered into a license agreement with PharmaEngine, Inc., or PharmaEngine, under which PharmaEngine received an exclusive license to research, develop, manufacture and commercialize MM-398 in Europe and certain countries in Asia. In May 2011, we entered into a new agreement with PharmaEngine under which we reacquired all previously licensed rights for MM-398, other than rights to commercialize MM-398 in Taiwan. As a result, we now have the exclusive right to commercialize MM-398 in all territories in the world, except for Taiwan, where PharmaEngine has an exclusive commercialization right. Upon entering into the May 2011 agreement with PharmaEngine, we paid PharmaEngine a $10.0 million upfront license fee. In addition, we will be required to make a milestone payment to PharmaEngine of $5.0 million in connection with dosing the first patient in our planned Phase 3 clinical trial of MM-398, which we expect to occur by the end of 2011. We may be required to make up to an aggregate of $75.0 million in additional development and regulatory milestone payments and $130.0 million in additional sales milestone payments to PharmaEngine upon the achievement of specified development, regulatory and annual net sales milestones. PharmaEngine is also entitled to tiered royalties on net sales of MM-398 in Europe and certain countries in Asia. The royalty rates under the agreement range from high single digits up to the low teens as a percentage of our net sales of MM-398 in these territories. Under the May 2011 agreement, we are responsible for all future development costs of MM-398 except those required specifically for regulatory approval in Taiwan. During the nine months ended September 30, 2011, we recognized expense of $10,881,000 under the May 2011 agreement for the reimbursement of development costs paid by us to PharmaEngine.

Our financial obligations under other license and development agreement are summarized below under "—Liquidity and capital resources—Contractual obligations and commitments."

Financial operations overview

Revenues

We have not yet generated any revenue from product sales. All of our revenue to date has been derived from license fees, milestone payments and research, development, manufacturing and other payments received from collaborations, primarily with Sanofi, and grant payments received from the National Cancer Institute. In the future, we may generate revenue from a combination of product sales, license fees, milestone payments and research, development and manufacturing payments from collaborations and royalties from the sales of products developed under licenses of our intellectual property. We expect that any revenue we generate will fluctuate from quarter to quarter as a result of the timing and amount of license fees,

research, development and manufacturing reimbursements, milestone and other payments from collaborations, and the amount and timing of payments that we receive upon the sale of our products, to the extent any are successfully commercialized. We do not expect to generate revenue from product sales until 2014, at the earliest. If we or our collaborators fail to complete the development of our product candidates in a timely manner or obtain regulatory approval for them, our ability to generate future revenue, and our results of operations and financial position, would be materially adversely affected.

Research and development expense

Research and development expenses consist of the costs associated with our research and discovery activities, including investment in our Network Biology approach, conducting preclinical studies and clinical trials, manufacturing development efforts and activities related to regulatory filings. Our research and development expenses consist of:

- employee salaries and related expenses, which include stock compensation and benefits for the personnel involved in our drug discovery and development activities;
- external research and development expenses incurred under agreements with third party contract research organizations and investigative sites;
- manufacturing material expense for in-house manufacturing and third party manufacturing organizations and consultants;
- license fees for and milestone payments related to in-licensed products and technologies; and
- facilities, depreciation and other allocated expenses, which include direct and allocated expenses for rent and maintenance of facilities, depreciation of leasehold improvements and equipment, and laboratory and other supplies.

We expense research and development costs as incurred. Conducting a significant amount of research and development is central to our business model. Product candidates in late stages of clinical development generally have higher development costs than those in earlier stages of clinical development, primarily due to the increased size and duration of late stage clinical trials. We plan to increase our research and development expenses for the foreseeable future as we seek to complete development of our five most advanced product candidates, MM-398, MM-121, MM-111, MM-302 and MM-151, and to further advance our preclinical products and earlier stage research and development projects.

We use our employee and infrastructure resources across multiple research and development programs. We track expenses related to our five most advanced product candidates on a per project basis. Accordingly, we allocate internal employee-related and infrastructure costs, as well as third party costs, to each of these programs. We do not allocate to particular development programs either stock compensation expense or expenses related to preclinical programs. Costs that are not directly attributable to specific clinical programs or early preclinical activities, such as general laboratory supplies, wages related to shared laboratory services, travel and employee training and development are not allocated and are considered general research and discovery expenses.

The following table summarizes our principal product development programs, including the related stages of development for each product candidate in development and the research

and development expenses allocated to each clinical product candidate. Prior to May 2011, our collaborator, PharmaEngine, led the clinical development of MM-398 with minimal investment by us.

(in thousands)	Indication	Current phase of development	Year ended December 31, 2008	2009	2010	Nine months ended September 30, 2010	2011
MM-398	Cancer	Phase 2	$ —	$ —	$ 163	$ 157	$ 15,196
MM-121	Cancer	Phase 2	5,968	12,328	18,014	11,476	20,671
MM-111	Cancer	Phase 1	8,814	7,462	15,938	13,324	7,425
MM-302	Cancer	Phase 1	—	940	4,974	3,600	3,867
MM-151	Cancer	IND filed	1,542	3,960	2,452	1,658	8,568
MM-093	Autoimmune	Outlicensed	9,319	432	6	5	1
Other preclinical			3,054	5,149	8,926	6,023	9,275
General research and discovery			4,466	5,445	5,019	3,697	5,444
Stock compensation			1,365	1,942	2,786	1,920	2,654
Total research and development expense			$ 34,528	$ 37,658	$ 58,278	$ 41,860	$ 73,101

The successful development of our clinical and preclinical product candidates is highly uncertain. At this time, other than as discussed below, we cannot reasonably estimate the nature, timing or costs of the efforts that will be necessary to complete the remainder of the development of any of our preclinical or clinical product candidates or the period, if any, in which material net cash inflows from these product candidates may commence. This is due to the numerous risks and uncertainties associated with developing drugs, including the uncertainty of:

- the scope, rate of progress and expense of our ongoing, as well as any additional, clinical trials and other research and development activities;
- the potential benefits of our product candidates over other therapies;
- our ability to market, commercialize and achieve market acceptance for any of our product candidates that we are developing or may develop in the future;
- future clinical trial results;
- the terms and timing of regulatory approvals; and
- the expense of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights.

A change in the outcome of any of these variables with respect to the development of a product candidate could mean a significant change in the costs and timing associated with the development of that product candidate. For example, if the FDA or another regulatory authority were to require us to conduct clinical trials beyond those which we currently anticipate will be required for the completion of clinical development of a product candidate or if we experience significant delays in enrollment in any of our clinical trials, we could be required to expend significant additional financial resources and time on the completion of clinical development.

MM-398

MM-398 is currently being evaluated in a Phase 2 clinical trial in pancreatic cancer, and we plan to initiate a Phase 3 clinical trial by the end of 2011 for MM-398 as a therapy in metastatic pancreatic cancer for patients who have failed treatment with gemcitabine. Our current estimate for the external costs associated with completing the planned Phase 3 clinical trial is between $17.0 million and $22.0 million. In May 2011, we made an upfront license payment of $10.0 million to PharmaEngine. We are required to make a milestone payment of $5.0 million to PharmaEngine in connection with dosing the first patient in our planned Phase 3 trial, which we expect to occur in the fourth quarter of 2011. We may be required to make up to an aggregate of $75.0 million in additional development and regulatory milestone payments and $130.0 million in additional sales milestone payments to PharmaEngine upon the achievement of specified development, regulatory and annual net sales milestones. PharmaEngine is also entitled to tiered royalties based on net sales of MM-398 in Europe and certain countries in Asia. The royalty rates range from high single digits up to the low teens as a percentage of our net sales of MM-398 in these territories. We also expect to initiate Phase 2 clinical trials of MM-398 in other indications over the next 12 months. In addition, several investigator sponsored trials are ongoing in which the majority of the total clinical trial costs are paid by the investigators. Investigator sponsored trials include a Phase 2 clinical trial in colorectal cancer, a Phase 1 clinical trial in colorectal cancer and a Phase 1 clinical trial in glioma.

MM-121

We have entered into a license and collaboration agreement related to MM-121 with Sanofi. Under the terms of the agreement, we are responsible for leading clinical development through Phase 2 proof of concept trials for each indication, including the manufacturing of material for clinical trials. All expenses related to manufacturing are required to be reimbursed by Sanofi. Sanofi pays a portion of the estimated manufacturing campaign costs upfront and the remainder during and upon completion of the manufacturing campaign in accordance with an agreed upon budget. We separately record revenue and expenses on a gross basis under this arrangement. Sanofi is responsible for all development and manufacturing costs of MM-121. We are currently conducting two Phase 2 clinical trials and three Phase 1 clinical trials of MM-121 in multiple cancer types. During the third quarter of 2010, we received a $10.0 million milestone payment from Sanofi for initiating a proof of concept Phase 2 clinical trial of MM-121 in breast cancer. Based on the current joint development plan under this collaboration, we anticipate receiving $15 million of additional milestone payments by the end of the fourth quarter of 2011.

MM-111

We are currently conducting three Phase 1 clinical trials of MM-111 in multiple cancer types.

MM-302

We are currently conducting one Phase 1 clinical trial of MM-302 in breast cancer.

MM-151

We submitted an IND to the FDA for MM-151 in July 2011 and, subject to the IND becoming effective, anticipate initiating one Phase 1 clinical trial of MM-151 by early 2012.

General and administrative expense

General and administrative expense consists primarily of salaries and other related costs for personnel, including stock-based compensation expenses and benefits, in our executive, legal, intellectual property, business development, finance, purchasing, accounting, information technology, corporate communications, investor relations and human resources departments. Other general and administrative expenses include employee training and development, board of directors costs, depreciation, insurance expenses, facility-related costs not otherwise included in research and development expense, and professional fees for legal services, including patent-related expenses, and accounting and information technology services. We expect that general and administrative expense will increase in future periods in proportion to increases in research and development and as a result of increased payroll, expanded infrastructure, increased consulting, legal, accounting and investor relations expenses associated with being a public company and costs incurred to seek collaborations with respect to any of our product candidates.

Interest income and interest expense

Interest income consists of interest earned on our cash and cash equivalents and short-term investments. Interest expense consists of expense incurred to finance equipment, office furniture and fixtures and noncash interest expense recognized on proceeds received from series F convertible preferred stock investors.

As more fully described in Note 13 to our consolidated financial statements appearing at the end of this prospectus, in July 2010, in connection with a review of our corporate records, we determined that we may not have obtained all of the required stockholder approvals to amend our articles of organization to authorize shares of series F convertible preferred stock that we agreed to issue in November 2007 and April 2008. As a result, in October 2010, we conducted an exchange offer in which we provided investors to whom we had agreed to issue and sell shares of series F convertible preferred stock in 2007 and 2008 with the opportunity to acquire shares of properly authorized series F convertible preferred stock. All of the holders of shares of series F convertible preferred stock accepted our offer and received new, properly authorized shares of series F convertible preferred stock. We recorded series F proceeds received in advance of the exchange offer as a short term liability and recognized noncash imputed interest expense for financial statement purposes of $4,064,000 for the year ended December 31, 2008, $4,805,000 for the year ended December 31, 2009, $3,673,000 for the year ended December 31, 2010 and $3,594,000 for the nine months ended September 30, 2010, which we collectively refer to as the series F amount. Upon completion of the exchanges of series F convertible preferred stock in October 2010, the series F amount was relieved and we recorded the initial investment of $5.10 per share as convertible preferred stock and the accrued noncash interest expense of $12,974,000 as additional paid-in capital.

Other income (expense)

Other income and other expense primarily consist of gains and losses on the change in value and time to expiration of preferred stock warrants, the recognition of federal and state sponsored tax incentives and other one-time income or expense-related items.

Critical accounting policies and significant judgments and estimates

Our management's discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which we have prepared in accordance with generally accepted accounting principles in the United States. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported revenues and expenses during the reporting periods. We evaluate our estimates and judgments on an ongoing basis. Estimates include revenue recognition, useful lives with respect to long-lived assets and intangibles, valuation of stock options, convertible preferred stock warrants, contingent consideration, accrued expenses, intangible assets, goodwill, in-process research and development and tax valuation reserves. We base our estimates on historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Our actual results may differ from these estimates under different assumptions or conditions.

While our significant accounting policies are more fully described in Note 2 to our consolidated financial statements appearing at the end of this prospectus, we believe that the following accounting policies are the most critical to aid you in fully understanding and evaluating our financial condition and results of operations.

Revenue recognition

We enter into biopharmaceutical product development agreements with collaborators for the research and development of therapeutic and diagnostic products. The terms of these agreements may include nonrefundable signing and licensing fees, funding for research, development and manufacturing, milestone payments and royalties on any product sales derived from collaborations. We assess these multiple elements in accordance with the Financial Accounting Standards Board, or FASB, Accounting Standards Codification 605, *Revenue Recognition*, in order to determine whether particular components of the arrangement represent separate units of accounting.

We recognize upfront license payments as revenue upon delivery of the license only if the license has stand-alone value and the fair value of the undelivered performance obligations can be determined. If the fair value of the undelivered performance obligations can be determined, such obligations are accounted for separately as the obligations are fulfilled. If the license is considered to either not have stand-alone value or have stand-alone value but the fair value of any of the undelivered performance obligations cannot be determined, the arrangement is accounted for as a single unit of accounting and the license payments and payments for performance obligations are recognized as revenue over the estimated period of when the performance obligations are performed.

Whenever we determine that an arrangement should be accounted for as a single unit of accounting, we must determine the period over which the performance obligations will be performed and revenue will be recognized. If we cannot reasonably estimate the timing and the level of effort to complete our performance obligations under the arrangement, then we recognize revenue under the arrangement on a straight-line basis over the period that we expect to complete our performance obligations.

Our collaboration agreements may include additional payments upon the achievement of performance-based milestones. As milestones are achieved, a portion of the milestone payment, equal to the percentage of the total time that we have performed the performance obligations to date over the total estimated time to complete the performance obligations, multiplied by the amount of the milestone payment, will be recognized as revenue upon achievement of such milestone. The remaining portion of the milestone will be recognized over the remaining performance period. Milestones that are tied to regulatory approval are not considered probable of being achieved until such approval is received. Milestones tied to counterparty performance are not included in our revenue model until the performance conditions are met.

To date, we have not received any royalty payments or recognized any royalty revenue. We will recognize royalty revenue upon the sale of the related products, provided we have no remaining performance obligations under the arrangement.

We record deferred revenue when payments are received in advance of the culmination of the earnings process. This revenue is recognized in future periods when the applicable revenue recognition criteria have been met.

We recognize grant revenues as we perform the underling research and development activities or, if applicable, when we meet the related preclinical, clinical or regulatory milestones and collectability and the amount to be received is not assured.

Accrued expenses

As part of the process of preparing financial statements, we are required to estimate accrued expenses. This process involves identifying services that have been performed on our behalf and estimating the level of services performed and the associated costs incurred for such services where we have not yet been invoiced or otherwise notified of actual cost. We record these estimates in our consolidated financial statements as of each balance sheet date. Examples of estimated accrued expenses include:

- fees due to contract research organizations in connection with preclinical and toxicology studies and clinical trials;
- fees paid to investigative sites in connection with clinical trials; and
- professional service fees.

In accruing service fees, we estimate the time period over which services will be provided and the level of effort in each period. If the actual timing of the provision of services or the level of effort varies from the estimate, we will adjust the accrual accordingly. In the event that we do not identify costs that have been incurred or we under or overestimate the level of services performed or the costs of such services, our actual expenses could differ from such estimates. The date on which some services commence, the level of services performed on or before a given date and the cost of such services are often subjective determinations. We make estimates based upon the facts and circumstances known to us at the time and in accordance with generally accepted accounting principles in the United States. There have been no material changes in estimates for the periods presented.

Stock-based compensation

We account for stock-based compensation by measuring and recognizing compensation expense for all stock-based awards made to employees, including stock options, based on the estimated grant date fair values. For employees, we use the straight-line method to allocate compensation expense to reporting periods over each optionee's requisite service period, which is generally the vesting period. For non-employees, we record awards at fair value, periodically remeasure awards to reflect the current fair value at each reporting period, and recognize expense over the related service period. When applicable, we account for these equity instruments based on the fair value of the consideration received or the fair value of the equity instrument issued, whichever is more reliably measurable.

We estimate the fair value of stock-based awards to employees and non-employees using the Black-Scholes option valuation model. Determining the fair value of stock-based awards requires the use of highly subjective assumptions, including volatility, the calculation of expected term, risk free interest rate and the fair value of the underlying common stock on the date of grant, among other inputs. The assumptions used in determining the fair value of stock-based awards represent our best estimates, which involve inherent uncertainties and the application of judgment. As a result, if factors change, and different assumptions are used, our level of stock-based compensation could be materially different in the future.

The expected volatility rate that we use to value stock option grants is based on historical volatilities of a peer group of similar companies whose share prices are publicly available. The peer group includes companies in the pharmaceutical and biotechnology industries in a similar stage of development, with a comparable market capitalization or a similar clinical focus. Because we do not have a sufficient history to estimate the expected term, we use the simplified method for estimating the expected term. Under this approach, the weighted-average expected life is presumed to be the average of the vesting term and the contractual term of the option for each tranche. The risk-free interest rate assumption was based on zero coupon U.S. treasury instruments that had terms consistent with the expected term of the stock option grants.

We recognize compensation expense for only the portion of options that are expected to vest. Accordingly, expected future forfeiture rates of stock options have been estimated based on our historical forfeiture rate, as adjusted for known trends. Forfeitures are estimated at the time of grant. If actual forfeiture rates vary from historical rates and estimates, additional adjustments to compensation expense may be required in future periods.

The following table sets forth information with respect to stock options granted from January 1, 2008 to August 2, 2011:

Date of issuance	Number of shares	Exercise price per share	Per share estimated fair value of common stock	Per share weighted average estimated fair value of options
May 5, 2008	344,400	$ 3.32	$ 3.32	$ 2.09
September 22, 2008	2,386,950	1.81	1.81	1.10
January 30, 2009	184,200	1.81	1.81	1.14
February 10, 2009	175,000	1.81	1.81	1.14
April 29, 2009	12,000	1.81	1.81	1.15
June 9, 2009	85,000	1.81	1.81	1.17
June 23, 2009	22,400	1.81	1.81	1.16
November 5, 2009	3,567,055	2.12	2.12	1.39
November 11, 2009	164,500	2.12	2.12	1.41
December 7, 2009	28,475	2.12	2.12	1.41
February 1, 2010	460,000	2.12	2.12	1.44
February 9, 2010	68,475	2.12	2.12	1.44
May 12, 2010	348,500	2.12	2.12	1.40
August 24, 2010	20,000	2.69	2.69	1.74
August 25, 2010	93,400	2.69	2.69	1.74
October 15, 2010	1,523,428	2.69	2.69	1.72
December 9, 2010	60,000	2.69	2.69	1.64
December 15, 2010	59,907	2.69	2.69	1.76
December 22, 2010	350,000	2.69	2.69	1.74
May 3, 2011	1,967,368	5.54	5.54	3.57
August 2, 2011	67,100	6.37	6.37	4.09

The per share estimated fair value of common stock in the table above represents the determination by our board of directors of the fair value of our common stock as of the date of grant, taking into consideration various objective and subjective factors, including the conclusions, if applicable, of contemporaneous valuations of our common stock as discussed below. We computed the per share weighted average estimated fair value for stock option grants based on the Black-Scholes option valuation model.

Historically, we have granted stock options at exercise prices equal to the estimated fair value of our common stock. Due to the absence of an active market for our common stock, the fair value for purposes of determining the exercise price for stock option grants was determined by our board of directors, with the assistance and upon the recommendation of management, in good faith based on a number of objective and subjective factors including:

- the prices of our convertible preferred stock sold to or exchanged between outside investors in arm's length transactions, and the rights, preferences and privileges of the convertible preferred stock as compared to those of our common stock, including the liquidation preferences of the convertible preferred stock;

- our results of operations, financial position and the status of research and development efforts, including clinical trial data for the various compounds under development;
- the composition of, and changes to, our management team and board of directors;
- the lack of liquidity of our common stock as a private company;
- the material risks related to our business;
- achievement of enterprise milestones, including results of clinical trials and entering into collaboration and license agreements;
- the market performance of publicly traded companies in the life sciences and biotechnology sectors, and recently completed mergers and acquisitions of companies comparable to us;
- external market conditions affecting the life sciences and biotechnology industry sectors;
- the likelihood of achieving a liquidity event for the holders of our common stock and stock options, such as an initial public offering, given prevailing market conditions; and
- contemporaneous valuations prepared in accordance with methodologies outlined in the American Institute of Certified Public Accountants Practice Aid, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation,* or the Practice Aid.

Based on these factors, our board of directors granted options at exercise prices that increased from $2.12 per share in 2010 up to $6.37 per share in 2011.

In determining the exercise prices of the options set forth in the table above granted in 2010 and 2011, our board of directors considered the most recent contemporaneous valuations of our common stock, which were prepared by an external consultant as of October 6, 2009, August 24, 2010, March 31, 2011 and July 31, 2011, and based its determination in part on the analyses summarized below.

For the options listed above granted in 2010 and 2011, we used the market approach, specifically the guideline public company and the guideline transaction methods, to estimate the enterprise value of our company by comparing it to similar publicly traded companies and acquisition transactions. In addition, the valuations considered the prices paid for our preferred stock in recent arm's length market financing transactions, most notably, transactions in August 2010 in which one of our preferred stockholders sold shares to several unrelated third parties and our series G convertible preferred stock financing completed in April 2011. Given the complex capital structure of our company, it was also necessary to allocate the aggregate equity value to the various classes of our outstanding capital stock, including several series of convertible preferred stock and our common stock.

We used the probability-weighted expected return method to allocate the enterprise values to the common stock. Under this method, the value of the common stock is estimated based upon an analysis of future values for our company assuming various investment outcomes, the timing of which is based, in part, on the plans of our board of directors and management. Under this approach, share value is derived from the probability-weighted present value of expected future investment returns, considering each of the possible outcomes available to us, as well as the economic and control rights of each share class. The fair value of our common stock was estimated using a probability-weighted analysis of the present value of the returns afforded to

common stockholders under several future stockholder exit or liquidity event scenarios, either through (1) an initial public offering, or IPO; (2) a trade sale of our company at a premium to cumulative amounts invested by preferred stock investors; or (3) a trade sale of our company at a value below the cumulative liquidation preference of the preferred stockholders.

The individual stockholder exit or liquidity scenarios considered in each analysis depended on the specific facts and circumstances, both internal and external, present as of each valuation date. For the October 6, 2009 valuation, we considered the following significant events:

- In September 2009, we entered into a license and collaboration agreement with Sanofi for the co-development and commercialization of MM-121, which included an upfront $60.0 million license fee, future clinical development and sales milestone payments and future royalty payments, depending on the success of MM-121. The agreement also provided that Sanofi would reimburse us for all direct development and manufacturing costs incurred in connection with MM-121.

- In October 2009, we completed the acquisition of Hermes, through which we expanded our discovery capabilities into the area of targeted liposomes and added the MM-398 development program.

As a result, in October 2009, we utilized the probability-weighted expected return method, and the exit events considered included one short-term IPO scenario, one long-term IPO scenario, two separate trade sale scenarios at premiums to the cumulative liquidation preference of the preferred stockholders and a fifth scenario presuming a sale below the aggregate convertible preferred stock liquidation preference.

Subsequently, in January 2011, we received positive Phase 2 clinical results for MM-398 in both pancreatic and gastric cancer indications. As a result of the positive data from these trials, the continued progress of our MM-121 and MM-111 clinical programs, the filing of an IND for MM-302 and the further expansion of our preclinical development pipeline, beginning with the March 31, 2011 valuation and continuing through the July 31, 2011 valuation, a third low-case IPO scenario was added and the sale below the aggregate convertible preferred stock liquidation preference was removed. This third low-case IPO scenario was added to better reflect the expectations of our board of directors and management with respect to the potential liquidity outcomes for our company as of the valuation date considering, in part, the number of compounds in our clinical development pipeline and the anticipated level of future funding necessary to initiate multiple Phase 2/3 clinical trials for two or more of these development programs simultaneously.

The future values of our common stock in the IPO scenarios and the trade sale scenarios were estimated by application of the market approach based on certain key assumptions, including the following:

- expected pre-money IPO valuations from recently completed initial public offerings;

- estimated third party trade sale values based on recent transactions involving biotechnology or biopharmaceutical companies; and

- expected dates for a future IPO or trade sale of our company.

For the sale above the preferred stock liquidation preference scenario, the future common stock value was estimated based on certain assumptions, including the estimated aggregate enterprise value that could be attained through such a sale and the estimated expected date of the future sale. The present values of our common stock under each scenario were then calculated by applying a risk-adjusted discount rate and then probability-weighting those present values based on our estimate of the relative probability of each scenario.

Finally, the estimated fair value of our common stock was reduced by a discount for lack of marketability. The discount for lack of marketability was analyzed based on the restrictive factors inherent in privately held common stock. Among other considerations, the determination of an appropriate discount for lack of marketability, was based in part on a put-option model that considers variables such as time to liquidity, volatility and the risk-free rate. Based on these analyses and consideration of liquidity restrictions, discounts for lack of marketability ranging from 7.5% to 5.0% were applied, depending on the presumed timing of the exit event.

Stock option grants from February 1, 2010 to May 12, 2010

Our board of directors granted stock options on February 1, 2010, February 9, 2010 and May 12, 2010, with each having an exercise price of $2.12 per share. In addition to the objective and subjective factors discussed above, our board of directors also considered input from management and the valuation as of October 6, 2009. Management determined that no significant events or other circumstances had occurred between October 6, 2009 and May 12, 2010 that would indicate there was a change in the fair value of our common stock during that period. The specific facts and circumstances considered by our board of directors for the October 6, 2009 valuation included the following:

- execution of a license and collaboration agreement with Sanofi for the development and commercialization of MM-121 in September 2009, as described above;
- completion of the acquisition of Hermes in October 2009, expanding our discovery capabilities into the area of targeted liposomes, including the MM-398 development program;
- filing of an IND for MM-111;
- out-licensing of MM-093 to GTC; and
- continued dislocation in the public and private capital markets resulting from weakness in macroeconomic conditions and the global credit and liquidity crisis.

In the October 6, 2009 valuation, the short-term IPO scenario assumed a liquidity event in July 2010 and the long-term IPO scenario assumed an exit event in October 2011. In applying the market approach under both IPO scenarios, it was assumed that all development programs, including MM-121 and MM-111, would continue to advance in the clinic through the time of an exit event. The guideline public company method as described in the Practice Aid was used to apply the market approach to both IPO scenarios. Market data on pre-money IPO valuations for biotechnology companies that went public in the period from 2005 to 2008 was analyzed under this method. From this set of data, a narrower sub-set of comparable companies was selected which had product candidates in various stages of drug development ranging from discovery stage to Phase 3 clinical trials. The selected enterprise values for the short-term IPO

scenario and the long-term IPO scenario were at or above the high-end of the observed range of the IPO market data based on consideration of our Network Biology approach, the collaboration agreement with Sanofi, the recently completed Hermes acquisition and progress made in our ongoing development programs.

In applying the market approach to estimate our aggregate future enterprise values under the base-case and high-case trade sale scenarios, the high-case scenario assumed all development programs, including MM-121 and MM-111, would advance in the clinic until the time of a trade sale, while the base-case scenario assumed one or more program would experience a clinical delay or setback prior to an exit event. In both trade sale scenarios, the liquidity event was assumed to occur in October 2012. In applying the market approach to the trade sale scenarios, the guideline transaction method was utilized. Under this method, sale transactions of similar private biotechnology companies were analyzed. The values utilized were supported by published transaction values between 2006 and 2008 involving comparable companies with product candidates in various stages of drug development, ranging from discovery stage to Phase 3 clinical trials. In estimating our enterprise value, consideration was given to those transactions for companies that were in a comparable stage of development as we were expected to be in as of October 2012. The selected enterprise value for the base-case scenario was based on consideration of the median of the comparable transaction values, and the selected enterprise value used in the high-case scenario was based on consideration of comparable transaction values between third quartile and the maximum of the observed range.

In the sale at a price below liquidation preference scenario, a sale of our existing research and intellectual property was assumed as of October 2012, at a value that would not allow preferred stockholders to realize their full liquidation preference. The fair value of our common stock under this exit scenario was determined by reducing the total estimated enterprise value by the liquidation preferences of convertible preferred shares, all of which would receive more value based on their liquidation preferences plus accrued dividends, as opposed to converting to common stock.

Under all the exit scenarios considered in the probability-weighted expected return method, the fair value of our common stock was calculated using the estimated future enterprise valuations, a risk-adjusted discount rate of 30.0% based on the inherent risk of a hypothetical investment in our common stock, and a discount for lack of marketability which ranged between 5.0% in the short-term IPO scenario to 7.5% in all other assumed liquidity events. The risk-adjusted discount rate was based on consideration of the weighted average cost of capital for comparable biotechnology companies adjusted for company specific risk factors, the venture capital rates of return detailed in the Practice Aid, and an analysis of other quantitative and qualitative factors considered pertinent to estimating the discount rate.

In the October 6, 2009 valuation, probability weightings of 20.0% were used for the short-term and long-term IPO scenarios, 30.0% and 10.0% were used for the base-case and high-case trade sale scenarios, respectively, and 20.0% was used for the sale at a price below liquidation preference scenario. The probability weightings assigned to the respective exit scenarios were primarily based on consideration of our various drug development programs, industry clinical success rates, our expected near-term and long-term funding requirements, and an assessment of the current financing and biotechnology industry environments at the time of the valuation. The resulting value, which represented the estimated fair value of our common stock as of October 6, 2009, was $2.12 per share.

Stock option grants from August 24, 2010 to December 22, 2010

Our board of directors granted stock options on August 24, 2010, August 25, 2010, October 15, 2010, December 9, 2010, December 15, 2010 and December 22, 2010, with each having an exercise price of $2.69 per share. In addition to the objective and subjective factors discussed above, our board of directors also considered input from management and the valuation as of August 24, 2010. The increase in share value from the October 6, 2009 valuation was primarily attributable to increases in the selected enterprise values in the long-term IPO and the base-case trade sale scenarios and a decrease in the probability weighting assigned to the sale at a price below liquidation preference scenario. The specific facts and circumstances considered by our board of directors in assessing these key valuation assumptions included the following:

- transactions in August 2010 in which one of our preferred stock investors sold shares of series B, series C and series D convertible preferred stock to several unrelated third parties in arm's length transactions;

- initiation in July 2010 of a randomized, double blind Phase 2 clinical trial of MM-121 in combination with exemestane (Aromasin) in breast cancer patients, which triggered payment of a $10.0 million milestone from Sanofi; and

- difficult conditions in the IPO and merger and acquisition markets, which resulted in an extension of the assumed timing for a liquidity event in all of the scenarios considered in the probability-weighted expected return method.

In applying the market approach to estimate our future enterprise values under the IPO exit scenarios, as described previously, it was assumed that a liquidity event would occur in November 2011 in the short-term scenario and in August 2012 in the long-term scenario. The valuation methodologies and underlying assumptions utilized to apply the market approach under the IPO liquidity scenarios were consistent with those employed in the October 6, 2009 valuation. Given our development pipeline, which included three clinical programs (MM-398, MM-121 and MM-111) and four additional compounds in various stages of preclinical development (MM-302, MM-151, MM-141 and MM-131) as of the valuation date, the selected enterprise value in the short-term scenario was based on the pre-money IPO market data for transactions between the third quartile and the maximum of the observed range. The selected aggregate enterprise value in the long-term scenario was based on consideration of the high-end of the observed range of transaction values and assumed our three most advanced development projects (MM-398, MM-121 and MM-111) would continue their positive clinical progression.

In applying the market approach to estimate our aggregate future enterprise values under the two trade sale scenarios, as described previously, it was assumed that a liquidity event would occur in August 2013 for the base-case scenario and in February 2013 for the high-case scenario. The valuation methodologies and underlying assumptions utilized to apply the market approach under the trade-sale scenarios were consistent with those employed in the October 6, 2009 valuation. The selected enterprise value utilized in the base-case scenario considered the median of the observed range of comparable transaction values. The selected enterprise value for the high-case scenario was based on the comparable transaction values between the third quartile and the high-end of the observed range. We assumed we would make significant progress and achieve certain key milestones with respect to our development pipeline by the

time a trade sale was consummated, including assumptions that our three most advanced development projects (MM-398, MM-121 and MM-111) would continue their positive clinical progression, one or more additional compounds would enter Phase 1/2 trials, including MM-302, and several other compounds would near Phase 1 trials (MM-151, MM-141 and MM-131).

In the sale at a price below liquidation preference scenario, a sale of our existing research and intellectual property was assumed as of August 2013, at a value that would not allow the preferred stockholders to realize their full liquidation preference. The valuation methodologies and underlying assumptions utilized in this scenario were consistent with those employed as of October 6, 2010.

Under all the exit scenarios considered in the probability-weighted expected return method, the fair value of our common stock was calculated using the estimated future enterprise valuations, a risk-adjusted discount rate of 30.0% based on the inherent risk of a hypothetical investment in our common stock, and a discount for lack of marketability which ranged between 5.0% in the short-term IPO scenario to 7.5% in all other assumed liquidity events. The risk-adjusted discount rate was based on consideration of the weighted average cost of capital for comparable biotechnology companies adjusted for company specific risk factors, the venture capital rates of return detailed in the Practice Aid, and an analysis of other quantitative and qualitative factors considered pertinent to estimating the discount rate.

In the August 24, 2010 valuation, probability weightings of 20.0% were used for the short-term and long-term IPO scenarios, respectively, 10.0% and 35.0% were used for the high-case and base-case trade sale scenarios, respectively, and 15.0% was used for the sale below liquidation preference scenario. The probability weightings assigned to the respective exit scenarios were primarily based on consideration of our various drug development programs, industry clinical success rates, our expected near-term and long-term funding requirements, and an assessment of the current financing and biotechnology industry environments at the time of the valuation. The resulting value, which represented the estimated fair value of our common stock as of August 24, 2010, was $2.69 per share. Management determined that no significant events or other circumstances had occurred between August 24, 2010 and December 22, 2010 that would indicate there was a change in the fair value of our common stock during that period.

Stock option grants on May 3, 2011

Our board of directors granted stock options on May 3, 2011 with an exercise price of $5.54 per share. In addition to the objective and subjective factors discussed above, our board of directors also considered input from management and the valuation as of March 31, 2011. The increase in share value from the August 24, 2010 valuation was primarily attributable to increases in the selected enterprise values in the long-term IPO, short-term IPO and high-case trade sale scenarios, a decrease in estimated time until a liquidity event in each of the exit scenarios and the addition of a third low-case IPO scenario and the elimination of the sale at a price below liquidation preference scenario. The specific facts and circumstances considered by our board of directors in assessing these key valuation assumptions included the following:

- positive results in January 2011 indicating that MM-398 met its primary endpoint in a Phase 2 clinical trial for patients with metastatic pancreatic cancer who had failed prior treatment with gemcitabine;

- positive Phase 2 clinical trial results in January 2011 for MM-398 as a second line therapy for patients with gastric or gastroesophageal junction adenocarcinoma;
- completion of a series G convertible preferred stock financing on April 6, 2011 in which we sold 11.0 million shares at $7.00 per share for aggregate proceeds of approximately $77.0 million;
- execution of a term sheet with PharmaEngine in February 2011 and determination by management as of the valuation date of a high likelihood that a final agreement would be executed under which we would reacquire the major Asia and Europe country rights to commercialize and market MM-398;
- filing of an IND in February 2011 for MM-302; and
- positive equity market conditions and performance for publicly traded biotechnology and biopharmaceutical companies.

The market approach was used to estimate our aggregate future enterprise values under three separate IPO scenarios, as described previously. The short-term scenario assumed a liquidity event in December 2011, the long-term scenario assumed a liquidity event in June 2012, and the low-case IPO scenario assumed a liquidity event in September 2012. The valuation methodologies and underlying assumptions utilized to apply the market approach under the short-term and long-term IPO liquidity scenarios were consistent with those employed in the August 24, 2010 valuation. The selected future enterprise value in the short-term IPO scenario was at the high end of the observed range of IPO market data based on consideration of the recent series G convertible preferred stock financing at $7.00 per share and our development pipeline as of the valuation date, which included:

- MM-398, positive Phase 2 data announced in January 2011;
- MM-121, in Phase 2 development;
- MM-111, in Phase 1 development;
- MM-302, IND filed in February 2011;
- MM-151, in advanced preclinical development; and
- three additional compounds in the discovery phase, MM-310, MM-141 and MM-131.

The future enterprise value selected in the long-term IPO scenario was above the high-end of the range of IPO market data and was based on the considerations listed above, and the assumption that clinical progress would be made in multiple development programs between the assumed short-term IPO and long-term IPO liquidity dates. The selected future enterprise value in the low-case IPO scenario was based on consideration of the IPO market data between the third quartile and the high-end of the range and assumed a clinical set-back or delay in one or more of our three clinical development programs.

In applying the market approach to estimate our aggregate future enterprise values under the two trade sale scenarios, as described previously, it was assumed that a liquidity event would occur in June 2013 for the base-case scenario, and in December 2012 for the high-case scenario. The valuation methodologies and underlying assumptions utilized to apply the market

approach under the trade-sale scenarios were consistent with those employed in the August 24, 2010 valuation. The selected enterprise value for the base-case was based on consideration of the median of the observed range of comparable transaction values. The selected enterprise value for the high-case sale scenario was based on consideration of the high-end of the observed range of comparable transaction values.

Based on consideration of our development pipeline and the Network Biology approach, the March 31, 2011 valuation did not include a sale at a price below the liquidation preference scenario.

Under all the scenarios considered in the probability-weighted expected return method, the fair value of our common stock was calculated using the expected future enterprise valuations, a risk-adjusted discount rate of 25.0% based on the inherent risk of a hypothetical investment in our common stock, and a discount for lack of marketability of 5.0% in all of the assumed liquidity scenarios. The risk-adjusted discount rate was based on consideration of the weighted average cost of capital for comparable biotechnology companies adjusted for company specific risk factors, the venture capital rates of return detailed in the Practice Aid, and an analysis of other quantitative and qualitative factors considered pertinent to estimating the discount rate.

In the March 31, 2011 valuation, probability weightings of 30.0%, 20.0% and 10.0% were used for the short-term, long-term and low-case IPO scenarios, respectively, and 15.0% and 25.0% were used for the high-case and base-case trade sale scenarios, respectively. The probability weightings assigned to the respective exit scenarios were primarily based on consideration of our various drug development programs, industry clinical success rates, our expected near-term and long-term funding requirements, and an assessment of the current financing and biotechnology industry environments at the time of the valuation. The resulting value, which represented the estimated fair value of our common stock as of March 31, 2011, was $5.54 per share. Management determined that no significant events or other circumstances that had not been taken into consideration in the March 31, 2011 valuation had occurred between March 31, 2011 and May 3, 2011 that would indicate there was a change in the fair value of our common stock during that period.

Stock option grants on August 2, 2011

Our board of directors granted stock options on August 2, 2011 with an exercise price of $6.37 per share. In addition to the objective and subjective factors discussed above, our board of directors also considered input from management and the valuation as of July 31, 2011. The increase in share value from the March 31, 2011 valuation was primarily attributable to a decrease in the estimated time until a liquidity event in each of the exit scenarios and the increase in probability of an IPO compared to a trade sale when estimating the probability of each potential future liquidity event. The specific facts and circumstances considered by our board of directors in assessing these key valuation assumptions included the following:

- filing a registration statement for an IPO with the Securities and Exchange Commission, or SEC, on July 8, 2011;
- dosing the first patient in July 2011 in our planned MM-302 Phase 1 study;
- filing of an IND in July 2011 for MM-151; and
- receipt of orphan drug status in July 2011 for MM-398 for the treatment of pancreatic cancer.

The market approach was used to estimate our aggregate future enterprise values under three separate IPO scenarios, as described previously. The short-term scenario assumed a liquidity event in November 2011, the long-term scenario assumed a liquidity event in June 2012, and the low-case IPO scenario assumed a liquidity event in September 2012. The valuation methodologies and underlying assumptions utilized to apply the market approach under all scenarios were consistent with those employed in the March 31, 2011 valuation.

Under all the scenarios considered in the probability-weighted expected return method, the fair value of our common stock was calculated using the expected future enterprise valuations, a risk-adjusted discount rate of 25.0% based on the inherent risk of a hypothetical investment in our common stock, and a discount for lack of marketability of 5.0% in all of the assumed liquidity scenarios. The risk-adjusted discount rate was based on consideration of the weighted average cost of capital for comparable biotechnology companies adjusted for company specific risk factors, the venture capital rates of return detailed in the Practice Aid, and an analysis of other quantitative and qualitative factors considered pertinent to estimating the discount rate.

In the July 31, 2011 valuation, probability weightings of 40.0%, 20.0% and 20.0% were used for the short-term, long-term and low-case IPO scenarios, respectively, and 10.0% and 10.0% were used for the high-case and base-case trade sale scenarios, respectively. The probability weightings assigned to the respective exit scenarios were primarily based on consideration of our various drug development programs, industry clinical success rates, our expected near-term and long-term funding requirements, and an assessment of the current financing and biotechnology industry environments at the time of the valuation. The resulting value, which represented the estimated fair value of our common stock as of July 31, 2011, was $6.37 per share. Management determined that no significant events or other circumstances that had not been taken into consideration in the July 31, 2011 valuation had occurred between July 31, 2011 and August 2, 2011 that would indicate there was a change in the fair value of our common stock during that period.

There are significant judgments and estimates inherent in the determination of these valuations. These judgments and estimates include assumptions regarding our future performance; the time to completing an IPO, a trade sale, or other liquidity event; and the timing of and probability of continuing to successfully progress our various drug development candidates toward commercialization, as well as determinations of the appropriate valuation methods. If different assumptions had been applied in the valuations, our stock-based compensation expense, net loss and net loss per share could have been significantly different. While the assumptions used to calculate and account for stock-based compensation awards represents management's best estimates, these estimates involve inherent uncertainties and the application of management's judgment. As a result, if revisions are made to the underlying assumptions and estimates, our stock-based compensation expense could vary significantly from period to period.

Acquisition

In connection with our acquisition of Hermes, we recorded the assets acquired, liabilities assumed, contractual contingencies and contingent consideration at their fair value on the acquisition date. The purchase price allocation process requires management to make significant estimates and assumptions at the acquisition date, especially with respect to intangible assets and estimated contingent consideration payments.

Although we believe the assumptions and estimates we have made with respect to the Hermes acquisition were reasonable and appropriate, they were based in part on management's judgment and information obtained from the management of the acquired company and are inherently uncertain. Examples of critical estimates in valuing the estimated contingent consideration and certain of the intangible assets we have acquired include the following:

- estimated fair value of the acquisition-related contingent consideration, which was performed using a probability-weighted analysis of future liquidity events;
- future expected cash flows of research and development activities and future expected cash flows from product sales and license agreements; and
- discount rates.

Unanticipated events and circumstances may occur which may affect the accuracy or validity of such assumptions, estimates or actual results. Additionally, any change in the fair value of the acquisition-related contingent consideration subsequent to the acquisition date, including changes from events after the acquisition date, such as changes in our estimate of the probability of certain future liquidity events, will be recognized in earnings in the period of the estimated fair value change. A change in fair value of the acquisition-related contingent consideration could have a material affect on the statement of operations and financial position in the period of the change in estimate.

Results of operations

Comparison of the nine months ended September 30, 2010 and 2011

Nine months ended September 30, (in thousands)	2010	2011
Research and development revenues	$ 13,996	$ 21,638
Research and development expenses	41,860	73,101
General and administrative expenses	8,555	11,239
Contingent consideration	37	—
Loss from operations	(36,456)	(62,702)
Interest income	54	51
Interest expense	(3,638)	(12)
Other income	12	1,208
Net loss before income taxes and non-controlling interest	(40,028)	(61,455)
Benefit from income taxes	—	—
Net loss	$ (40,028)	$ (61,455)

Research and development revenues

Revenues for the nine months ended September 30, 2011 were $21.6 million, compared to $14.0 million for the nine months ended September 30, 2010, an increase of $7.6 million, or 54%. This increase resulted from increased revenues recognized under the collaboration agreement with Sanofi due to increased research and development and manufacturing services.

Research and development expense

Research and development expenses for the nine months ended September 30, 2011 were $73.1 million, compared to $41.9 million for the nine months ended September 30, 2010, an increase of $31.2 million, or 74%. This increase was primarily attributable to:

- $15.0 million of increased MM-398 spending due to a $10.0 million upfront license payment made to PharmaEngine in May 2011 and costs associated with preparing to initiate a Phase 3 clinical trial;
- $9.2 million of increased MM-121 spending due to initiation of two new clinical trials and increased spending on ongoing clinical trials;
- $6.9 million of increased MM-151 spending due to increased toxicology and other preclinical costs;
- $5.0 million of increased spending on preclinical product candidates and other general unallocated research and development primarily due to an increase in the number of preclinical programs;
- $0.7 million of increased stock compensation expense due to increased headcount and the timing of stock option grants; and
- $0.3 million of increased MM-302 spending due to costs associated with initiating a Phase 1 clinical trial.

These increases were partially offset by a decrease of $5.9 million in MM-111 spending due to the timing of clinical and manufacturing costs.

General and administrative expense

General and administrative expenses for the nine months ended September 30, 2011 were $11.2 million, compared to $8.6 million for the nine months ended September 30, 2010, an increase of $2.6 million, or 30%. This increase was primarily attributable to the timing of stock option grants to our directors, the impact of outstanding non-employee stock options, which are marked to market, and increased labor and labor-related costs due to an increase in headcount.

Contingent consideration

Contingent consideration for the nine months ended September 30, 2011 was $0, compared to $37,000 for the nine months ended September 30, 2010. This charge was the result of a change in the estimated fair value of our common stock used to value the contingent consideration liability from the Hermes acquisition.

Interest income

Interest income for the nine months ended September 30, 2011 was $51,000, compared to $54,000 for the nine months ended September 30, 2010, a decrease of $3,000. Interest income was related to interest earned on our money market investments.

Interest expense

Interest expense for the nine months ended September 30, 2011 was $12,000, compared to $3.6 million for the nine months ended September 30, 2010. This decrease was due to lower non-cash interest expense recognized on the series F amount, which was settled in October 2010 and was not present during 2011.

Other income

Other income for the nine months ended September 30, 2011 was $1.2 million, compared to $12,000 for the nine months ended September 30, 2010. This increase was primarily due to the receipt of a $1.8 million cash settlement from a former service provider, partially offset by $0.7 million from the change in the fair value of preferred stock warrants.

Comparison of the years ended December 31, 2009 and 2010

Year ended December 31, (in thousands)	2009	2010
Research and development revenues	$ 2,148	$ 20,305
Research and development expenses	37,658	58,278
General and administrative expenses	12,178	11,381
Contingent consideration	—	(178)
Loss from operations	(47,688)	(49,176)
Interest income	81	74
Interest expense	(4,909)	(3,726)
Other income	41	2,669
Net loss before income taxes and non-controlling interest	(52,475)	(50,159)
Benefit from income taxes	3,402	—
Net loss	$ (49,073)	$ (50,159)

Research and development revenues

Revenues for 2010 were $20.3 million, compared to $2.1 million for 2009, an increase of $18.2 million. This increase resulted from a full year of revenues recognized under the collaboration agreement with Sanofi.

Research and development expense

Research and development expenses for 2010 were $58.3 million, compared to $37.7 million for 2009, an increase of $20.6 million, or 55%. This increase was primarily attributable to:

- $8.5 million of increased MM-111 spending due to initiation of one new clinical trial and increased manufacturing activity;
- $3.4 million of increased spending on preclinical product candidates and other general unallocated research and development due to an increase in the number of preclinical programs;
- $5.7 million of increased MM-121 spending due to initiation of three new clinical trials and increased spending on ongoing clinical trials;
- $4.0 million of increased MM-302 spending due to increased preclinical activities; and
- $0.8 million of increased stock compensation expense due to increased headcount.

These increases were partially offset by the following decreases:

- $0.4 million of MM-093 spending due to out-licensing the program to GTC during 2009; and
- $1.5 million of MM-151 spending due to the timing of toxicology studies and other preclinical activities.

General and administrative expense

General and administrative expenses for 2010 were $11.4 million, compared to $12.2 million for 2009, a decrease of $0.8 million, or 7%. This decrease was primarily attributable to a $2.0 million consulting and banking fee related to the MM-121 license and collaboration agreement with Sanofi in 2009, which was not present in 2010, partially offset by higher legal costs and higher labor and labor-related costs.

Contingent consideration

Contingent consideration for 2010 was a benefit of $0.2 million, compared to $0 in 2009. This benefit was a result of a change in the estimated probability of occurrence of a financing event in the contingent consideration arrangement from the Hermes acquisition.

Interest income

Interest income for each of 2010 and 2009 was $0.1 million. Interest income was related to interest earned on our money market investments.

Interest expense

Interest expense for 2010 was $3.7 million, compared to $4.9 million for 2009, a decrease of $1.2 million, or 24%. This decrease was primarily due to lower non-cash interest expense recognized on the series F amount, which was settled in October 2010.

Other income

Other income for 2010 was $2.7 million, compared to $41,000 for 2009, an increase of $2.7 million. This increase was primarily due to the receipt of a $2.4 million grant awarded under the federal Qualifying Therapeutic Discovery Project program, which was recognized as other income in 2010.

Benefit from income taxes

In 2009, we recognized a benefit from income taxes of $3.4 million upon the release of a tax valuation allowance as a result of the acquisition of Hermes.

Comparison of the years ended December 31, 2008 and 2009

Year ended December 31, (in thousands)	**2008**	**2009**
Research and development revenues	$ 365	$ 2,148
Research and development expenses	34,528	37,658
General and administrative expenses	8,836	12,178
Loss from operations	(42,999)	(47,688)
Interest income	1,243	81
Interest expense	(4,403)	(4,909)
Other income	607	41
Net loss before income taxes and non-controlling interest	(45,552)	(52,475)
Benefit from income taxes	—	3,402
Net loss	$ (45,552)	$ (49,073)

Research and development revenues

Revenues for 2009 were $2.1 million, compared to $0.4 million for 2008, an increase of $1.7 million. The increase was primarily due to revenues recognized under the collaboration agreement with Sanofi in 2009, partially offset by revenues recognized from a federal research grant in 2008.

Research and development expense

Research and development expenses for 2009 were $37.7 million, compared to $34.5 million for 2008, an increase of $3.2 million, or 9%. This increase was primarily attributable to:

- $6.4 million of increased MM-121 spending due to increased preclinical spending and spending to prepare for initiation of one new clinical trial;
- $3.1 million of increased spending on preclinical product candidates and other general unallocated research and development due to an increase in the number of preclinical programs;
- $2.4 million of increased MM-151 spending due to increased toxicology and other preclinical costs;
- $0.9 million of increased MM-302 spending due to increased preclinical costs; and
- $0.6 million of increased stock compensation expense due to increased headcount and the timing of grants.

These increases were partially offset by the following decreases:

- $8.9 million of decreased spending on MM-093 due to licensing the program to GTC during 2009; and
- $1.4 million of decreased spending on MM-111 due to the timing of manufacturing campaigns.

General and administrative expense

General and administrative expenses for 2009 were $12.2 million, compared to $8.8 million for 2008, an increase of $3.4 million, or 39%. This increase was primarily attributable to a $2.0 million consulting and banking fee related to the MM-121 license and collaboration agreement with Sanofi and $1.2 million of incremental legal expenses primarily related to the drafting and execution of the MM-121 license and collaboration agreement with Sanofi and the acquisition of Hermes.

Interest income

Interest income for 2009 was $0.1 million, compared to $1.2 million for 2008, a decrease of $1.1 million, or 92%. This decrease was primarily due a lower net investment balance coupled with lower interest rates earned on cash balances and investments. We converted all of our marketable securities to lower risk and lower yielding cash and cash equivalents during the second quarter of 2008.

Interest expense

Interest expense for 2009 was $4.9 million, compared to $4.4 million for 2008, an increase of $0.5 million, or 11%. This increase was primarily due to higher non-cash interest expense recognized on the series F amount.

Other income

Other income for 2009 was $41,000, compared to $0.6 million for 2008, a decrease of $0.6 million. This decrease was primarily due to the change in estimated fair value of preferred stock warrants.

Benefit from income taxes

In 2009, we recognized a benefit from income taxes of $3.4 million upon the release of a tax valuation allowance as a result of the acquisition of Hermes.

Liquidity and capital resources

Sources of liquidity

We have financed our operations to date primarily through private placements of our convertible preferred stock, collaborations and, to a lesser extent, through government grants, the monetization of tax credits and equipment lease financings. Through September 30, 2011, we have received $268.2 million from the sale of convertible preferred stock and warrants and $112.6 million of upfront license fees, milestone payments, reimbursement of research and development costs and manufacturing services and other payments from our collaborations.

As of September 30, 2011, we had consolidated cash and cash equivalents of approximately $59.2 million, of which $2.4 million related to the cash and cash equivalents held by our majority owned subsidiary, Silver Creek, which is consolidated for financial reporting purposes and is designated for the operations of Silver Creek. We primarily invest cash and cash equivalents in money market funds backed by the U.S. treasury and U.S. federal agencies.

Cash flows

The following table provides information regarding our cash flows for the years ended December 31, 2008, 2009 and 2010 and the nine months ended September 30, 2010 and 2011.

	Year ended December 31,			Nine months ended September 30,	
(in thousands)	**2008**	**2009**	**2010**	**2010**	**2011**
Cash (used in) provided by operating activities	$ (38,009)	$ 19,055	$ (26,369)	$ (20,390)	$ (46,362)
Cash provided by (used in) investing activities	19,501	(4,851)	(4,900)	(4,397)	(2,460)
Cash provided by (used in) financing activities	23,196	(791)	3,595	2,634	77,341
Net increase (decrease) in cash and cash equivalents	$ 4,688	$ 13,413	$ (27,674)	$ (22,153)	$ 28,519

Operating activities

Cash used in operating activities of $38.0 million during the year ended December 31, 2008 was primarily a result of our $45.6 million net loss coupled with changes in operating assets and liabilities of $0.4 million, partially offset by non-cash items of $8.0 million. Cash provided by operating activities of $19.1 million during the year ended December 31, 2009 was primarily a result of our $49.1 million net loss, partially offset by non-cash items of $7.2 million, changes in operating assets and liabilities of $0.9 million and receipt of $60 million upfront payment under the collaboration agreement with Sanofi. Cash used in operating activities of $26.4 million during the year ended December 31, 2010 was primarily a result of our $50.2 million net loss, partially offset by non-cash items of $11.7 million, changes in operating assets and liabilities of $2.1 million and receipt of $10.0 million milestone payment under the collaboration agreement with Sanofi. Cash used in operating activities of $20.4 million during the nine month period ended September 30, 2010 was primarily a result of our net loss of $40.0 million partially offset by changes in operating assets and liabilities of $10.1 million and non-cash items of $9.5 million. Cash used in operating activities of $46.4 million during the nine month period ended September 30, 2011 was primarily a result of our $61.5 million net loss, partially offset by non-cash items of $9.8 million and changes in operating assets and liabilities of $5.3 million.

Investing activities

Investing activities provided cash of $19.5 million for the year ended December 31, 2008 and used cash of $4.9 million for both the years ended December 31, 2009 and 2010. Investing activities used cash of $4.4 million for the nine month period ended September 30, 2010 and $2.5 million for the nine month period ended September 30, 2011. Cash used in investing activities during 2009, 2010 and both nine month periods ended September 30, 2011 and 2010 was primarily due to the purchase of plant, property and equipment. Cash provided by investing activities of $19.5 million in 2008 was primarily due to proceeds from the sale of investments of $24.7 million, partially offset by purchases of marketable securities of $3.4 million and $1.5 million from the purchase of plant, property and equipment.

Financing activities

Financing activities provided cash of $23.2 million for the year ended December 31, 2008, used cash of $0.8 million for the year ended December 31, 2009, and provided cash of $3.6 million for the year ended December 31, 2010. Financing activities provided cash of $2.6 million for the nine month period ended September 30, 2010 and $77.3 million for the nine month period ended September 30, 2011. Cash provided by financing activities of $23.2 million during 2008 was primarily from proceeds from the series F convertible preferred stock financing of $24.5 million, partially offset by the payment of capital leases of $1.0 million and the payment of long-term debt of $1.0 million. Cash used in financing activities of $0.8 million during 2009 was primarily a result of payment of capital leases of $1.0 million. Cash provided by financing activities of $3.6 million during 2010 was primarily a result of proceeds received by Silver Creek for the issuance of convertible preferred stock of $4.2 million, partially offset by the payment of capital leases of $0.9 million. Cash provided by financing activities of $2.6 million for the nine months ended September 30, 2010 was primarily the result of proceeds received by Silver Creek for the issuance of convertible preferred stock of $3.0 million. Cash provided by financing activities of $77.3 million for the nine months ended September 30, 2011 was primarily a result of $76.9 million of proceeds received from the series G convertible preferred stock financing, net of offering costs.

Funding requirements

We have not completed development of any therapeutic products or companion diagnostics. We expect to continue to incur significant expenses and increasing operating losses for at least the next several years. We anticipate that our expenses will increase substantially as we:

- initiate or continue our clinical trials of our five most advanced product candidates;
- continue the research and development of our other product candidates;
- seek to discover additional product candidates;
- seek regulatory approvals for our product candidates that successfully complete clinical trials;
- establish a sales, marketing and distribution infrastructure and scale up manufacturing capabilities to commercialize products for which we may obtain regulatory approval; and
- add operational, financial and management information systems and personnel, including personnel to support our product development and planned commercialization efforts.

We expect that the net proceeds from this offering, together with our existing cash and cash equivalents, anticipated interest income and anticipated milestone payments and research and development and manufacturing funding under our collaboration with Sanofi related to MM-121, will enable us to fund our operating expenses and capital expenditure requirements through at least . We have based this estimate on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect. Because of the numerous risks and uncertainties associated with the development and commercialization of our product candidates, and the extent to which we enter into collaborations with third parties to participate in their development and commercialization, we are unable to estimate the amounts of increased capital outlays and operating expenditures associated with our current and anticipated clinical trials. Our future capital requirements will depend on many factors, including:

- the progress and results of the clinical trials of our five most advanced product candidates;
- the success of our collaborations with Sanofi related to MM-121 and PharmaEngine related to MM-398;
- the scope, progress, results and costs of preclinical development, laboratory testing and clinical trials for our other product candidates;
- the costs, timing and outcome of regulatory review of our product candidates;
- the costs of commercialization activities, including product sales, marketing, manufacturing and distribution;
- the costs of preparing, filing and prosecuting patent applications and maintaining, enforcing and defending intellectual property-related claims;
- the extent to which we acquire or invest in businesses, products and technologies; and
- our ability to establish and maintain additional collaborations on favorable terms, particularly marketing and distribution arrangements for oncology product candidates outside the United States and Europe.

Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of equity offerings, debt financings, collaborations, strategic alliances, licensing arrangements and other marketing and distribution arrangements. We do not have any committed external sources of funds, other than our collaboration with Sanofi, which is terminable by Sanofi for convenience upon 180 days' prior written notice. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interest of our stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect your rights as a stockholder. Debt financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. If we raise additional funds through marketing and distribution arrangements or other collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates or to grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Contractual obligations and commitments

The following table summarizes our contractual obligations as of September 30, 2011:

(in thousands)	Total	Less than 1 year	1 to 3 years	3 to 5 years	More than 5 years
Capital lease obligations(1)	$ 99	$ 99	$ —	$ —	$ —
Operating lease obligations	7,846	3,467	3,537	843	—
Antibody licensing costs(2)	2,060	1,615	230	215	—
PharmaEngine license and collaboration agreement(3)	5,000	5,000	—	—	—
Total contractual cash obligations	$ 15,005	$ 10,181	$ 3,767	$ 1,058	$ —

(1) Capital lease obligations include obligated interest payments.

(2) Antibody licensing costs include costs related to a collaboration agreement with Adimab LLC for $1.5 million, which we expect to pay during the fourth quarter of 2011. Antibody licensing costs also include costs under license agreements with The Regents of the University of California, which include annual license maintenance fee payments of $20,000 and $95,000 estimated to be paid from 2012 through 2015 and a minimum annual royalty payment of $100,000 estimated to be paid in 2015. We have not included annual license maintenance fees or minimum royalty payments after September 30, 2015, as we cannot estimate if they will occur.

(3) In May 2011, we entered into an agreement with PharmaEngine under which we reacquired previously licensed rights for MM-398 and made an upfront license payment to PharmaEngine of $10.0 million. We will be required to make a $5.0 million milestone payment to PharmaEngine in connection with dosing the first patient in our planned Phase 3 clinical trial of MM-398, which we expect to occur in the fourth quarter of 2011. We may be required to make up to an aggregate of $75.0 million in additional development and regulatory milestone payments and $130.0 million in additional sales milestone payments upon the achievement of specified development, regulatory and annual net sales milestones. We cannot estimate if or when these milestone payments will occur. PharmaEngine is also entitled to tiered royalties on net sales of MM-398 in Europe and certain countries in Asia. The royalty rates under the agreement range from high single digits up to the low teens as a percentage of our net sales of MM-398 in these territories. We cannot estimate if or when these royalties will occur.

We are required to pay the holders of series B convertible preferred stock cash dividends of approximately $4.3 million upon the closing of this offering.

Expenditures to contract research organizations represent a significant cost in clinical development. However, our contracts with these research organizations are cancellable at our option upon short notice and do not have cancellation penalties. Therefore, payments to contract research organizations have not been included in the above table.

In January 2010, we received $1.5 million of tax incentives from the Massachusetts Life Sciences Center, or MLSC, an independent agency of the Commonwealth of Massachusetts, which allowed us to monetize approximately $1.4 million of state research and development tax credits. In exchange for these incentives, we pledged to hire 50 employees in 2010 and to maintain the additional headcount through at least December 31, 2014. Failure to do so could result in our being required to repay a portion of these incentives. This contingent obligation has not been included in the above table as we cannot estimate if or when it will become payable.

In January 2011, we received $1.3 million of tax incentives from the MLSC, which allowed us to monetize approximately $1.2 million of state research and development tax credits. In exchange for these incentives, we pledged to hire 50 employees in 2011 and to maintain the additional headcount through at least December 31, 2015. Failure to do so could result in our being required to repay these incentives. This contingent obligation has not been included in the above table as we cannot estimate if or when it will become payable.

Other than the specific payments noted in the table and as described above, milestone and royalty payments associated with antibody licensing, manufacturing technology licensing costs and other in-licensed collaboration payments have not been included in the above table as management cannot reasonably estimate if or when they will occur. These arrangements include the following:

- Under a collaboration agreement with Dyax Corp., or Dyax, related to antibody identification and evaluation, we are required to make aggregate development and regulatory milestone payments of up to $16.2 million for therapeutic products and aggregate regulatory milestone payments of up $1.0 million for diagnostic products directed to selected targets. We also are required to pay mid single digit royalties on net sales of licensed products.

- Under license agreements with The Regents of the University of California, we are required to make aggregate development and regulatory milestone payments of up to $1.4 million associated with MM-111 and MM-302 and pay royalties in the low single digits on net sales of licensed products.

- In addition to the amounts included in the table above payable to Adimab LLC, we are required to make aggregate development and regulatory milestone payments of up to $52.5 million related to therapeutic antibody licensing costs associated with MM-151 and pay mid single digit royalties on net sales of licensed products.

- Under a license agreement with the U.S. Public Health Service, a division of the U.S. Department of Health and Human Services, we are required to make aggregate development and regulatory milestone payments of up to $6.1 million, per therapeutic licensed product, related to ErbB3 receptor patents associated with MM-121 and MM-111, and pay royalties in the low single digits on net sales of licensed products. The term of the agreement extends until the expiration of the licensed patent rights, which is 2016.

- Under an agreement with Selexis SA, we are required to make aggregate milestone payments of up to €1.0 million, per licensed product, related to the manufacturing of all of our clinical programs, with the exception MM-398, and royalties of less than one percent on net sales of licensed products.

Milestone and royalty payments that we may be required to make to Dyax, the U.S. Public Health Service and Selexis SA related to MM-121 are fully reimbursed by Sanofi under the terms of our license and collaboration agreement. Sanofi is then entitled to deduct 50% of any amount reimbursed against future royalty payments that Sanofi may be required to make to us.

Off-balance sheet arrangements

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements, as defined under SEC rules.

Tax loss carryforwards

As of December 31, 2010, we had federal net operating loss carryforwards of $88.9 million and state net operating loss carryforwards of $54.2 million, which will begin to expire in 2011. As of December 31, 2010, we had federal research and development and investment tax credit carryforwards of $7.9 million and state research and development and investment tax credit carryforwards of $3.6 million, which also will begin to expire in 2011. Management has evaluated the positive and negative evidence bearing upon the realizability of our deferred tax assets and determined that it is more likely than not we will not recognize the benefits of federal and state deferred tax assets. As a result, we have established a valuation allowance of $81.4 million as of December 31, 2009 and $103.9 million as December 31, 2010. Our ability to use our net operating loss carryforwards and research and development credit carryforwards to offset future taxable income may be subject to a substantial annual limitation under Section 382 of the Internal Revenue Code due to ownership changes that have occurred previously or that could occur in the future. Ownership changes, as defined in Section 382 of the Internal Revenue Code, limit the amount of net operating loss carryforwards and research and development credit carryforwards we can use each year to offset future taxable income and taxes payable. We have not performed a complete study to determine whether an ownership change has occurred or the limit on the future use of our net operating loss carryforwards or research and development credit carryforwards. Any such limitation would reduce our gross deferred tax asset.

Modification of warrants to purchase common stock held by a related party

In August 2010, we modified warrants held by a related party stockholder to purchase 2,596,000 shares of our common stock to extend the expiration dates by four years and increase the exercise prices from $2.12 and $2.47 to $3.00 per share. We valued the modification using a Black-Scholes option valuation model and accounted for the $1,803,000 of incremental value within the equity section of the accompanying balance sheets as a capital transaction.

Recent accounting pronouncements

In October 2009, the FASB issued Accounting Standard Update No. 2009-13, *Multiple Deliverable Revenue Arrangements,* or ASU 2009-13, which amends existing revenue recognition accounting pronouncements for multiple-deliverable revenue arrangements. ASU 2009-13 provides accounting principles and application guidance on whether multiple deliverables exist, how the arrangement should be separated, and the consideration allocated. ASU 2009-13 eliminates the requirement to establish the fair value of undelivered products and services and instead provides for separate revenue recognition based upon management's estimate of the selling price for an undelivered item in circumstances when there is no other means to determine the fair value of that undelivered item. Multiple-deliverable revenue arrangement guidance previously required that the fair value of the undelivered item be the price of the item either sold in a separate transaction between unrelated third parties or the price charged for each item when the item is sold separately by the vendor. This was difficult to determine when the product was not individually sold because of its unique features. Under the previous guidance, if the fair value of all of the elements in the arrangement was not determinable, then revenue was deferred until all of the items were delivered or fair value was determined. ASU 2009-13 was effective prospectively for revenue arrangements entered into or materially modified in fiscal years beginning on or after June 15, 2010. We adopted this standard on a prospective basis on January 1, 2011 with no impact.

In April 2010, the FASB issued Accounting Standard Update No. 2010-17, *Revenue Recognition—Milestone Method,* or ASU 2010-17. ASU 2010-17 provides guidance in applying the milestone method of revenue recognition to research or development arrangements. Under this guidance, companies may recognize revenue contingent upon the achievement of a milestone in its entirety, in the period in which the milestone is achieved, only if the milestone meets all the criteria within the guidance to be considered substantive. ASU 2010-17 is effective on a prospective basis for research and development milestones achieved in fiscal years beginning on or after June 15, 2010. We adopted this standard on a prospective basis on January 1, 2011 with no impact.

In September 2011, the FASB amended the authoritative guidance regarding the testing for goodwill impairment. Under the amendments, an entity has the option to first assess qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If, after assessing the totality of events or circumstances, an entity determines it is not more likely than not that the fair value reporting of a reporting unit is less than the carrying amount, then performing the two-step impairment test is unnecessary. The changes are effective for annual and interim goodwill impairment tests performed for fiscal years beginning after December 15, 2011, however, early adoption is permitted. We plan to adopt this authoritative guidance on January 1, 2012 and expect there will be no impact.

Quantitative and qualitative disclosures about market risk

We are exposed to market risk related to changes in interest rates. Our current investment policy is to invest our cash in a variety of financial instruments, principally deposits, securities issued by the U.S. government and its agencies and money market instruments. The goals of our investment policy are preservation of capital, fulfillment of liquidity needs and fiduciary

control of cash and investments. We also seek to maximize income from our investments without assuming significant risk.

Our primary exposure to market risk is interest income sensitivity, which is affected by changes in the general level of interest rates, particularly because our investments are in short-term marketable securities. Due to the short-term duration of our investment portfolio and the low risk profile of our investments, an immediate 10.0% change in interest rates would not have a material effect on the fair market value of our portfolio. Accordingly, we would not expect our operating results or cash flows to be affected to any significant degree by the effect of a sudden change in market interest rates on our investment portfolio.

We do not believe that our cash, cash equivalents and available-for-sale investments have significant risk of default or illiquidity. While we believe our cash, cash equivalents and available-for-sale investments do not contain excessive risk, we cannot provide absolute assurance that in the future our investments will not be subject to adverse changes in market value. In addition, we maintain significant amounts of cash and cash equivalents at one or more financial institutions that are in excess of federally insured limits.

Business

Overview

We are a biopharmaceutical company discovering, developing and preparing to commercialize innovative medicines consisting of novel therapeutics paired with companion diagnostics. Our mission is to provide patients, physicians and the healthcare system with the medicines, tools and information to transform the approach to care from one based on the identification and treatment of symptoms to one focused on the diagnosis and treatment of illness through a more precise mechanistic understanding of disease. We seek to accomplish our mission by applying our proprietary systems biology-based approach to biomedical research, which we call Network Biology. Our vision is to apply Network Biology to become a global healthcare enterprise that is founded on leading science and driven to deliver integrated healthcare solutions that improve both the quality of outcomes and the efficiency of care. Our initial focus is in the field of oncology. We have four programs in clinical development, the most advanced of which is expected to enter a pivotal Phase 3 clinical trial by the end of 2011.

Network Biology is an interdisciplinary approach to drug discovery and development. It focuses on understanding how the complex molecular interactions that occur within cell signaling pathways, or networks, regulate cell decisions and how network dysfunction leads to disease. Our approach integrates proprietary, dynamic biological data generated in a high-throughput, or rapid and automated, method in which we test multiple biological or chemical parameters using engineering, analytical and modeling expertise. Our capabilities allow us to build computational models of cell biology as a basis for drug discovery, design and predictive development. We apply Network Biology throughout the research and development process, including for target identification, lead compound design and optimization, diagnostic discovery, *in vitro* and *in vivo* predictive development and the design of clinical trial protocols. We believe that drug discovery and development using Network Biology is more efficient and productive than traditional approaches.

We currently have four targeted therapeutic oncology candidates in clinical development and a fifth that we expect to enter clinical development by early 2012. Additionally, we have multiple product candidates in preclinical development and a discovery effort advancing additional candidate medicines. We have tailored each of our five most advanced product candidates to target specific disease mechanisms that our research suggests are common across many solid tumor types. We believe that these product candidates have the potential to address major unmet medical needs.

Our most advanced product candidates are MM-398, MM-121, MM-111, MM-302 and MM-151.

- MM-398 is a novel, stable nanotherapeutic encapsulation, or enclosed sphere carrying an active drug, of the marketed chemotherapy drug irinotecan. MM-398 recently achieved its primary efficacy endpoints in two Phase 2 clinical trials, one in pancreatic cancer patients and one in gastric cancer patients. We are preparing to initiate a pivotal Phase 3 clinical trial of MM-398 for the treatment of patients with metastatic pancreatic cancer who have previously failed treatment with the chemotherapy drug gemcitabine. In July 2011, the FDA granted MM-398 orphan drug designation for the treatment of pancreatic cancer. We believe that MM-398 has potential uses in multiple other indications, including colorectal cancer, lung cancer and glioma. There are multiple ongoing Phase 1 and Phase 2 clinical trials of MM-398.

- MM-121 is a fully human monoclonal antibody that targets ErbB3, a cell surface receptor, or protein attached to the cell membrane that mediates communication inside and outside the cell, implicated in cancer. A monoclonal antibody is a type of protein normally produced by cells of the immune system that binds to just one epitope, or chemical structure, on a protein or other structure. Our research suggests that ErbB3 is critical to the growth and survival of tumors and that use of ErbB3 as a resistance mechanism by cancer cells is common across patient populations and tumor types. MM-121 is designed to inhibit cancer growth directly, restore sensitivity to drugs to which a tumor has become resistant and delay the development of resistance of a tumor to other agents. In collaboration with Sanofi, we are conducting a clinical program to test MM-121 in combination with both chemotherapies and other targeted agents across a wide spectrum of solid tumor patient populations, including patients with lung, breast and ovarian cancers.

- MM-111 is a bispecific antibody designed to target cancer cells that are characterized by overexpression of the ErbB2 cell receptor, also referred to as HER2. A bispecific antibody is a type of antibody that is able to bind simultaneously to two distinct proteins or epitopes. Our research suggests that a complex including ErbB2 (HER2) and ErbB3 is a powerful promoter of tumor growth and survival when stimulated by signaling molecules called ligands. MM-111 is designed to uniquely address the signaling from this complex of molecules. We believe that MM-111 is potentially applicable across a broad range of solid tumors. We are conducting multiple Phase 1 clinical trials of MM-111 in monotherapy and combination therapy settings.

- MM-302 is a nanotherapeutic encapsulation of doxorubicin with attached antibodies that target the ErbB2 (HER2) receptor. We designed MM-302 to bind to cancer cells that overexpress ErbB2 (HER2) and thereby release doxorubicin at the site of the tumor. Our goal is for MM-302 to retain the safety profile of liposomal doxorubicin, in particular with respect to cardiac safety, but to have better efficacy in ErbB2 (HER2) positive tumors. We are conducting a Phase 1 clinical trial of MM-302 in patients with advanced ErbB2 (HER2) positive breast cancer.

- MM-151 is an oligoclonal therapeutic consisting of a mixture of three fully human monoclonal antibodies designed to bind to non-overlapping epitopes of the epidermal growth factor receptor, or EGFR. EGFR is also known as ErbB1. An oligoclonal therapeutic is a mixture of two or more distinct monoclonal antibodies. EGFR (ErbB1) has long been recognized as an important drug target in several malignancies, including lung, breast, colon, pancreatic and head and neck cancers. We submitted an investigational new drug application, or IND, to the U.S. Food and Drug Administration, or FDA, for MM-151 in July 2011. In August 2011, the FDA responded to our IND and, among other things, is requiring that we submit additional preclinical data from our ongoing toxicology studies before we can initiate a Phase 1 clinical trial. Subject to our providing all of the information that the FDA has requested and a decision by the FDA to allow us to proceed, we expect to be able to initiate a Phase 1 clinical trial of MM-151 by early 2012.

We are developing *in vitro* and *in vivo* companion diagnostics for use with each of our therapeutic oncology product candidates. We use Network Biology in identifying biomarkers, which are biophysical or biochemical markers of cancer, and developing them into *in vitro* companion diagnostic agents for use with our therapeutic products. The *in vivo* companion diagnostics that we are developing take the form of imaging agents that may help identify

patients likely to benefit from our therapeutic products by measuring deposition of our products in the tumor. We believe that companion diagnostics will allow us to improve the efficiency and productivity of our clinical development and enhance the potential efficacy and pharmacoeconomic benefit of our therapeutics.

Our strategy

Our goal is to build a global healthcare enterprise founded on a leading understanding of complex biology through the use of our Network Biology approach. Key elements of our strategy to achieve this goal are:

- *Strengthen and expand our core Network Biology capabilities.* Network Biology is critical to our ability to explore, model and understand complex biology and is the core of our drug discovery and development efforts. We apply Network Biology across all of our development programs. We intend to increase our investment in the technologies, methods and know-how that comprise our Network Biology capabilities. We also plan to expand the scope of the therapeutic areas and biological processes we explore with Network Biology.

- *Foster an integrated, multidisciplinary model of drug discovery, clinical development, manufacturing and commercialization.* We believe that an integrated, multidisciplinary team approach is essential to our productivity, innovation and retention of knowledge across all of our processes from research through manufacturing. To continue to foster this collaborative environment, we plan to invest in recruiting and retaining top talent and professional development for all of our employees and to focus on establishing and maintaining strong relationships with researchers, physicians and patients. We intend to extend our multidisciplinary team approach into our planned commercial organization and to market our product candidates with the same science and information-based passion with which they are developed.

- *Develop a companion diagnostic for each of our therapeutic oncology product candidates.* We are investing in the development of companion diagnostics to support our therapeutic oncology product candidates so as to guide their use and enhance their benefit for patients and the healthcare system. It is our long-term vision to combine these individual tests into a unified cancer diagnostic that can aid in the prescription of multiple therapeutics and treatment combinations based on the profile of a tumor.

- *Establish sales and marketing capabilities.* We generally expect to retain commercial rights in the United States and Europe for our oncology product candidates, other than MM-121. Subject to receiving marketing approvals, we plan to commence commercialization activities by building a focused sales and marketing organization to establish relationships with the community of oncologists who are the key specialists in treating solid tumors.

Network Biology

Merrimack was founded by a team of scientists from The Massachusetts Institute of Technology, and Harvard University seeking to develop a systems biology-based approach to biomedical research. Fundamentally, systems biology is the study of the complex molecular interactions that regulate the cellular decisions that drive the functioning of living organisms. The core of our approach to systems biology is a multidisciplinary and multitechnology capability to build

functional and predictive computational models of biological systems, such as cell signaling networks, that allow us to engineer treatments that are directed at the mechanisms of disease.

Network Biology compared to traditional molecular biology

Traditionally, the search for new drugs has been based on the identification of individual molecules in diseased cells that appear to be abnormal relative to individual molecules in healthy cells. Using traditional biomedical research methods, researchers label as "targets" the molecules that appear to be abnormal, typically either in amount, which is commonly referred to as expression, or make-up, which is commonly referred to as mutation status. These researchers then seek to validate a target by creating cells that either lack the target or overexpress the target to verify that the target contributes to the diseased state of the cell. Following positive validation, companies using traditional biomedical research methods then develop drugs to treat the target and test those various drugs in experimental models of the disease. If effective in animal studies that replicate the disease characteristics, these companies then consider the new drug candidate for human clinical testing. Unfortunately, new drug candidates developed with the traditional approach have a very high rate of clinical failure. We believe that the failure of traditional research methods to account for the complexity of biological systems underlying disease has contributed to this high rate of clinical failure. Additionally, we believe that few complex disease states are caused and perpetuated by only one molecular component.

Our view is that traditional research methods for drug discovery are suboptimal. First, they focus on individual molecules as determinants of cell decisions. We believe that the governance of cells is a function of the interactions of many molecules, which is referred to as systems dynamics. Individual molecules are simply contributors to signaling networks that process many parallel signals. We focus on networks because it is the outcome of the network that determines cell behavior. We believe that the overexpression of many molecules in a diseased cell is merely symptomatic of abnormal cell processes, rather than causal. Second, we believe that the focus on individual molecules and their relationship to disease states does not account for the inherent complexity of signaling. Cellular signaling networks often have redundant signaling routes, any one of which can compensate for the other. In addition, networks are replete with feedback loops, or a signaling relationship in which the output of one communication path returns to regulate or affect the input of its own or other communication paths. This complexity often confounds efforts to ascribe specific cellular behavior to one molecule or one signaling relationship. Although a molecule may be involved in a signaling pathway, the degree of its importance depends on its signaling contribution and the state of other contributors in the system. Lastly, traditional biomedical research has focused on one-dimensional measures of a molecule's impact on signaling, such as the increase or decrease in the expression of a protein at a specific time point. We believe that traditional methods fail to recognize the dynamic nature of biology in which the duration and intensity of signaling is essential. Our view is that the duration and the degree of signaling is a more important contributor to cell signaling networks than the expression of a molecule.

Network Biology methods

The goal of Network Biology is to understand how systems dynamics govern cell behavior. The methodology underpinning Network Biology is an integrated, multidisciplinary technology

platform that incorporates biology, simulation and mathematics to enable the construction of computational models of cell signaling pathways. To execute Network Biology, we have developed an expertise in generating kinetic data, describing molecular changes or interactions over time, to illuminate the dynamic interactions that occur within biological systems. Our data sets differ from traditional data sets in that they focus on quantitative measures of signaling, and not qualitative measures of molecular activity and interaction. Our data also focus on time, and not simply intensity, as a critical variable in understanding the impact of a signal.

We initiate our Network Biology discovery efforts by identifying the biological signaling networks that are engaged in a disease state. For example, in order to identify the signaling networks that are used by cancer cells for growth and survival, we perform experiments that we refer to as Critical Network Identification. We conduct these experiments using our expertise in high-density protein array technology to measure the impact of dozens of factors that are thought to cause or promote cancer across many different tumor types. The experimental output identifies which cell signaling networks are activated in response to various stimuli across different disease models. In one such experiment, we studied 54 types of solid tumor cells from the National Cancer Institute's panel of tumor cell lines. This analysis revealed that, while there are many different types of cancer reflecting diverse genetic backgrounds, these cancers rely on a relatively limited number of cell signaling networks for growth and survival.

Once we identify the critical networks, we initiate a program of mapping, measuring and constructing a detailed biochemical model of each individual signaling network for use in drug discovery. We construct our network models using proprietary data sets. We generate our data sets utilizing high-throughput, multiplexed microarray technology or automated, high-throughput biological assays. These experiments are executed over time-courses on cultured cells. Within each cell, at specific time intervals, we simultaneously measure the signaling and interaction status of a large panel of proteins to generate this kinetic data. We then convert the kinetic parameters drawn from the data sets into mathematical equations that describe the relationship between each molecular entity in the network. The individual equations are then assembled into a network model. For example, our model of the ErbB network contains equations that describe the interaction of nearly 700 molecular entities. Once constructed, we then test the model for accuracy in many different and varied experimental settings. We use the model to make predictions of network behavior within a cell under a varied set of experimental conditions. Following this, we test these predictions in actual laboratory experiments and use the data to refine and validate the model.

We believe that our models differ from other models in the industry because of their level of specificity and detail. Models that we have seen in other drug discovery settings often seek to correlate activity from external cellular stimuli directly to disease state. In contrast, we build models that describe each of the individual molecular interactions starting with external stimuli, but continuing with the hundreds of interactions that occur from the cell surface to the nucleus of the cell. In academic settings, this level of detailed molecular interaction modeling is often referred to as biochemical modeling. We believe our accuracy in predicting cell behavior from our models is driven by the precision and details of our approach.

Our models are constructed and validated using internally generated and proprietary data sets. We do not rely on outside databases. The data generated from our Critical Network Identification experiments is also proprietary and generated in-house.

Following the validation of a comprehensive model of a cell signaling network, we are able to use the model for drug discovery. Contrary to traditional methods, our discovery work takes place *in silico*, or using the model for simulation. One example of our discovery approach is to execute a sensitivity analysis across the entire network to identify drug targets that have the greatest impact on signal transduction in the network. We believe that the best targets are those most involved in signaling, and not necessarily those that are most abnormal, which is more likely a symptom of irregular cell processes.

As one example, we identified MM-121 using our proprietary model of the ErbB signaling network after conducting a sensitivity analysis on its signaling process. Although the ErbB pathway has been extensively targeted by cancer therapeutics, we believe that understanding the relative importance of the different components of the ErbB network is central to identifying an attractive drug target and a therapeutic directed at this target. In this case, we built a computational model of the ErbB signaling network that describes the most potent ErbB receptor ligands, as well as known and novel ErbB inhibitors. We populated the model with proprietary dynamic data that we generated from our Critical Network Identification experiments. The model describes in mathematical equations the dynamic interactions of approximately 700 molecular entities in the network. The model identified ErbB3 as the key node in response to both ErbB3- and EGFR (ErbB1)-binding ligands. We then used this insight to develop MM-121.

Network Biology and patient care

The goal of Network Biology is to deliver better treatments for complex diseases. We use Network Biology to obtain an understanding of the dynamics that govern cell signaling networks and how dysfunction in these networks leads to and perpetuates disease. We believe that Network Biology may provide broader insight into disease and the potential therapeutic alternatives for physicians and patients. In particular, we believe that Network Biology may provide three key benefits:

- stratification of disease by the underlying mechanisms promoting tumor growth and survival;
- novel medicines designed to take into account the complexity of cell signaling networks within a tumor cell; and
- integrated medicines that provide a therapeutic and diagnostic to help guide treatment.

Stratification of disease by the underlying mechanisms promoting tumor growth and survival

To date, much of the study of cancer has focused on tumors characterized by a single, overexpressed receptor or a mutated gene, also known as oncogene-driven cancers. While these types of cancer are relatively easy to discern, we believe that they are actually somewhat rare across solid tumors.

Our research suggests that identifying the cell signaling networks that are used by a patient's tumor will enable more precise mechanistic diagnosis. Based on our research on the mechanisms underlying cancer, we believe that the abnormal growth of tumor cells is due to the development of addictions to one or more signaling networks in response to stressors in the tumor environment. Once a cell has been stressed, its systems begin to compensate, in particular by activating additional growth and survival signaling.

As an example, the results of one of our Critical Network Identification experiments revealed that, while there are many different types of cancer reflecting diverse genetic backgrounds, these cancers rely on a relatively limited number of cell signaling networks for growth and survival. We believe that developing drugs that effectively inhibit these signaling mechanisms, independent of the type or nature of the stressor, may provide an improved basis of treatment.

Novel medicines designed to take into account the complexity of cell signaling networks within a tumor cell

All cells function by means of signaling networks. Critical signals related to functions, such as growth and survival, are regulated via complex networks of extracellular and intracellular molecular entities that are organized into individual biological pathways. These pathways compete and cooperate with one another to drive particular cellular decisions or outcomes. We use the detailed understanding of the most active signaling networks within a tumor cell that we obtain from Network Biology to guide the design of targeted therapeutics that we believe will intervene and affect the activity of these networks.

As discussed above, a Critical Network Identification screen confirmed that one of these networks, the ErbB pathway, is a significant survival network utilized by tumor cells. This pathway is made up of four receptors: EGFR (ErbB1), ErbB2 (HER2), ErbB3 and ErbB4. Several currently approved therapies are directed at targets in the ErbB pathway. In particular, EGFR (ErbB1) and ErbB2 (HER2) have been the focus of modern pharmaceutical efforts due to their overexpression in many tumor cells relative to their expression in normal tissue. However, using Network Biology to understand the complex signaling dynamics that govern this pathway, our research suggested that ErbB3 is the most sensitive target. This was an unconventional conclusion because, in contrast to EGFR (ErbB1) and ErbB2 (HER2), ErbB3 does not have an active kinase domain, a common drug target. A kinase domain is part of an enzyme-like protein often involved in the activation or deactivation of other proteins. In addition, ErbB3 is not expressed in tumors at levels nearly as high as those seen with EGFR (ErbB1) and ErbB2 (HER2).

Thus, despite being aware of the existence of ErbB3, scientists largely ignored ErbB3 as a drug target prior to our research. In our research, we found that within the ErbB pathway, blocking ErbB3 had the largest impact on inhibiting the survival signal that perpetuates the growth of tumor cells addicted to this network. Our analysis assessed signal transmission and communication, which we believe is a more accurate measure of disease mechanism than simply examining the characteristics of different proteins, such as expression level or mutation status, in isolation.

Integrated medicines that provide a therapeutic and diagnostic to help guide treatment

Using Network Biology, we are incorporating the identification of biomarkers and the development of companion diagnostics into the drug development process. We believe that a companion diagnostic for a therapeutic agent should provide a precise molecular measurement of the nature of the tumor, rather than simply identifying the qualitative overexpression of a protein. We are also of the view that cancer continues to alter its means of growth and survival over time, often in response to the additional stress of drug treatments. As a result, we believe that frequent assessment of patients' cancers during treatment are helpful to gain insight into which resistance mechanism a cancer defers to once treatment has altered the tumor's mechanism of growth and survival.

Ultimately, we intend all of our oncology candidates to be integrated medicines consisting of:

- a therapeutic designed to work in tumors with a specific molecular profile;
- diagnostics that measure the biochemical and biophysical properties that characterize the molecular profiles of tumors; and
- analytical algorithms to translate quantitative diagnostic data into treatment information.

We are currently developing predictive tests for companion diagnostics to identify patient populations who would preferentially respond to our therapeutic product candidates. In our preclinical work, we have used predictive development, which involves modeling and simulation, in an effort to understand and eventually predict how a tumor cell will respond to treatment. For example, in designing our ErbB3 inhibitor, MM-121, we utilized predictive development to understand how blocking signaling through ErbB3 would impact cell growth in several tumor cell lines. We quantitatively measured the expression level of multiple biomarkers to predict the activity of MM-121 in specific xenograft models, which are human tumors that have been implanted in mice. Based on our simulations and biomarker analysis, we were able to successfully and accurately predict response to MM-121 using 20 different xenograft tumor models. We are now actively translating this predictive test into a companion diagnostic that can be paired with MM-121 for human treatment.

Our current diagnostic development efforts are focused on developing assays and algorithms that support a physician's determination of whether an individual therapeutic is appropriate for a given patient population. We intend to develop and commercialize future diagnostics that combine our research understanding across multiple cell signaling networks and in multiple tumors with varying biophysical characteristics to support physician treatment decisions for all classes of cancer therapeutics.

In another example of our application of the Network Biology systems modeling approach, we built a model of the biophysical characteristics of tumors to explore the variables most important to drug activity. The model examined the complex relationship between the pharmacokinetics of a drug and physical characteristics of a tumor, such as the nature of the vascularization, or blood vessel development, supporting a tumor's survival. The analysis demonstrated that the variability of the physical characteristics of the tumor had tremendous impact on the activity of the drug in treating the tumor. The analysis supports the insight of using our nanotherapeutics as a means to localize the activity of a drug by utilizing differences in vascularization between normal tissues and the tumor. Additionally, we attach antibodies to the outside of our nanotherapeutics to promote active transport of the nanotherapeutics into the cell. The model also led directly to our efforts to use our nanoliposome technology to diagnose the biophysical characteristics of a tumor as a means of guiding the choice of a therapeutic and the appropriate dose.

We believe that integrated medicines may enable physicians to deliver the right drug to the right set of patients at the right time. If we are successful, we may be able to:

- improve patient outcomes by providing improved therapeutics along with the diagnostic information to guide physician treatment decisions;
- reduce the overall costs of treating and caring for cancer patients; and

- provide a basis for seeking favorable reimbursement of approved drugs from payors because of the benefits to patients.

Network Biology's potential impact on the drug development process

In addition to improving patient care, we believe that Network Biology can increase the productivity of biomedical research, increase the probability of approval for new drugs and produce more precisely targeted therapeutics. We believe that our therapeutic oncology product candidates will have a greater probability of success than product candidates based on conventional drug development because Network Biology provides us with:

- a multidisciplinary, integrated approach to understanding complex biology;
- simulation and modeling capabilities that aid in the efficiency and productivity of development; and
- the capability to design and build a broad range of therapeutic product candidates without being limited to a particular drug design technology or target class.

A multidisciplinary, integrated approach to understanding complex biology

Network Biology incorporates biology, modeling, simulation and mathematics, which we use to build computational models of cell signaling pathways. This requires a focus on new types of data to understand the dynamic interactions that occur within biological systems. This biological data must be quantitative, kinetic and multiplexed to capture the breadth and depth of the parallel and often redundant signaling processes that occur within cells. We also use this approach to construct computational models that explain biophysical distribution of drugs, pharmacokinetics, which is the process by which a drug is absorbed, distributed and metabolized by the body, and pharmacodynamics, which is the biochemical and physiological effect of the drug on the body. Using our robust quantitative understanding of the complexity of cell signaling, we design drugs and drug combinations that we believe will effectively inhibit tumor growth and survival.

Simulation and modeling capabilities that aid in the efficiency and productivity of development

We believe that Network Biology improves our decision making throughout the research and development process by providing our scientists with tools to simulate hypotheses in computer models and then test these hypotheses in preclinical and clinical settings. This process provides a comprehensive view of the biological system that we are addressing and facilitates knowledge retention throughout the project. For example, as is the industry standard, preclinical development of our therapeutic product candidates includes testing our drugs in xenograft tumor models. However, our ability to model cell signaling pathways allows us to choose which xenograft tumor models we believe will be well suited for a particular program, as we did for both MM-121 and MM-111.

Another example of our use of simulation capabilities to identify novel biology and design a therapy is our product candidate MM-151. MM-151 is an oligoclonal antibody mixture directed at inhibiting EGFR (ErbB1) signaling. EGFR (ErbB1) is one of four cell surface receptors in the ErbB network. EGFR (ErbB1) is overexpressed in several types of solid tumors, including lung and colorectal cancer. Currently, there are several approved products that target EGFR (ErbB1).

Unfortunately, these therapies are limited in their efficacy because they have relatively low response rates in patients who overexpress EGFR (ErbB1). Further, even when they are effective, tumors often develop resistance. Our model of the ErbB network revealed that current drugs failed to account for a high degree of signal amplification downstream of EGFR (ErbB1). Only tumors with low amplification, even when EGFR (ErbB1) was overexpressed, were impacted by the current therapies. Moreover, we noted that the current therapies were only effective at blocking signaling when initiated by low affinity ligands that bind to EGFR (ErbB1). Noting the importance of understanding amplification and the role of high affinity ligands as a potential escape route for tumors, we sought to develop a comprehensive EGFR (ErbB1) inhibitor. Using the model, we identified key specifications of an optimal inhibitor and set about engineering MM-151.

We believe that our simulation and modeling capabilities enable us to:

- assess our product candidates within a broad range of biological conditions so that we can make informed judgments as to which indications to pursue;
- based on these judgments, select appropriate preclinical tests for the cost-effective and expeditious development of our product candidates; and
- initiate clinical development programs that are based on hypotheses validated in the preclinical setting.

The capability to design and build a broad range of therapeutic product candidates without being limited to a particular drug design technology or target class

We apply the insights about cell signaling dynamics that we gain from our Network Biology approach across a range of therapeutic technologies to design product candidates that we believe can be efficiently delivered to the selected molecular target. We believe that the best drugs for the oncology indications that are the initial focus of our business are targeted therapies that, in contrast with conventional chemotherapies, are highly selective for the molecular mechanisms that we are seeking to affect and, therefore, offer the potential for significant efficacy and safety benefits.

The breadth of our therapeutic design capabilities is shown by the five different designs of our five most advanced product candidates. These product candidates consist of a nanotherapeutic, a monoclonal antibody, a bispecific antibody designed to simultaneously bind to two different target cell surface receptors, an antibody-targeted nanotherapeutic and an oligoclonal antibody consisting of a mixture of three different antibodies. Each of these product candidates is designed with specific characteristics that we believe are well suited for the type of disease mechanism that we are targeting.

Application of Network Biology beyond cancer

We believe that our Network Biology approach is applicable to a broad range of therapeutic areas beyond cancer, including bone and joint conditions, infectious disease, inflammation, central nervous system disease and other areas of medicine with high unmet needs. While we may pursue some of these disease areas directly ourselves, because of the potential of very broad applicability of our Network Biology approach, our plan is to pursue many or all of these other areas through collaborations, licenses and other arrangements with third parties. As an

example, in 2010, we established Silver Creek Pharmaceuticals, Inc., or Silver Creek, to apply our Network Biology approach to the research, development and commercialization of pharmaceuticals in the regenerative medicine field. Silver Creek is now a majority-owned subsidiary of ours with the minority equity held by third party investors.

Our most advanced product candidates

The following table summarizes key information about our five most advanced therapeutic product candidates. All of these product candidates are designed for intravenous administration.

Program	Indication	Stage of development	Commercial rights
MM-398 (nanotherapeutic encapsulation of irinotecan)	Monotherapy in pancreatic	Phase 3 planned Phase 2 ongoing	Merrimack worldwide, except Taiwan
	MM-398 plus 5-FU and leucovorin in colorectal	Phase 2 ongoing	
	Monotherapy in colorectal	Phase 1 ongoing	
	Monotherapy in gastric	Phase 2 complete	
	Monotherapy in glioma	Phase 1 ongoing	
MM-121 (ErbB3 targeted monoclonal antibody)	MM-121 plus exemestane in hormone-sensitive breast	Phase 2 ongoing	Sanofi worldwide; Merrimack holds option to co-promote in United States
	MM-121 plus erlotinib in non-small cell lung	Phase 2 planned Phase 1 ongoing	
	Neoadjuvent MM-121 plus paclitaxel in ErbB2 (HER2) negative breast	Phase 2 ongoing	
	MM-121 plus paclitaxel in platinum resistant/refractory advanced ovarian	Phase 2 planned	
	MM-121 plus paclitaxel in ErbB2 (HER2) negative breast, ovarian and other gynecological	Phase 1 ongoing	
	Solid tumors, monotherapy	Phase 1 ongoing	
	Solid tumors, combination therapy	Various Phase 2 and Phase 1 trials planned	
MM-111 (ErbB3 and ErbB2 (HER2) targeted bispecific antibody)	MM-111 plus lapatinib and letrozole in ErB2 (HER2) positive breast	Phase 2 planned	Merrimack worldwide
	Monotherapy in ErbB2 (HER2) positive indications	Phase 1 ongoing	
	MM-111 plus trastuzumab in ErbB2 (HER2) positive breast	Phase 1 ongoing	
	Multi-arm combination therapy safety trial	Phase 1 ongoing	

Program	Indication	Stage of development	Commercial rights
MM-302 (ErbB2 (HER2) targeted nanotherapeutic encapsulation of doxorubicin)	Monotherapy in ErbB2 (HER2) positive breast	Phase 1 ongoing	Merrimack worldwide
MM-151 (EGFR (ErbB1) targeted oligoclonal antibody)	Monotherapy safety trial	IND filed and Phase 1 planned	Merrimack worldwide

We are developing companion diagnostics for each of the above therapeutic candidates. We plan to file an Investigational Device Exemption, or IDE, with the FDA prior to initiating clinical trials of each of our *in vitro* companion diagnostics to validate their prospective use.

Cancer

The initial focus of our business is to apply our Network Biology approach to the development of therapeutics and companion diagnostics for the treatment of solid tumor cancers. Cancer is the second most common cause of death in the United States, exceeded only by heart disease. In the United States, cancer accounts for almost one of every four deaths. The National Institutes of Health estimates that the direct medical cost of cancer of all types, including solid tumors, in the United States in 2010 was more than $100 billion.

Solid tumor market

The following table sets forth information about the solid tumor cancers for which we are developing therapeutic product candidates and companion diagnostics. The U.S. annual incidence and five year relative survival rates are based on information from the American Cancer Society in 2011. Relative survival compares survival among cancer patients to that of people not diagnosed with cancer who are of the same age, race and sex. It represents the percentage of cancer patients who are alive after a designated time period relative to persons without cancer.

Tumor type	U.S. annual incidence	Five year relative survival rate	Selected marketed therapies
Pancreatic	44,030	6%	gemcitabine (Gemzar); erlotinib (Tarceva)
Colorectal	141,210	65%	oxaliplatin (Eloxatin); irinotecan (Camptosar); bevacizumab (Avastin); cetuximab (Erbitux); panitumumab (Vectibix)
Gastric	21,520	26%	capecitabine (Xeloda); trastuzumab (Herceptin)
Brain and other nervous system cancers	22,340	36%	temozolomide (Temodar); carmustine (BiCNU); polifeprosan 20 with carmustine implant (Gliadel); bevacizumab (Avastin)
Breast	230,480	89%	trastuzumab (Herceptin); docetaxel (Taxotere); paclitaxel (Taxol, Abraxane); capecitabine (Xeloda); anastrazole (Arimidex); letrozole (Femara); exemestane (Aromasin)
Lung and bronchus	221,130	16%	docetaxel (Taxotere); gemcitabine (Gemzar); pemetrexed (Alimta); gefitinib (Iressa); erlotinib (Tarceva); bevacizumab (Avastin); paclitaxel (Taxol)
Ovarian	21,990	46%	liposomal doxorubicin (Doxil)

In addition to the marketed therapies listed above, there are many generic chemotherapies and regimens commonly used to treat these cancers. Although the various marketed therapies and regimens provide benefits to some patients when given as monotherapies or in combination with other therapies, each has efficacy and adverse event limitations and none of them are successful in treating all patients. The level of morbidity and mortality from these cancers remains high.

Outcome measures

There are a number of standard efficacy endpoints that clinicians use to measure outcomes for clinical trials for cancer therapies. The following are explanations of the meanings of the various efficacy endpoints that we are using in our ongoing and planned clinical trials for our product candidates, as described in more detail below:

- Overall survival (OS): survival from the initiation of treatment.
- Complete response (CR): disappearance of all target lesions and non-target lesions.

- Pathologic complete response (pCR): complete response as determined by a pathologist and defined by the absence of any cancer cells in the tumor sample.
- Partial response (PR): overall tumor regression based on a decrease of at least 30% in the sum of measured tumor diameters with no new tumors.
- Progression free survival (PFS): time to tumor progression from the initiation of treatment based on an increase of at least 20% in the sum of measured tumor diameters with no new tumors.
- Progressive disease (PD): growth of at least 20% in the size of the tumor or spread of the tumor since beginning of treatment.
- Stable disease (SD): neither sufficient decrease in tumor size to qualify for partial response (PR) nor sufficient increase in tumor size to qualify for progressive disease (PD).
- Objective response rate (ORR): complete response (CR) rate plus partial response (PR) rate.
- Disease control rate (DCR): complete response (CR) rate plus partial response (PR) rate plus stable disease (SD) rate for a specified period of time, also known as clinical benefit rate.
- Duration of response: amount of time a patient shows an objective tumor response.

Adverse event grading

Clinicians typically classify adverse events observed in clinical trials of cancer therapies based on a standard grading system as follows:

- Grade 1—mild.
- Grade 2—moderate.
- Grade 3—severe.
- Grade 4—potentially life threatening or disabling.
- Grade 5—death.

MM-398

Overview

MM-398 is a novel, stable nanotherapeutic encapsulation of the marketed chemotherapy drug irinotecan. MM-398 recently achieved its primary efficacy endpoints in two Phase 2 clinical trials, one in pancreatic cancer patients and one in gastric cancer patients. We are preparing to initiate a pivotal Phase 3 clinical trial of MM-398 for the treatment of patients with metastatic pancreatic cancer who have previously failed treatment with the chemotherapy drug gemcitabine (Gemzar). We plan to initiate this trial by the end of 2011. In July 2011, the FDA granted MM-398 orphan drug designation for the treatment of pancreatic cancer. We are simultaneously working to develop an imaging agent that can be used as a companion diagnostic to identify the patient population likely to respond to treatment with MM-398. We plan to develop MM-398 for a range of other solid tumor indications, including colorectal cancer, lung cancer and glioma.

Gemcitabine is the current standard of care in the first-line treatment of metastatic pancreatic cancer. Multiple studies of gemcitabine published in peer reviewed medical journals in the first-line setting for this indication have shown median overall survival (OS) in the range of five to seven months, with median progression free survival (PFS) of two to four months and 12-month survival of approximately 20%.

There are currently no approved treatments for gemcitabine refractory metastatic pancreatic cancer, nor is there a consensus on standard of care treatment for such patients. A limited amount of data suggest that, absent additional therapies, metastatic pancreatic cancer patients who are refractory to gemcitabine on average can expect to live approximately two months. These patients currently receive chemotherapy combinations, usually containing one or more of gemcitabine, capecitabine (Xeloda), oxaliplatin (Eloxatin), fluorouracil, or 5-FU, or leucovorin.

There are a number of agents currently being tested in combination regimens as both first-line and second-line therapy for metastatic pancreatic cancer. In a recent Phase 3 clinical trial in first-line metastatic pancreatic cancer comparing gemcitabine with the regimen known as FOLFIRINOX, which is a combination of oxaliplatin, irinotecan, 5-FU and leucovorin, published in *The New England Journal of Medicine*, patients dosed with FOLFIRINOX showed a statistically significant increase in objective response rate (ORR) and overall survival (OS) compared to patients dosed with gemcitabine. However, the results in this trial suggested FOLFIRINOX is most appropriate for patients with good performance status, or general well-being, because of adverse events observed in the FOLFIRINOX group. Patients dosed with FOLFIRINOX showed statistically significant increases in grade 3 and grade 4 adverse events, including neutropenia, febrile neutropenia, thrombocytopenia, diarrhea and sensory neuropathy, compared to patients dosed with gemcitabine.

Design and potential advantages of MM-398

MM-398 is designed to stably retain and protect irinotecan while in circulation in the body and enable efficient accumulation of the drug in solid tumors. Our nanotherapeutics consist of lipidic particles, which are enclosed spheres of lipid membranes, and are designed to encapsulate active drug payloads. The encapsulated active agent of MM-398, irinotecan, is a well known and widely used chemotherapy. Irinotecan is a pro-drug of SN-38. SN-38 potently arrests cell growth by inhibiting topoisomerase 1, an enzyme involved in cell replication. Typically, free irinotecan is metabolized in the liver into SN-38, and from there SN-38 circulates throughout the body. Dosing with irinotecan, as with other chemotherapies, is limited by severe adverse effects that, in turn, limit efficacy. In addition, as with other chemotherapies, the efficacy of irinotecan is limited by tumor resistance mechanisms.

We believe that the nanotherapeutic encapsulation of irinotecan yields a number of favorable attributes that will lead to increased efficacy and fewer adverse events in comparison with free irinotecan.

- We believe that the encapsulation technology prevents the premature metabolism of the active drug and thereby reduces systemic exposure and increases the amount of active drug available to be delivered at the tumor site.

- The specific size and stability characteristics of MM-398 are designed to enable the preferential deposition of the drug within tumors relative to normal tissue. Specifically, we believe that, as a nanotherapeutic, MM-398 is able to utilize the enhanced permeability and retention, or EPR, effect to selectively enter, and subsequently be trapped in, tumors with leaky vasculature.

- MM-398 is designed for the irinotecan inside the molecule to be converted into SN-38 locally by tumor-resident macrophages, rather than being converted in the liver, as occurs with free irinotecan. We believe that MM-398 utilizes tumor macrophages to both break down the

nanotherapeutic and convert the irinotecan into SN-38 in the local tumor environment, thereby preventing tissues surrounding the tumor from blocking the access of SN-38 to the tumor, as occurs case with traditional chemotherapies. Overall, the design of MM-398 is intended to increase the local concentration of active drug so as to improve its anti-tumor effects, especially for hard to treat tumors.

Clinical development of MM-398

We are pursuing two approaches in the ongoing clinical development of MM-398:

- *Replace irinotecan.* The FDA approved irinotecan as Camptosar in 1994 for use in colorectal cancer. Before losing patent coverage, worldwide sales of Camptosar exceeded $1.0 billion annually. In clinical practice, irinotecan is currently used as a monotherapy or combination therapy in multiple cancer indications, including pancreatic, colorectal, lung, ovarian, stomach, breast, leukemia, lymphoma and cervical cancers. One of our clinical development strategies is to replace the use of irinotecan with MM-398 by demonstrating that MM-398 has favorable efficacy and safety characteristics compared to irinotecan.

- *Expand into new indications.* Chemotherapies are widely used in the treatment of cancer in the neoadjuvant setting, in which the goal of treatment is to reduce the size of a tumor so that it can be completely removed by surgery or other means, through late stage cancer treatment. The use of chemotherapies is limited by severe adverse effects that, in turn, limit their efficacy. Our second clinical development strategy is to expand the use of MM-398 into indications for which irinotecan is currently not being used by demonstrating that MM-398 has favorable efficacy and safety characteristics compared to the current standard of care.

Prior to May 2011, our collaborator, PharmaEngine, Inc. or PharmaEngine, led the clinical development of MM-398 under the designation PEP02. In May 2011, we entered into an agreement with PharmaEngine through which we now hold the development and commercialization rights to MM-398 worldwide, other than in Taiwan. As a result, we expect that we or third party investigator sponsors will conduct all future clinical trials of MM-398, including the planned Phase 3 clinical trial of MM-398 for the treatment of metastatic pancreatic cancer.

Pancreatic cancer

Planned Phase 3 clinical trial

We are planning a randomized, open label, controlled, pivotal Phase 3 clinical trial of MM-398 in patients with metastatic pancreatic cancer who have previously failed treatment with gemcitabine. The trial is being designed to compare the efficacy of MM-398 against the combination of 5-FU and leucovorin, which is one of the drug combinations that clinicians use to treat patients with metastatic pancreatic cancer who have failed treatment with gemcitabine. We expect this trial to enroll approximately 270 patients at approximately 90 sites in North America, South America, Europe, Asia and Africa. We expect that the primary efficacy endpoint of this trial will be a statistically significant difference in overall survival (OS) between MM-398 and the combination of 5-FU and leucovorin and that secondary endpoints will include objective response rate (ORR) and progression free survival (PFS). We plan to initiate this trial by the end of 2011.

Phase 2 clinical trial

MM-398 is currently being evaluated in an open label, single arm Phase 2 clinical trial in 40 patients with metastatic pancreatic cancer who had previously failed treatment with gemcitabine. Patients receive 120 mg/m^2 of MM-398 once every three weeks. This trial is being conducted at three sites, two in Taiwan and a third at the University of California, San Francisco, and has completed enrollment. The trial is being conducted by PharmaEngine. As of May 31, 2011, a total of seven patients in this trial were still alive and two of these patients were still undergoing treatment with MM-398.

The primary efficacy endpoint of this trial is the three month survival rate. The hypothesis of the clinical trial was that absent further therapies, 40% of these patients would survive three months. Success in the MM-398 Phase 2 clinical trial was defined as achieving a three month survival rate of 65%. The trial was successful as 75% of patients survived three months or longer. The secondary efficacy endpoints in this trial were objective response rate (ORR), progression free survival (PFS) and overall survival (OS). The objective response rate (ORR) was 7.5%, with three patients achieving a partial response (PR). The median progression free survival (PFS) was 9.6 weeks, and median overall survival (OS) was 22.4 weeks.

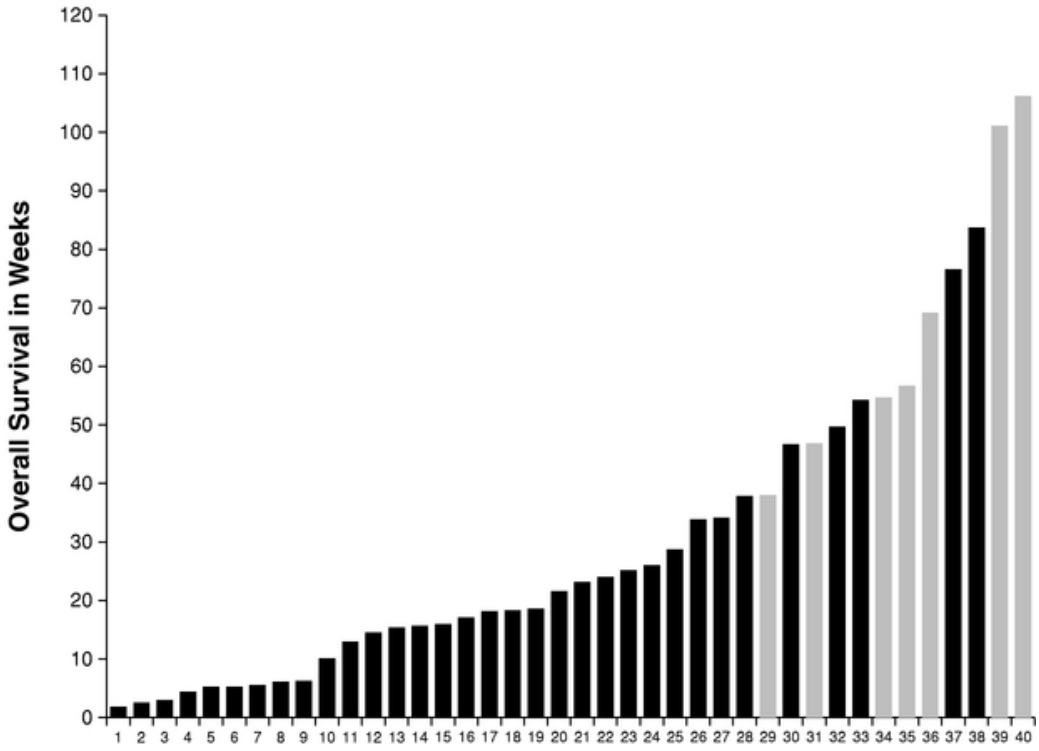
The trial had the following additional key highlights as of May 31, 2011:

- As shown in the waterfall plot below, 16 patients survived longer than six months and eight of those patients, or 20% overall, survived for greater than one year. In addition, two patients remained alive who had not yet reached the one year time point. Since May 31, 2011, both of these patients reached the one year time point, for a 25% one year survival rate. Gemcitabine was approved as a first-line treatment for pancreatic cancer based on a one year survival rate of 18%.

- Initially, one of the eight patients who survived one year had a tumor that was not able to be surgically removed. However, while receiving treatment with MM-398, the tumor shrank sufficiently that the patient could undergo surgery, and the tumor was surgically removed. As of May 31, 2011, this patient was still alive.

- Three patients achieved a partial response (PR) and 16 patients had stable disease (SD) at six weeks, resulting in a disease control rate (DCR) at six weeks of 47.5%.

The chart below shows the overall survival (OS) of each patient in this trial as of May 31, 2011. Each bar represents a different patient, and the height of the bar represents how long that patient survived. The black bars represent patients who have died, while the gray bars represent those who were still alive as of May 31, 2011.



The following table summarizes the grade 3 and grade 4 adverse events observed in this trial.

Adverse event	Patients (n = 40)
Neutropenia	12 (30.0%)
Leucopenia	9 (22.5%)
Anemia	6 (15.0%)
Diarrhea	3 (7.5%)
Fatigue	3 (7.5%)
Nausea	2 (5.0%)
Vomiting	2 (5.0%)
Thrombocytopenia	2 (5.0%)

Colorectal cancer

Phase 2 clinical trial

MM-398 is currently being evaluated in a randomized, open label Phase 2 clinical trial to compare the efficacy of FUPEP, which is a regimen of 5-FU, leucovorin and MM-398, to FOLFIRI, which is a regimen of 5-FU, leucovorin and irinotecan. The trial protocol calls for enrollment of

88 patients with second-line metastatic colorectal cancer. We are currently recruiting patients at approximately four sites in France. As of September 30, 2011, the trial had enrolled nine patients. The primary efficacy endpoint of this trial is objective response rate (ORR). Secondary endpoints include progression free survival (PFS) and overall survival (OS). GERCOR, a cooperative research group of physicians based in France, is conducting this trial.

Phase 1 clinical trial

MM-398 is currently being evaluated in an open label, dose escalation Phase 1 clinical trial of MM-398 in patients with colorectal cancer who have previously failed treatment with the chemotherapy drug oxaliplatin. The trial has enrolled 18 patients, and recruitment is complete. The purpose of this trial is to assess safety and determine the maximum tolerated dose. The National Health Research Institute of Taiwan is conducting this trial.

Gastric cancer

Phase 2 clinical trial

MM-398 was recently evaluated in a randomized, blinded Phase 2 clinical trial comparing the efficacy of MM-398 to each of irinotecan and docetaxel (Taxotere) in 132 patients with metastatic gastric or gastroesophageal junction adenocarcinoma who had failed one previous therapy. The patients were randomized into three groups of 44 patients each. Patients were dosed at 22 sites in six countries in Europe and Asia. Patients were randomized to receive 120 mg/m^2 of MM-398 every three weeks, 300 mg/m^2 of irinotecan every three weeks or 75 mg/m^2 of docetaxel every three weeks.

The primary efficacy endpoint of this trial was objective response rate (ORR). Success was prospectively defined as five or more patients in an arm achieving a complete or partial response. MM-398 (six patients) and docetaxel (seven patients) met the primary endpoint, but free irinotecan did not. The secondary efficacy endpoints were disease control rate (DCR), progression free survival (PFS) and overall survival (OS). The following table summarizes the efficacy data for this trial.

Response	MM-398 (n=44)	Irinotecan (n=44)	Docetaxel (n=44)
ORR	6 (13.6%)	3 (6.8%)	7 (15.9%)
DCR at six weeks	27 (61.4%)	27 (61.4%)	24 (54.6%)
Median PFS (days)	81	79.5	82
Median OS (days)	218	235	219

The following tables summarize the grade 3 and grade 4 adverse events observed in this trial.

Adverse event	MM-398 (n=44)	Irinotecan (n=44)	Docetaxel (n=44)
Hematological			
Neutropenia	5 (11.4%)	7 (15.9%)	7 (15.9%)
Febrile Neutropenia	3 (6.8%)	5 (11.3%)	2 (4.6%)
Anemia	2 (4.5%)	2 (4.5%)	3 (6.8%)
Thrombocytopenia	1 (2.3%)	1 (2.3%)	0 (0.0%)
Non-hematological			
Diarrhea	12 (27.3%)	8 (18.2%)	1 (2.3%)
Nausea	5 (11.4%)	2 (4.6%)	0 (0.0%)
Vomiting	2 (4.6%)	6 (13.6%)	3 (6.8%)
Anorexia	3 (6.8%)	3 (6.8%)	0 (0.0%)
Fatigue	2 (4.6%)	1 (2.3%)	1 (2.3%)

In addition to the data shown above, we performed a subgroup analysis on the MM-398 group based on the two different dose levels that patients received. 39 of the 44 patients who received MM-398 were treated at 120 mg/m^2. The remaining five patients were treated at 150 mg/m^2. As summarized in the following table, patients at the higher dose showed better outcomes with respect to both the primary and secondary endpoints.

Response	Dose 120 mg/m^2 (n=39)	Dose 150 mg/m^2 (n=5)	Total (n=44)
ORR	3 (7.7%)	3 (60.0%)	6 (13.6%)
DCR	22 (56.4%)	5 (100.0%)	27 (61.4%)
Median PFS (days)	77	181	81
Median OS (days)	181	235	218

The following table summarizes the grade 3 and grade 4 adverse events observed in these subgroups.

Adverse event	Dose 120 mg/m^2 (n=39)	Dose 150 mg/m^2 (n=5)	Total (n=44)
Hematological			
Neutropenia	5 (12.8%)	0 (0.0%)	5 (11.4%)
Febrile Neutropenia	3 (7.7%)	0 (0.0%)	3 (6.8%)
Anemia	0 (0.0%)	2 (40.0%)	2 (4.5%)
Thrombocytopenia	0 (0/0%)	1 (20.0%)	1 (2.3%)
Non-hematological			
Diarrhea	11 (28.2%)	1 (20.0%)	12 (27.3%)
Nausea	5 (12.8%)	0 (0.0%)	5 (11.4%)
Vomiting	2 (5.1%)	0 (0.0%)	2 (4.6%)
Anorexia	3 (7.7%)	0 (0.0%)	3 (6.8%)
Fatigue	2 (5.1%)	0 (0.0%)	2 (4.6%)

Initial Phase 1 clinical trials

Several additional Phase 1 clinical trials of MM-398 have been conducted or are ongoing to evaluate safety and determine dosing for Phase 2 clinical trials of MM-398. Key findings from these trials include the following:

- In a multi-center, open label dose escalation trial of MM-398 as a monotherapy at 60mg/m^2, 120mg/m^2 and 180 mg/m^2 every three weeks in 11 patients with advanced solid tumors, MM-398 exhibited a sustained release profile and longer circulation time in the blood than free irinotecan, based on a comparison of pharmacokinetic data from this trial and the product label for irinotecan. In addition, systemic exposure to irinotecan released by MM-398 was negligible across the range of doses tested, indicating that most MM-398 was present as the encapsulated form in the plasma and that leakage of irinotecan was minimal during circulation.

- In a multi-center, open label dose escalation trial of MM-398 at 60mg/m^2, 80mg/m^2, 100mg/m^2 and 120 mg/m^2 every three weeks in combination with 5-FU and leucovorin in 16 advanced solid tumor patients, MM-398 exhibited a longer circulation time in the blood than free irinotecan, based on a comparison of pharmacokinetic data from this trial and the product label for irinotecan.

- In an ongoing investigator sponsored, open label, dose escalation Phase 1 clinical trial of MM-398 in patients with glioma being conducted at the University of California, San Francisco, MM-398 has been well tolerated in doses of up to 180 mg/m^2 every three weeks by four patients within a subgroup defined by the presence of a specific genetic marker of irinotecan metabolism.

Companion diagnostic development

We believe that deposition of MM-398 in the tumor is important to efficacy. We are developing an *in vivo* liposome-based imaging agent to measure deposition in the tumor in an effort to exclude those patients whose tumors are unlikely to respond to MM-398 treatment. We are currently evaluating in preclinical testing nanotherapeutic formulations of various agents imaged by PET scan and other modalities to assess the potential for measuring significant deposition. We are also investigating functional *in vitro* biomarkers that we believe may be predictive of efficacy in poorly vascularized tumors, such as pancreatic cancer.

MM-121

Overview

MM-121 is a fully human monoclonal antibody that targets the ErbB3 cell surface receptor. We are currently evaluating MM-121 in multiple Phase 1 and Phase 2 clinical trials in combination with chemotherapies and other targeted therapies. We believe that MM-121 was the first ErbB3 inhibitor to enter clinical development. We are developing a companion diagnostic based on a five biomarker assay to determine whether a tumor is dependent on ErbB3 signaling and amenable to treatment with MM-121. We are testing this assay in our ongoing MM-121 clinical trial program. We have established a worldwide collaboration with Sanofi for the development and commercialization of MM-121. We are developing MM-121 for a wide range of solid tumor indications, including lung, ovarian and breast cancers.

Design and potential advantages of MM-121

We identified the importance of ErbB3 through Network Biology. Our research recognized the previously unappreciated role of ErbB3 as being critical in combinatorial ligand-induced activation of the ErbB pathway, which can lead to tumor cell growth and survival.

In designing MM-121, we:

- generated a human antibody antagonist as opposed to another type of therapeutic because the ErbB3 receptor does not have an active kinase domain and therefore ErbB3 signaling cannot be blocked by a small molecule kinase inhibitor;
- generated a human antibody that binds to a specific portion of the ErbB3 molecule so as to block the binding of ErbB3's activating ligand, known as heregulin, and inhibit growth and survival signaling;
- designed the antibody to inhibit ErbB3-induced activation by ligands other than heregulin by blocking the ability of ErbB3 to pair with other receptors and become activated by them;
- designed MM-121 to cause the ErbB3 receptor to be internalized into the tumor cell so that it is no longer available for the signaling process that can drive cancer growth and survival; and
- designed MM-121 as a specific type of antibody, called an IgG2, that minimizes immune activation that can cause off-target adverse events.

Based on the central role of ErbB3 in cancer growth and survival, we believe that MM-121 potentially is applicable to a broad range of tumors, including lung, prostate, breast, ovarian and pancreatic cancers. Our preliminary study of several hundred tumors suggests that MM-121 may be able to target ErbB3 signaling occurring in 30% or more of cancer patients with these types of tumors.

Our research suggests that ErbB3 is associated with the development of resistance to other therapies. Therefore, we believe that MM-121 may be especially effective when given in combination with chemotherapies and other targeted therapies and potentially offers the following advantages compared to existing therapies:

- the ability to synergistically or additively attack tumor growth, based on our preclinical research involving a broad range of combination therapies;
- the ability to delay the development of resistance to other agents, based on our research demonstrating that ErbB3 signaling is upregulated in response to treatment with other therapies; and
- the ability to restore sensitivity to drugs, based on analyses of MM-121 in several cell types and xenograft models that are resistant to targeted therapies or chemotherapies.

Clinical development of MM-121

We and Sanofi are conducting a broad clinical program to test MM-121 in combination with a range of other therapies across a wide spectrum of solid tumor patient populations. The goal of this program is to explore the effect and efficacy of MM-121 in combination with other targeted ErbB agents, such as erlotinib (Tarceva), and chemotherapies, such as paclitaxel (Taxol).

We plan to assess whether efficacy is improved by measuring the ability of various MM-121 combinations to enhance anti-tumor activity or to delay resistance or restore sensitivity to the other therapies.

Phase 2 clinical trial of MM-121 in combination with exemestane for hormone-sensitive breast cancer

We are currently enrolling patients in a randomized, double blind Phase 2 clinical trial to compare the efficacy of MM-121 in combination with exemestane (Aromasin) to exemestane alone. Exemestane is a widely used aromatase inhibitor for the treatment of breast cancer. Aromatase is an enzyme implicated in breast cancer. The trial protocol calls for enrollment of 130 postmenopausal women with metastatic hormone-sensitive breast cancer who have tested negative for overexpression of ErbB2 (HER2) and who have previously failed treatment with an aromatase inhibitor or other anti-estrogen therapy. We are conducting this trial at multiple sites in the United States and are now expanding the trial into clinical sites in other countries. The primary efficacy endpoint of this trial is progression free survival (PFS). Secondary endpoints are overall survival (OS), objective response rate (ORR), duration of response and disease control rate (DCR).

Phase 1/2 clinical trial of MM-121 in combination with erlotinib for non-small cell lung cancer

We are currently conducting a Phase 1/2 clinical trial of MM-121 in patients with metastatic non-small cell lung cancer, or NSCLC. The Phase 1 portion of the trial is an open label, dose escalation study in which successive groups of patients will be enrolled. The purpose of the Phase 1 portion of the trial is to assess the safety of MM-121 in combination with erlotinib and determine the optimal dose and dosing schedule of this combination for the Phase 2 portion of the trial. Erlotinib is a marketed small molecule directed at EGFR (ErbB1). Enrollment in the Phase 1 portion of the trial is complete.

We expect to initiate the Phase 2 portion of the trial, which involves testing three separate hypotheses in three different populations of NSCLC patients, by the end of 2011 at multiple sites in North America, Europe and Asia. The Phase 2 portion of the trial will be an open label study in which we plan to enroll approximately 229 patients in parallel across the three different patient populations. The primary efficacy endpoint of the Phase 2 portion of the trial is progression free survival (PFS). The three populations of NSCLC patients to be included in the study are:

- Group A: patients who do not have an EGFR (ErbB1) activating mutation and have failed at least one chemotherapy-containing regimen will be randomized to receive either MM-121 in combination with erlotinib or erlotinib alone;
- Group B: patients who have an EGFR (ErbB1) activating mutation and have not received prior EGFR (ErbB1) targeted therapy will be randomized to receive either MM-121 in combination with erlotinib or erlotinib alone; and
- Group C: patients who have an EGFR (ErbB1) activating mutation and have failed prior EGFR (ErbB1) targeted therapy will receive MM-121 in combination with erlotinib.

Phase 2 clinical trial of neoadjuvant MM-121 in combination with paclitaxel for ErbB2 (HER2) negative breast cancer

We have initiated a randomized, open label Phase 2 clinical trial of neoadjuvant MM-121 in combination with paclitaxel, an established chemotherapy, in patients with ErbB2 (HER2) negative breast cancer. We expect to enroll patients in this trial at approximately 35 to 40 sites in North America. The primary efficacy endpoint of this trial will be pathologic complete response (pCR) rate at time of surgery. We expect this trial to enroll approximately 200 patients in parallel across the following two populations of neoadjuvant ErbB2 (HER2) negative breast cancer patients:

- Group A: patients whose tumors are estrogen receptor, or ER, positive and ErbB2 (HER2) negative and have not undergone prior treatment or surgery; and

- Group B: patients whose tumors are ER negative, ErbB2 (HER2) negative and progesterone receptor negative, often referred to as triple negative breast cancer, and have not undergone prior treatment or surgery.

Each population of patients is being randomized at a two to one ratio to receive either MM-121 in combination with paclitaxel or paclitaxel alone. Following treatment, patients will receive standard treatment with doxorubicin and cyclophosphamide, two marketed chemotherapies, and monitored until the surgical resection.

Phase 2 clinical trial of MM-121 in combination with paclitaxel for platinum resistant or refractory advanced ovarian cancer

We are planning a randomized, open label Phase 2 clinical trial of MM-121 in combination with paclitaxel in patients with advanced ovarian cancer who are resistant or refractory to treatment with platinum-based chemotherapies, which are frequently used to treat ovarian cancer. We expect to initiate this trial by the end of 2011. We expect this trial to enroll up to 210 patients at multiple sites in North America and Europe and that the primary efficacy endpoint of this trial will be progression free survival (PFS). The planned secondary endpoints include overall survival (OS), objective response rate (ORR) and duration of response.

Phase 1 clinical trial of MM-121 in combination with paclitaxel for ErbB2 (HER2) negative breast cancer and gynecological cancers

We are currently conducting an open label, dose escalation Phase 1 clinical trial of MM-121 in combination with paclitaxel in patients with the following cancers:

- advanced ovarian and other gynecological cancers; or

- metastatic ErbB2 (HER2) negative breast cancer.

We are conducting this trial at multiple sites in the United States. The purpose of the trial is to assess the safety of MM-121 in combination with paclitaxel, determine the recommended dose for a subsequent Phase 2 clinical trial and evaluate the potential utility of the predictive biomarkers for MM-121. There are two cohorts of patients in this trial who receive different loading and ongoing doses of MM-121 during the trial.

Phase 1 clinical trial

We have completed an open label, dose escalation Phase 1 clinical trial of MM-121 in 25 patients with advanced tumors that were refractory to other treatments. The purpose of this trial was to study the safety and pharmacokinetic properties, determine the maximum tolerated dose and evaluate the effect of MM-121 on tumor growth. There were six successive cohorts of three to six patients each in this trial. Each cohort received different weekly doses of MM-121 that increased after each cohort. In the last cohort, a dosing regimen known as a loading dose regimen was tested in which the first dose received was higher than subsequent weekly dosing. We did not identify a maximum tolerated dose in this trial.

We are currently enrolling 20 to 30 patients in an open label, expansion cohort of this trial to further characterize safety and explore clinical biomarkers. Patients in the expansion cohort are biopsied before and after dosing. This trial is focused on enrolling patients with ErbB2 (HER2) negative breast cancer, ovarian cancer and other tumor types in which the ErbB3 pathway may play an important role. As of December 31, 2010, we had enrolled 13 patients in this expansion cohort. The following table summarizes the grade 3 and grade 4 adverse events observed in the dose escalation and expansion phases of this trial as of December 31, 2010.

Adverse event	Patients (n = 38)
Fatigue	4 (10.5%)
Nausea	1 (2.6%)
Vomiting	1 (2.6%)

In the dose escalation portion of this trial, five of 25 patients (20%) achieved a clinical benefit, as demonstrated by stable disease (SD), partial response (PR) or complete response (CR). In the expansion portion of this trial, four of 13 patients (29%) enrolled as of December 31, 2010 had stable disease (SD) for eight weeks or longer.

Planned clinical trials

We plan to initiate additional clinical trials of MM-121 in a range of other solid tumor indications both as a monotherapy and in combination with other treatments.

Preclinical development of MM-121

We have conducted a comprehensive program of preclinical testing of MM-121, including several *in vitro* analyses and *in vivo* xenograft studies. Key findings from this preclinical program include the following:

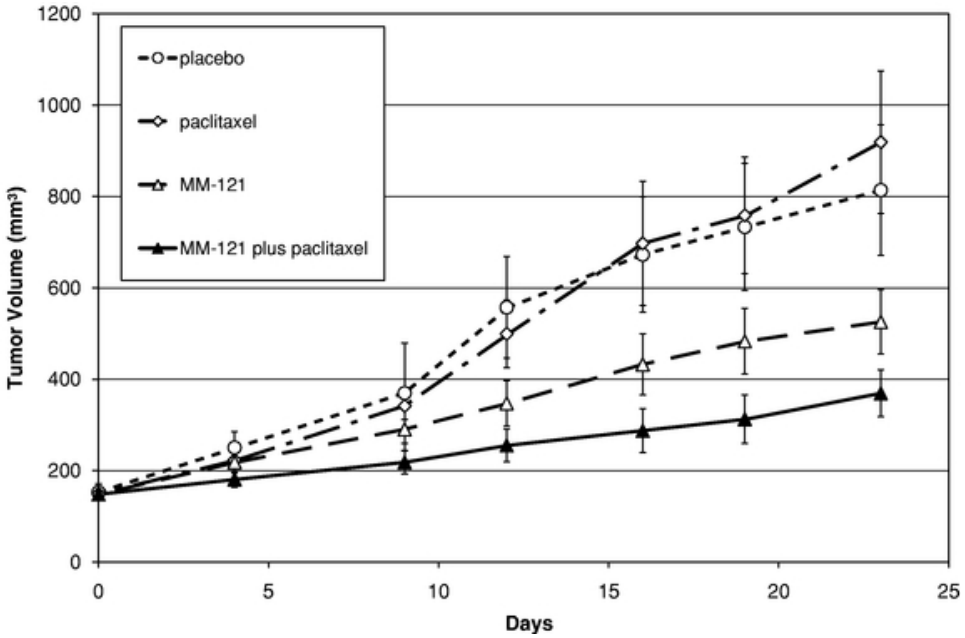
- Administration of MM-121 resulted in dose-dependent growth inhibition in a broad range of cancer xenograft models, including those of lung, ovarian, breast, prostate and renal cancer.

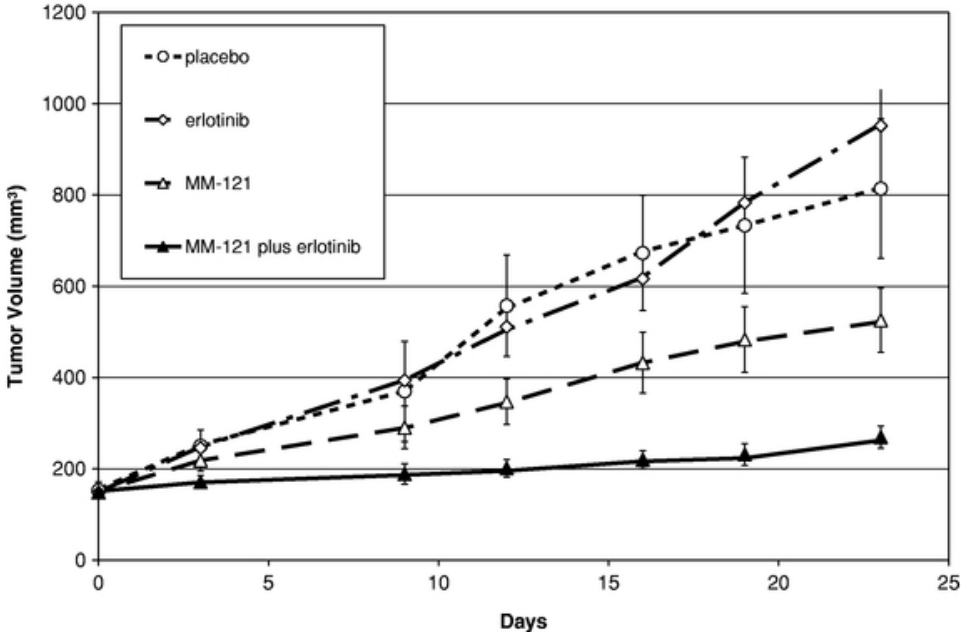
- MM-121 demonstrated synergistic or additive effects when combined with a number of other therapies, including both chemotherapies and other targeted therapies, as reflected in the graphs below.

The figures below show the ability of MM-121 in preclinical testing to restore sensitivity to both chemotherapies and other targeted therapies and to achieve a synergistic improvement in activity when used in combination with those therapies. The figures summarize experiments in which we implanted human tumor cells into mice and measured how the growth of tumors was affected over time in response to different treatment regimens.

In the first figure, mice were implanted with A549 human lung cancer cells, and the tumors were allowed to grow. Seven mice in each of four groups were then treated with placebo, paclitaxel, MM-121 or a combination of MM-121 and paclitaxel. The A549 lung cancer tumors are generally resistant to treatment with paclitaxel, which is confirmed by the lack of activity demonstrated by treatment with paclitaxel alone. Treatment with MM-121 inhibited growth of the tumors. Importantly, when MM-121 and paclitaxel were administered in combination, there was an additional inhibition of xenograft growth, indicating that treatment with MM-121 sensitized the xenograft to treatment with paclitaxel and resulted in a synergistic inhibition of the growth of the xenograft.

In the second figure, a similar experiment was conducted in A549 human lung cancer cells. Seven mice in each of four groups were implanted with A549 cells, and the tumors were allowed to grow. Mice were then treated with placebo, erlotinib, MM-121 or a combination of MM-121 and erlotinib. The A549 lung cancer tumors are also generally resistant to treatment with erlotinib, which is confirmed by the lack of activity demonstrated by treatment with erlotinib alone. Treatment with MM-121 inhibited growth of the tumors. Importantly, when MM-121 and erlotinib were administered in combination, there was an additional inhibition of xenograft growth, indicating that treatment with MM-121 sensitized the xenograft to treatment with erlotinib and resulted in a synergistic inhibition of the growth of the tumors.





Companion diagnostic development

Using our Network Biology approach, we derived a predictive biomarker profile that identifies tumors that are responsive to MM-121 in animal models. This test measures the levels of five proteins involved in the ErbB pathway and predicts the activated state of ErbB3 and, therefore, the potential responsiveness of the tumor to MM-121 based on those levels. Using this approach, we have been able to successfully predict whether a tumor in a preclinical xenograft study will respond to MM-121. We now plan to investigate whether and at what levels these biomarkers can predict MM-121 response in human tumor samples. As part of our ongoing clinical development of MM-121, we are taking biopsies from patients in order to measure levels of biomarkers in the tumors treated with MM-121.

MM-111

Overview

MM-111 is a bispecific antibody designed to target cancer cells that overexpress the ErbB2 (HER2) cell surface receptor, which are also referred to as ErbB2 (HER2) positive, in order to inhibit ErbB3 cell growth signaling. Bispecific antibodies are antibodies designed to simultaneously bind to two different target cell surface proteins or receptors. In the case of MM-111, these targets are the ErbB2 (HER2) receptor and the ErbB3 receptor. We are currently evaluating MM-111 in three Phase 1 clinical trials. We are working to develop a companion diagnostic based on a multiple biomarker assay to identify patient populations likely to respond to treatment with MM-111. This diagnostic is in preclinical development. We are developing MM-111 for a wide range of solid tumors, including breast, gastric, ovarian and bladder cancers.

Design and potential advantages of MM-111

MM-111 is designed to inhibit growth and survival signaling through ErbB3 in cancer cells characterized by high levels of ErbB2 (HER2). The complex of ErbB2, ErbB3 and its ligand, heregulin, promotes tumor growth in ErbB2 (HER2) positive cancer cells. MM-111 consists of a targeting arm that binds to ErbB2 (HER2) and a therapeutic arm that binds to ErbB3. The ErbB3 arm is designed to disrupt the ErbB2/ErbB3/heregulin complex and therefore inhibit tumor cell growth and survival.

Based on our preclinical research, we believe that MM-111 may offer the following advantages compared to existing treatments:

- In patients with ErbB2 (HER2) positive cancers, we believe that the bispecific design of MM-111 more effectively inhibits ErbB3 than combinations of separate ErbB2 (HER2) and ErbB3 targeted antibodies. Multiple published studies indicate that the affinity of heregulin for the ErbB2/ErbB3 receptor complex on ErbB2 (HER2) positive tumor cells is very high. Our research suggests that this makes it difficult to inhibit signaling with single drugs or combinations. MM-111 is designed to utilize an ErbB2 (HER2) targeting arm to greatly increase the local concentration of the ErbB3 therapeutic arm on the surface of ErbB2 (HER2) positive tumor cells, thus enabling the molecule to disrupt the high affinity complex and inhibit signaling.

- We believe that MM-111 may be particularly effective in combination with both ErbB2 (HER2) targeted and conventional chemotherapies, as MM-111 may be able to enhance anti-tumor activity, delay the development of resistance to other agents and restore sensitivity to drugs to which a tumor has become resistant.

- In breast cancer and additional tumor types, such as gastric and ovarian cancer, we believe that MM-111 may be effective in patients whose tumors express ErbB2 (HER2) at lower levels than those needed for currently marketed ErbB2 (HER2) targeted agents that inhibit the ErbB2 (HER2) receptor directly.

- We believe that MM-111 will have a more favorable safety profile than currently marketed ErbB2 (HER2) targeting agents because it is not designed to block ErbB2 (HER2) cell signaling, which is associated with cardiac adverse events.

Clinical development of MM-111

We have initiated a clinical program to evaluate MM-111 as a monotherapy and in combination with trastuzumab, with and without conventional chemotherapy, across traditional ErbB2 (HER2) positive solid tumors. We are evaluating MM-111 for the treatment of breast and gastric cancer, for which ErbB2 (HER2) directed agents are currently approved, in addition to ErbB2 (HER2) positive solid tumors for which there are no approved therapies, such as bladder cancer.

The goal of this program is to evaluate the added benefit of combining MM-111 with targeted ErbB2 (HER2) agents, such as trastuzumab (Herceptin) and lapatinib (Tykerb), and conventional chemotherapies, such as paclitaxel, capecitabine and cisplatin. We plan to assess whether clinical benefit is improved by evaluating the ability of MM-111 to delay resistance or restore the sensitivity of other therapeutics. We have designed this clinical program to provide us with information about MM-111 for use in treating both traditional ErbB2 (HER2) positive cancers

and solid tumors in which lower levels of ErbB2 (HER2) expression is known to occur but for which ErbB2 (HER2) directed agents are not currently clinically used.

We are currently planning one Phase 2 clinical trial and conducting three Phase 1 clinical trials of MM-111 as described below. Based on data from the Phase 1 clinical trials, we expect to identify the recommended combinations of therapies and doses for additional future Phase 2 clinical development of MM-111 in ErbB2 (HER2) positive cancers.

Phase 2 clinical trial of MM-111 in combination with lapatinib and letrozole for advanced metastatic hormone receptor positive, ErbB2 (HER2) positive breast cancer

We are planning a randomized, open label Phase 2 clinical trial of MM-111 in patients with hormone receptor positive, ErbB2 (HER2) positive metastatic breast cancer who are eligible for first-line hormone receptor therapy. The trial is being designed to compare the efficacy of MM-111 in combination with lapatinib and letrozole against the combination of lapatinib and letrozole alone. We expect to initiate this trial in the first half of 2012. In addition, we plan to evaluate the potential utility of the predictive biomarkers for MM-111. We expect this trial to enroll approximately 180 patients and that the primary efficacy endpoint of this trial will be progression free survival (PFS). The planned secondary endpoints include overall survival (OS), objective response rate (ORR), clinical benefit rate and duration of response.

Phase 1 clinical trial of MM-111 in advanced, refractory ErbB2 (HER2) positive cancers

We are currently conducting an open label, dose escalation Phase 1 clinical trial of MM-111 in patients with ErbB2 (HER2) positive solid tumors. The trial protocol calls for enrollment of patients with any solid tumor type. We are conducting this trial at approximately four sites in the United States. The purpose of this trial is to assess the safety and clinical activity of MM-111 and evaluate other exploratory endpoints.

We have designed the trial to determine the maximum tolerated dose or the maximum feasible dose of MM-111, and any dose limiting adverse events. We also designed the trial to assess objective response rate (ORR) and progression free survival (PFS). As of September 30, 2011, we had enrolled and dosed 19 patients in this trial.

Phase 1 clinical trial of MM-111 in combination with trastuzumab for advanced refractory ErbB2 (HER2) positive breast cancer

We are currently conducting an open label, dose escalation Phase 1 clinical trial of MM-111 in patients with ErbB2 (HER2) positive breast cancer. The purpose of the trial is to assess the safety of MM-111 in combination with trastuzumab and determine the optimal dose and dosing schedule of this combination. Trastuzumab is an approved therapy directed at ErbB2 (HER2) positive cancer cells. We are conducting this trial at approximately three sites in the United States. We plan to enroll up to 24 patients in the trial. As of September 30, 2011, we had enrolled and dosed 15 patients in this trial.

Phase 1 clinical trial of MM-111 in combination with multiple treatments for ErbB2 (HER2) positive solid tumors

We are conducting an open label, dose escalation Phase 1 clinical trial of MM-111 in patients with advanced ErbB2 (HER2) positive solid tumors. The trial protocol calls for enrollment of approximately 18 to 36 patients. We are conducting this trial at approximately 14 sites in the United States. The purpose of the trial is to determine the maximum tolerated dose and any

dose limiting adverse events of MM-111 in combination with multiple treatment regimens. The trial includes three arms of combination therapies with MM-111:

- cisplatin, capecitibane and trastuzumab in the first arm;
- lapatinib and trastuzumab in the second arm; and
- paclitaxel and trastuzumab in the third arm.

This trial also will assess the pharmacokinetics of MM-111 with each combination, safety and tolerability of each combination and the antitumor activity of each combination as indicated by objective response rate (ORR), duration of response and progression free survival (PFS). Exploratory endpoints include an analysis of serum and tissue markers and their correlation with antitumor activity. As of September 30, 2011, we had enrolled and dosed 26 patients in this trial.

Preclinical development of MM-111

We have conducted a comprehensive program of preclinical testing of MM-111, including several *in vitro* analyses and *in vivo* xenograft studies. Key findings from this preclinical program include the following:

- MM-111 was active in several ErbB2 (HER2) positive xenograft models, including breast, lung and gastric cancer. Tumor size was reduced in all tumor types.
- In cell-based and animal model tests, the anti-proliferative activity of MM-111 resulted in a tumor shrinkage that positively correlated with ErbB2 (HER2) expression levels. MM-111 had a synergistic effect on the inhibition of tumor growth in a breast cancer xenograft model when combined with trastuzumab or lapatinib. We believe these data suggest a potential benefit of adding MM-111 to existing agents that target ErbB2 (HER2) and have marginal activity as monotherapies in ErbB2 (HER2) positive disease.
- In cell-based and animal model tests, the combination of MM-111 with anti-estrogen therapy showed superior activity to either drug as a monotherapy, indicating the potential for a combination of MM-111 with endocrine therapies to overcome acquired resistance to endocrine therapies in ER positive, ErbB2 (HER2) positive breast cancer patients. For example, in an estrogen-stimulated, estrogen positive and ErbB2 (HER2) positive breast cancer cell assay, MM-111 as a monotherapy showed growth inhibitory effects similar to the anti-estrogen drugs tamoxifen and fulvestrant. In the presence of heregulin, MM-111 maintained its growth inhibitory activity. In contrast, the inhibitory effect of tamoxifen and fulvestrant was diminished in the presence of heregulin. This suggests that activation of ErbB3 may confer tumor cell resistance to anti-estrogen therapies.

Companion diagnostic development

We are working to develop a diagnostic tool that will allow rapid identification of patients likely to respond to treatment with MM-111 based on their expression levels of ErbB2 (HER2), ErbB3, heregulin and other factors that we anticipate identifying from ongoing clinical trials. Our goal is to develop a diagnostic tool that offers significant improvement over the qualitative tests that are currently used to identify potentially responsive patients based on ErbB2 (HER2) overexpression alone.

The current focus of this program is the development of quantitative assays to assess ErbB2 (HER2), ErbB3 and heregulin levels in archived and pretreatment patient biopsies from our clinical trials to generate data to support our biomarker hypotheses. We are also evaluating other potential biomarkers through collaborative work with a third party.

MM-302

Overview

MM-302 is a nanotherapeutic encapsulation of doxorubicin with attached antibodies that target ErbB2 (HER2). We are conducting a Phase 1 clinical trial of MM-302 in patients with advanced ErbB2 (HER2) positive breast cancer. We are designing a companion diagnostic for MM-302 to predict which patients have tumors that will exhibit high uptake of MM-302. We are initially pursuing development of MM-302 as a therapy for metastatic breast cancer that is refractory to other therapies. We also plan to pursue the use of MM-302 as an earlier line of therapy in the adjuvant setting, which means use in conjunction with radiotherapy or surgery, and the neoadjuvant setting. In addition, we plan to pursue the use of MM-302 as a therapy for other ErbB2 (HER2) positive tumors.

Doxorubicin is a marketed chemotherapy that is a member of the anthracycline class of chemotherapies. The addition of anthracyclines to the treatment of both solid and liquid tumors has historically improved outcomes for patients. Specifically, anthracyclines have served as the backbone of breast cancer therapy for decades. Free doxorubicin is currently approved and used in adjuvant and neoadjuvant breast cancer alone and in combination with other chemotherapies and targeted agents. Consistent clinical benefit has been observed with anthracycline-based regimens in breast cancer. However, significant adverse events, including acute and chronic heart dysfunction, have limited their use.

Liposomal doxorubicin, marketed as Doxil, is currently approved and used in ovarian cancer and multiple myeloma. Although liposomal doxorubicin exhibits a better cardiac adverse event profile than free doxorubicin, its use also has been limited by hand-foot syndrome, which is an adverse event that produces redness and peeling on the hands and feet. In addition, the incremental efficacy benefits of liposomal doxorubicin compared with free doxorubicin are not clear, with direct comparisons between the two therapies in some tumor subtypes demonstrating equivocal results. In a pivotal clinical trial of women with breast cancer, liposomal doxorubicin was no more effective than free doxorubicin.

Design and potential advantages of MM-302

We designed MM-302 to bind to cancer cells that overexpress ErbB2 (HER2) and thereby release doxorubicin at the site of the tumor. Our goal is for MM-302 to retain the safety profile of liposomal doxorubicin, in particular with respect to cardiac safety, but to have better efficacy in ErbB2 (HER2) positive tumors.

We believe that MM-302 may offer the following advantages in comparison with free doxorubicin and liposomal doxorubicin:

- MM-302 is designed to utilize nanotherapeutic encapsulation to protect the heart from cardiac adverse events associated with free doxorubicin.

- The specific size and stability characteristics of MM-302 are designed to enable the preferential deposition of the drug within tumors relative to normal tissue. Specifically, we believe that, as a nanotherapeutic, MM-302 is able to utilize the EPR effect to selectively enter, and subsequently be trapped in, tumors with leaky vasculature.

- MM-302 is designed with attached antibodies so as to use the ErbB2 (HER2) receptor as a binding mechanism to induce the internalization of the nanotherapeutic encapsulated drug particle, and thereby provide drug delivery directly into the cell and increase the potential efficacy of doxorubicin.

- MM-302 is designed with an ErbB2 (HER2) antibody that binds to but does not shut down the signaling activity of ErbB2 (HER2). We believe that this will minimize the severity and frequency of adverse events associated with suppressing ErbB2 (HER2) and allow for more clinical benefit for patients with lower levels of ErbB2 (HER2) than is provided by current ErbB2 (HER2) directed treatments.

- MM-302 may provide anti-tumor benefit for patients who have failed other ErbB2 (HER2) targeted therapies, but who have not been exposed to anthracyclines.

- Based on our preclinical research, we believe that MM-302 may synergize effectively in combination with a number of approved therapies, such as trastuzumab and possibly lapatinib, chemotherapy, hormonal therapy and our own drugs, MM-111 and MM-121. The current concerns about the severity and frequency of adverse events associated with doxorubicin and liposomal doxorubicin prevent them from being used in many combination regimens.

Clinical development of MM-302

We have two key strategies for the clinical development of MM-302:

- *Replace doxorubicin in ErbB2-positive settings.* Doxorubicin remains a widely used chemotherapy drug notwithstanding concerns of adverse events, particularly cardiac adverse events. One of our clinical development strategies is to replace the use of doxorubicin with MM-302 by demonstrating that MM-302 has favorable efficacy and safety compared to doxorubicin.

- *Expand into indications where anthracyclines are no longer used.* We believe that there is the potential to expand MM-302 into indications, such as late-line therapy, where anthracyclines are viewed as effective but are not used due to safety concerns. If we are able to demonstrate that MM-302 has a favorable safety profile compared to doxorubicin, we believe that we can expand into these settings.

Phase 1 clinical trial in breast cancer

We are conducting an open label, dose escalation Phase 1 clinical trial of MM-302. The trial protocol calls for enrollment of between 18 and 36 patients with advanced ErbB2 (HER2) positive breast cancer. We are conducting this trial at approximately four sites in the United States. The purpose of this trial is to assess the safety of MM-302 and identify the maximum tolerated dose. We are planning an expansion cohort to follow the dose escalation portion of this trial. As of September 30, 2011, we had enrolled and dosed three patients in this trial.

Preclinical development of MM-302

We have conducted a comprehensive program of preclinical testing of MM-302, including several *in vitro* analyses and *in vivo* xenograft studies. Key findings from this preclinical program include the following:

- In studies of human heart muscle cells known as cardiomyocytes, MM-302 did not measurably impact ErbB2 (HER2) signaling, which we believe suggests a potential for low cardiac adverse event occurrence in the clinic.
- In multiple cell culture experiments, MM-302 bound with and was internalized into ErbB2-expressing cells more effectively than liposomal doxorubicin.
- MM-302 demonstrated measurable activity in cultured cells expressing a lower level of ErbB2 (HER2) receptors than are indicated for treatment with currently marketed therapies.
- In multiple xenograft experiments, MM-302 was significantly more potent than free doxorubicin in inhibiting tumor growth.

With respect to the safety of MM-302, we conducted two single dose toxicity studies of MM-302 in rats and monkeys. We dosed the animals at four dose levels for one hour by intravenous infusion followed by a 28-day observation period. In each dose group, at least 87% of all administered doxorubicin remained encapsulated while in the plasma, which we believe limits distribution to the heart and other non-target tissue. At 28 days following the dosing period, we observed no microscopic signs of cardiac damage in either rats or monkeys.

Companion diagnostic development

We are conducting preclinical research on a companion diagnostic for MM-302 that will help to determine which patients will derive benefits from the drug alone or in combination with other therapies, while experiencing a satisfactory safety profile. This research is focused on:

- Developing an *in vivo* liposome-based imaging agent to measure deposition in the tumor in an effort to exclude those patients whose tumors are unlikely to respond to MM-302 treatment. We are currently evaluating in preclinical testing nanotherapeutic formulations of various agents imaged by PET scan and other modalities to assess the potential for measuring significant deposition.
- Assessing the association of ErbB2 (HER2) levels, measured *in vitro*, with how much MM-302 can bind and enter cells. As part of these efforts, we may incorporate inclusion and exclusion criteria into our Phase 1 clinical trials of MM-302 to enrich our study population with patients who we believe are likely to benefit from MM-302, including those with high ErbB2 (HER2) expression.

MM-151

Overview

MM-151 is an oligoclonal therapeutic consisting of a mixture of three fully human monoclonal antibodies designed to bind to non-overlapping regions, or epitopes, of the EGFR (ErbB1) receptor. EGFR (ErbB1) has long been recognized as an important drug target in several malignancies, including lung, breast, colon, pancreatic and head and neck cancers. We submitted an IND to the FDA for MM-151 in July 2011. In August 2011, the FDA responded to

our IND and, among other things, is requiring that we submit additional preclinical data from our ongoing toxicology studies before we can initiate a Phase 1 clinical trial. In particular, the FDA has requested data on the formation of antibodies against MM-151 in the test animals included in our ongoing toxicology studies. As a result, our IND for MM-151 is on clinical hold until we provide all of the information that the FDA has requested and the FDA notifies us that we may initiate our planned Phase 1 clinical trial. We expect the report containing the requested data to be available in November 2011. Following its receipt of the requested information, the FDA has 30 days to review and further respond. Subject to our providing all of the information that the FDA has requested and a decision by the FDA to allow us to proceed, we expect to be able to initiate a Phase 1 clinical trial of MM-151 by early 2012.

We are focusing our diagnostic efforts for MM-151 on the identification of key biomarkers that will indicate which patient populations are likely to benefit from MM-151 treatment. We plan to develop MM-151 for a range of solid tumor indications, including colorectal, head and neck, lung, breast and pancreatic cancers.

Design and potential advantages

We believe that MM-151 may offer the following advantages over other EGFR (ErbB1) inhibitors:

- MM-151 is designed to block the signal amplification that our research suggests occurs in the EGFR (ErbB1) pathway. We believe that binding to multiple epitopes of EGFR (ErbB1) may result in superior signal inhibition compared to currently marketed EGFR (ErbB1) therapies, which only bind to one epitope.

- MM-151 is designed to inhibit the signaling that results from the binding of a full range of EGFR (ErbB1) ligands. In contrast, currently marketed therapies block the signaling of only a subset of these ligands. As a result, we believe that a broader patient population may derive clinical benefit from MM-151 than from currently marketed therapies.

- Tumors treated with marketed monoclonal antibodies directed at EGFR (ErbB1), such as cetuximab (Erbitux) and panitumumab (Vectibix), often develop resistance to these therapies. We hypothesize that this resistance results from the production by the tumor of a different type of ligand that binds to EGFR (ErbB1). Because MM-151 is designed to block a full range of EGFR (ErbB1) ligands, we believe that MM-151 may be able to delay or prevent the development of resistance more effectively than these existing therapies.

- In preclinical models, MM-151 inhibited tumor cell growth of mutated lung cancer cell lines with acquired resistance to erlotinib. As a result, we believe that MM-151 may provide a longer duration of response than small molecules, such as erlotinib, that target mutated EGFR (ErbB1).

Clinical development of MM-151

We have two key strategies related to the clinical development of MM-151:

- *Replace EGFR (ErbB1) therapies.* The FDA approved the EGFR (ErbB1) therapy erlotinib in lung and pancreatic cancer and cetuximab in colon and head and neck cancer. In clinical practice, erlotinib is used as a monotherapy or combination therapy in multiple cancer indications, including NSCLC, colorectal cancer, breast cancer and head and neck cancer. One

of our clinical development strategies is to replace the use of erlotinib with MM-151 by demonstrating that MM-151 has better efficacy and comparable safety.

- *Expand the EGFR (ErbB1) market using Network Biology.* Based on Network Biology insights, we believe that current EGFR (ErbB1) therapies are not being used in indications in which patients would benefit from them. Our second clinical development strategy is to expand the use of MM-151 into indications in which targeted EGFR (ErbB1) therapies are not currently approved, but which our preclinical research indicates should contain patients who will respond to these therapies. Potential indications include lung cancer, for which there is no currently approved targeted antibody therapy, and triple negative breast cancer, for which there is no currently approved EGFR (ErbB1) targeted therapy.

Clinical development plan

Subject to our IND becoming effective, we plan to initiate an open label, dose escalation Phase 1 clinical trial of MM-151 in patients with solid tumors, with a focus on colorectal cancer, NSCLC and triple negative breast cancer. The purpose of this trial will be to assess the initial safety and tolerability of escalating doses of MM-151 in a small set of patients, including a determination of the maximum tolerated dose and any dose limiting adverse events. We also will assess pharmacokinetics, immunogenicity and the response to treatment after the administration of MM-151 based on objective response rate (ORR).

We also plan to conduct expansion studies as part of this Phase 1 clinical trial to determine the response of proteins, such as the known ligands of EGFR (ErbB1) that we predict will be affected by MM-151.

Preclinical development of MM-151

We have conducted a comprehensive program of preclinical testing of MM-151, including several *in vitro* analyses and *in vivo* xenograft studies. Key findings of this preclinical program include the following:

- In *in vitro* experiments, MM-151 exhibited near complete inhibition of EGFR (ErbB1)-induced signaling in a dose-dependent manner. Subsequent *in vitro* studies confirmed that each of the three antibodies comprising MM-151 bound to EGFR (ErbB1) with differential avidity and affinity.

- In *in vitro* experiments, the inhibitory effects of MM-151 on signaling and proliferation were more profound than those of cetuximab, as evidenced by the virtually complete inhibition of signaling by MM-151 compared to the partial inhibition of signaling with cetuximab.

- MM-151 reduced tumor cell growth in multiple xenograft models, including lung, triple negative breast and prostate cancers. Furthermore, MM-151 exhibited better activity than cetuximab at reducing cell growth in triple negative breast and lung cancer models with acquired resistance to erlotinib.

We conducted toxicokinetic studies to support the use of MM-151 in clinical trials, including a four week repeat dosing study of MM-151 in rats and monkeys to assess safety parameters. The animals were dosed for one hour by intravenous infusion once a week for four weeks followed by a 28-day observation period. Adverse events associated with intravenous MM-151 administration were similar to other monoclonal EGFR (ErbB1) inhibitors, including primarily

dermatologic and gastrointestinal events, which have largely been manageable in clinical practice.

Companion diagnostic development

We are focusing our diagnostic efforts for MM-151 on the identification of key biomarkers that will indicate which patient populations are likely to benefit from MM-151 treatment. Our goal is to be able to identify patient populations who will respond to MM-151 and who may be unresponsive to other EGFR (ErbB1) inhibitors. This program is in preclinical development.

Preclinical product candidates

We are developing our preclinical product candidates for a range of solid tumor indications. Our most advanced preclinical candidates are MM-141, MM-310 and MM-131.

- MM-141 is a multispecific antibody. We plan to file an IND for MM-141 in 2012.
- MM-310 is a targeted nanotherapeutic. We plan to file an IND for MM-310 in early 2013.
- MM-131 is a multispecific antibody. We are pursuing further preclinical development of MM-131.

MM-141 and MM-131 are the first candidates in our pipeline to target multiple growth factors that are co-utilized for growth by a cancer cell. We expect that this approach may increase tumor response and limit the development of resistance that is often observed with growth factor and kinase inhibitors.

Therapeutic design capabilities

We apply the insights about cell signaling dynamics that we gain from Network Biology across a range of therapeutic technologies to design drug candidates that we believe can be efficiently delivered to the selected molecular target. We believe that the best therapies for the oncology indications that we are pursuing are targeted therapies that, in contrast with conventional chemotherapies, are highly selective for the molecular mechanisms that we are seeking to affect and, as a result, offer the potential for significant efficacy and safety benefits.

Human monoclonal antibodies

Human monoclonal antibodies are a key component of many of our targeted therapies based on their range of favorable attributes, including their significant target specificity and avidity relative to small molecules and their well understood pharmacokinetic properties. We have designed antibodies for use as stand-alone therapeutics and have incorporated antibodies into other therapeutics, such as targeted nanotherapeutics, as targeting or docking agents. We work with several antibody formats, including the following:

- Fully human recombinant monoclonal antibodies and fragments of fully human recombinant monoclonal antibodies that include the antibody binding domain. Monoclonal antibodies and antibody fragments are proteins that bind specifically to one defined site on a cell surface protein or receptor.

- Bispecific antibody formats, which are comprised of two or more antibodies or antibody fragments linked to a common scaffold molecule to produce a single molecule that specifically binds to two epitopes on two target cell surface proteins or receptors.

- Oligoclonal antibody mixtures, which are comprised of defined ratios of two or more recombinant human monoclonal antibodies that target two or more distinct epitopes on a single cell surface protein or receptor.

Nanotherapeutics

Our nanotherapeutics are lipidic particles, carefully constructed on a nanoscale, to encapsulate active drug payloads. Nanoscale objects typically, though not exclusively, have dimensions on the order of 100 nanometers or smaller. We believe that nanotherapeutics offer the following potentially favorable attributes:

- The uniform sizing of our nanotherapeutics is intended to enable targeting and preferential deposition within tumors by taking advantage of the EPR effect.

- We formulate our nanotherapeutics to minimize the leakage of active drug payload out of the particle before the nanotherapeutic has reached the tumor, with the goal of limiting systemic exposure, and the associated occurrence of adverse events, and maximizing the amount of active drug that reaches the target.

- Encapsulation is designed to protect the active drug payload as it passes through the circulation and organs of the body, such as the liver, preventing premature clearance or metabolism of the active drug, and thereby extend the pharmacokinetic profile and enable more convenient dosing regimens.

- We can efficiently create targeted nanotherapeutics using our technical expertise and know-how that enable insertion of targeting agents, such as antibodies, into our nanotherapeutics.

- We can customize our nanotherapeutics for use with a variety of drug payloads, including chemotherapies, cytotoxics and nucleic acids, such as siRNA and genes.

Manufacturing

We manufacture drug substance for use in our clinical trials and research and development efforts for all of our therapeutic product candidates using current good manufacturing practices, or cGMP, at our 4,000 square foot multi-product facility located at our corporate headquarters in Cambridge, Massachusetts. We have the capabilities to manufacture monoclonal antibodies, bispecific antibodies, nanotherapeutics and antibody-targeted nanotherapeutics.

Our manufacturing facility:

- is comprised of four independent clean rooms;

- includes three 1,000 liter single-use bioreactors; and

- has capacity to produce approximately 50 kilograms of antibodies per year.

As of September 30, 2011, we employed approximately 54 employees in manufacturing activities.

We believe that our strategic investment in manufacturing capabilities allows us to advance product candidates at a more rapid pace and with more flexibility than a contract manufacturer, produce drug substance in a cost-effective manner while retaining control over the process and prioritize the timing of internal programs.

Our manufacturing capabilities encompass the full manufacturing process through quality control and quality assurance and are integrated with our project teams from discovery through development. This structure enables us to efficiently transfer research stage lead molecules into manufacturing. We have designed our manufacturing facility and processes to provide maximum flexibility and rapid change over for the manufacture of different product candidates. We outsource fill-finish, packaging, labeling and shipping.

Recently, a third party contractor that we have used to fill and package both MM-121 and MM-111 experienced FDA inspection issues with its quality control processes that resulted in a formal warning letter from the FDA. Following a review by Sanofi and us, some MM-121 was withdrawn from clinical trial sites and replaced with MM-121 that was filled by a different contractor. This restocking is complete and only resulted in a few patients missing one or two doses of MM-121.

We manufacture our antibody and nanotherapeutic product candidates using readily available raw materials and well established manufacturing procedures. We produce antibodies in bioreactors using Chinese hamster ovary cells that have been genetically engineered to secrete our antibody. We then purify the antibodies using industry standard methods, which include affinity chromatography and ultrafiltration operations. We produce nanotherapeutics using high pressure filter extrusion of a mixture of cholesterol and lipids. We then load the nanoliposomes with active pharmaceutical ingredient using a proprietary process.

We have optimized the Phase 2 production process of MM-398 and produced material for our planned Phase 3 clinical trial at our manufacturing facility. We are currently conducting comparability characterization between PharmaEngine's Phase 2 material and our material that we produced for our planned Phase 3 clinical trial. We intend to file a chemistry manufacturing and controls amendment, or CMC amendment, with the FDA by the end of 2011. We intend to use product that we manufacture for our planned Phase 3 clinical trial of MM-398 in metastatic pancreatic cancer following submission to the FDA of our CMC amendment.

We believe that we can scale our manufacturing processes to support our clinical development programs and the potential commercialization of our product candidates. If any of our product candidates are approved for marketing by the FDA, we intend to oversee the manufacturing of these products, other than MM-121, which we will transfer to Sanofi for Phase 3 production under the terms of our collaboration agreement.

For our antibody product candidates, we intend to continue to manufacture drug substance for preclinical testing and Phase 1 and Phase 2 clinical development at our current facility. Our long term plan is to establish our own facilities for manufacturing antibody drug substance for Phase 3 clinical development and commercial sale. Pending our establishment of these facilities, we expect to transfer Phase 3 and commercial antibody manufacturing to a contract manufacturing organization. For our nanotherapeutic product candidates, we intend to continue to manufacture drug substance for preclinical testing and all stages of clinical

development and initially manufacture drug substance for commercial sale at our current facility.

We are developing and testing diagnostic assays for predictive biomarkers in an internal laboratory under Good Clinical Laboratory Practices. Upon completion of the development of the diagnostic tests, we plan to evaluate external as well as internal options for manufacturing and commercialization of the tests.

Organizational measures

Our objective is to discover, develop and commercialize innovative medicines that transform patient care. We believe that building an organization that fosters and sustains innovation is important to providing long-term value for our investors. Therefore, we plan to continue to invest and develop our innovation capabilities as we research and develop novel medicines.

We also believe that part of our task as effective stewards of our investors' capital is to provide transparent information to our investors on the components of our work that ultimately determine our ability to meet our objectives. We believe that our financial performance in creating innovative medicines is a function in part of four performance indicators. Accordingly, we intend to report on our progress against the following key metrics:

- *Organizational health.* We believe that our employees are our key asset. In order for our employees to be productive, we need to support their efforts with an effective work environment, competitive compensation that rewards their creation of stockholder value and leading opportunities for personal and professional development.

- *Collaboration networks.* We believe that networks are not only the key drivers of biology, but essential to innovation and research and development productivity. We believe innovation requires the fertilization of different fields and perspectives. We strive to create information networks internally and collaborations externally.

- *Research and development productivity.* We believe that Network Biology has the potential to create transformative medicines and alter the productivity of research and development. Our goals are to achieve a superior success rate in our clinical trials and establish overall resource productivity that is best in class.

- *The health and economic outcomes of our products.* Our goal is to create integrated medicines that not only provide the best medical outcome, but also improve the overall efficiency of care. We intend to assess the impact of our products relative to standard of care both in terms of health and economic benefits.

Sales and marketing

As our lead product candidates are still in clinical development, we have not yet established a sales, marketing or product distribution infrastructure. We generally expect to retain commercial rights in the United States and Europe for our oncology product candidates, other than MM-121, for which we receive marketing approvals. We believe that it is possible to access these markets through a focused, specialized field force.

Subject to receiving marketing approvals, we expect to commence commercialization activities by building a focused sales and marketing organization for MM-398. This could form the basis

of the sales and marketing organization that we will use to sell our other products, subject to receiving marketing approval. We believe that such an organization will be able to address the community of oncologists who are the key specialists in treating solid tumors, including the lung, breast, ovarian, pancreatic, colorectal and head and neck cancers for which our product candidates are being developed. Outside the United States and Europe, we expect to enter into distribution and other marketing arrangements with third parties for any of our product candidates that obtain marketing approval.

We also plan to build a marketing and sales management organization to create and implement marketing strategies for any products that we market through our own sales organization and to oversee and support our sales force. The responsibilities of the marketing organization would include developing educational initiatives with respect to approved products and establishing relationships with thought leaders in relevant fields of medicine.

We plan to tightly integrate the marketing of our therapeutics and companion diagnostics. As we expect to pair various types of diagnostics with our therapeutics, it is likely that the sales and marketing tactics and business model employed for our various diagnostics may differ from one another.

Competition

The biotechnology and pharmaceutical industries are characterized by rapidly advancing technologies, intense competition and a strong emphasis on proprietary products. While we believe that our Network Biology technologies, integrated research, clinical and manufacturing capabilities, development experience and scientific knowledge provide us with competitive advantages, we face potential competition from many different sources, including major pharmaceutical, specialty pharmaceutical and biotechnology companies, academic institutions and governmental agencies and public and private research institutions. Any product candidates that we successfully develop and commercialize will compete with existing therapies and new therapies that may become available in the future.

Many of our competitors may have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved products than we do. Mergers and acquisitions in the pharmaceutical, biotechnology and diagnostic industries may result in even more resources being concentrated among a smaller number of our competitors. These competitors also compete with us in recruiting and retaining qualified scientific and management personnel and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs. Smaller or early stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies.

The key competitive factors affecting the success of all of our product candidates, if approved, are likely to be their efficacy, safety, convenience, price, the effectiveness of companion diagnostics in guiding the use of related therapeutics, the level of generic competition and the availability of reimbursement from government and other third party payors.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are

more convenient or are less expensive than any products that we may develop. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours. In addition, our ability to compete may be affected because in many cases insurers or other third party payors seek to encourage the use of generic products. There are many generic products currently on the market for the indications that we are pursuing, and additional products are expected to become available on a generic basis over the coming years. If our therapeutic product candidates are approved, we expect that they will be priced at a significant premium over competitive generic products.

The most common methods of treating patients with cancer are surgery, radiation and drug therapy, including chemotherapy and targeted drug therapy. As discussed under "—Cancer—Solid tumor market," there are a variety of available drug therapies marketed for solid tumors. In many cases, these drugs are administered in combination to enhance efficacy. Some of these drugs are branded and subject to patent protection, and others are available on a generic basis, including the active ingredients in MM-398 and MM-302. Many of these approved drugs are well established therapies and are widely accepted by physicians, patients and third party payors. In general, although there has been considerable progress over the past few decades in the treatment of solid tumors and the currently marketed therapies provide benefits to many patients, these therapies all are limited to some extent in their efficacy and frequency of adverse events, and none of them are successful in treating all patients. As a result, the level of morbidity and mortality from solid tumor cancers remains high.

In addition to the marketed therapies highlighted under "—Cancer—Solid tumor market," there are also a number of products in late stage clinical development to treat solid tumors. These products in development may provide efficacy, safety, convenience and other benefits that are not provided by currently marketed therapies. As a result, they may provide significant competition for any of our product candidates for which we obtain market approval.

Collaboration and license agreements

We are party to a number of collaboration agreements for the development and commercialization of our product candidates and license agreements under which we license patents, patent applications and other intellectual property. We consider the following collaboration and license agreements to be material to our business.

Sanofi

In September 2009, after MM-121 entered Phase 1 clinical development, we entered into a license and collaboration agreement with Sanofi for the development and commercialization of MM-121. Under the agreement, we granted Sanofi an exclusive, worldwide, royalty-bearing right and license, with the right to grant sublicenses, under our patent rights and know-how to develop and commercialize the monoclonal antibody MM-121 and an MM-121 companion diagnostic. We retained the right, but not the obligation, to participate in clinical development of MM-121 through Phase 2 proof of concept for each indication and final decision making authority over the conduct of the trials that we conduct, subject to our having the necessary capabilities and resources to conduct those trials and subject to the trials we conduct having been approved by Sanofi as part of the global development plan for MM-121. Sanofi is responsible for using commercially reasonable efforts thereafter to develop, obtain regulatory approvals for and, following regulatory approval, commercialize MM-121 and a companion

diagnostic in each of the United States, Europe and Japan. We also retained an option to co-promote MM-121 in the United States.

Under the agreement, Sanofi paid us a non-refundable upfront license fee of $60 million. Sanofi is also responsible for all development and manufacturing costs under the collaboration. In addition, we could receive under the agreement up to an aggregate of $410 million from Sanofi upon the achievement of specified development and regulatory milestones and an additional $60 million based on the achievement of specified sales milestones. We have received $10 million to date based on our achievement of a clinical milestone. Under the agreement, we are entitled to tiered, escalating royalties beginning in the sub-teen double digits based on net sales of MM-121 in the United States and beginning in the high single digits based on net sales of MM-121 outside the Unites States. In general, Sanofi's obligation to pay us royalties continues on a product-by-product and country-by-country basis until the latest of the expiration of the patent rights covering the product in such country, the expiration of all data and regulatory exclusivity applicable to the product in such country or ten years after the first commercial sale of the product in such country. If we co-promote MM-121 in the United States, we will be responsible for paying our sales force costs and a specified percentage of direct medical affairs, marketing and promotion costs for MM-121 in the United States and will be eligible to receive tiered, escalating royalties beginning in the high teens based on net sales of MM-121 in the United States. We are also entitled to an increase in the royalty rate on a product-by-product and country-by-country basis if a diagnostic product is actually used in the treatment of solid tumor indications with a particular therapeutic product.

Under the agreement, we are obligated to pay all licensing costs for specified third party patent rights that we or Sanofi may in the future license for the development and commercialization of MM-121. The third party patent rights for which we are required to pay all licensing costs consist of the patent rights that are the subject of two European Patent Office opposition proceedings and related counterparts worldwide. See "—Legal proceedings" for more information. We share the licensing costs for other third party patent rights that we or Sanofi have licensed or may in the future license for the development and commercialization of MM-121 through specified deductions that Sanofi is permitted to take against the royalties Sanofi pays to us. The third party patent rights for which we share the costs with Sanofi include rights that we have licensed from Dyax Corp., or Dyax, the U.S. Public Health Service and Selexis SA, as described in more detail below.

A joint steering committee comprised of an equal number of representatives from each of Sanofi and us is responsible for reviewing and approving the global development plan for MM-121, including all budgets relating to development activities we conduct, and overseeing the parties' development and commercialization activities with respect to MM-121. The joint steering committee also oversees a joint development committee responsible for overseeing the progress of the development program. In general, Sanofi has final decision making authority over matters on which the joint steering committee deadlocks, following escalation to designated executive officer representatives of the parties, with the exception of our retained decision making authority over the conduct of clinical trials that that we conduct in accordance with the global development plan. If necessary and at a time to be mutually agreed by the parties, we and Sanofi have agreed to form a commercialization committee, also to be overseen by the joint steering committee, that will be responsible for overseeing co-promotion

activities in the United States and serving as a forum for communication between the parties regarding worldwide commercialization matters for MM-121.

Sanofi has agreed that, subject to limited exceptions, until the second anniversary of the closing of this offering, neither Sanofi nor any of its affiliates will (1) effect or seek, initiate, offer or propose to effect, or cause or participate in any way, advise or assist any other person to effect or seek, initiate, offer or propose to effect or cause or participate in, any acquisition of any of our securities or assets, any tender or exchange offer, merger, consolidation or other business combination involving us, any recapitalization, restructuring, liquidation, dissolution or other extraordinary transaction with respect to us or any solicitation of proxies or consents to vote any of our voting securities; (2) form, join or in any way participate in a group with respect to any of our securities; (3) otherwise act, alone or in concert with others, to seek to control or influence our management, board of directors or policies, except as contemplated by our collaboration agreement; (4) take any action which would reasonably be expected to force us to make a public announcement regarding the foregoing; or (5) enter into any agreements, discussions or arrangements with any third party with respect to any of the foregoing.

If not terminated earlier, the agreement will expire upon expiration of all royalty and other payment obligations of Sanofi under the agreement. Either party may terminate the agreement in the event of an uncured material breach by the other party. Sanofi also may terminate the agreement for its convenience upon 180 days' prior written notice. In addition, we may terminate the agreement if Sanofi challenges or supports any challenge of our licensed patent rights.

PharmaEngine

In May 2011, we entered into an assignment, sublicense and collaboration agreement with PharmaEngine. Under the agreement, PharmaEngine assigned to us its rights and obligations under a 2005 agreement with Hermes BioSciences, Inc., or Hermes, to develop and commercialize MM-398 in Europe and certain countries in Asia. Through our acquisition of Hermes in 2009, we hold the rights to MM-398 in North America and the rest of the world. PharmaEngine also granted to us an exclusive right and license, with the right to sublicense, under PharmaEngine technology and rights to develop and commercialize MM-398 worldwide outside of Taiwan. We granted to PharmaEngine a paid-up, royalty free, exclusive right and license under our technology and rights to develop and commercialize MM-398 in Taiwan.

Under the agreement, we paid PharmaEngine a $10 million upfront license fee. In addition, PharmaEngine is eligible to receive up to an aggregate of $210 million from us upon the achievement of specified development, regulatory and annual net sales milestones. Under the agreement, PharmaEngine is entitled to tiered royalties based on net sales of MM-398 in Europe and certain countries in Asia. The royalty rates under the agreement range from high single digits up to the low teens as a percentage of our net sales of MM-398 in these territories. Our obligation to pay royalties to PharmaEngine continues on a country-by-country basis until the later of ten years after the first commercial sale of MM-398 in such country and May 2, 2024. We are responsible for the development and commercialization, and all related costs and expenses, of MM-398 in all countries except Taiwan, where PharmaEngine retains the right to develop and commercialize MM-398 at its expense. Each party has agreed to use commercially reasonable efforts to develop, in accordance with a development plan, and commercialize MM-398 in its respective territory. We also have diligence obligations to initiate

a Phase 3 clinical trial of MM-398 in two different solid tumor indications within timeframes specified in the agreement.

Three executive committees were formed under the agreement, each comprised of an equal number of representatives from each party. The steering committee is responsible for reviewing and approving changes to the development plan, providing overall strategic direction with respect to development of MM-398 under the development plan and overseeing other committees. The steering committee is also responsible for resolving any disputes arising under the agreement at the steering committee or that are referred to it by any of the other committees. If a matter is unresolved by the steering committee, it may be referred for resolution to executive officers from both companies. We have final decision making authority on any such matter not resolved by the executive officers that relates to the worldwide development of MM-398 or commercialization of MM-398 outside of Taiwan. The development committee is responsible for recommending to the steering committee changes to the development plan and overseeing the progress of the development program and monitoring the parties' compliance with their respective obligations under the development plan. The manufacturing committee is responsible for overseeing and advising on the preclinical and clinical manufacture of MM-398 and overseeing the transfer of manufacturing responsibility from PharmaEngine to us.

Upon expiration of all royalty and other payment obligations due to PharmaEngine under this agreement on a country-by-country basis, the licenses granted under the agreement will be deemed to be perpetual, fully paid-up and irrevocable with respect to the licensed product in such country. Either party may terminate the agreement in the event of an uncured material breach by the other party. In addition, at any time after May 2013, we may terminate the agreement for convenience upon 90 days' prior written notice. If PharmaEngine terminates this agreement in its entirety or with respect to Europe or the Asian territories because of our material breach, or if we terminate the agreement for convenience with respect to Europe or the Asian territories, then we are required to grant PharmaEngine a license under our technology and rights with respect to MM-398 in Europe or the Asian territories, as applicable, and PharmaEngine is required to pay us single-digit royalties for net sales of MM-398 in such territories.

Dyax

In January 2007, we entered into an amended and restated collaboration agreement with Dyax, which superseded a prior collaboration agreement with Dyax that we entered into in December 2005. Under this collaboration agreement, Dyax uses its proprietary phage display technology to identify antibodies that bind to targets of interest to us as therapeutics or diagnostics. Further, Dyax has granted to us a worldwide, non-exclusive, royalty free right to use and make any and all of the antibodies identified by Dyax for certain research purposes. In order to clinically develop or commercialize any such antibody, however, we must obtain an additional product license from Dyax on a target-by-target basis. We have the option to obtain one or more product licenses on terms set forth in the collaboration agreement, subject to limitations on the availability of each such product license under an agreement between Dyax and Cambridge Antibody Technologies, which has merged with MedImmune, LLC and is now owned by AstraZeneca PLC.

As consideration for the grant of the initial research license, we paid Dyax a research fee based on the total estimated full time equivalent researchers that were required to conduct the research plan and a fee for achieving certain technical milestones. If we elect to obtain a product license with respect to any therapeutic or diagnostic target, we are required to pay to Dyax an additional upfront license fee for the applicable antibody. We also will be required to make additional maximum aggregate development and regulatory milestone payments of $16.2 million for therapeutic products and maximum aggregate regulatory milestone payments of $1.0 million for diagnostic products directed to selected targets. In addition, Dyax is entitled to mid single digit royalties based on net sales of products covered by any product license that we obtain from Dyax. Our obligation to pay royalties to Dyax continues on a product-by-product and country-by-country basis until the later of a specified number of years after the first commercial sale of the product in such country and the expiration of the patent rights covering the product in such country. MM-121 was identified under this agreement, and we have obtained a target license from Dyax by exercising our product license option and paying the applicable license fee. We are obligated to use commercially reasonable efforts to develop and commercialize the antibodies for which we obtain a commercial license.

This agreement will remain in effect, unless terminated earlier, for so long as we or any of our affiliates or sublicensees continue to develop or commercialize products that remain royalty-bearing under the agreement. Either party may terminate the agreement in the event of an uncured material breach by the other party. We also may terminate the agreement in its entirety or on a product-by-product basis at any time upon 90 days' prior written notice.

Adimab

In November 2009, we entered into a collaboration agreement with Adimab LLC, or Adimab, to allow us to evaluate the utility of using antibodies identified during the collaboration as therapeutics or diagnostics. Under the agreement, Adimab granted to us a worldwide, non-exclusive, royalty free right to use materials provided by Adimab to perform non-clinical research during the evaluation term. Adimab also granted to us an option to obtain the assignment of specified patent rights claiming the selected antibodies and a license under Adimab's background patent rights and know-how for the development and commercialization of the antibodies.

As partial consideration for the research license grant, we paid Adimab a technology access fee at the time of grant, research fees based on the total estimated full time equivalent researchers that were required to conduct the research plan and a fee for achieving certain technical milestones. We have exercised our assignment and license option by paying Adimab a fee of $1.0 million. In addition, we are required to pay Adimab up to an aggregate of $13.5 million per therapeutic area, for the first four therapeutic areas, upon achievement of specified development and regulatory milestones and up to an aggregate of $500,000 per diagnostic product upon the achievement of specified regulatory milestones. In addition, Adimab is entitled to mid single digit royalty payments based on net sales of therapeutic products and diagnostic products arising from the collaboration. Our obligation to pay royalties to Adimab continues on a product-by-product and country-by-country basis until the later of a specified number of years after the first commercial sale of the product in such country and the expiration of the patent rights covering the product in such country, provided that the royalty term will not extend beyond a specified number of years after the first commercial sale of the product in such country. We are obligated to use commercially reasonable efforts to

develop and commercialize at least one product that incorporates the antibodies for which we exercised our assignment and license option in each of the United States, Europe and Japan. MM-151 was generated under this agreement.

The term of the agreement expires on a country-by-country basis on the earliest date after which no payments are due to Adimab, unless earlier terminated. Either party may terminate the agreement in the event of an uncured material breach by the other party. In addition, we may terminate the agreement at any time upon 90 days' prior written notice.

University of California

2005 agreement

In March 2005, we entered into a license agreement with The Regents of the University of California, or the Regents. Under the agreement, the Regents granted to us a royalty-bearing right and license in the United States and other countries where the Regents have the right to grant the license under certain patent rights and rights in biological materials to develop and commercialize products for therapeutic or diagnostic use in humans that are covered by the licensed patents. Licensed products under this agreement include MM-111. This license is exclusive with respect to certain patents, including some relevant to MM-111, and non-exclusive with respect to other patents and biological materials. The agreement requires that we diligently pursue the development, manufacture and commercialization of licensed products. In addition, we are required to meet specific development, regulatory and commercialization milestones within timeframes specified in the agreement. We have sole responsibility for the development and commercialization of products under the licensed technology. However, the agreement provides that the Regents may require us to sublicense our exclusive rights for the application or use of licensed products covered by any exclusively licensed technology that we are not currently pursuing.

We are required to pay to the Regents an annual license maintenance fee of between $20,000 and $30,000 until the first commercial sale of a licensed product and are responsible for all development costs. In addition, we are required to pay to the Regents up to an aggregate of $725,000 per therapeutic product, other than the second therapeutic product, for which we are responsible for up to an aggregate of $906,250, based on the achievement of specified development and regulatory milestones. The Regents are also entitled to royalties in the low single digits based on net sales of products covered by the licensed technology. A minimum annual royalty is due to the Regents commencing in the earlier of the year of the first commercial sale of a licensed product or 2015. The minimum annual royalty increases from $100,000 in the first year it is payable to $500,000 in the fifth year and thereafter for the life of the patents. If we sublicense the rights granted to us under the licensed technology to a third party, then we are also obligated to pay to the Regents a portion of the sublicensing income related to the licensed technology.

If not terminated earlier, this agreement terminates upon the later of nine years from the market introduction of the last licensed product that contains the licensed biological materials or the expiration of all patent rights licensed under this agreement. At such time, we will have a perpetual, fully paid, world-wide, non-exclusive license. The Regents may terminate the agreement in the event of an uncured material breach by us. We may terminate the agreement on a country-by-country basis at any time upon 60 days' prior written notice.

2000 agreement

In November 2000, we entered into a separate exclusive license agreement with the Regents. Under the agreement, the Regents granted us a royalty-bearing world-wide right and license under certain patent rights for the development and commercialization of products that are covered by the licensed patent rights, including MM-302. The agreement requires that we diligently pursue the development, manufacture and commercialization of licensed products. In addition, we are required to meet specified development, regulatory and commercialization milestones within timeframes specified in the agreement. We have the sole responsibility for the development and commercialization of products under the licensed technology.

We are required to pay to the Regents an annual license maintenance fee of $95,000 until the first commercial sale of a licensed product. We also are responsible for all development costs and have agreed to spend a minimum of $150,000 per year for such costs. In addition, we are responsible for up to an aggregate of $700,000 per product upon the achievement of specified development and regulatory milestones. The Regents are also entitled to royalties in the low single digits based on net sales of products covered by the licensed technology. If we sublicense the rights granted to us under the licensed technology to a third party, then we are also obligated to pay to the Regents a portion of the sublicensing income related to the licensed technology.

If not terminated earlier, this agreement terminates upon the expiration or abandonment of all patents licensed under this agreement. The Regents may terminate the agreement in the event of an uncured material breach by us. We may terminate the agreement on a country-by-country basis at any time upon 60 days' prior written notice.

U.S. Public Health Service

In February 2008, we entered into a commercial license with the U.S. Public Health Service, a division of the U.S. Department of Health and Human Services, for non-exclusive rights in the United States to patents related to ErbB3 and ErbB3 antibodies associated with MM-121 and MM-111. Under the agreement, we are required to make aggregate development and regulatory milestone payments of up to $6.1 million, per therapeutic licensed product, and pay low single digit royalties on net sales of licensed products. The term of the agreement extends until the expiration of the licensed patent rights, which is 2016.

Selexis

In June 2008, we entered into a commercial license with Selexis SA for non-exclusive rights to technology for use in the manufacture of certain biologic products, including each of our five most advanced product candidates, other than MM-398. Under this agreement, we are required to make aggregate milestone payments of up to €1.0 million, per licensed product, and pay royalties of less than one percent on net sales of licensed products. The obligation to pay royalties with respect to each product sold in a country continues until the expiration of the patent rights covering the product in such country.

Intellectual property

We aggressively strive to protect the proprietary technology that we believe is important to our business, including seeking and maintaining patents intended to cover our products and compositions, their methods of use and processes for their manufacture, as well as our

diagnostic and drug discovery technologies and any other inventions that are commercially important to the development of our business. We also rely on trade secrets to protect aspects of our business that are not amenable to, or that we do not consider appropriate for, patent protection, such as our proprietary network modeling programs and large scale protein and liposome production methods.

Our success will significantly depend on our ability to obtain and maintain patent and other proprietary protection for commercially important technology, inventions and know-how related to our business, defend and enforce our patents, preserve the confidentiality of our trade secrets and operate without infringing the valid and enforceable patents and proprietary rights of third parties. We also rely on know-how, continuing technological innovation and in-licensing opportunities to develop and maintain our proprietary position.

We seek to obtain domestic and international patent protection, and endeavor to promptly file patent applications for new commercially valuable inventions once the experimental data necessary for an application become available. We generally file international applications under the Patent Cooperation Treaty, or PCT, within one year after the filing of a U.S. provisional application.

As of September 30, 2011, we owned 17 issued U.S. patents, two issued patents in Europe and 10 issued patents in other jurisdictions, as well as 33 pending U.S. provisional and non-provisional patent applications and 138 pending foreign patent applications in Europe and 42 other jurisdictions. As of September 30, 2011, we also co-owned seven pending U.S. provisional patent applications with Sanofi, as well as one U.S. non-provisional and one PCT application with Silver Creek. As of September 30, 2011, we had licenses to 37 U.S. patents and 8 pending U.S. patent applications, as well as numerous foreign counterparts to many of these patents and patent applications. Of these licensed patents and patent applications, we license the majority on an exclusive basis, with the rest licensed non-exclusively to us. The exclusive licenses are, in some cases, limited to certain technical fields, for example for medical and diagnostic purposes.

The patent portfolios for our five most advanced product candidates as of September 30, 2011 are summarized below.

MM-398

Our MM-398 patent portfolio is wholly owned by us and includes two pending U.S. patent applications covering the composition of and methods of making and using MM-398, both of which, if issued, will expire in 2025. Related international patent applications have issued or been allowed in three countries and are pending in Europe and a number of other countries. These international patents and patent applications, if issued, are also due to expire in 2025.

MM-121

Our MM-121 patent portfolio is wholly owned by us, with the exception of seven pending U.S. provisional method of use patent applications that are eligible for worldwide filing and that may be used to establish non-provisional applications, are co-owned with Sanofi and, if issued, will expire in 2032, and one family of U.S. patents broadly covering anti-ErbB3 antibodies, the last of which will expire in 2016. We license this one family of U.S. patents non-exclusively from the U.S. Public Health Service, a division of the U.S. Department of Health and Human Services.

This portfolio includes a U.S. composition of matter patent that will expire in 2028, two related pending U.S. patent applications that, if issued, will expire in 2028 and related international patent applications pending in 24 countries and Europe, which, if issued, will expire in 2028. Pending method of use and diagnostic patents in this portfolio also include two PCT applications and a U.S. application that, if issued, will expire in 2031, two U.S. applications and related pending foreign applications in Europe and 38 other jurisdictions that, if issued, will expire in 2029, and three pending U.S. provisional applications that are eligible for worldwide filing and that may be used to establish non-provisional applications that, if issued, will expire in 2032.

MM-111

Our MM-111 patent portfolio includes two wholly owned, pending U.S. patent applications covering the composition of, and method of use and diagnostics for, MM-111 that, if issued, will expire in 2029. The portfolio also includes four provisional U.S. applications that may be used to establish non-provisional applications that if issued, will expire between 2030 and 2032, and one related PCT application. For two of these four provisional U.S. applications, we intend to submit a single consolidated worldwide filing. This portfolio also includes 19 related patent applications pending in Europe and a number of other jurisdictions that, if issued, will expire in 2028 or 2029.

In addition, this portfolio includes the following patents licensed from the Regents:

- an exclusively licensed family of patents that will expire in 2023, including an issued U.S. composition of matter patent, a pending European divisional application, an issued European composition of matter patent application that is eligible for validation in all European Patent Organization countries and applications pending in a number of other countries; and

- a non-exclusively licensed family of patents that will expire in 2016, including a granted European composition of matter patent, a pending European divisional application and two applications pending in Canada.

MM-302

Our MM-302 patent portfolio includes three wholly owned provisional U.S. dosage and administration patent applications that may be used to establish non-provisional applications that, if issued, will expire in 2031. These three provisional patent applications are eligible for worldwide filing, but we intend to file a single consolidated worldwide filing. This portfolio also includes the following exclusively licensed issued U.S. patents:

- five composition of matter patents that will expire between 2014 and 2019; and
- one method of use patent that will expire in 2019.

In addition, this portfolio includes the following exclusively licensed European patents:

- a composition of matter patent that will expire in 2019;
- a composition of matter and method patent that will expire in 2019; and
- a composition of matter patent that will expire in 2014.

Our MM-302 patent portfolio further includes one exclusively licensed composition of matter application that is pending in the United States that, if issued, will expire in 2017, as well as

several foreign composition of matter patents and patent applications that expire or, if issued, will expire between 2014 and 2017.

All of the licensed patents and patent applications related to MM-302 are licensed from the Regents.

MM-151

Our MM-151 portfolio is wholly owned. This portfolio consists of two provisional patent applications that are eligible for worldwide filing and that may be used to establish non-provisional applications, which, if issued, will expire in 2032. These provisional applications cover compositions, methods of use and diagnostics related to MM-151. This portfolio also consists of one pending U.S. composition of matter and method of use patent application and one closely related pending PCT application that remains eligible for worldwide filing, each of which, if issued, will expire in 2031.

The term of individual patents depends upon the legal term for patents in the countries in which they are obtained. In most countries, including the United States, the patent term is 20 years from the earliest filing date of a non-provisional patent application. In the United States, a patent's term may be lengthened by patent term adjustment, which compensates a patentee for administrative delays by the U.S. Patent and Trademark Office in examining and granting a patent, or may be shortened if a patent is terminally disclaimed over an earlier filed patent. The term of a patent that covers a drug, biological product or medical device approved pursuant to a pre-market approval, or PMA, may also be eligible for patent term extension when FDA approval is granted, provided statutory and regulatory requirements are met. The length of the patent term extension is related to the length of time the drug is under regulatory review while the patent is in force. The Drug Price Competition and Patent Term Restoration Act of 1984, or the Hatch-Waxman Act, permits a patent term extension of up to five years beyond the expiration date set for the patent. Patent extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval, only one patent applicable to each regulatory review period may be granted an extension and only those claims reading on the approved drug are extended. Similar provisions are available in Europe and other foreign jurisdictions to extend the term of a patent that covers an approved drug. In the future, if and when our product candidates receive approval by the FDA or foreign regulatory authorities, we expect to apply for patent term extensions on issued patents covering those products, depending upon the length of the clinical trials for each drug and other factors, including those involved in the filing of a biologics license application, or BLA, or a new drug application, or NDA.

We are currently engaged in three ongoing opposition proceedings to European patents in the European Patent Office to narrow or invalidate the claims of patents owned by third parties. For more information, see "—Legal proceedings." We have obtained favorable interim decisions in two of the oppositions and a favorable preliminary opinion in the third. However, the ultimate outcome of all three oppositions remains uncertain. We are also aware of issued or pending counterparts to some of these European patents in the United States that may be relevant to our development and commercialization of MM-121. In addition, we are aware of issued U.S. patents held by Genentech, Inc., or Genentech, broadly covering methods of producing certain types of recombinant antibodies and related compositions for antibody

production that may be relevant to our development and commercialization of MM-121, MM-302 and MM-151.

We rely, in some circumstances, on trade secrets to protect our technology. However, trade secrets can be difficult to protect. We seek to protect our proprietary technology and processes, in part, by confidentiality agreements with our employees, consultants, scientific advisors and contractors. We also seek to preserve the integrity and confidentiality of our data and trade secrets by maintaining physical security of our premises and physical and electronic security of our information technology systems. While we have confidence in these individuals, organizations and systems, agreements or security measures may be breached, and we may not have adequate remedies for any breach. In addition, our trade secrets may otherwise become known or be independently discovered by competitors. To the extent that our consultants, contractors or collaborators use intellectual property owned by others in their work for us, disputes may arise as to the rights in related or resulting know-how and inventions.

Silver Creek

In August 2010, we acquired 12,000,000 shares of series A convertible preferred stock of Silver Creek, a newly formed company, in exchange for our grant to Silver Creek of technology licenses. We granted to Silver Creek a royalty free license under certain antibody growth factor patent rights to develop and commercialize products covered by the licensed patent rights. This license is exclusive to Silver Creek for therapeutic or diagnostic use in humans for the promotion of organ regeneration and co-exclusive with us for all other uses. We also granted to Silver Creek royalty free, non-exclusive licenses under certain patent rights and know-how to use certain of our technologies for research and development purposes. Either party may terminate the agreement in the event of an uncured material breach by the other party.

In August and December 2010, Silver Creek issued and sold an aggregate of 4,189,904 additional shares of its series A convertible preferred stock at a price per share of $1.00 to other investors for an aggregate purchase price of $4,189,904. As of September 30, 2011, we owned approximately 74% of the outstanding capital stock of Silver Creek, making Silver Creek a majority owned subsidiary of ours.

Silver Creek's mission is to apply our Network Biology approach to the discovery and development of innovative therapeutics in the field of regenerative medicine. In the future, we may consider forming additional businesses or business units to apply our Network Biology approach to multiple additional disease areas outside the oncology field. We expect to do so in some cases, as with Silver Creek, through the establishment of separately funded companies.

Government regulation

Government authorities in the United States, at the federal, state and local level, and in other countries extensively regulate, among other things, the research, development, testing, manufacture, including any manufacturing changes, packaging, storage, recordkeeping, labeling, advertising, promotion, distribution, marketing, post-approval monitoring and reporting, import and export of pharmaceutical products, biological products and medical devices, such as those we are developing.

United States drug and biological product approval process

In the United States, the FDA regulates drugs and biological products under the Federal Food, Drug, and Cosmetic Act, or FDCA, the Public Health Service Act, or PHSA, and implementing regulations. The process of obtaining regulatory approvals and the subsequent compliance with appropriate federal, state, local and foreign statutes and regulations requires the expenditure of substantial time and financial resources. Failure to comply with the applicable United States requirements at any time during the product development process, approval process or after approval, may subject an applicant to a variety of administrative or judicial sanctions, such as the FDA's refusal to approve pending applications, withdrawal of an approval, imposition of a clinical hold, issuance of warning letters, product recalls, product seizures, total or partial suspension of production or distribution injunctions, fines, refusals of government contracts, restitution, disgorgement of profits or civil or criminal penalties.

The process required by the FDA before a drug or biological product may be marketed in the United States generally involves the following:

- completion of preclinical laboratory tests, animal studies and formulation studies in compliance with the FDA's good laboratory practice, or GLP, regulations;
- submission to the FDA of an IND, which must become effective before human clinical trials may begin;
- approval by an independent institutional review board, or IRB, at each clinical site before each trial may be initiated;
- performance of adequate and well-controlled human clinical trials in accordance with good clinical practices, or GCP, to establish the safety and efficacy of the proposed drug or biological product for each indication;
- submission to the FDA of an NDA or BLA;
- satisfactory completion of an FDA advisory committee review, if applicable;
- satisfactory completion of an FDA inspection of the manufacturing facility or facilities at which the product is produced to assess compliance with cGMP requirements and to assure that the facilities, methods and controls are adequate to preserve the drug's identity, strength, quality and purity; and
- FDA review and approval of the NDA or BLA.

We expect that all of our product candidates, other than MM-398, will be subject to review as biological products under BLA standards. We expect that MM-398 will be subject to review as a drug under NDA standards. MM-302 contains both drug and biological components. We believe that this combination product will be subject to review as a biological product pursuant to a BLA. However, it is possible that the FDA could consider MM-302 subject to review pursuant to an NDA.

Preclinical studies

Preclinical studies include laboratory evaluation of product chemistry and formulation, as well as *in vitro* and animal studies to assess the potential for adverse events and in some cases to establish a rationale for therapeutic use. The conduct of preclinical studies is subject to federal regulations and requirements, including GLP regulations. An IND sponsor must submit the results of the preclinical tests, together with manufacturing information, analytical data, any available clinical data or literature and plans for clinical studies, among other things, to the FDA as part of an IND. Some long-term preclinical testing, such as animal tests of reproductive adverse events and carcinogenicity, may continue after the IND is submitted. An IND automatically becomes effective 30 days after receipt by the FDA, unless before that time the FDA raises concerns or questions related to one or more proposed clinical trials and places the trial on clinical hold. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. As a result, submission of an IND may not result in the FDA allowing clinical trials to commence.

Clinical trials

Clinical trials involve the administration of the investigational new drug to human subjects under the supervision of qualified investigators in accordance with GCP requirements, which include, among other things, the requirement that all research subjects provide their informed consent in writing before their participation in any clinical trial. Clinical trials are conducted under written study protocols detailing, among other things, the objectives of the study, the parameters to be used in monitoring safety and the effectiveness criteria to be evaluated. A protocol for each clinical trial and any subsequent protocol amendments must be submitted to the FDA as part of the IND. In addition, an IRB at each institution participating in the clinical trial must review and approve the plan for any clinical trial before it commences at that institution, and the IRB must conduct continuing review and reapprove the study at least annually. The IRB must review and approve, among other things, the study protocol and informed consent information to be provided to study subjects. An IRB must operate in compliance with FDA regulations. Information about certain clinical trials must be submitted within specific timeframes to the National Institutes of Health for public dissemination on their ClinicalTrials.gov website.

Human clinical trials are typically conducted in three sequential phases, which may overlap or be combined:

- *Phase 1:* The drug or biological product is initially introduced into healthy human subjects or patients with the target disease or condition and tested for safety, dosage tolerance, absorption, metabolism, distribution, excretion and, if possible, to gain an early indication of its effectiveness.

- *Phase 2:* The drug or biological product is administered to a limited patient population to identify possible adverse effects and safety risks, to preliminarily evaluate the efficacy of the product for specific targeted diseases and to determine dosage tolerance and optimal dosage.

- *Phase 3:* The drug or biological product is administered to an expanded patient population in adequate and well-controlled clinical trials to generate sufficient data to statistically confirm the efficacy and safety of the product for approval, to establish the overall

risk-benefit profile of the product and to provide adequate information for the labeling of the product.

Progress reports detailing the results of the clinical trials must be submitted at least annually to the FDA and more frequently if serious adverse events occur. Phase 1, Phase 2 and Phase 3 clinical trials may not be completed successfully within any specified period, or at all. Furthermore, the FDA or the sponsor may suspend or terminate a clinical trial at any time on various grounds, including a finding that the research subjects are being exposed to an unacceptable health risk. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution if the clinical trial is not being conducted in accordance with the IRB's requirements or if the drug has been associated with unexpected serious harm to patients.

Marketing approval

Assuming successful completion of the required clinical testing, the results of the preclinical and clinical studies, together with detailed information relating to the product's chemistry, manufacture, controls and proposed labeling, among other things, are submitted to the FDA as part of an NDA or BLA requesting approval to market the product for one or more indications. Under federal law, the submission of most NDAs and BLAs is additionally subject to a substantial application user fee, currently exceeding $1.5 million, and the sponsor of an approved NDA or BLA are also subject to annual product and establishment user fees, currently exceeding $86,000 per product and $497,000 per establishment. These fees are typically increased annually.

The FDA conducts a preliminary review of all NDAs and BLAs within the first 60 days after submission before accepting them for filing to determine whether they are sufficiently complete to permit substantive review. The FDA may request additional information rather than accept an NDA or BLA for filing. In this event, the application must be resubmitted with the additional information. The resubmitted application is also subject to review before the FDA accepts it for filing. Once the submission is accepted for filing, the FDA begins an in-depth substantive review. The FDA has agreed to specified performance goals in the review of NDAs and BLAs. Most such applications for non-priority products are reviewed within ten months, and most applications for priority review products, that is, drugs and biologics that the FDA determines represent a significant improvement over existing therapy, are reviewed in six months. The review process may be extended by the FDA for three additional months to consider certain information or clarification regarding information already provided in the submission. The FDA may also refer applications for novel drugs or biological products or products that present difficult questions of safety or efficacy to an advisory committee, typically a panel that includes clinicians and other experts, for review, evaluation and a recommendation as to whether the application should be approved. The FDA is not bound by the recommendations of an advisory committee, but it considers such recommendations carefully when making decisions.

Before approving an NDA or BLA, the FDA typically will inspect the facility or facilities where the product is manufactured. The FDA will not approve an application unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. In addition, before approving an NDA or BLA, the FDA will typically inspect one or more clinical sites to assure compliance with GCP and integrity of the clinical data submitted.

The testing and approval process requires substantial time, effort and financial resources, and each may take many years to complete. Data obtained from clinical activities are not always conclusive and may be susceptible to varying interpretations, which could delay, limit or prevent regulatory approval. The FDA may not grant approval on a timely basis, or at all. We may encounter difficulties or unanticipated costs in our efforts to develop our product candidates and secure necessary governmental approvals, which could delay or preclude us from marketing our products.

After the FDA's evaluation of the NDA or BLA and inspection of the manufacturing facilities, the FDA may issue an approval letter or a complete response letter. An approval letter authorizes commercial marketing of the drug or biological product with specific prescribing information for specific indications. A complete response letter generally outlines the deficiencies in the submission and may require substantial additional testing or information in order for the FDA to reconsider the application. If and when those deficiencies have been addressed to the FDA's satisfaction in a resubmission of the NDA, the FDA will issue an approval letter. The FDA has committed to reviewing such resubmissions in two or six months depending on the type of information included. Even with submission of this additional information, the FDA ultimately may decide that the application does not satisfy the regulatory criteria for approval.

Even if the FDA approves a product, it may limit the approved indications for use for the product, require that contraindications, warnings or precautions be included in the product labeling, require that post-approval studies, including Phase 4 clinical trials, be conducted to further assess a drug's safety after approval, require testing and surveillance programs to monitor the product after commercialization, or impose other conditions, including distribution restrictions or other risk management mechanisms, which can materially affect the potential market and profitability of the product. The FDA may prevent or limit further marketing of a product based on the results of post-market studies or surveillance programs. After approval, some types of changes to the approved product, such as adding new indications, manufacturing changes and additional labeling claims, are subject to further testing requirements and FDA review and approval.

Fast track designation

The FDA is required to facilitate the development and expedite the review of drugs and biologics that are intended for the treatment of a serious or life-threatening condition for which there is no effective treatment and which demonstrate the potential to address unmet medical needs for the condition. Under the fast track program, the sponsor of a new drug or biologic candidate may request the FDA to designate the product for a specific indication as a fast track product concurrent with or after the filing of the IND for the product candidate. The FDA must determine if the product candidate qualifies for fast track designation within 60 days after receipt of the sponsor's request.

In addition to other benefits, such as the ability to use surrogate endpoints and have greater interactions with the FDA, the FDA may initiate review of sections of a fast track product's NDA or BLA before the application is complete. This rolling review is available if the applicant provides and the FDA approves a schedule for the submission of the remaining information and the applicant pays applicable user fees. However, the FDA's time period goal for reviewing a fast track application does not begin until the last section of the NDA or BLA is submitted. In

addition, the fast track designation may be withdrawn by the FDA if the FDA believes that the designation is no longer supported by data emerging in the clinical trial process.

Priority review

Under FDA policies, a product candidate may be eligible for priority review, or review within a six-month time frame from the time a complete application is accepted for filing. Products regulated by the FDA's Center for Drug Evaluation and Research, or CDER, are eligible for priority review if they provide a significant improvement compared to marketed products in the treatment, diagnosis or prevention of a disease. Products regulated by the FDA's Center for Biologics Evaluation and Research are eligible for priority review if they provide a significant improvement in the safety or effectiveness of the treatment, diagnosis or prevention of a serious or life-threatening disease. A fast track designated product candidate would ordinarily meet the FDA's criteria for priority review.

Accelerated approval

Under the FDA's accelerated approval regulations, the FDA may approve a drug or biologic for a serious or life-threatening illness that provides meaningful therapeutic benefit to patients over existing treatments based upon a surrogate endpoint that is reasonably likely to predict clinical benefit. In clinical trials, a surrogate endpoint is a measurement of laboratory or clinical signs of a disease or condition that substitutes for a direct measurement of how a patient feels, functions or survives. Surrogate endpoints can often be measured more easily or more rapidly than clinical endpoints. A product candidate approved on this basis is subject to rigorous post-marketing compliance requirements, including the completion of Phase 4 or post-approval clinical trials to confirm the effect on the clinical endpoint. Failure to conduct required post-approval studies, or confirm a clinical benefit during post-marketing studies, would allow the FDA to withdraw the drug from the market on an expedited basis. All promotional materials for drug candidates approved under accelerated regulations are subject to prior review by the FDA.

Orphan drugs

Under the Orphan Drug Act, the FDA may grant orphan drug designation to drugs or biologics intended to treat a rare disease or condition, which is generally defined as a disease or condition that affects fewer than 200,000 individuals in the United States. Orphan drug designation must be requested before submitting an NDA or BLA. After the FDA grants orphan drug designation, the generic identity of the drug or biologic and its potential orphan use are disclosed publicly by the FDA. Orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process. The first NDA or BLA applicant to receive FDA approval for a particular active ingredient to treat a particular disease with FDA orphan drug designation is entitled to a seven-year exclusive marketing period in the United States for that product, for that indication. During the seven-year exclusivity period, the FDA may not approve any other applications to market the same drug or biologic for the same orphan indication, except in limited circumstances, such as a showing of clinical superiority to the product with orphan drug exclusivity in that it is shown to be safer, more effective or makes a major contribution to patient care. Orphan drug exclusivity does not prevent the FDA from approving a different drug or biologic for the same disease or condition, or the same drug or biologic for a different disease or condition. Among the other benefits of orphan drug

designation are tax credits for certain research and a waiver of the NDA or BLA application user fee.

Pediatric information

Under the Pediatric Research Equity Act of 2003, as amended and reauthorized by the Food and Drug Administration Amendments Act of 2007, or the FDAAA, an NDA, BLA or supplement to an NDA or BLA must contain data that are adequate to assess the safety and effectiveness of the drug or biological product for the claimed indications in all relevant pediatric subpopulations, and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective. The FDA may, on its own initiative or at the request of the applicant, grant deferrals for submission of some or all pediatric data until after approval of the product for use in adults, or full or partial waivers from the pediatric data requirements. Unless otherwise required by regulation, the pediatric data requirements do not apply to products with orphan drug designation.

The Hatch-Waxman Act

Abbreviated new drug applications

In seeking approval for a drug through an NDA, applicants are required to list with the FDA each patent with claims that cover the applicant's product. Upon approval of a drug, each of the patents listed in the application for the drug is then published in the FDA's Approved Drug Products with Therapeutic Equivalence Evaluations, commonly known as the Orange Book. Drugs listed in the Orange Book can, in turn, be cited by potential competitors in support of approval of an abbreviated new drug application, or ANDA. Generally, an ANDA provides for marketing of a drug product that has the same active ingredients in the same strengths and dosage form as the listed drug and has been shown through bioequivalence testing to be therapeutically equivalent to the listed drug. ANDA applicants are not required to conduct or submit results of preclinical or clinical tests to prove the safety or effectiveness of their drug product, other than the requirement for bioequivalence testing. Drugs approved in this way are commonly referred to as "generic equivalents" to the listed drug, and can often be substituted by pharmacists under prescriptions written for the original listed drug.

The ANDA applicant is required to certify to the FDA concerning any patents listed for the approved product in the FDA's Orange Book. Specifically, the applicant must certify that:

- the required patent information has not been filed;
- the listed patent has expired;
- the listed patent has not expired, but will expire on a particular date and approval is sought after patent expiration; or
- the listed patent is invalid or will not be infringed by the new product.

A certification that the new product will not infringe the already approved product's listed patents or that such patents are invalid is called a Paragraph IV certification. If the applicant does not challenge the listed patents, the ANDA application will not be approved until all the listed patents claiming the referenced product have expired.

If the ANDA applicant has provided a Paragraph IV certification to the FDA, the applicant must also send notice of the Paragraph IV certification to the NDA and patent holders once the ANDA has been accepted for filing by the FDA. The NDA and patent holders may then initiate a patent infringement lawsuit in response to the notice of the Paragraph IV certification. The filing of a patent infringement lawsuit within 45 days after the receipt of a Paragraph IV certification automatically prevents the FDA from approving the ANDA until the earlier of 30 months, expiration of the patent, settlement of the lawsuit or a decision in the infringement case that is favorable to the ANDA applicant.

The ANDA also will not be approved until any applicable non-patent exclusivity, such as exclusivity for obtaining approval of a new chemical entity, listed in the Orange Book for the referenced product has expired. Federal law provides a period of five years following approval of a drug containing no previously approved active ingredients during which ANDAs for generic versions of those drugs cannot be submitted unless the submission contains a Paragraph IV challenge to a listed patent, in which case the submission may be made four years following the original product approval. Federal law provides for a period of three years of exclusivity following approval of a listed drug that contains previously approved active ingredients but is approved in a new dosage form, route of administration or combination, or for a new use, the approval of which was required to be supported by new clinical trials conducted by or for the sponsor, during which the FDA cannot grant effective approval of an ANDA based on that listed drug. Under the Best Pharmaceuticals for Children Act, federal law also provides that periods of patent and non-patent marketing exclusivity listed in the Orange Book for a drug may be extended by six months if the NDA sponsor conducts pediatric studies identified by the FDA in a written request. For written requests issued by the FDA after September 27, 2007, the date of enactment of the FDAAA, the FDA must grant pediatric exclusivity no later than nine months prior to the date of expiration of patent or non-patent exclusivity in order for the six-month pediatric extension to apply to that exclusivity period.

Section 505(b)(2) new drug applications

Most drug products obtain FDA marketing approval pursuant to an NDA or an ANDA. A third alternative is a special type of NDA, commonly referred to as a Section 505(b)(2) NDA, which enables the applicant to rely, in part, on the FDA's previous approval of a similar product, or published literature, in support of its application.

505(b)(2) NDAs often provide an alternate path to FDA approval for new or improved formulations or new uses of previously approved products. Section 505(b)(2) permits the filing of an NDA where at least some of the information required for approval comes from studies not conducted by or for the applicant and for which the applicant has not obtained a right of reference. If the 505(b)(2) applicant can establish that reliance on the FDA's previous approval is scientifically appropriate, it may eliminate the need to conduct certain preclinical or clinical studies of the new product. The FDA may also require companies to perform additional studies or measurements to support the change from the approved product. The FDA may then approve the new product candidate for all or some of the label indications for which the referenced product has been approved, as well as for any new indication sought by the Section 505(b)(2) applicant.

To the extent that the Section 505(b)(2) applicant is relying on studies conducted for an already approved product, the applicant is required to certify to the FDA concerning any patents listed

for the approved product in the Orange Book to the same extent that an ANDA applicant would. As a result, approval of a 505(b)(2) NDA can be stalled until all the listed patents claiming the referenced product have expired, until any non-patent exclusivity, such as exclusivity for obtaining approval of a new chemical entity, listed in the Orange Book for the referenced product has expired, and, in the case of a Paragraph IV certification and subsequent patent infringement suit, until the earlier of 30 months, settlement of the lawsuit or a decision in the infringement case that is favorable to the Section 505(b)(2) applicant.

Combination products

The FDA regulates combinations of products that cross FDA centers, such as biologic, drug or medical device components that are physically, chemically or otherwise combined into a single entity, as a combination product. The FDA center with primary jurisdiction for the combination product will take the lead in the premarket review of the product using that center's marketing application for submission purposes, with the other center consulting or collaborating with the lead center.

The FDA's Office of Combination Products, or OCP, determines which center will have primary jurisdiction for the combination product based on the combination product's "primary mode of action." A mode of action is the means by which a product achieves an intended therapeutic effect or action. The primary mode of action is the mode of action that provides the most important therapeutic action of the combination product, or the mode of action expected to make the greatest contribution to the overall intended therapeutic effects of the combination product.

Often it is difficult for the OCP to determine with reasonable certainty the most important therapeutic action of the combination product. In those difficult cases, the OCP will consider consistency with other combination products raising similar types of safety and effectiveness questions, or which center has the most expertise to evaluate the most significant safety and effectiveness questions raised by the combination product.

A sponsor may use a voluntary formal process, known as a Request for Designation, when the product classification is unclear or in dispute, to obtain a binding decision as to which center will regulate the combination product. If the sponsor objects to that decision, it may request that the agency reconsider that decision.

Biosimilars law

The Biologics Price Competition and Innovation Act of 2009, or BPCIA, amended the PHSA to create a new licensure framework for biosimilar products, which could ultimately subject our biological products to competition. Under the BPCIA, a manufacturer may submit an application for licensure of a biologic product that is "biosimilar to" or "interchangeable with" a referenced, branded biologic product. Previously, there had been no licensure pathway for such biosimilar or interchangeable products. For purposes of the BPCIA, a reference product is defined as the single biological product licensed under a full BLA against which a biological product is evaluated in an application submitted under a follow-on BLA.

The BPCIA also created a 12-year period of reference product exclusivity, which can be extended to $12^{1}/_{2}$ years with pediatric exclusivity. The 12-year exclusivity period begins on the date of first licensure of the reference product under the PHSA and during which the licensure

of a follow-on application for a biosimilar or interchangeable product cannot be made effective. During the first four years (or four and one-half years with pediatric exclusivity) of the 12-year period, an application for a biosimilar or interchangeable version of the reference product cannot be submitted to the FDA. Under a budget proposal President Obama submitted to Congress in 2011, beginning in 2012, reference product exclusivity would decrease from 12 to seven years. Congress has not yet enacted, but could move to enact, such a decrease in the reference product exclusivity period.

The BPCIA includes limits on obtaining 12-year reference product exclusivity for certain changes or modifications to the reference product. A separate 12-year reference product exclusivity period does not apply to:

- a BLA supplement for the product that is the reference product;
- a subsequent BLA filed by the same reference product sponsor or manufacturer (or a licensor, predecessor in interest, or other related entity) for a change (not including a modification to the structure of the biological product) that results in a new indication, route of administration, dosing schedule, dosage form, delivery system, delivery device or strength; or
- a modification to the structure of the biological product that does not result in a change in safety, purity or potency.

The FDA has not yet issued proposed regulations setting forth its interpretation of the BPCIA's exclusivity provisions and it is unclear when the FDA will do so.

In addition to creating a 12-year period of reference product exclusivity, the BPCIA clarifies the interaction of that exclusivity with orphan drug exclusivity, such that the licensure of a biosimilar or interchangeable version of a reference product that was designated and approved as an orphan drug may only occur after the later of the expiration of any applicable seven-year orphan drug exclusivity or the 12-year reference product exclusivity (or seven and one-half years and $12^{1}/_{2}$ years with pediatric exclusivity).

Like pediatric exclusivity applicable to drug products approved under the FDCA, pediatric exclusivity applicable to biological reference products is subject to an exception. Pediatric exclusivity will not apply to either the 12-year reference product or the seven-year orphan drug exclusivity periods if the FDA determines later than nine months prior to the expiration of such period that the study reports a BLA sponsor submitted in response to a written request for pediatric studies met the terms of that request.

Our investigational biological products, if approved, could be considered reference products entitled to 12-year exclusivity. Even if our products are considered to be reference products eligible for exclusivity, another company could market a competing version of any of our biological products if the FDA approves a full BLA for such product containing the sponsor's own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of their product.

The BPCIA also sets forth a complex mechanism for resolving patent disputes that involves a step-wise exchange of information prior to the initiation of a patent infringement lawsuit against a biosimilar or interchangeable product sponsor. Unlike the Hatch-Waxman Act, the BPCIA provides no automatic stay on approval of a biosimilar or interchangeable product application.

Overview of FDA regulation of companion diagnostics

We are developing *in vitro* and *in vivo* companion diagnostics for use in selecting the patients that we believe will respond to our cancer therapeutics.

FDA officials have issued draft guidance that, when finalized, would address issues critical to developing *in vitro* companion diagnostics, such as biomarker qualification, establishing clinical validity, the use of retrospective data, the appropriate patient population and when the FDA will require that the device and the drug be approved simultaneously. The draft guidance issued in July 2011 states that if safe and effective use of a therapeutic depends on an *in vitro* diagnostic, then the FDA generally will require approval or clearance of the diagnostic at the same time that the FDA approves the therapeutic. The FDA has yet to issue further guidance, and it is unclear whether it will do so, or what the scope would be.

The FDA previously has required *in vitro* companion diagnostics intended to select the patients who will respond to the cancer treatment to obtain PMA, simultaneously with approval of the drug or licensure of the biologic. Based on the draft guidance, and the FDA's past treatment of companion diagnostics, we believe that the FDA will require one or more of our *in vitro* companion diagnostics to obtain PMA for our companion diagnostics to identify patient populations suitable for our cancer therapies, such as the *in vitro* companion diagnostic for MM-121. The review of these *in vitro* companion diagnostics in conjunction with the review of our cancer treatments involves coordination of review by CDER and by the FDA's Center for Devices and Radiological Health Office of In Vitro Diagnostics Device Evaluation and Safety.

Our *in vivo* companion diagnostics, which are in the form of imaging agents, are regulated as drugs by CDER and, as such, are generally subject to the regulatory requirements applicable to other new drug candidates.

PMA approval pathway

A medical device, including an *in vitro* diagnostic, or IVD, to be commercially distributed in the United States must receive either 510(k) clearance or PMA approval from the FDA prior to marketing. Devices deemed by the FDA to pose the greatest risk, such as life-sustaining, life supporting or implantable devices, or devices deemed not substantially equivalent to a previously 510(k) cleared device or a preamendment class III device for which PMA applications have not been called, are placed in Class III requiring PMA approval. The PMA approval pathway requires proof of the safety and effectiveness of the device to the FDA's satisfaction. The PMA approval pathway generally takes from one to three years or even longer from submission of the application.

A PMA application for an IVD must provide extensive preclinical and clinical trial data. Preclinical data for an IVD includes many different tests, including how reproducible the results are when the same sample is tested multiple times by multiple users at multiple laboratories. The clinical data need to establish that the test is sufficiently safe, effective and reliable in the intended use population. In addition, the FDA must be convinced that a device has clinical utility, meaning that an IVD provides information that is clinically meaningful. A biomarker's clinical significance may be obvious, or the applicant may be able to rely upon published literature or submit data to show clinical utility.

A PMA application also must provide information about the device and its components regarding, among other things, device design, manufacturing and labeling. The sponsor must pay an application fee.

As part of the PMA review, the FDA will typically inspect the manufacturer's facilities for compliance with Quality System Regulation, or QSR, requirements, which impose elaborate testing, control, documentation and other quality assurance procedures.

Upon submission, the FDA determines if the PMA application is sufficiently complete to permit a substantive review, and, if so, the FDA accepts the application for filing. The FDA then commences an in-depth review of the PMA application. The entire process typically takes one to three years, but may take longer. The review time is often significantly extended as a result of the FDA asking for more information or clarification of information already provided. The FDA also may respond with a not approvable determination based on deficiencies in the application and require additional clinical trials that are often expensive and time-consuming and can substantially delay approval.

During the review period, an FDA advisory committee, typically a panel of clinicians, likely will be convened to review the application and recommend to the FDA whether, or upon what conditions, the device should be approved. Although the FDA is not bound by the advisory panel decision, the panel's recommendation is important to the FDA's overall decision making process.

If the FDA's evaluation of the PMA application is favorable, the FDA typically issues an approvable letter requiring the applicant's agreement to specific conditions, such as changes in labeling, or specific additional information, such as submission of final labeling, in order to secure final approval of the PMA. If the FDA concludes that the applicable criteria have been met, the FDA will issue a PMA for the approved indications, which can be more limited than those originally sought by the manufacturer. The PMA can include post-approval conditions that the FDA believes necessary to ensure the safety and effectiveness of the device, including, among other things, restrictions on labeling, promotion, sale and distribution. Failure to comply with the conditions of approval can result in material adverse enforcement action, including the loss or withdrawal of the approval.

Even after approval of a PMA, a new PMA or PMA supplement may be required in the event of a modification to the device, its labeling or its manufacturing process. Supplements to a PMA often require the submission of the same type of information required for an original PMA, except that the supplement is generally limited to the information needed to support the proposed change from the product covered by the original PMA.

Clinical trials

A clinical trial is almost always required to support a PMA application. In some cases, one or more smaller Investigational Device Exemption, or IDE, studies may precede a pivotal clinical trial intended to demonstrate the safety and efficacy of the investigational device.

All clinical studies of investigational devices must be conducted in compliance with the FDA's requirements. If an investigational device could pose a significant risk to patients pursuant to FDA regulations, the FDA must approve an IDE application prior to initiation of investigational use. IVD trials usually do not require an IDE, as the FDA does not judge them to be a

significant risk because the results do not affect the patients in the study. However, for a trial where the IVD result directs the therapeutic care of patients with cancer, we believe that the FDA would consider the investigation to present significant risk.

An IDE application must be supported by appropriate data, such as laboratory test results, showing that it is safe to test the device in humans and that the testing protocol is scientifically sound. The FDA typically grants IDE approval for a specified number of patients. A nonsignificant risk device does not require FDA approval of an IDE. Both significant risk and nonsignificant risk investigational devices require approval from IRBs at the study centers where the device will be used.

During the trial, the sponsor must comply with the FDA's IDE requirements for investigator selection, trial monitoring, reporting and record keeping. The investigators must obtain patient informed consent, rigorously follow the investigational plan and study protocol, control the disposition of investigational devices and comply with all reporting and record keeping requirements. Prior to granting PMA approval, the FDA typically inspects the records relating to the conduct of the study and the clinical data supporting the PMA application for compliance with applicable requirements.

Although the QSR does not fully apply to investigational devices, the requirement for controls on design and development does apply. The sponsor also must manufacture the investigational device in conformity with the quality controls described in the IDE application and any conditions of IDE approval that the FDA may impose with respect to manufacturing.

Post-market

After a device is on the market, numerous regulatory requirements apply. These requirements include: the QSR, labeling regulations, the FDA's general prohibition against promoting products for unapproved or "off label" uses, the Medical Device Reporting regulation, which requires that manufacturers report to the FDA if their device may have caused or contributed to a death or serious injury or malfunctioned in a way that would likely cause or contribute to a death or serious injury if it were to recur, and the Reports of Corrections and Removals regulation, which requires manufacturers to report recalls and field actions to the FDA if initiated to reduce a risk to health posed by the device or to remedy a violation of the FDCA.

The FDA enforces these requirements by inspection and market surveillance. If the FDA finds a violation, it can institute a wide variety of enforcement actions, ranging from a public warning letter to more severe sanctions such as: fines, injunctions and civil penalties; recall or seizure of products; operating restrictions, partial suspension or total shutdown of production; refusing requests for PMA approval of new products; withdrawing PMA approvals already granted; and criminal prosecution.

Other regulatory requirements

Any drug or biological products manufactured or distributed by us pursuant to FDA approvals are subject to pervasive and continuing regulation by the FDA, including, among other things, requirements relating to recordkeeping, periodic reporting, product sampling and distribution, advertising and promotion and reporting of adverse experiences with the product. After approval, most changes to the approved product, such as adding new indications or other labeling claims are subject to prior FDA review and approval.

The FDA may impose a number of post-approval requirements as a condition of approval of an NDA or BLA. For example, the FDA may require post-marketing testing, including phase 4 clinical trials, and surveillance to further assess and monitor the product's safety and effectiveness after commercialization. Regulatory approval of oncology products often requires that patients in clinical trials be followed for long periods to determine the overall survival benefit of the drug or biologic.

In addition, drug and biologic manufacturers and other entities involved in the manufacture and distribution of approved drugs and biological products are required to register their establishments with the FDA and state agencies, and are subject to periodic unannounced inspections by the FDA and these state agencies for compliance with cGMP requirements. Changes to the manufacturing process are strictly regulated and often require prior FDA approval before being implemented. FDA regulations also require investigation and correction of any deviations from cGMP and impose reporting and documentation requirements upon us and any third party manufacturers that we may decide to use. Accordingly, manufacturers must continue to expend time, money and effort in the areas of production and quality control to maintain cGMP compliance.

Once an approval is granted, the FDA may withdraw the approval if compliance with regulatory requirements and standards is not maintained or if problems occur after the product reaches the market. Later discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, or with manufacturing processes, or failure to comply with regulatory requirements, may result in revisions to the approved labeling to add new safety information, imposition of post-market studies or clinical trials to assess new safety risks or imposition of distribution or other restrictions under a Risk Evaluation and Mitigation Strategy program. Other potential consequences include, among other things:

- restrictions on the marketing or manufacturing of the product, complete withdrawal of the product from the market or product recalls;
- fines, warning letters or holds on post-approval clinical trials;
- refusal of the FDA to approve pending applications or supplements to approved applications, or suspension or revocation of product license approvals;
- product seizure or detention, or refusal to permit the import or export of products; or
- consent decrees, injunctions or the imposition of civil or criminal penalties.

The FDA strictly regulates marketing, labeling, advertising and promotion of products that are placed on the market. Drugs and biologics may be promoted only for the approved indications and in accordance with the provisions of the approved label. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off label uses, and a company that is found to have improperly promoted off label uses may be subject to significant liability.

Additional provisions

Anti-kickback and false claims laws

In addition to FDA restrictions on marketing of pharmaceutical products, several other types of state and federal laws have been applied to restrict certain marketing practices in the

pharmaceutical industry in recent years. These laws include anti-kickback statutes and false claims statutes. The federal healthcare program anti-kickback statute prohibits, among other things, knowingly and willfully offering, paying, soliciting or receiving remuneration to induce or in return for purchasing, leasing, ordering or arranging for the purchase, lease or order of any healthcare item or service reimbursable under Medicare, Medicaid or other federally financed healthcare programs. This statute has been interpreted to apply to arrangements between pharmaceutical manufacturers on the one hand and prescribers, purchasers and formulary managers on the other. Violations of the anti-kickback statute are punishable by imprisonment, criminal fines, civil monetary penalties and exclusion from participation in federal healthcare programs. Although there are a number of statutory exemptions and regulatory safe harbors protecting certain common activities from prosecution or other regulatory sanctions, the exemptions and safe harbors are drawn narrowly, and practices that involve remuneration intended to induce prescribing, purchases or recommendations may be subject to scrutiny if they do not qualify for an exemption or safe harbor.

Federal false claims laws prohibit any person from knowingly presenting, or causing to be presented, a false claim for payment to the federal government, or knowingly making, or causing to be made, a false statement to have a false claim paid. Recently, several pharmaceutical and other healthcare companies have been prosecuted under these laws for allegedly inflating drug prices they report to pricing services, which in turn were used by the government to set Medicare and Medicaid reimbursement rates, and for allegedly providing free product to customers with the expectation that the customers would bill federal programs for the product. In addition, certain marketing practices, including off-label promotion, may also violate false claims laws. The majority of states also have statutes or regulations similar to the federal anti-kickback law and false claims laws, which apply to items and services reimbursed under Medicaid and other state programs, or, in several states, apply regardless of the payor.

Physician drug samples

As part of the sales and marketing process, pharmaceutical companies frequently provide samples of approved drugs to physicians. The Prescription Drug Marketing Act, or the PDMA, imposes requirements and limitations upon the provision of drug samples to physicians, as well as prohibits states from licensing distributors of prescription drugs unless the state licensing program meets certain federal guidelines that include minimum standards for storage, handling and record keeping. In addition, the PDMA sets forth civil and criminal penalties for violations.

Foreign regulation

In order to market any product outside of the United States, we would need to comply with numerous and varying regulatory requirements of other countries regarding safety and efficacy and governing, among other things, clinical trials, marketing authorization, commercial sales and distribution of our products. Whether or not we obtain FDA approval for a product, we would need to obtain the necessary approvals by the comparable regulatory authorities of foreign countries before we can commence clinical trials or marketing of the product in those countries. The approval process varies from country to country and can involve additional product testing and additional administrative review periods. The time required to obtain approval in other countries might differ from and be longer than that required to obtain FDA

approval. Regulatory approval in one country does not ensure regulatory approval in another, but a failure or delay in obtaining regulatory approval in one country may negatively impact the regulatory process in others.

To date, other than applying for orphan medicinal product designation in the European Union for MM-398 for the treatment of pancreatic cancer, we have not initiated any discussions with the European Medicines Agency or any other foreign regulatory authorities with respect to seeking regulatory approval for any of our products in Europe or in any other country outside the United States.

New legislation and regulations

From time to time, legislation is drafted, introduced and passed in Congress that could significantly change the statutory provisions governing the testing, approval, manufacturing and marketing of products regulated by the FDA. For example, the FDAAA and the BPCIA discussed above were enacted in 2007 and 2010, respectively. In addition to new legislation, FDA regulations and policies are often revised or interpreted by the agency in ways that may significantly affect our business and our products. It is impossible to predict whether further legislative changes will be enacted or whether FDA regulations, guidance, policies or interpretations changed or what the effect of such changes, if any, may be.

Pharmaceutical coverage, pricing and reimbursement

Significant uncertainty exists as to the coverage and reimbursement status of any drug products for which we obtain regulatory approval. Sales of any of our product candidates, if approved, will depend, in part, on the extent to which the costs of the products will be covered by third party payors, including government health programs such as Medicare and Medicaid, commercial health insurers and managed care organizations. The process for determining whether a payor will provide coverage for a drug product may be separate from the process for setting the price or reimbursement rate that the payor will pay for the drug product once coverage is approved. Third party payors may limit coverage to specific drug products on an approved list, or formulary, which might not include all of the approved drugs for a particular indication.

In order to secure coverage and reimbursement for any product that might be approved for sale, we may need to conduct expensive pharmacoeconomic studies in order to demonstrate the medical necessity and cost-effectiveness of the product, in addition to the costs required to obtain FDA or other comparable regulatory approvals. Our product candidates may not be considered medically necessary or cost-effective. A payor's decision to provide coverage for a drug product does not imply that an adequate reimbursement rate will be approved. Third party reimbursement may not be sufficient to enable us to maintain price levels high enough to realize an appropriate return on our investment in product development.

The containment of healthcare costs has become a priority of federal, state and foreign governments, and the prices of drugs have been a focus in this effort. Third party payors are increasingly challenging the prices charged for medical products and services and examining the medical necessity and cost-effectiveness of medical products and services, in addition to their safety and efficacy. If these third party payors do not consider our products to be cost-effective compared to other available therapies, they may not cover our products after approval as a benefit under their plans or, if they do, the level of payment may not be

sufficient to allow us to sell our products at a profit. The U.S. government, state legislatures and foreign governments have shown significant interest in implementing cost containment programs to limit the growth of government-paid health care costs, including price controls, restrictions on reimbursement and requirements for substitution of generic products for branded prescription drugs. Adoption of such controls and measures, and tightening of restrictive policies in jurisdictions with existing controls and measures, could limit payments for pharmaceuticals such as the drug candidates that we are developing and could adversely affect our net revenue and results.

Pricing and reimbursement schemes vary widely from country to country. Some countries provide that drug products may be marketed only after a reimbursement price has been agreed. Some countries may require the completion of additional studies that compare the cost-effectiveness of a particular product candidate to currently available therapies. For example, the European Union provides options for its member states to restrict the range of drug products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. European Union member states may approve a specific price for a drug product or may instead adopt a system of direct or indirect controls on the profitability of the company placing the drug product on the market. Other member states allow companies to fix their own prices for drug products, but monitor and control company profits. The downward pressure on health care costs in general, particularly prescription drugs, has become very intense. As a result, increasingly high barriers are being erected to the entry of new products. In addition, in some countries, cross-border imports from low-priced markets exert competitive pressure that may reduce pricing within a country. There can be no assurance that any country that has price controls or reimbursement limitations for drug products will allow favorable reimbursement and pricing arrangements for any of our products.

The marketability of any products for which we receive regulatory approval for commercial sale may suffer if the government and third party payors fail to provide adequate coverage and reimbursement. In addition, an increasing emphasis on managed care in the United States has increased and we expect will continue to increase the pressure on drug pricing. Coverage policies, third party reimbursement rates and drug pricing regulation may change at any time. In particular, the Patient Protection and Affordable Care Act was enacted in the United States in March 2010 and contains provisions that may reduce the profitability of drug products, including, for example, increased rebates for drugs sold to Medicaid programs, extension of Medicaid rebates to Medicaid managed care plans, mandatory discounts for certain Medicare Part D beneficiaries and annual fees based on pharmaceutical companies' share of sales to federal health care programs. Even if favorable coverage and reimbursement status is attained for one or more products for which we receive regulatory approval, less favorable coverage policies and reimbursement rates may be implemented in the future.

Employees

As of September 30, 2011, we had 197 full-time employees, including a total of 73 employees with M.D. or Ph.D. degrees. Of these full-time employees, 166 employees are engaged in research, development and manufacturing. None of our employees is represented by a labor union or covered by collective bargaining agreements. We consider our relationship with our employees to be good.

Facilities

Our principal facilities consist of approximately 77,000 square feet of research, manufacturing and office space located at One Kendall Square in Cambridge, Massachusetts. The lease on approximately 33,000 square feet of this space expires in April 2015. The lease on the remaining approximately 44,000 square feet of this space expires in April 2013, subject to our option to extend the lease for two individual one year terms to either April 2014 or April 2015. At the expiration of our lease in 2015, we retain an option to renew the lease on all of our current space for an additional five years.

The facilities of our Silver Creek subsidiary consist of approximately 1,715 square feet of research and office space located in San Francisco, California. The lease on this space expires in September 2012, subject to an option to extend the lease for six additional months.

Legal proceedings

We are currently engaged in three ongoing opposition proceedings to European patents in the European Patent Office to narrow or invalidate the claims of patents owned by third parties. We have obtained favorable interim decisions in two of the oppositions. These decisions are now under appeal. In the third opposition, we have received a favorable preliminary opinion. The ultimate outcome of all three oppositions remains uncertain.

We filed our notice of opposition in the first proceeding, opposing a patent (EP 0896586) held by Genentech, in July 2007 on the grounds of added matter, insufficient disclosure, lack of novelty and lack of inventive step. Amgen and U3 Pharma also opposed the Genentech patent. If the issued claims of the Genentech patent were determined to be valid and construed to cover MM-121 or MM-111, our development and commercialization of these product candidates in Europe could be delayed or prevented. In August 2009, the European Patent Office issued a written decision rejecting several sets of Genentech's claims and upholding the patent solely on the basis of a further set of claims that we believe will not restrict the development or commercialization of MM-121 or MM-111. All parties have appealed this decision. Pending the outcome of the appeal proceedings, the original issued claims of the Genentech patent remain in effect. Each party has submitted written statements regarding the appeal to the European Patent Office. No date has been set for a hearing for the appeal.

We filed our notice of opposition in the second proceeding, opposing a patent (EP 1187634) held by Zensun (Shanghai) Science and Technology Ltd., or Zensun, in September 2008 on the grounds of added matter, insufficient disclosure, lack of novelty and lack of inventive step. If the issued claims of the Zensun patent were determined to be valid and construed to cover MM-111, our development and commercialization of MM-111 in Europe could be delayed or prevented. In August 2010, the European Patent Office issued a written decision revoking Zensun's patent. Zensun has appealed this decision. Pending the outcome of this appeal, the original issued claims of the Zensun patent remain in effect. Each party has submitted written statements regarding the appeal to the European Patent Office. No date has been set for a hearing for the appeal.

We filed our notice of opposition in the third proceeding, opposing a patent (EP 1414494) held by Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., or Max-Planck, in December 2009 on the grounds of added matter, insufficient disclosure, lack of novelty and lack of inventive step. A number of other pharmaceutical companies are also opposing the Max-Planck patent. If the issued claims of the Max-Planck patent were determined to be valid and construed to cover MM-121, our development and commercialization of MM-121 in Europe could be delayed or prevented. In February 2011, the European Patent Office issued a favorable preliminary, non-binding opinion indicating that Max-Planck does not currently have any valid sets of claims on file with respect to this patent. A hearing for this opposition was scheduled for November 2011. However, in October 2011, Max-Planck withdrew its request for a hearing and requested that the opposition instead continue in writing.

We are not currently a party to any other material legal proceedings.

Management

The following table sets forth the name, age and position of each of our executive officers and directors as of September 30, 2011.

Name	Age	Position
Robert J. Mulroy(4)	47	President, Chief Executive Officer and Director
Fazal R. Khan, Ph.D.	61	Senior Vice President of Manufacturing
Ulrik B. Nielsen, Ph.D.	39	Senior Vice President and Chief Scientific Officer
Clet M. Niyikiza, Ph.D.	53	Executive Vice President of Development
Edward J. Stewart	40	Senior Vice President of Business Development
William A. Sullivan	40	Chief Financial Officer and Treasurer
Gary L. Crocker(2)(4)	59	Chairman of the Board of Directors
James van B. Dresser(1)	69	Director
Gordon J. Fehr(1)(3)	78	Director
Robert C. Gay, Ph.D.(2)	60	Director
Walter M. Lovenberg, Ph.D.(3)	77	Director
Sarah E. Nash(1)	57	Director
Michael E. Porter, Ph.D.(4)	64	Director
Anthony J. Sinskey, Sc.D.(3)	71	Director

(1) Member of the audit committee.

(2) Member of the corporate governance and nominating committee.

(3) Member of the organization and compensation committee.

(4) Member of the executive committee.

Robert J. Mulroy has served as our President and Chief Executive Officer and a member of our board of directors since May 1999. Prior to joining us, Mr. Mulroy worked as a management consultant in the pharmaceutical and healthcare industries. Mr. Mulroy has also worked as a consultant in the field of international development and has served as an advisor to multiple start-up companies in the biotechnology industry. Mr. Mulroy holds a master's degree in public and private management from Yale University and a B.A. from Stanford University. We believe that Mr. Mulroy is qualified to serve on our board of directors because of his extensive executive leadership experience, many years of service as one of our directors and our President and Chief Executive Officer and extensive knowledge of our company and industry.

Fazal R. Khan, Ph.D. has served as our Senior Vice President of Manufacturing since April 2006. Prior to joining us, Dr. Khan served as Vice President of Manufacturing for Cellective Therapeutics, Inc., Vice President of Manufacturing Operations at Human Genome Sciences and Director of Biopharmaceuticals Development and Manufacturing at Hoffmann-LaRoche, Inc. Dr. Khan holds a Ph.D. and an M.S. in biochemistry and a B.S. in biology from Aligarh University in India.

Ulrik B. Nielsen, Ph.D. has served as our Senior Vice President and Chief Scientific Officer since March 2009. Dr. Nielsen has also served as President and Chief Executive Officer and as a

member of the board of directors of Silver Creek Pharmaceuticals, Inc., since July 2010. Dr. Nielsen was one of our co-founders and has been leading our research and drug discovery since March 2002, first as our Director of Research from March 2002 to December 2004 and then as our Vice President of Research from January 2005 to February 2009. Prior to joining us, Dr. Nielsen was a post-doctoral fellow at The Massachusetts Institute of Technology, or MIT, where he researched the interface among biology, engineering and computational biology. Dr. Nielsen holds a Ph.D. in molecular biology and an M.S. in biochemistry from the University of Copenhagen.

Clet M. Niyikiza, Ph.D. has served as our Executive Vice President of Development since February 2010. Dr. Niyikiza served as our Senior Vice President of Product Development from July 2009 to February 2010. Previously, Dr. Niyikiza served as Vice President and Medicine Development Leader at GlaxoSmithKline, overseeing product development and global anti-cancer medicine development strategy, from 2005 to July 2009. Prior to that, Dr. Niyikiza held multiple high level positions at Eli Lilly and Company, where he ultimately led the oncology translational and applied genomics research division. Dr. Niyikiza holds a Ph.D. in mathematical sciences and an M.A. in mathematics from Indiana University.

Edward J. Stewart has served as our Senior Vice President of Business Development since March 2009. Mr. Stewart served as our Director of Business Development from August 2001 to July 2006, as our Senior Director of Business Development from August 2006 to July 2007 and as our Vice President of Business Development from July 2007 to March 2009. Mr. Stewart began his career at KPMG Peat Marwick LLP in the life sciences strategy consulting group. Mr. Stewart holds an M.B.A. from the Johnson Graduate School of Management at Cornell University and a B.S. in biology from Bates College.

William A. Sullivan has served as our Chief Financial Officer since May 2011 and our Treasurer since February 2010. Mr. Sullivan served as our Controller from November 2007 to February 2010 and our Vice President of Finance from February 2010 to May 2011. Previously, Mr. Sullivan served as Corporate Controller of Vette Corp., a thermal management solutions company, from October 2004 to November 2007. Mr. Sullivan began his career at Arthur Andersen LLP, where he obtained his certified public accountant license. Mr. Sullivan holds an M.B.A. and an M.S. in accounting from Northeastern University's Graduate School of Professional Accounting and a B.A. in economics from Williams College.

Gary L. Crocker has served as a member of our board of directors since 2004 and as chairman of our board of directors since 2005. Mr. Crocker is President, Manager and Chairman of Crocker Ventures, LLC, a privately-held life science investment firm funding differentiated technologies in the areas of biotechnology and medical devices. Mr. Crocker has held senior executive positions or served on the board of directors of several privately-held life science companies, including as chairman of the board of ARUP Laboratories, co-founder and director of Theratech, Inc., President and Chief Executive Officer, founder and member of the board of directors of Research Medical, Inc. and as a member of the board of directors of Interleuken Genetics, Inc., The Med-Design Corporation and LineaGen Genetics, LLC. Mr. Crocker served as a member of the board of the Federal Reserve Branch of San Francisco from 1999 to 2007. Mr. Crocker also serves as a member of the board of directors of Sorenson Legacy Foundation. Mr. Crocker holds an M.B.A. and a B.S. in economics from Harvard University. We believe that Mr. Crocker is qualified to serve on our board of directors due to his experience in the life sciences industry as an entrepreneur, venture capitalist and executive and his service on the

boards of directors of a range of public and private companies and government institutions, as well as his ability to provide us with his expertise in diagnostics and therapeutic development.

James van B. Dresser has served as a member of our board of directors since 1999. From 1970 until his retirement in 1997, Mr. Dresser held various consulting and leadership positions at The Boston Consulting Group, including serving as the firm's first Chief Administrative Officer from 1982 to 1997. Mr. Dresser served on the Board of Trustees of Wesleyan University from 1990 until 1993 and again from 1995 until 2009, when he also served as the chairman of the Board of Trustees. Mr. Dresser currently serves as a selectman for the Town of Salisbury, Connecticut. Mr. Dresser holds an M.B.A. from Harvard University, an M.A. from the Fletcher School of Law and Diplomacy at Tufts University and a B.A. from Wesleyan University. We believe that Mr. Dresser is qualified to serve on our board of directors due to his background and experience in business and organizational strategy, both as a consultant for and the chief administrative officer of a global management consulting firm and his prior board service.

Gordon J. Fehr has served as a member of our board of directors since 1999. Mr. Fehr also currently serves on the board of directors of the Research Institute of McGill University Health Centers. In 1963, Mr. Fehr joined Pfizer Canada, Inc., or Pfizer Canada, as the Assistant to the President of Pfizer Canada and later became Pfizer Canada's Controller and the General Manager of the Chemical Division. In 1972, Mr. Fehr was named Chairman and President of Pfizer Canada, a position he held until his retirement in 1994. Mr. Fehr served as a member of the board of directors of Labopharm, Inc. from 1998 to 2007. Mr. Fehr also served as President and Chairman of the Montreal Board of Trade from 1983 to 1984 and as a member of board of directors of the Montreal Airport Authority from 1992 to 2002. In addition, Mr. Fehr has served on advisory boards for the National Research Council's Biotechnology Research Institute and the Montreal Center of Innovative Technology, where he was Chairman of the biotechnology committee. Mr. Fehr holds a B.Eng. in chemical engineering from McGill University. We believe that Mr. Fehr is qualified to serve on our board of directors due to his expertise in the commercialization of pharmaceuticals, his leadership and management experience from his service as an executive for a public pharmaceutical company and his knowledge of our business and industry.

Robert C. Gay, Ph.D. has served as a member of our board of directors since 2007. Dr. Gay currently is a Managing Director and the Chief Executive Officer of Huntsman Gay Global Capital, a private equity firm, which he co-founded in 2008. From 2004 to 2007, Dr. Gay served as a Mission President for the Church of Jesus Christ of Latter-day Saints in Ghana. From 1989 to 2004, Dr. Gay was a Managing Director of Bain Capital. Prior to that, Dr. Gay served as an Executive Vice President of General Electric Credit Corporation Capital Markets Group. Dr. Gay serves on the board of directors of The Gymboree Corporation and Sunquest Information Systems, Inc. and serves as vice chairman of the board of directors of ICON Health & Fitness, Inc. Dr. Gay holds a Ph.D. in business economics from Harvard Business School and an A.B. from the University of Utah. We believe that Dr. Gay is qualified to serve on our board of directors due to his educational qualifications and his broad industry experience in business management, financing and development, as well as the unique perspective he brings from the range of executive positions and directorships that he has held and currently holds.

Walter M. Lovenberg, Ph.D. has served as a member of our board of directors since 2000. Dr. Lovenberg is the President of Lovenberg Associates, Inc., a privately-held corporation, a position he has held since 1993 and is also the current acting Chief Executive Officer and a

director of Quantum Bio, Inc. Dr. Lovenberg served on the board of directors of OSI Pharmaceuticals, Inc. from 1994 until 2008 and as the chairman of the board of directors of Inflazyme Pharmaceuticals from 1996 until 2006. Dr. Lovenberg served as Executive Vice President and a member of the board of directors of Marion Merrell Dow, Inc. from 1989 until 1993. Dr. Lovenberg served as Chief of the section of Biochemical Pharmacology at the National Institutes of Health from 1968 to 1985. Dr. Lovenberg holds a Ph.D. from the George Washington University School of Medicine and Health Sciences and an M.S. in agricultural biochemistry and a B.S. in agriculture from Rutgers University. We believe that Dr. Lovenberg is qualified to serve on our board of directors due to his expertise and experience in drug discovery, development and management, his experience leading global research and development efforts, and his service on the board of directors at several pharmaceutical companies.

Sarah E. Nash has served as a member of our board of directors since 2006. Ms. Nash also currently serves on the boards of directors of Knoll Inc. and Blackbaud Inc. From 2000 until her retirement in 2005, Ms. Nash served as vice chairman of JPMorgan Chase & Co.'s Investment Bank where she was responsible for the firm's client relationships. Prior to that, Ms. Nash was the Regional Executive and Co-Head of Investment Banking for North America at JPMorgan Chase & Co. Previously, Ms. Nash served on the board of directors of Pathmark Stores, Inc. from 2005 to 2009 and AbitibiBowater from 2010 to 2011. Ms. Nash also serves as a Trustee for the New York-Presbyterian Hospital, a Trustee of Washington and Lee University and on the boards of The New York Historical Society, The New York Restoration Project and the Business Leadership Council of The City University of New York. Ms. Nash holds a B.A. from Vassar College. We believe that Ms. Nash is qualified to serve on our board of directors due to her financial expertise, her experience serving on the boards of other public and private companies and her management background as an executive in the financial services industry.

Michael E. Porter, Ph.D. has served as a member of our board of directors since December 2010 and has been a strategy advisor to us since 1999. Dr. Porter is the Bishop William Lawrence University Professor at Harvard Business School and has been on the faculty at Harvard Business School since 1973. Dr. Porter also serves on the boards of directors of Parametric Technology Corporation and Thermo Fisher Scientific Inc. Dr. Porter has written extensively on healthcare delivery and has worked with leading healthcare providers in multiple countries and with government leaders on healthcare policy issues. Dr. Porter holds a Ph.D. in business economics from Harvard University, an M.B.A. from Harvard Business School and a B.S.E. in aerospace and mechanical engineering from Princeton University. We believe that Dr. Porter is qualified to serve on our board of directors due to his expertise in corporate strategy, healthcare delivery and the development of companies in the life sciences industry, as well as his experience as an advisor and consultant to many leading companies globally, including a range of healthcare and pharmaceutical companies.

Anthony J. Sinskey, Sc.D. has served as a member of our board of directors since 1999 and is one of our co-founders. Dr. Sinskey is a Professor of Microbiology and Engineering Systems at MIT and a Professor of Health Sciences and Technology at the Harvard-MIT Division of Health Sciences and Technology, and he has been a member of the faculty at MIT since 1968. Dr. Sinskey also holds positions as Co-Director of the Malaysia-MIT Biotechnology Partnership Program and as Faculty Director of the Center for Biomedical Innovation. Dr. Sinskey is a co-founder and a member of the boards of directors of Metabolix, Inc. and Tepha, Inc. and a

consultant to several chemical and biotechnology companies. Dr. Sinskey received an Sc.D. from MIT and a B.S. from the University of Illinois, and he was a post-doctoral fellow at the Harvard School of Public Health. We believe that Dr. Sinskey is qualified to serve on our board of directors due to his experience in the startup and development of other pharmaceutical companies, his scientific expertise in the field of biology and his leadership experience gained from serving as a director of several pharmaceutical companies.

Board composition and election of directors

Our board of directors is currently authorized to have nine members. In accordance with the terms of our restated certificate of incorporation and our amended and restated bylaws that will become effective upon the closing of this offering, our board of directors will be divided into three classes, class I, class II and class III, with members of each class serving staggered three-year terms. Upon the closing of this offering, the members of the classes will be divided as follows:

- the class I directors will be Mr. Dresser, Dr. Lovenberg and Dr. Sinskey, and their term will expire at the annual meeting of stockholders to be held in 2012;
- the class II directors will be Mr. Fehr, Dr. Gay and Ms. Nash, and their term will expire at the annual meeting of stockholders to be held in 2013; and
- the class III directors will be Mr. Crocker, Mr. Mulroy and Dr. Porter, and their term will expire at the annual meeting of stockholders to be held in 2014.

Upon the expiration of the term of a class of directors, directors in that class will be eligible to be elected for a new three-year term at the annual meeting of stockholders in the year in which their term expires. Our directors may be removed only for cause by the affirmative vote of the holders of 75% or more of our voting stock. We have agreed to include in the proxy statement for our first annual meeting of stockholders following the completion of this offering a proposal that, if passed, would declassify our board of directors, so that each of our directors would be elected annually.

Our board of directors has determined that each of our directors, other than Mr. Mulroy, are independent directors, as defined by the applicable NASDAQ Marketplace Rules.

There are no family relationships among any of our directors or executive officers.

Board leadership structure

Our board of directors, upon the recommendation of our corporate governance and nominating committee, has determined that the roles of Chairman of the board and Chief Executive Officer should be separated at the current time. Accordingly, our board has appointed Mr. Crocker, an independent director within the meaning of NASDAQ Marketplace Rules, as the Chairman of the board of directors. Mr. Crocker's duties as Chairman of the board include the following:

- chairing meetings of the board and of the independent directors in executive session;
- meeting with any director who is not adequately performing his or her duties as a member of our board or any committee;

- facilitating communications between other members of our board and the Chief Executive Officer;
- determining the frequency and length of board meetings and recommending when special meetings of our board should be held;
- preparing or approving the agenda for each board meeting; and
- reviewing and, if appropriate, recommending action to be taken with respect to written communications from stockholders submitted to our board.

Our board of directors decided to separate the roles of Chairman and Chief Executive Officer because it believes that a bifurcated leadership structure offers the following benefits:

- increasing the independent oversight of our company and enhancing our board's objective evaluation of our Chief Executive Officer;
- freeing the Chief Executive Officer to focus on company operations instead of board administration;
- providing the Chief Executive Officer with an experienced sounding board;
- providing greater opportunities for communication between stockholders and our board;
- enhancing the independent and objective assessment of risk by our board; and
- providing an independent spokesman for our company.

Board committees

Our board of directors has established an audit committee, a corporate governance and nominating committee, an organization and compensation committee and an executive committee, each of which operates under a charter that has been approved by our board. The composition of each committee will be effective upon the closing of this offering.

Our board of directors has determined that all of the members of the audit committee, the corporate governance and nominating committee and the organization and compensation committee are independent as defined under The NASDAQ Marketplace Rules, including, in the case of all the members of our audit committee, the independence requirements contemplated by Rule 10A-3 under the Securities Exchange Act of 1934, as amended, or the Exchange Act.

Audit committee

The members of our audit committee are Mr. Dresser, Mr. Fehr and Ms. Nash. Ms. Nash chairs the audit committee. Upon the closing of this offering, our audit committee's responsibilities will include:

- appointing, approving the compensation of, and assessing the independence of our registered public accounting firm;
- overseeing the work of our independent registered public accounting firm, including through the receipt and consideration of reports from such firm;

- reviewing and discussing with management and the independent registered public accounting firm our annual and quarterly financial statements and related disclosures;
- monitoring our internal control over financial reporting, disclosure controls and procedures and code of business conduct and ethics;
- overseeing our internal audit function;
- overseeing our risk assessment and risk management policies;
- establishing policies regarding hiring employees from the independent registered public accounting firm and procedures for the receipt and retention of accounting-related complaints and concerns;
- meeting independently with our internal auditing staff, registered public accounting firm and management;
- reviewing and approving or ratifying any related person transactions; and
- preparing the audit committee report required by SEC rules.

All audit and non-audit services, other than *de minimis* non-audit services, to be provided to us by our independent registered public accounting firm must be approved in advance by our audit committee.

Our board of directors has determined that Mr. Fehr is an "audit committee financial expert" as defined in applicable SEC rules. We believe that the composition of our audit committee meets the requirements for independence under the current NASDAQ Marketplace and SEC rules and regulations.

Corporate governance and nominating committee

The members of our corporate governance and nominating committee are Mr. Crocker and Dr. Gay. Dr. Gay chairs the corporate governance and nominating committee. Upon the closing of this offering, our corporate governance and nominating committee's responsibilities will include:

- identifying individuals qualified to become members of our board;
- recommending to our board the persons to be nominated for election as directors and to each of our board's committees;
- reviewing and making recommendations to our board with respect to our board leadership structure;
- developing and recommending to our board corporate governance principles; and
- overseeing an annual evaluation of our board.

Organization and compensation committee

The members of our organization and compensation committee are Mr. Fehr, Dr. Lovenberg and Dr. Sinskey. Mr. Fehr chairs the organization and compensation committee. Upon the

closing of this offering, our organization and compensation committee's responsibilities will include:

- annually reviewing and approving corporate goals and objectives relevant to the compensation of our Chief Executive Officer and our other executive officers;
- determining our Chief Executive Officer's compensation;
- reviewing and approving, or making recommendations to our board with respect to, the compensation of our other executive officers;
- overseeing an evaluation of our executive officers;
- overseeing and administering our cash and equity incentive plans;
- reviewing and making recommendations to our board with respect to director compensation;
- reviewing and making recommendations to our board with respect to management succession planning;
- reviewing and discussing annually with management our "Compensation discussion and analysis" disclosure required by SEC rules; and
- preparing the organization and compensation committee report required by SEC rules.

Executive committee

The members of our executive committee are Mr. Crocker, Mr. Mulroy and Dr. Porter. Mr. Crocker chairs the executive committee. Upon the closing of this offering, our executive committee will have, and may exercise, when necessary, all of the authority and powers of our full board of directors during the intervals between meetings of our board, except as limited by Delaware law.

Compensation committee interlocks and insider participation

None of our executive officers serves as a member of the board of directors or compensation committee, or other committee serving an equivalent function, of any other entity that has one or more of its executive officers serving as a member of our board of directors or our organization and compensation committee. None of the members of our organization and compensation committee has ever been our employee.

Executive compensation

Compensation discussion and analysis

Overview

This section discusses the principles underlying our policies and decisions with respect to the compensation of our executive officers and the most important factors relevant to an analysis of these policies and decisions. This section also describes the material elements of compensation awarded to, earned by or paid to each of our named executive officers for 2010. Our "named executive officers" for 2010 are Robert J. Mulroy, our President and Chief Executive Officer, William A. Sullivan, our Chief Financial Officer and Treasurer, Lisa A. Evren, our former Chief Financial Officer, and our three other most highly compensated executive officers, Ulrik B. Nielsen, our Senior Vice President and Chief Scientific Officer, Clet M. Niyikiza, our Executive Vice President of Development, and Edward J. Stewart, our Senior Vice President of Business Development. In addition, this section provides qualitative information regarding the manner and context in which compensation is awarded to and earned by our executive officers and is intended to place in perspective the data presented in the tables and narrative that follow.

Our organization and compensation committee oversees our policies governing the compensation for our executive officers. In this role, the organization and compensation committee reviews and approves all compensation decisions relating to our named executive officers. Our organization and compensation committee consists of three members of our board of directors, all of whom have extensive experience in our industry and each of whom is an independent director. Our organization and compensation committee uses its judgment and experience and has historically considered the recommendations of our President and Chief Executive Officer when determining the amount and appropriate mix of compensation for each of our executive officers. Specifically, our President and Chief Executive Officer provides input and recommendations, via an annual review of executive performance and otherwise, regarding salary adjustments, the corporate and individual goals used to determine annual performance-based cash bonuses and appropriate equity incentive compensation levels. Historically, our President and Chief Executive Officer has provided input to the organization and compensation committee on his own compensation, but has not had any control over setting the amount or mix of his compensation and is not present when the organization and compensation committee discusses his compensation.

The organization and compensation committee periodically evaluates the need for revisions to our executive compensation program to ensure our program is competitive with the companies with which we compete for executive talent.

Objectives and philosophy of our executive compensation program

The primary objectives of the organization and compensation committee with respect to executive compensation are to:

- attract, retain and motivate experienced and talented executives;
- ensure executive compensation is aligned with our corporate strategies, research and development programs and business goals;

- recognize the individual contributions of executives but foster a shared commitment among executives by aligning their individual goals with our corporate goals;

- promote the achievement of key strategic, development and operational performance measures by linking compensation to the achievement of measurable corporate and individual performance goals; and

- align the interests of our executives with our stockholders by rewarding performance that leads to the creation of stockholder value.

To achieve these objectives, the organization and compensation committee evaluates our executive compensation program with the goal of setting compensation at levels that are justifiable based on each executive's level of experience, performance and responsibility and that the committee believes are competitive with those of other companies in our industry and our region that compete with us for executive talent. In addition, our executive compensation program ties a portion of each executive's overall compensation to the achievement of key corporate and individual goals. We provide a portion of our executive compensation in the form of stock options that vest over time, which we believe helps to retain our executives and aligns their interests with those of our stockholders by allowing them to participate in the longer term success of our company as reflected in the appreciation of our stock price.

Use of compensation consultants and market benchmarking

Our organization and compensation committee considers publicly available compensation data for national and regional companies in the biotechnology industry to help guide its executive compensation decisions at the time of hiring and for subsequent adjustments in compensation. Historically, our organization and compensation committee has also retained the services of Mercer, LLC, or Mercer, an independent compensation consultant, to provide it with additional comparative data on executive compensation practices in our industry and to advise it on our executive compensation program generally. Although the organization and compensation committee considers Mercer's advice and recommendations about our executive compensation program, the organization and compensation committee ultimately makes its own decisions about these matters.

Mercer has in the past, most recently in 2010, provided our organization and compensation committee with comparative data showing where our total compensation and each element of our compensation rated among (1) both public and private companies in the biotechnology and life sciences industry generally, according to compensation data from the 2010 Radford Global Life Sciences Survey, and (2) a peer group of publicly traded companies in the life science industry at a stage of development, market capitalization or size comparable to ours with which the organization and compensation committee believes we compete against for executive talent. The companies included in this peer group in 2010 were:

Achillion Pharmaceuticals	Ariad Pharmaceuticals, Inc.	Pharmasset, Inc.
Acorda Therapeutics, Inc.	Micromet, Inc.	Rigel Pharmaceuticals, Inc.
Affymax Inc.	Oculus Innovative Sciences	Targacept, Inc.
Allos Therapeutics, Inc.	Osiris Therapeutics, Inc.	Trubion Pharmaceuticals, Inc.

This peer group is subject to change, and we expect that our organization and compensation committee will periodically review and update the list. The peer group is used for purposes of

gathering data to compare against our existing executive compensating practices and for guiding future compensation decisions. Our compensation consultant also makes suggestions for changes to our executive compensation practices based on the data they provide to us as well as compensation trends in our industry. However, although the organization and compensation committee may consider peer group and other industry compensation data and the recommendations of our compensation consultant when making decisions related to executive compensation, to date, it has not made and does not intend to make adjustments to overall executive compensation or any element thereof solely or primarily either to target a specified threshold level of compensation or market benchmark within the peer group, our larger industry or some other group of comparable companies or to act on the recommendations of our compensation consultant.

Annual compensation review process

During the first calendar quarter of each year, we evaluate each executive's performance for the prior year. Our President and Chief Executive Officer, with respect to each executive other than himself, prepares a written evaluation based on his evaluation of the executive and input from others within our company. Our President and Chief Executive Officer also prepares his own self assessment. This process leads to a recommendation by our President and Chief Executive Officer to the organization and compensation committee with respect to each executive officer, including himself, as to:

- the achievement of stated corporate and individual performance goals;
- the level of contributions made to the general management and guidance of the company;
- the need for salary increases;
- the amount of bonuses to be paid; and
- whether or not stock option awards should be made.

These recommendations are reviewed by the organization and compensation committee and taken into account when it makes a final determination on all such matters.

Components of our executive compensation program

The primary elements of our executive compensation program are:

- base salary;
- annual performance-based cash bonuses;
- equity incentive awards;
- broad-based health and welfare benefits; and
- severance and change in control benefits.

We do not have a formal or informal policy for allocating between long-term and short-term compensation, between cash and non-cash compensation or among different forms of non-cash compensation. Instead, our organization and compensation committee, after reviewing information provided by our compensation consultant, and other relevant data, determines subjectively what it believes to be the appropriate level and mix of the various compensation

components. We generally strive to provide our named executive officers with a balance of short-term and long-term incentives to encourage consistently strong performance. Ultimately, the objective in allocating between long-term and currently paid compensation is to ensure adequate base compensation to attract and retain personnel, while providing incentives to maximize long-term value for our company and our stockholders. Therefore, we provide cash compensation in the form of base salary to meet competitive salary norms and reward good performance on an annual basis and in the form of bonus compensation to incent and reward superior performance based on specific annual goals. To further focus our executives on longer-term performance and the creation of stockholder value, we rely upon equity-based awards that vest over a meaningful period of time. In addition, we provide our executives with benefits that are generally available to our salaried employees, including medical, dental, group life insurance, accidental death, dismemberment insurance, long and short term disability insurance, medical and dependent care flexible spending accounts, personal welfare reimbursement stipends and matching contributions in our 401(k) plan. Finally, we offer our executives severance benefits to incentivize them to continue to strive to achieve stockholder value in connection with change in control situations.

Base salary

We use base salaries to recognize the experience, skills, knowledge and responsibilities of our employees, including our executive officers. Base salaries for our named executive officers typically are established through arm's length negotiation at the time the executive is hired, taking into account the position for which the executive is being considered and the executive's qualifications, prior experience and prior salary. None of our executive officers is currently party to an employment agreement that provides for automatic or scheduled increases in base salary. However, on an annual basis, our organization and compensation committee reviews and evaluates, with input from our President and Chief Executive Officer, the need for adjustment of the base salaries of our executives based on changes and expected changes in the scope of an executive's responsibilities, including promotions, the individual contributions made by and performance of the executive during the prior fiscal year, the executive's performance over a period of years, overall labor market conditions, the relative ease or difficulty of replacing the executive with a well-qualified person, our overall growth and development as a company and general salary trends in our industry and among our peer group and where the executive's salary falls in the salary range presented by that data. In making decisions regarding salary increases, we may also draw upon the experience of members of our board of directors with other companies. No formulaic base salary increases are provided to our named executive officers, and we do not target the base salaries of our named executive officers at a specified compensation level within our peer group or other market benchmark.

The following table sets forth the annual base salary for 2010 and 2011 for our named executive officers:

Executive	2010 Base salary(1)	2011 Base salary(1)
Robert J. Mulroy *President and Chief Executive Officer*	$ 432,253	$ 457,330
William A. Sullivan(2) *Chief Financial Officer and Treasurer*	240,000	247,200
Lisa A. Evren(3) *Former Chief Financial Officer*	—	—
Ulrik B. Nielsen *Senior Vice President and Chief Scientific Officer*	287,370	302,940
Clet M. Niyikiza *Executive Vice President of Development*	329,892	341,651
Edward J. Stewart *Senior Vice President of Business Development*	254,582	268,376

(1) The adjustments to our 2010 base salaries were effective February 1, 2010 and the adjustment to our 2011 base salaries were effective April 1, 2011.

(2) Mr. Sullivan's salary was $170,969 as of January 1, 2010 and was increased to $240,000 as of July 1, 2010 in connection with his promotion to Vice President of Finance in February 2010 and his later appointment as an executive officer. Mr. Sullivan was promoted to Chief Financial Officer in May 2011.

(3) Ms. Evren left the company in January 2010 and was paid $19,355 in total salary for 2010.

In 2010, the organization and compensation committee approved base salary increases for Mr. Mulroy, Dr. Nielsen, Dr. Niyikiza, Mr. Sullivan and Mr. Stewart to recognize their overall performance in 2009, their increased level of experience and, as a result of our growth in our industry, to ensure that their salaries remained competitive with those of similarly situated executives in our peer group. In addition, Dr. Nielsen's salary was increased from his 2009 level in recognition of his promotion to Chief Scientific Officer and Mr. Stewart's salary was increased from his 2009 level in recognition of his promotion to Senior Vice President of Business Development. Mr. Sullivan's salary was increased in July 2010 from $170,969 to $240,000 in connection with his promotion to Vice President of Finance in February 2010, which resulted in increased responsibilities for him as he assumed the duties of the Chief Financial Officer who departed in January 2010, and his later appointment as an executive officer.

For 2011, the organization and compensation committee determined to adjust the base salaries of Mr. Mulroy, Dr. Nielsen, Dr. Niyikiza, Mr. Sullivan and Mr. Stewart based on their overall performance in 2010, their increased level of experience and, as a result of our continued growth in our industry, to ensure that their salaries remained competitive with those of similarly situated executives in our peer group.

Annual performance-based cash bonus

We have designed our annual performance-based cash bonus program to emphasize pay-for-performance and to reward our named executive officers for (1) the achievement of specified annual corporate objectives, (2) the achievement of specified annual individual

performance objectives and (3) the achievement of specified objectives that support the overall management of the company and the creation of long-term value for our stockholders, which we refer to as the general management contribution. Each executive officer is eligible to receive an annual performance-based cash bonus, which we refer to as an annual cash bonus, in an amount up to a fixed percentage of his base salary, or bonus percentage, and each of the foregoing three elements is weighted equally in determining the percentage of the annual cash bonus that the executive will receive.

The annual corporate objectives component of the annual cash bonus focuses on the achievement of specific research, clinical, regulatory, operational and financial milestones. The corporate objectives are proposed by senior management each year in the company's annual operating plan that is reviewed and approved by our board of directors at its regularly scheduled meeting in the fourth quarter of our fiscal year, with such modifications as the board deems appropriate. The annual individual performance objectives component of the annual cash bonus focuses on contributions made by each individual executive officer within their respective areas of responsibility that facilitate the achievement of our corporate objectives. Each executive officer, including our President and Chief Executive Officer, proposes his own annual individual objectives prior to the start of the company's fiscal year relating to building our long-term capabilities, which are then reviewed and approved by the organization and compensation committee, with such modifications as the committee deems appropriate. Achievement of the corporate and individual objectives is measured on a successful/unsuccessful basis and proportionate achievement of a particular goal is not taken into account. Our organization and compensation committee has the authority to shift both corporate and individual goals to subsequent fiscal years and eliminate them from the current year's bonus calculation if it determines that circumstances that were beyond the control of the executive were the primary cause of a goal being unattainable. The corporate and individual objectives established by our board of directors and the organization and compensation committee are designed to require significant effort and operational success on the part of our executives and our company, but also to be achievable with hard work and dedication.

The general management contribution of each executive officer, including our President and Chief Executive Officer, is evaluated retrospectively by our President and Chief Executive Officer, who reports his findings to the organization and compensation committee. Historically, each executive has been evaluated on his contributions to the following areas:

- the improvement of processes and efficiency;
- the development of human and scientific capacity; and
- the development and management of stakeholders, including partners, collaborators, investigators, stockholders and licensees.

Each executive's contributions are evaluated on a scale of 0 to 3, with 0 meaning that the executive made no contribution, 1 meaning that the executive's contributions were below expectations, 2 meaning that the executive's contributions met expectations and 3 meaning that the executive's contributions exceeded expectations. The executive's scores in each of the categories for the particular year are totaled and the ratio of the executive's score to the maximum number of points that the executive could have earned across all categories is used to determine what portion of this element of the annual cash bonus that the executive will

earn. The organization and compensation committee reviews and has the authority to approve the evaluation prepared by our President and Chief Executive Officer or to adjust it in a manner that it sees fit. While this element of the annual cash bonus is inherently subjective in nature, we believe it is important to recognize the contributions made by our executives that do not appear in the operating plan, via objective individual goals or on our financial statements. These contributions may have an impact beyond the current fiscal year, and we believe that giving a partial weighting in the annual cash bonus calculation to these intangible contributions made by an executive is appropriate in light of our long-term goal of developing a motivated workforce and creating stockholder value.

The bonus percentages for each executive are set by the organization and compensation committee. The bonus percentages that are proposed by our organization and compensation committee are derived from peer group data that is adjusted to match the level of qualification and experience of the executive candidate, but are guided by our overarching "team-based" philosophy. Our organization and compensation committee believes that our executive officers should function as a team and that one way to foster a collaborative, team-based environment is to provide for each executive officer to have a similar bonus percentage.

Our organization and compensation committee has authority to, in its sole discretion, adjust the bonus percentage each year in connection with its review of the executive's performance and has authority to allow an executive to receive a bonus payment in excess of his or her annual cash bonus for exceptional performance. Further, our organization and compensation committee reviews the assessment of each executive's performance conducted by the organization and compensation committee with respect to the annual cash bonus and retains the authority, in its sole discretion, to modify the amount of the annual cash bonus above or below the amount recommended by the organization and compensation committee.

2010 bonuses

For 2010, Mr. Mulroy was eligible to receive an annual cash bonus of up to 50% of his 2010 base salary and each of Mr. Nielsen, Dr. Niyikiza, Mr. Sullivan and Mr. Stewart were eligible to receive annual cash bonuses of up to 40% of their 2010 base salaries. Ms. Evren was not eligible to receive a bonus for 2010 because her employment with us ended in January 2010. With the exception of Mr. Sullivan, the bonus percentages were not increased for our named executive officers in 2010. Mr. Sullivan's bonus percentage was increased by our organization and compensation committee from 30% to 40% in 2010 in connection with his promotion to Vice President of Finance in February 2010 and his assumption of the duties of our former Chief Financial Officer.

For 2010, the annual corporate objectives, which accounted for one-third of the annual cash bonus for each of our named executive officers, were as follows:

- launch a comprehensive MM-121 Phase 1/2 development program that integrates the development of a companion diagnostic with the development of MM-121;
- advance the clinical pipeline of novel network biology therapeutics;
- build and advance the network biology pipeline to establish two preclinical lead molecules; and

- secure additional funding through MM-121 milestones and business development initiatives.

The organization and compensation committee determined that we achieved each of the 2010 corporate objectives, other than securing additional funding through MM-121 milestones and business development initiatives. In making this determination, the organization and compensation committee considered all of the information available to it at the time and concluded that each executive officer should be receive 75% of the portion of the annual cash bonus related to the achievement of the annual corporate objectives.

For 2010, the individual goals for each of our named executive officers accounted for one-third of their annual cash bonus. The individual goals for our named executive officers are primarily related to the corporate goals for which they are most responsible and, to a lesser extent, individual development goals or department specific goals.

Mr. Mulroy's individual objectives for 2010 related to finalizing the 2010 and 2011 development plan and budget for MM-121 and initiating additional clinical trials of MM-121, securing additional business development and milestone funding, advancing our strategy of extending Network Biology into additional therapeutic fields and developing a future facilities plan. The organization and compensation committee determined that Mr. Mulroy achieved each of his individual objectives, other than securing additional business development and milestone funding. As a result, Mr. Mulroy was allocated 75% of the portion of his annual cash bonus related to the achievement of annual individual objectives.

Mr. Sullivan's individual objectives for 2010 related to completing the corporate record review and legal audit, securing federal and state biotechnology research tax credit funding, assessing and developing strategies to improve internal controls and completing the 2010 audit and reconfirming prior year audits. The organization and compensation committee determined that Mr. Sullivan achieved each of his individual objectives. As a result, Mr. Sullivan was allocated 100% of the portion of his annual cash bonus related to the achievement of annual individual objectives.

Dr. Nielsen's individual objectives for 2010 related to advancing our preclinical product candidates and advancing our plan to extend Network Biology into additional therapeutic fields. The organization and compensation committee determined that Dr. Nielsen achieved each of his individual objectives. As a result, Dr. Nielsen was allocated 100% of the portion of his annual cash bonus related to the achievement of annual individual objectives.

Dr. Niyikiza's individual objectives for 2010 related to initiating clinical trials of MM-121 and MM-111, establishing a clinical advisory group and finalizing clinical trial plans and budgets. The organization and compensation committee determined that Dr. Niyikiza achieved each of his individual objectives. As a result, Dr. Niyikiza was allocated 100% of the portion of his annual cash bonus related to the achievement of annual individual objectives. Dr. Niyikiza was initially assigned a 2010 individual performance objective of achieving the first human patient dosing with a particular product candidate in our pipeline. However, due to problems at the manufacturer of this product candidate, the organization and compensation committee determined that this individual objective was unable to be achieved through no fault of Dr. Niyikiza, moved the individual objective to 2011 and did not include it in determining Dr. Niyikiza's 2010 bonus payment.

Mr. Stewart's individual objectives for 2010 related to advancing our program of partnering company assets, expanding and protecting key intellectual property, implementing clinical-stage product teams and developing a physical infrastructure plan. The organization and compensation committee determined that Mr. Stewart achieved each of his individual objectives. As a result, Mr. Stewart allocated 100% of the portion of his annual cash bonus related to the achievement of annual individual objectives.

Our President and Chief Executive Officer conducted a thorough review of the third element of each executive officer's annual cash bonus, the general management contribution of each executive officer, and reported his findings, including his findings with respect to himself, to our organization and compensation committee. Our organization and compensation committee determined that the contributions made by Mr. Mulroy, Dr. Nielsen, Dr. Niyikiza and Mr. Stewart exceeded expectations for 2010 and that they were entitled to receive 100% of this portion of their annual cash bonus payment. Our organization and compensation committee determined that the contributions made by Mr. Sullivan met expectations for 2010 and that he was entitled to receive 67% of this portion of his annual cash bonus payment. It has been the practice of the organization and compensation committee to rate first year executives, in this case, Mr. Sullivan, as meeting, not exceeding, expectations.

The following table sets forth each named executive officer's annual cash bonus eligibility (both as a percentage of annual base salary and in actual dollars), the total bonus paid and the total bonus paid as a percentage of salary. As disclosed above, notwithstanding the annual cash bonus assessment performed by the organization and compensation committee for each executive officer, our organization and compensation committee retains full discretion to adjust each executive officer's annual cash bonus beyond the amount calculated. Based on our organization and compensation committee's assessment of Mr. Mulroy's contribution to our growth and development in 2010, our organization and compensation committee determined that Mr. Mulroy should receive an annual cash bonus in an amount equal to his full bonus percentage despite the results of the assessment performed by the organization and compensation committee. Further, as disclosed above, Ms. Evren was not eligible to and did not receive a cash bonus for 2010 because her employment with the company ended in January 2010.

Name	2010 Base salary	Annual bonus percentage range	Target cash bonus	Cash bonus paid for 2010	Actual bonus as % of salary
Robert J. Mulroy	$ 432,253	0-50%	$ 217,776	$ 217,776	50%
William A. Sullivan	240,000	0-40	82,194	76,800	32
Ulrik B. Nielsen	287,370	0-40	114,948	105,596	37
Clet M. Niyikiza	329,892	0-40	131,957	121,402	37
Edward J. Stewart	254,582	0-40	101,833	93,548	37

Equity incentive awards

Our equity award program is the primary vehicle for offering long-term incentives to our executives. While we do not currently have any equity ownership guidelines for our executives, we believe that equity grants provide our executives with a strong link to our long-term performance, create an ownership culture and help to align the interests of our executives and our stockholders. Because our executives profit from stock options only if our stock price

increases relative to the stock option's exercise price, we believe stock options provide meaningful incentives to our executives to achieve increases in the value of our stock over time. In addition, the vesting feature of our equity grants contributes to executive retention by providing an incentive to our executives to remain employed by us during the vesting period. Prior to this offering, our executives were eligible to participate in the 2008 stock incentive plan, as amended, or the 2008 plan, and the 1999 stock option plan as amended, or the 1999 plan. During 2010, all stock options were granted pursuant to the 2008 stock incentive plan. Following the closing of this offering, our employees and executives will be eligible to receive stock-based awards pursuant to the 2011 stock incentive plan, or the 2011 plan. Under the 2011 plan, executives will be eligible to receive grants of stock options, restricted stock, restricted stock units, stock appreciation rights and other stock-based equity awards at the discretion of our organization and compensation committee.

We use stock options to compensate our named executive officers both in the form of initial grants in connection with the commencement of employment and generally on an annual basis thereafter. Our organization and compensation committee may also make additional discretionary grants, typically in connection with the promotion of an employee, to reward an employee, for retention purposes or for other circumstances recommended by management. Typically, the stock options we grant to our executives vest quarterly over a three year period. Vesting and exercise rights cease shortly after termination of employment except in the case of death or disability. Prior to the exercise of an option, the holder has no rights as a stockholder with respect to the shares subject to such option, including voting rights or the right to receive dividends or dividend equivalents.

In determining the size of the annual stock option grants to our executives, our organization and compensation committee is guided by our overarching team-based philosophy. To help foster collaboration among our named executive officers, our organization and compensation committee has historically aimed to make equal annual grants of options to each executive officer. In determining the amount of the annual stock option grants, our organization and compensation committee considers recommendations developed by our compensation consultant, including information regarding comparative stock ownership and equity grants received by the executives in our peer group and our industry. In addition, our organization and compensation committee considers our corporate performance, the potential for enhancing the creation of value for our stockholders, the amount of equity previously awarded to the executives and the vesting of such awards.

We have historically granted stock options with exercise prices that are set at no less than the fair market value of shares of our common stock on the date of grant as determined by our organization and compensation committee with the assistance and recommendation of management, in good faith based on a number of objective and subjective factors, including contemplating valuations prepared by an external consultant. The exercise price of all stock options granted after the closing of this offering will be equal to the fair market value of shares of our common stock on the date of grant, which generally will be determined by reference to the closing market price of our common stock on the date of grant. Following this offering, we intend to grant equity awards annually.

2010 grants

In February 2010, as part of the annual performance evaluation of our named executive officers, our organization and compensation committee granted to each of Drs. Nielsen and Niyikiza an option to purchase 100,000 shares of our common stock. Each of these options vests quarterly over a three year period. The exercise price of each option grant is $2.12, the fair market value of our common stock on the date of grant as determined by our organization and compensation committee. Dr. Nielsen's grant was awarded in recognition of his promotion to Chief Scientific Officer. Dr. Niyikiza's grant was awarded in recognition of his assumption of additional responsibilities overseeing our clinical development organization.

In October 2010, our organization and compensation committee granted to Dr. Nielsen an option to purchase 60,000 shares of our common stock and to Mr. Stewart an option to purchase 50,000 shares of our common stock. Dr. Nielsen's option vests quarterly over a three year period and Mr. Stewart's option was fully vested as of the date of grant. The exercise price of each option grant is $2.69, the fair market value of our common stock on the date of grant as determined by our organization and compensation committee. Dr. Nielsen's grant was made in recognition of his development of certain intellectual property that formed the basis for creating our subsidiary, Silver Creek Pharmaceuticals, Inc. Mr. Stewart's grant was made in recognition of his assumption of a broader management role in his capacity as Senior Vice President of Business Development.

In December 2010, as part of our annual grant process, our organization and compensation committee granted to each of Dr. Nielsen, Dr. Niyikiza and Mr. Stewart an option to purchase 50,000 shares of our common stock and to Mr. Sullivan an option to purchase 150,000 shares of our common stock. Each of these options vests quarterly over a three year period. The exercise price of each option grant is $2.69, the fair market value of our common stock on the date of grant as determined by our organization and compensation committee. Consistent with our team-based approach, we intended to grant to each named executive officer an option to purchase 100,000 shares of our common stock, except that we planned to grant to Mr. Sullivan an option that would let him purchase an additional 50,000 shares of our common stock in connection with his promotion to Vice President of Finance in February 2010, which resulted in increased responsibilities for him as he assumed the duties of the Chief Financial Officer who departed in January 2010, and his later appointment as an executive officer. However, after establishing the amount of the grants, we determined that we did not have a sufficient number of authorized shares of common stock available for issuance under our 2008 plan for the grants. As a result, we made a full grant to Mr. Sullivan, partial grants to Dr. Nielsen, Dr. Niyikiza and Mr. Stewart and no grant to Mr. Mulroy. The balance of the annual grants have been made to our named executive officers during 2011, with the exception of Mr. Mulroy, who elected to forgo receipt of his 2010 grant in its entirety in order to increase the number of shares available for grants to our other employees and directors.

Benefits and other compensation

We believe that establishing competitive benefit packages for our employees is an important factor in attracting and retaining highly qualified personnel. We maintain broad-based benefits that are provided to all employees, including medical, dental, group life insurance, accidental death, dismemberment insurance, long and short term disability insurance, medical and dependent care flexible spending accounts, personal welfare reimbursement stipends and matching contributions in our 401(k) plan. All of our executives are eligible to participate in all

of our employee benefit plans, in each case on the same basis as other employees. Under our 401(k) plan, we are permitted to make discretionary contributions and matching contributions, subject to established limits and a vesting schedule. Currently, we match 50% of employee contributions up to a maximum contribution by us of 3% of the employee's salary. The match vests at 25% per year over four years. We also provide each employee, including our executives, with an annual $1,250 work welfare stipend that can be used to pay for services such as personal professional development, public transportation passes, gym memberships and medical insurance co-pays. Our executives are also entitled to supplemental long-term disability insurance coverage that is not available to our other employees. We provide a tax-gross up payment to our executives to compensate them for the additional tax cost of receiving this benefit. Consistent with our compensation philosophy, we intend to continue to maintain our current benefits for our named executive officers. The organization and compensation committee in its discretion may revise, amend or add to the named executive officer's benefits and perquisites if it deems it advisable.

In particular circumstances, we sometimes award cash signing bonuses when executives first join us. Such cash signing bonuses typically must be repaid in full if the executive voluntarily terminates employment with us prior to the first anniversary of the date of hire. Whether a signing bonus is paid and the amount of the bonus is determined on a case-by-case basis under the specific hiring circumstances. For example, we will consider paying signing bonuses to compensate for amounts forfeited by an executive upon terminating prior employment, to assist with relocation expenses or to create additional incentive for an executive to join our company in a position where there is high market demand.

Severance and change in control benefits

Pursuant to employment agreements we have entered into with our executives, our executives are entitled to specified benefits in the event of the termination of their employment under specified circumstances, including termination following a change in control of our company. Please refer to "—Employment agreements" for a more detailed discussion of these benefits. We have provided estimates of the value of the severance payments made and other benefits provided to executives under various termination circumstances, under the caption "—Potential payments upon termination or change in control" below.

We believe providing these benefits helps us compete for executive talent. After reviewing the practices of companies represented in the compensation peer group, we believe that our severance and change in control benefits are generally in line with severance packages offered to executives of the companies in our peer group.

We have structured our change in control benefits as "double trigger" benefits. In other words, the change in control does not itself trigger benefits. Rather, benefits are paid only if the employment of the executive is terminated during a specified period after the change in control. We believe a "double trigger" benefit maximizes stockholder value because it prevents an unintended windfall to executives in the event of a friendly change in control, while still providing them appropriate incentives to cooperate in negotiating any change in control in which they believe they may lose their jobs.

Risk considerations in our compensation program

Our organization and compensation committee has reviewed and evaluated the philosophy and standards on which our compensation plans have been developed and implemented across our company. It is our belief that our compensation programs do not encourage inappropriate actions or risk taking by our executive officers. We do not believe that any risks arising from our employee compensation policies and practices are reasonably likely to have a material adverse effect on our company. In addition, we do not believe that the mix and design of the components of our executive compensation program encourage management to assume excessive risks. We believe that our current business process and planning cycle fosters the behaviors and controls that would mitigate the potential for adverse risk caused by the action of our executives.

We believe that our current business process and planning cycle fosters the following behaviors and controls that mitigate the potential for adverse risk caused by the action of our executives:

- annual establishment of corporate and individual objectives for our performance-based cash bonus programs for our executive officers that are consistent with our annual operating and strategic plans, that are designed to achieve the proper risk/reward balance, and that should not require excessive risk taking to achieve;

- the mix between fixed and variable, annual and long-term and cash and equity compensation are designed to encourage strategies and actions that balance the company's short-term and long-term best interests; and

- stock option awards vest over a period of time, which we believe encourages executives to take a long-term view of our business.

Tax and accounting considerations

Section 162(m) of the Internal Revenue Code of 1986, as amended, which will become applicable to us upon the closing of this offering, subject to certain transition rules, generally disallows a tax deduction for compensation in excess of $1.0 million paid to our chief executive officer, our chief financial officer and our three other most highly paid executive officers (other than our chief executive officer and chief financial officer). Qualifying performance-based compensation is not subject to the deduction limitation if specified requirements are met. We intend to periodically review the potential consequences of Section 162(m) and we generally intend to structure the performance-based portion of our executive compensation, where feasible, to comply with exemptions in Section 162(m) so that the compensation will remain tax deductible to us. However, the organization and compensation committee may, in its judgment, authorize compensation payments that do not comply with the exemptions in Section 162(m) when it believes that such payments are appropriate to attract and retain executive talent and are in the best interests of our stockholders.

We account for equity compensation paid to our employees in accordance with FASB Accounting Standards Codification Topic 718, *Compensation—Stock Compensation*, or ASC 718, which requires us to measure and recognize compensation expense in our financial statements for all stock-based payments based on an estimate of their fair value over the service period of the award. We record cash compensation as an expense at the time the obligation is accrued.

Summary compensation table

The following table sets forth the total compensation awarded to, earned by or paid to our named executive officers during 2010.

Name and principal position	Year	Salary ($)	Option awards ($)(1)	Non-equity incentive plan compensation ($)(2)	All other compensation ($)(3)	Total ($)
Robert J. Mulroy(4) *President and Chief Executive Officer*	2010	432,253	—	217,776	12,892	662,921
William A. Sullivan(5) *Chief Financial Officer and Treasurer*	2010	205,485	260,714	76,800	5,496	548,495
Lisa A. Evren(6) *Former Chief Financial Officer*	2010	19,355	—	—	705	20,060
Ulrik B. Nielsen *Senior Vice President and Chief Scientific Officer*	2010	287,370	334,125	105,596	8,985	736,076
Clet M. Niyikiza *Executive Vice President of Development*	2010	329,892	230,852	121,402	2,184	684,330
Edward J. Stewart *Senior Vice President of Business Development*	2010	254,582	168,680	93,548	8,440	525,250

(1) The amounts in the "Option awards" column reflect the aggregate grant date fair value of stock options granted during the year computed in accordance with the provisions of ASC 718, excluding the impact of estimated forfeitures related to service-based vesting conditions (which in our case were none). The assumptions that we used to calculate these amounts are discussed in Note 16 to our financial statements appearing at the end of this prospectus.

(2) The amounts in the "Non-equity incentive plan compensation" column represent awards to our named executive officers under our annual cash bonus program. Annual bonus compensation for 2010 was paid in 2011.

(3) Amounts represent the value of perquisites and other personal benefits, which are further detailed below.

Name	401(k) Match ($)	Group life insurance premium ($)	Tax gross-ups ($)(a)	Stipend ($)(b)	Total ($)
Robert J. Mulroy	3,493	8,951	448	—	12,892
William A. Sullivan	3,644	154	448	1,250	5,496
Lisa A. Evren	582	86	37	—	705
Ulrik B. Nielsen	7,112	210	448	1,215	8,985
Clet M. Niyikiza	—	486	448	1,250	2,184
Edward J. Stewart	5,070	2,922	448	—	8,440

(a) Represents the value of the tax gross-up payment provided to executives to compensate them for the additional tax cost of receiving supplemental long-term disability insurance coverage.

(b) Represents the value of the work welfare stipend, described above in "Benefits and other compensation" provided to the executive.

(4) Mr. Mulroy is also a member of our board of directors, but does not receive any additional compensation in his capacity as a director.

(5) Mr. Sullivan's salary was $170,969 as of January 1, 2010 and was increased to $240,000 as of July 1, 2010 in connection with his promotion to Vice President of Finance in February 2010 and his later appointment as an executive officer. Mr. Sullivan was promoted to Chief Financial Officer in May 2011.

(6) Ms. Evren's employment with us ended in January 2010.

Grants of plan-based awards in 2010

The following table sets forth information regarding grants of plan-based awards in the form of stock options to our named executive officers during 2010.

Name	Grant date	Estimated future payouts under non-equity incentive plan awards			All other option awards: number of securities underlying options (#)	Exercise or base price of option awards ($/share)(2)	Grant date fair value of option awards ($)(3)
		Threshold ($)	Target ($)(1)	Maximum ($)			
Robert J. Mulroy	3/17/2010	—	217,776	—	—	—	—
William A. Sullivan	3/17/2010	—	82,194	—	—	—	—
	12/22/2010	—	—	—	150,000	2.69	260,714
Lisa A. Evren	—	—	—	—	—	—	—
Ulrik B. Nielsen	3/17/2010	—	114,948	—	—	—	—
	1/31/2010	—	—	—	100,000	2.12	143,947
	10/15/2010	—	—	—	60,000	2.69	103,274
	12/22/2010	—	—	—	50,000	2.69	86,905
Clet M. Niyikiza	3/17/2010	—	131,957	—	—	—	—
	1/31/2010	—	—	—	100,000	2.12	143,947
	12/22/2010	—	—	—	50,000	2.69	86,905
Edward J. Stewart	3/17/2010	—	101,833	—	—	—	—
	10/15/2010	—	—	—	50,000	2.69	81,775
	12/22/2010	—	—	—	50,000	2.69	86,905

(1) The target amounts in the "Estimated future payouts under non-equity incentive plan awards" column represent the amount determined by our organization and compensation committee as the target annual cash bonus payable to each executive officer for 2010. On March 17, 2010, our organization and compensation committee established the annual cash bonus targets for 2010, as a percentage of annual base salary, for each executive officer.

(2) The exercise price per share of each option award is equal to the fair value per share of our common stock on the date of grant as determined by our board of directors.

(3) The amounts in the "Grant date fair value of option awards" column reflect the grant date fair value of option awards granted in 2010 calculated in accordance with ASC 718.

Outstanding equity awards at December 31, 2010

The following table sets forth information regarding outstanding stock options held by our named executive officers as of December 31, 2010.

Name	Number of securities underlying unexercised options exercisable (#)	Number of securities underlying unexercised options unexercisable (#)	Option exercise price ($/share)	Option expiration date
Robert J. Mulroy	75,000	—	2.19	8/2/2012
	50,000	—	2.19	5/8/2013
	158,048	—	1.25	8/30/2014
	141,952	—	1.25	8/30/2014
	25,837	—	1.25	8/3/2015
	224,163	—	1.25	8/3/2015
	43,247	—	1.71	8/3/2015
	456,753	—	1.71	8/3/2015
	52,985	—	2.47	1/23/2017
	97,015	—	2.47	1/23/2017
	26,689	—	2.59	10/4/2017
	248,311	—	2.59	10/4/2017
	322,917	452,083(2)	2.12	11/4/2019
William A. Sullivan	75,000	—	2.12	12/4/2017
	15,125	1,375(3)	2.12	5/4/2018
	26,250	8,750(4)	1.81	9/21/2018
	25,000	35,000(2)	2.12	11/4/2019
	—	150,000(5)	2.69	12/21/2020
Lisa A. Evren(1)	—	—	—	—
Ulrik B. Nielsen	19,035	—	0.3152	7/10/2011
	4,368	—	2.19	8/2/2012
	10,483	—	2.19	5/8/2013
	150,000	—	1.25	8/30/2014
	82,977	—	1.71	8/3/2015
	17,023	—	1.71	8/3/2015
	48,175	—	2.47	10/3/2016
	26,825	—	2.47	10/3/2016
	53,378	—	2.59	10/4/2017
	146,622	—	2.59	10/4/2017
	187,500	62,500(6)	1.81	9/21/2018
	75,000	105,000(2)	2.12	11/4/2019
	25,000	75,000(7)	2.12	1/31/2020
	5,000	55,000(5)	2.69	10/14/2020
	—	50,000(5)	2.69	12/21/2020
Clet M. Niyikiza	66,667	133,333(8)	2.12	11/4/2019
	25,000	75,000(7)	2.12	1/31/2020
	—	50,000(5)	2.69	12/21/2020
Edward J. Stewart	16,385	—	2.19	5/3/2012
	5,000	—	2.19	5/8/2013
	40,000	—	1.25	8/30/2014
	30,000	—	1.71	8/3/2015
	30,000	—	2.47	8/1/2016
	50,000	—	2.59	10/4/2017
	75,000	25,000(6)	1.81	9/21/2018
	83,333	116,667(2)	2.12	11/4/2019
	50,000	—	2.69	10/14/2020
	—	50,000(5)	2.69	12/21/2020

(1) Ms. Evren's employment with us ended in January 2010, and her stock options terminated during 2010 without being exercised.

(2) The unvested shares under this option are scheduled to vest in approximately equal quarterly installments through August 1, 2012.

(3) The unvested shares under this option are scheduled to vest in approximately equal quarterly installments through May 5, 2011.

(4) The unvested shares under this option are scheduled to vest in approximately equal quarterly installments through October 1, 2011.

(5) The unvested shares under this option are scheduled to vest in approximately equal quarterly installments through July 1, 2013.

(6) The unvested shares under this option are scheduled to vest in approximately equal quarterly installments through November 1, 2011.

(7) The unvested shares under this option are scheduled to vest in approximately equal quarterly installments through January 1, 2013.

(8) The unvested shares under this option are scheduled to vest in approximately equal quarterly installments through November 1, 2012.

Option exercises and stock vested

None of our named executive officers exercised any stock options or held any restricted stock that vested during 2010.

Employment agreements

In August 2011, we entered into amended and restated employment agreements with each of our executive officers. Each of these agreements provides for an employment term continuing until December 31, 2012, unless earlier terminated in accordance with the agreement. Each agreement renews automatically thereafter for successive one-year terms, unless either we or the executive officer gives notice of non-renewal.

These employment agreements prohibit our executive officers, during the term of employment and any severance period and for a period of one year thereafter, from competing with us and soliciting or hiring our employees. Our executive officers also are bound by the terms of separate non-competition, non-solicitation, non-disclosure and developments agreements.

Pursuant to the terms of these employment agreements, our named executive officers who were serving as executive officers as of December 31, 2010 receive the following base salaries and are eligible for the following bonus percentages.

Name	Annual base salary	Bonus percentage
Robert J. Mulroy	$ 457,330	50%
William A. Sullivan	247,200	40
Ulrik B. Nielsen	302,940	40
Clet M. Niyikiza	341,651	40
Edward J. Stewart	268,376	40

Upon execution and effectiveness of a severance agreement and release of claims, each executive officer is entitled to severance payments if we terminate the executive officer's employment without cause, as defined in the employment agreement, including our decision not to renew the executive officer's term of employment, or the executive officer terminates employment with us for good reason, as defined in the employment agreement.

If an executive officer's employment terminates under these circumstances, in each case prior to a change in control, as defined in the employment agreement, we are obligated for a period of 12 months to pay such executive officer his base salary, pay for coverage for such executive

officer under any company sponsored insurance and benefit programs available to our senior management employees and, to the extent allowed by applicable law and the applicable plan documents, continue to provide to such executive officer all company employee benefit plans and arrangements available to our senior management employees. In addition, we would be obligated to pay to each of our executive officers a pro-rata bonus for the portion of the year in which such executive officer was employed by us based on his average annual bonus payments over each of the three years prior to the year of termination, or such lesser period during which such executive officer served as one of our executive officers.

If an executive officer's employment terminates under these circumstances, in each case within 18 months following a change in control, we are obligated to pay such executive officer a lump sum amount equal to 36 months of his base salary plus a bonus equal to three times the average of his annual bonus payments over each of the three years prior to the year of termination, or such lesser period during which such executive officer served as one of our executive officers, accelerate the vesting of all outstanding stock options, restricted stock or other equity awards granted to the executive officer, pay for coverage for such executive officer under any company sponsored insurance and benefit programs available to our senior management employees for a period of 18 months and, to the extent allowed by applicable law and the applicable plan documents, continue to provide to such executive officer all company employee benefit plans and arrangements available to our senior management employees for a period of 18 months.

If we terminate an executive officer's employment due to disability, the executive officer will be eligible to receive a pro-rata bonus for the portion of the year in which such executive officer was employed by us based on his average annual bonus payments over each of the three years prior to the year of termination, or such lesser period during which such executive officer served as one of our executive officers.

Potential payments upon termination or change in control

The following tables set forth information regarding potential payments that each named executive officer who was serving as an executive officer as of December 31, 2010 would have received if the executive officer's employment had terminated as of December 31, 2010 under the circumstances set forth below, assuming that the employment agreements described above for each of the named executive officers were in effect as of December 31, 2010. For purposes of these severance calculations, we also have used the new 2011 annual base salaries and bonus percentages.

	Termination without cause or for good reason prior to a change in control	
Name	**Cash payment**	**Value of benefits**
Robert J. Mulroy	$ 606,232	$ 20,139
William A. Sullivan	247,200	11,899
Ulrik B. Nielsen	394,901	1,224
Clet M. Niyikiza	441,651	8,845
Edward J. Stewart	344,466	14,459

Name	Termination without cause or for good reason within 18 months following a change in control		
	Cash payment	Value of stock options with accelerated vesting(1)	Value of benefits
Robert J. Mulroy	$ 1,818,697	$ 257,688	$ 30,209
William A. Sullivan	741,600	27,650	17,848
Ulrik B. Nielsen	1,184,703	157,601	1,836
Clet M. Niyikiza	1,324,953	118,751	13,268
Edward J. Stewart	1,033,398	88,502	21,688

(1) The value of stock options with accelerated vesting represents the value of unvested stock options based on the difference between the exercise price of the options and the fair market value of our common stock as of December 31, 2010 as determined by our board of directors.

Name	Termination for disability
	Cash payment
Robert J. Mulroy	$ 148,902
William A. Sullivan	—
Ulrik B. Nielsen	91,961
Clet M. Niyikiza	100,000
Edward J. Stewart	76,090

Pension benefits

We do not maintain any defined benefit pension plans.

Nonqualified deferred compensation

We do not maintain any nonqualified deferred compensation plans.

Stock option and other employee benefit plans

The four equity incentive plans described in this section are the 2011 plan, the 2008 plan, the 1999 plan and the 2011 employee stock purchase plan, or the 2011 ESPP. Prior to this offering, we granted awards to eligible participants under the 1999 plan and the 2008 plan. Following the closing of this offering, we expect to grant awards to eligible participants under the 2011 plan and to grant options to eligible employees under the 2011 ESPP.

2011 stock incentive plan

Our 2011 plan was adopted by our board of directors in August 2011 and approved by our stockholders in October 2011. Our 2011 plan will become effective immediately prior to the closing of this offering. The 2011 plan provides for the grant of incentive stock options, non-qualified stock options, stock appreciation rights, restricted stock awards, restricted stock units and other stock-based awards. Upon effectiveness of the plan, the number of shares of our common stock that will be reserved for issuance under the 2011 plan will be the sum of 3,500,000 shares plus (1) the number of shares of our common stock then available for issuance under the 1999 plan and the 2008 plan, both described below, that remain available for grant immediately prior to the closing of this offering, (2) the number of shares of our common stock

subject to outstanding awards under the 1999 plan and the 2008 plan, both described below, that expire, terminate or are otherwise surrendered, cancelled, forfeited or repurchased by us at their original issuance price pursuant to a contractual repurchase right, in the aggregate up to 18,669,858 shares, and (3) an annual increase, to be added on the first day of each fiscal year beginning in fiscal year 2013 and each subsequent anniversary until the expiration of the 2011 plan, equal to the lowest of (a) 4,500,000 shares of our common stock, (b) 3.5% of the number of shares of our common stock outstanding on the first day of the fiscal year and (c) an amount determined by our board of directors.

Our employees, officers, directors, consultants and advisors are eligible to receive awards under the 2011 plan. However, incentive stock options may only be granted to our employees. The maximum number of shares of our common stock with respect to which awards may be granted to any participant under the 2011 plan is 2,000,000 per calendar year. For purposes of this limit on the maximum number of shares that may be awarded to any participant, the combination of an option in tandem with a stock appreciation right will be treated as a single award.

Pursuant to the terms of the 2011 plan, our board of directors administers the plan and, subject to any limitations in the plan, selects the recipients of awards and determines:

- the number of shares of our common stock covered by options and the dates upon which the options become exercisable;
- the type of options to be granted;
- the duration of options, which may not be in excess of ten years;
- the exercise price of options, which may not be less than the fair market value of our common stock on the date of grant of the options; and
- the number of shares of our common stock subject to any stock appreciation rights, restricted stock awards, restricted stock units or other stock-based awards and the terms and conditions of such awards, including conditions for repurchase, issue price and repurchase price.

Our board of directors has delegated authority to Mr. Mulroy to grant awards under the 2011 plan. Mr. Mulroy has the power to make awards to all of our employees, except himself, any other executive officer, any other employee at or above the director level or its equivalent or any person that our board of directors or our organization and compensation committee designates in writing. Mr. Mulroy is not authorized to grant options for more than 50,000 shares of our common stock to any person in any one year and is not authorized to grant options for more than 1,000,000 shares of our common stock in the aggregate. Mr. Mulroy is required to maintain a list of the options granted pursuant to this authority and report to our organization and compensation committee upon request. The exercise price of such options will be equal to the closing price of our common stock on the second trading day of the month following the month that includes the date of grant.

Upon a merger or other reorganization event, our board of directors may, in its sole discretion, take any one or more of the following actions pursuant to the 2011 plan as to some or all outstanding awards other than restricted stock:

- provide that all outstanding awards shall be assumed, or substantially equivalent awards shall be substituted, by the acquiring or successor corporation (or an affiliate thereof);
- upon written notice to a participant, provide that all of the participant's unexercised awards will terminate immediately prior to the consummation of such reorganization event unless exercised by the participant;
- provide that outstanding awards shall become exercisable, realizable or deliverable, or restrictions applicable to an award shall lapse, in whole or in part, prior to or upon such reorganization event;
- in the event of a reorganization event pursuant to which holders of shares of our common stock will receive a cash payment for each share surrendered in the reorganization event, make or provide for a cash payment to the participants with respect to each award held by a participant equal to (1) the number of shares of common stock subject to the vested portion of the award (after giving effect to any acceleration of vesting that occurs upon or immediately prior to such reorganization event) multiplied by (2) the excess, if any, of the cash payment for each share surrendered in the reorganization event over the exercise, measurement or purchase price of such award and any applicable tax withholdings, in exchange for the termination of such award; and
- provide that, in connection with a liquidation or dissolution, awards shall convert into the right to receive liquidation proceeds.

In the case of certain restricted stock units, no assumption or substitution is permitted, and the restricted stock units will instead be settled in accordance with the terms of the applicable restricted stock unit agreement.

Upon the occurrence of a reorganization event other than a liquidation or dissolution, the repurchase and other rights with respect to outstanding restricted stock will continue for the benefit of the successor company and will, unless the board of directors may otherwise determine, apply to the cash, securities or other property into which shares of our common stock are converted or exchanged pursuant to the reorganization event, unless otherwise provided in the agreement, including any amendment, evidencing the restricted stock award. Upon the occurrence of a reorganization event involving a liquidation or dissolution, all restrictions and conditions on each outstanding restricted stock award will automatically be deemed terminated or satisfied, unless otherwise provided in the agreement evidencing the restricted stock award.

At any time, our board of directors may, in its sole discretion, provide that any award under the 2011 plan will become immediately exercisable in full or in part, free of some or all restrictions or conditions, or otherwise realizable in full or in part.

No award may be granted under the 2011 plan on or after October 3, 2021. Our board of directors may amend, suspend or terminate the 2011 plan at any time, except that stockholder approval will be required to comply with applicable law or stock market requirements.

2008 stock incentive plan

Our 2008 plan was adopted by our board of directors in April 2008 and approved by our stockholders in May 2008. Our 2008 plan was amended in October 2010 and April 2011. Upon the closing of this offering and the effectiveness of our 2011 plan, we do not expect to grant any additional awards under the 2008 plan.

The 2008 plan provides for the grant of incentive stock options, non-statutory stock options, restricted stock awards, restricted stock units and other stock-based awards. The number of shares of our common stock that are reserved for issuance under the 2008 plan is the sum of 7,200,000 shares plus such additional number of shares of our common stock as is equal to the sum of (1) the number of shares of our common stock reserved for issuance under the 1999 plan, described below, that remained available for grant upon the effectiveness of the 2008 plan and (2) the number of shares of our common stock subject to awards granted under the 1999 plan that expire, terminate or are otherwise surrendered, canceled, forfeited or repurchased by us at their original issuance price pursuant to a contractual repurchase right, in the aggregate up to 19,592,788 shares.

Our employees, officers, directors, consultants and advisors are eligible to receive awards under the 2008 plan. However, incentive stock options may only be granted to our employees.

Upon a merger or other reorganization event, our board of directors may, in its sole discretion, take any one or more of the following actions pursuant to the 2008 plan as to some or all outstanding awards other than restricted stock:

- provide that all outstanding awards shall be assumed, or substantially equivalent awards shall be substituted, by the acquiring or successor corporation (or an affiliate thereof);
- upon written notice to a participant, provide that all of the participant's unexercised awards will terminate immediately prior to the consummation of such reorganization event unless exercised by the participant;
- provide that outstanding awards shall become exercisable, realizable or deliverable, or restrictions applicable to an award shall lapse, in whole or in part, prior to or upon such reorganization event;
- in the event of a reorganization event pursuant to which holders of shares of our common stock will receive a cash payment for each share surrendered in the reorganization event, make or provide for a cash payment to the participants with respect to each award held by a participant equal to the excess, if any, of the cash payment for each share surrendered in the reorganization event over the exercise price of such award and any applicable tax withholdings, in exchange for the termination of such award; and
- provide that, in connection with a liquidation or dissolution, awards shall convert into the right to receive liquidation proceeds.

Upon the occurrence of a reorganization event other than a liquidation or dissolution, the repurchase and other rights with respect to outstanding restricted stock will continue for the benefit of the successor company and will, unless the board of directors may otherwise determine, apply to the cash, securities or other property into which shares of our common stock are converted or exchanged pursuant to the reorganization event. Upon the occurrence

of a reorganization event involving a liquidation or dissolution, all restrictions and conditions on each outstanding restricted stock award will automatically be deemed terminated or satisfied, unless otherwise provided in the agreement evidencing the restricted stock award.

At any time, our board of directors may, in its sole discretion, provide that any award under the 2008 plan will become immediately exercisable in full or in part, free of some or all restrictions or conditions, or otherwise realizable in full or in part.

As of September 30, 2011, there were options to purchase an aggregate of 10,996,996 shares of common stock outstanding under the 2008 plan at a weighted average exercise price of $2.79 per share and an aggregate of 26,252 shares of common stock issued upon the exercise of options granted under the 2008 plan. Following effectiveness of our 2011 plan, we will grant no further stock options or other awards under the 2008 plan. However, any shares of common stock reserved for issuance under the 2008 plan that remain available for issuance and any shares of common stock subject to awards under the 2008 plan that expire, terminate, or are otherwise surrendered, canceled, forfeited or repurchased without having been fully exercised or resulting in any common stock being issued shall be available for grant under the 2011 plan up to a specified number of shares.

1999 stock option plan

Our 1999 plan was adopted by our board of directors and approved by our stockholders in May 1999. Our 1999 plan was amended in March 2000, December 2001, December 2003, March 2006 and October 2007. A maximum of 12,600,000 shares of common stock was authorized for issuance under the 1999 plan.

The 1999 plan provides for the grant of incentive stock options and non-statutory stock options. Our officers, employees and consultants were eligible to receive awards under the 1999 plan. However, incentive stock options were only granted to our employees.

In the event of a consolidation or merger, the sale or exchange of all or substantially all of our assets or a reorganization or liquidation, each holder of an option will be entitled to receive, upon exercise of such option, the same shares, securities or property as he would have been entitled to receive upon the occurrence of such exercise if the holder had exercised his option prior to such transaction; provided, however, that in lieu of the foregoing, our board of directors may, in its sole discretion, take any one or more of the following actions pursuant to the 1999 Plan as to some or all outstanding awards:

- upon written notice to a participant, provide that all of the participant's unexercised options will terminate on a date not less than 20 days after the date of such notice unless exercised by the participant; and

- in connection with such written notice to a participant, provide for the acceleration or waiver of any deferred exercise period.

As of September 30, 2011, there were options to purchase an aggregate of 6,524,910 shares of common stock outstanding under the 1999 plan at a weighted average exercise price of $1.96 per share and an aggregate of 1,200,282 shares of common stock issued upon the exercise of options granted under the 1999 plan. After the effective date of the 2008 plan, we granted no additional awards under the 1999 plan and any shares of common stock reserved for issuance under the 1999 plan that remained then available for issuance were available for issuance

under the 2008 plan up to a specified number of shares. Any shares of common stock subject to awards under the 1999 plan that expire, terminate, or are otherwise surrendered, canceled, forfeited or repurchased without having been fully exercised or resulting in any common stock being issued will be available for issuance under the 2011 plan, up to a specified number of shares.

2011 employee stock purchase plan

Our 2011 ESPP was adopted by our board of directors in August 2011 and approved by our stockholders in October 2011. Our 2011 ESPP will become effective upon the closing of this offering. The 2011 ESPP provides eligible employees with the opportunity to purchase up to an aggregate of 1,500,000 shares of our common stock.

All of our employees and all employees of a designated subsidiary, as defined in the 2011 ESPP, are eligible to participate in the 2011 ESPP, subject to limited exceptions set forth in the 2011 ESPP.

However, no employee is eligible to receive an option to purchase shares of our common stock under the 2011 ESPP that would result in the employee owning 5% or more of the total combined voting power or value of our or any of our subsidiary's common stock immediately after the grant of an option under the 2011 ESPP. Additionally, no employee may purchase shares of our common stock with an aggregate value of more than $25,000 per calendar year in which the option is outstanding under the 2011 ESPP, as determined by the value of such shares as of the date the option is granted.

We may make one or more offerings under the 2011 ESPP at such time or times as determined by our board of directors with each offering continuing for a six month period, or plan period. However, our board of directors or a committee appointed by our board of directors may, in its discretion, choose a different plan period of twelve months or less for any offerings made under the 2011 ESPP. Our board of directors has not yet determined when the first plan period under the 2011 ESPP will commence. Payroll deductions made during each plan period will be held in payroll deductions accounts for all participating employees for the purchase of our common stock at the end of each plan period.

On the commencement date of each plan period, we will grant to each eligible employee who is then a participant in the 2011 ESPP an option to purchase shares of our common stock. The employee may authorize up to a maximum of 20% of his or her base pay to be deducted by us during the plan period. Each employee who continues to be a participant in the 2011 ESPP on the last business day of the plan period will be deemed to have exercised the option to the extent of the employee's accumulated payroll deductions, subject to the maximum share ownership limits for the 2011 ESPP. Under the terms of the 2011 ESPP, the option exercise price will be determined by our board of directors or a committee appointed by our board of directors for each plan period. Our board of directors or a committee appointed by our board of directors may set whether the option exercise price will be based on the closing price of our common stock on (1) the first business day of the plan period or (2) the last business day of the plan period, or the lower of such closing prices, provided that the option exercise price will be at least 85% of the applicable closing price. In no event may an employee purchase in any one plan period a number of shares that exceeds the number of shares determined by dividing (1) the product of $2,083 and the number of full months in the plan period by (2) the closing price of a share of our common stock on the commencement date of the plan period.

An employee who is not a participant in the 2011 ESPP on the last day of the plan period is not entitled to exercise any option, and any balance held in the employee's accumulated payroll deduction account will be refunded. An employee's rights under the 2011 ESPP terminate upon voluntary withdrawal from the purchase plan at any time prior to the last business day of the applicable plan period or when the employee ceases employment for any reason, as defined in the 2011 ESPP, before the last business day of the applicable plan period.

In the event of any stock splits, reverse stock splits, stock dividends, recapitalizations, combination of shares, reclassification of shares, spin-offs or other similar events or changes in capitalization, we will be required to make equitable adjustments in connection with the 2011 ESPP to the extent determined by our board of directors or a committee appointed by our board of directors.

Upon a merger or other reorganization event, our board of directors or a committee appointed by our board of directors may take any one or more of the following actions pursuant to the 2011 ESPP as to some or all outstanding options:

- provide that options will be assumed, or substantially equivalent options shall be substituted, by the acquiring or succeeding corporation (or an affiliate thereof);
- upon written notice to employees, provide that all outstanding options will terminate immediately prior to the consummation of such reorganization event and that all such outstanding options will become exercisable to the extent of accumulated payroll deductions as of a date specified by our board of directors or by a committee appointed by our board of directors;
- upon written notice to employees, provide that all outstanding options shall be cancelled as of a date prior to the effective date of such reorganization event and that all accumulated payroll deductions will be returned to participating employees on such date;
- in the event of a reorganization event pursuant to which holders of shares of our common stock will receive a cash payment for each share surrendered in the reorganization event, change the last day of the plan period to be the date of the consummation of the reorganization event and make or provide for a cash payment equal to (1) the acquisition price multiplied by the number of shares of our common stock subject to the participant's option that could be purchased based on the employee's accumulated payroll deductions at such time, minus (2) the aggregate option price of such option;
- provide that, in connection with a liquidation or dissolution, options shall convert into the right to receive liquidation proceeds (net of the option price).

In order to comply with the laws of a foreign jurisdiction, we may grant options to our employees or employees of a designated subsidiary who are citizens or residents of such jurisdiction with terms that are less favorable (but not more favorable) than the terms of options granted under the 2011 ESPP to our employees or employees of a designated subsidiary who are residents of the United States. Notwithstanding the foregoing, our employees or employees of a designated subsidiary who are citizens or residents of a foreign jurisdiction may be excluded from eligibility under the 2011 ESPP if (1) the grant of an option under the 2011 ESPP is prohibited by law in such employees' jurisdiction of residence or

citizenship or (2) compliance with the laws of the foreign jurisdiction would cause the 2011 ESPP to violate the requirements of Section 423 of the Internal Revenue Code.

Our board may from time to time establish one or more subplans under the 2011 ESPP with respect to one or more designated subsidiaries, provided that such subplans comply with Section 423 of the Internal Revenue Code.

Our board of directors may at any time amend or terminate the 2011 ESPP, except that we must obtain stockholder approval for any amendment that requires stockholder approval under Section 423 of the Internal Revenue Code, and our board of directors may not make any amendment that would cause the 2011 ESPP to fail to comply with Section 423 of the Internal Revenue Code. Upon termination of the 2011 ESPP, we will refund any balance held in the payroll deduction accounts of participating employees.

401(k) retirement plan

We maintain a defined contribution employee retirement plan for our employees. Our 401(k) retirement plan, or 401(k) plan, is intended to qualify as a tax-qualified plan under Section 401 of the Internal Revenue Code so that contributions to our 401(k) plan, and income earned on such contributions, are not taxable to participants until withdrawn or distributed from the 401(k) plan. Our 401(k) plan provides that each participant may contribute up to 100% of his or her pre-tax compensation, up to a statutory limit, which is $16,500 for 2011. Participants who are at least 50 years old can also make "catch-up" contributions, which in 2011 may be up to an additional $5,500 above the statutory limit. Under our 401(k) plan, each employee is fully vested in his or her deferred salary contributions. Employee contributions are held and invested by the plan's trustee. Our 401(k) plan also permits us to make discretionary contributions and matching contributions, subject to established limits and a vesting schedule. For 2010, we made an employer matching contribution equal to 50% of employee deferral contributions up to a maximum deferral rate of 3% of compensation.

Director compensation

Compensation for 2010

The following table sets forth information regarding the total compensation awarded to, earned by or paid to each of our current non-employee directors during the year ended December 31, 2010 for their service on our board of directors. The compensation amounts presented in the table below are historical and are not indicative of the amounts we may pay our directors in the future. Robert J. Mulroy, our Chief Executive Officer, has not received and

will not receive any additional compensation for his services as a director. The compensation that we pay to Mr. Mulroy is discussed under "Executive Compensation" above.

Name	Fees earned or paid in cash ($)(1)	Option awards ($)(2)	Other compensation ($)(3)	Total ($)
Gary L. Crocker	62,500	—	—	62,500
James van B. Dresser	25,500	40,888	—	66,388
Gordon J. Fehr	27,750	—	—	27,750
Robert C. Gay, Ph.D.	15,250	—	—	15,250
Peter C. Lewis(4)	2,500	241,692	—	244,192
Walter M. Lovenberg, Ph.D.	33,750	—	—	33,750
Sarah E. Nash	26,000	—	—	26,000
Michael E. Porter, Ph.D.(5)	—	98,130	34,349	132,479
Anthony J. Sinskey, Sc.D.	24,750	—	—	24,750

(1) Fees earned or paid in cash consist of:

- for Mr. Crocker, $37,000 for serving as chairman of the board, $4,500 for attending board meetings and $21,000 for attending committee meetings;
- for Mr. Dresser, $12,000 as a retainer for board service, $3,750 for attending board meetings and $9,750 for attending committee meetings;
- for Mr. Fehr, $12,000 as a retainer for board service, $3,750 for attending board meetings and $12,000 for attending committee meetings;
- for Dr. Gay, $12,000 as a retainer for board service, $750 for attending board meetings and $2,500 for attending committee meetings;
- for Mr. Lewis, who resigned from our board on January 27, 2010, $1,000 as a retainer for the pro-rated period of his board service for 2010 and $1,500 for attending committee meetings;
- for Dr. Lovenberg, $12,000 as a retainer for board service, $3,750 for attending board meetings and $18,000 for attending committee meetings;
- for Ms. Nash, $12,000 as a retainer for board service, $3,750 for attending board meetings and $10,250 for attending committee meetings; and
- for Dr. Sinskey, $12,000 as a retainer, $3,000 for attending board meetings and $9,750 for attending committee meetings.

(2) The amounts in the "Option awards" column reflect the aggregate grant date fair value of stock options granted during the year to directors for their service as directors computed in accordance with the provisions of ASC 718, excluding the impact of estimated forfeitures related to service-based vesting conditions (which in our case were none). The assumptions that we used to calculate these amounts are discussed in Note 16 to our financial statements appearing at the end of this prospectus.
As of December 31, 2010, the aggregate number of shares of our common stock subject to each non-employee director's outstanding option awards was as follows: Mr. Crocker 290,000; Mr. Dresser 215,462; Mr. Fehr 185,462; Dr. Gay 100,000; Mr. Lewis 134,558; Dr. Lovenberg 185,462; Ms. Nash 140,000; Dr. Sinskey 185,462; and Dr. Porter 120,000.

(3) In October 2010, our organization and compensation committee awarded a stock option for 25,000 shares of our common stock to Dr. Porter as compensation for his services as a consultant to the company. The amount of Dr. Porter's compensation reflects the aggregate grant date fair value of the stock option computed in accordance with the provisions of ASC 718, excluding the impact of estimated forfeitures related to service-based vesting conditions, which in our case were none. The assumptions that we used to calculate this amount are discussed in Note 16 to our financial statements appearing at the end of this prospectus.

(4) In connection with the transactions described under "Transactions with related persons—Wharton transactions," in August 2010, we granted to Mr. Lewis, in respect of his board service, an option to purchase 20,000 shares of our common stock (with a grant date fair value computed in accordance with the provisions of ASC 718 of $34,796) and we extended the exercise period of all the options held by Mr. Lewis so that the ability to exercise each such option expires 10 years after its original date of grant (to which we assigned an incremental fair value as a result of the modification in accordance with ASC 718 of $206,896).

(5) Dr. Porter became a member of our board in December 2010.

Director compensation arrangements

For 2010, each non-employee director, other than the chairman of the board, received an annual retainer for board service of $12,000. The chairman of the board received an annual retainer for board service of $37,000. Our non-employee directors were paid an additional $1,500 for each board meeting that they attended in person and $750 for each board meeting that they attended by telephone, except that the chairman of the board of directors received $1,000 for each meeting he attended by telephone. In addition, the members of each of our board committees received a fee of $750 for each committee meeting that they attended. The chairs of each of our board committees each received a fee of $1,000 for each meeting of such committee that they attended. Upon joining our board, non-employee directors received an initial stock option grant to purchase 60,000 shares of our common stock. For 2010, non-employee directors, other than the chairman of the board, were targeted to receive an annual stock option grant with a grant date fair value of approximately $57,500. The chairman of the board was targeted to receive an annual stock option grant with a grant date fair value of approximately $71,875. However, these annual awards were not granted during 2010 because we did not have a sufficient number of shares of common stock available for grants to be made under the 2008 Plan. We instead made these grants on May 3, 2011.

For 2011, each non-employee director, other than the chairman of the board, receives an annual retainer for board service of $25,000. The chairman of the board receives an annual retainer for board service of $38,000. Our non-employee directors are paid an additional $2,000 for each board meeting that they attend. In addition, the members of each of our four board committees receive a fee for each committee meeting that they attend. The chairs of each of our four board committees each receive an additional fee for each meeting of such committee that they attend. Upon joining our board, non-employee directors currently receive an initial stock option grant to purchase 60,000 shares of our common stock. Non-employee directors, other than the chairman of the board, are also currently targeted to receive, on an annual basis, an annual stock option grant with a grant date fair value of approximately $90,500. The chairman of our board is targeted to receive, on an annual basis, an annual stock option grant with a grant date fair value of approximately $113,125.

Effective upon the closing of this offering, our non-employee directors will be compensated for their services to the board as follows:

- an annual retainer for board service of $25,000 ($47,500 for the chairman of the board);
- a fee of $2,000 for each meeting of the board that each non-employee director attends;
- an annual stock option grant with a grant date fair value of approximately $90,500 (approximately $113,125 for the chairman of the board);
- for members of the audit committee, a fee of $1,700 per meeting of the audit committee that each non-employee director attends ($3,000 per meeting for the chair);
- for members of the organization and compensation committee, a fee of $1,000 per meeting of the organization and compensation committee that each non-employee director attends ($2,500 per meeting for the chair);

- for members of the corporate governance and nominating committee, a fee of $750 per meeting of the corporate governance and nominating committee that each non-employee director attends ($1,000 per meeting for the chair); and

- for members of the executive committee, a fee of $1,000 per meeting of the executive committee that each non-employee director attends ($1,500 per meeting for the chair).

In addition, we have reimbursed, and will continue to reimburse, our non-employee directors for their travel, lodging and other reasonable expenses incurred in attending meetings of our board and committees of our board.

Limitation of liability and indemnification

Our certificate of incorporation, which will become effective upon the closing of this offering, limits the personal liability of directors for breach of fiduciary duty to the maximum extent permitted by the Delaware General Corporation Law and provides that no director will have personal liability to us or to our stockholders for monetary damages for breach of fiduciary duty or other duty as a director. However, these provisions do not eliminate or limit the liability of any of our directors:

- for any breach of the director's duty of loyalty to us or our stockholders;

- for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law;

- for voting or assenting to unlawful payments of dividends, stock repurchases or other distributions; or

- for any transaction from which the director derived an improper personal benefit.

Any amendment to or repeal of these provisions will not eliminate or reduce the effect of these provisions in respect of any act, omission or claim that occurred or arose prior to such amendment or repeal. If the Delaware General Corporation Law is amended to provide for further limitations on the personal liability of directors of corporations, then the personal liability of our directors will be further limited to the greatest extent permitted by the Delaware General Corporation Law.

In addition, our certificate of incorporation, which will become effective upon the closing of this offering, provides that we must indemnify our directors and officers and we must advance expenses, including attorneys' fees, to our directors and officers in connection with legal proceedings, subject to very limited exceptions.

We maintain a general liability insurance policy that covers certain liabilities of our directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers. In addition, we have entered into indemnification agreements with certain of our directors, and we intend to enter into indemnification agreements with all of our directors and executive officers. These indemnification agreements may require us, among other things, to indemnify each such director for some expenses, including attorneys' fees, judgments, fines and settlement amounts incurred by him in any action or proceeding arising out of his service as one of our directors.

Certain of our non-employee directors may, through their relationships with their employers, be insured and/or indemnified against certain liabilities incurred in their capacity as members of our board of directors.

Insofar as indemnification for liabilities arising under the Securities Act of 1933, as amended, or the Securities Act, may be permitted to directors, executive officers or persons controlling us, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Rule 10b5-1 plans

Our directors and executive officers may adopt written plans, known as Rule 10b5-1 plans, in which they will contract with a broker to buy or sell shares of our common stock on a periodic basis based upon a pre-set plan or formula. Under a Rule 10b5-1 plan, a broker executes trades pursuant to parameters established by the director or officer when entering into the plan, without further direction from the director or officer. The director or officer may amend or terminate the plan in some circumstances. Our directors and executive officers may also buy or sell additional shares outside of a Rule 10b5-1 plan when they are not in possession of material, nonpublic information.

Transactions with related persons

Since January 1, 2008, we have engaged in the following transactions with our directors, executive officers and holders of more than 5% of our voting securities, and affiliates or immediate family members of our directors, executive officers and holders of more than 5% of our voting securities. We believe that all of these transactions were on terms as favorable as could have been obtained from unrelated third parties.

Series G convertible preferred stock financing

In April 2011, we issued and sold an aggregate of 11,000,000 shares of our series G convertible preferred stock at a price per share of $7.00 for an aggregate purchase price of $77,000,000. The following table sets forth the number of shares of our series G convertible preferred stock that we issued to our directors, executive officers and 5% stockholders and their affiliates and immediate family members.

Name	Shares of series G convertible preferred stock
5% Stockholders:	
Fidelity Investments(1)	5,524,135
Fred Alger Management, Inc.(2)	1,428,570
Directors and executive officers:	
Robert J. Mulroy(3)	82,855
Gary Crocker(4)	483,270
Sarah E. Nash(5)	32,000
Michael E. Porter	28,570

(1) Consists of (i) 1,428,572 shares of series G convertible preferred stock held by Fidelity Mt. Vernon Street Trust: Fidelity Growth Company Fund, (ii) 2,142,858 shares of series G convertible preferred stock held by Fidelity Securities Fund: Fidelity Blue Chip Growth Fund, (iii) 380,800 shares of series G convertible preferred stock held by Fidelity Securities Fund: Fidelity Series Small Cap Opportunities Fund, (iv) 80,373 shares of series G convertible preferred stock held by Fidelity Advisor Series VII: Fidelity Advisor Health Care Fund, (v) 123,883 shares of series G convertible preferred stock held by Fidelity Central Investment Portfolios LLC: Fidelity Health Care Central Fund, (vi) 14,977 shares of series G convertible preferred stock held by Variable Insurance Products Fund IV: Health Care Portfolio, (vii) 391,134 shares of series G convertible preferred stock held by Fidelity Capital Trust: Fidelity Stock Selector Small Cap Fund, (viii) 350,000 shares of series G convertible preferred stock held by Fidelity Select Portfolios: Health Care Portfolio and (ix) 611,538 shares of series G convertible preferred stock held by Fidelity Destiny Portfolios: Fidelity Advisor Capital Development Fund.

Fidelity Management & Research Company, or Fidelity, a wholly-owned subsidiary of FMR LLC, acts as investment adviser for the beneficial owners set forth above, or the funds. Edward C. Johnson 3d, the Chairman of FMR LLC, and his family members, directly or through trust, are parties to a shareholders' agreement and may be deemed, under the Investment Act of 1940, to form a controlling group with respect to FMR LLC and therefore to be persons with the indirect control of Fidelity. Fidelity has the ability to make decisions with respect to the voting and disposition of the shares set forth above, subject to the oversight of the board of trustees (or similar entity) of each fund. The board of trustees of each fund has enacted a policy with respect to the voting of any investment property owned thereby and shares are voted for the funds by Fidelity in accordance with such policies. Under the terms of its management contract with each fund, Fidelity has overall responsibility for directing the investments of the fund in accordance with the fund's investment objective, policies and limitations. Each fund has one or more portfolio managers appointed by and serving at the pleasure of Fidelity who make the decisions with respect to the disposition of the shares.

(2) Consists of (i) 396,775 shares of series G convertible preferred stock held by Alger Capital Appreciation Fund, (ii) 496,510 shares of series G convertible preferred stock held by Alger Capital Appreciation Institutional Fund, (iii) 129,055 shares of series G convertible preferred stock held by Alger Capital Appreciation Portfolio and (iv) 406,230 shares of series G convertible preferred stock held by Alger Spectra Fund. Fred Alger Management, Inc. is the investment advisor of each of the above listed funds and, as such, has sole voting and sole dispositive control over the securities owned by such funds.

(3) Consists of 4,285 shares of series G convertible preferred stock held by Mr. Mulroy's brother, Richard D. Mulroy, Jr., 61,428 shares of series G convertible preferred stock held by Mr. Mulroy's brother, William F. Mulroy, and 17,142 shares of series G convertible preferred stock held by the Mulroy family irrevocable trust, of which Mr. Mulroy's brother, Richard D. Mulroy, Jr. is a trustee, each of whom is deemed to be a person related to us.

(4) Consists of 313,266 shares of series G convertible preferred stock held by Mr. Crocker jointly with his wife, Ann Crocker. In addition, Mr. and Mrs. Crocker, certain members of Mr. Crocker's family, certain trusts established for members of Mr. Crocker's family and certain entities controlled by Mr. Crocker or members of his family are parties to a Shareholder Voting Agreement, dated December 20, 2010, or the Crocker voting agreement, pursuant to which the parties to the agreement have agreed to vote his, her or its shares as directed by Crocker Ventures, LLC. Mr. Crocker is the President, Manager and chairman of Crocker Ventures, LLC and in connection therewith shares voting control over all of the shares subject to the Crocker voting agreement. As a result, in addition to the shares of series G convertible preferred stock held by Mr. and Mrs. Crocker jointly, the 170,004 shares of series G convertible preferred stock held by the parties to the Crocker voting agreement are deemed to be shares held by a person related to us.

(5) Consists of 25,000 shares of series G convertible preferred stock held by Ms. Nash. Ms. Nash's husband, Michael Sylvester, holds 7,000 shares of series G convertible preferred stock. Mr. Sylvester is deemed to be a person related to us.

Series F convertible preferred stock financing and exchange offer

Between November 2007 and April 2008, we agreed to issue an aggregate of 11,775,995 shares of our series F convertible preferred stock at a price per share of $5.10 for an aggregate purchase price of $60,057,575. The following table sets forth the number of shares of our series F convertible preferred stock that we agreed to issue to our directors and 5% stockholders and their affiliates and immediate family members.

Name	Shares of series F convertible preferred stock
5% Stockholders:	
CSFB Next Fund, Inc.	1,960,784
TPG-Axon Partners(1)	1,960,783
Directors:	
Gary Crocker(2)	655,000
Sarah E. Nash(3)	226,665
Michael E. Porter	33,000
James van B. Dresser	4,901

(1) Consists of 1,313,725 shares of series F convertible preferred stock held by TPG-Axon International, L.P. and 647,058 shares of series F convertible preferred stock held by TPG-Axon Partners, LP.

(2) Consists of 41,900 shares of series F convertible preferred stock held by Mr. Crocker jointly with his wife, Ann Crocker. In addition, Mr. and Mrs. Crocker, certain members of Mr. Crocker's family, certain trusts established for members of Mr. Crocker's family and certain entities controlled by Mr. Crocker or members of his family are parties to a Shareholder Voting Agreement, dated December 20, 2010, or the Crocker voting agreement, pursuant to which the parties to the agreement have agreed to vote his, her or its shares as directed by Crocker Ventures, LLC. Mr. Crocker is the President, Manager and Chairman of Crocker Ventures, LLC and in connection therewith shares voting control over all of the shares subject to the Crocker voting agreement. As a result, in addition to the shares of series F convertible preferred stock held by Mr. and Mrs. Crocker jointly, the 613,100 shares of series F convertible preferred stock held by the parties to the Crocker voting agreement are deemed to be shares held by persons related to us.

(3) Consists of 142,610 shares of series F convertible preferred stock held by Ms. Nash. Ms. Nash is also the trustee of the Sarah E. Nash 2009 Grantor Retained Annuity Trust and, as such, has voting and investment control over, and may be deemed the beneficial owner of, 64,448 shares of series F convertible preferred stock held by the Sarah E. Nash 2009 Grantor Retained Annuity Trust. Ms. Nash's husband, Michael Sylvester, holds 19,607 shares of series F convertible preferred stock. Mr. Sylvester is deemed to be a person related to us.

In July 2010, in connection with a review of our corporate records, we determined that we may not have obtained all of the required stockholder approvals to amend our articles of organization to authorize the shares of series F convertible preferred stock that we agreed to issue in 2007 and 2008. As a result, in October 2010, we conducted an exchange offer in which we provided investors to whom we had agreed to issue and sell shares of series F convertible preferred stock in 2007 and 2008 with the opportunity to acquire shares of properly authorized series F convertible preferred stock. All of the holders of shares of series F convertible preferred stock accepted our offer and received new, properly authorized shares of series F convertible

preferred stock. Each such holder received a sub-series of the properly authorized series F convertible preferred stock that is intended to provide the investor with the economic benefit of the accrued dividends to which the investor would be entitled had the properly authorized shares of series F convertible preferred stock been issued on the dates that we originally agreed to do so in 2007 and 2008. In the exchange offer, we issued to our directors and 5% stockholders and their affiliates the same number of shares of properly authorized series F convertible preferred stock as we had agreed to issue and sell to such holders in the series F financing in 2007 and 2008, which amounts are noted in the table above.

Wharton transactions

In June and August 2010, we entered into various agreements with certain individuals and entities associated with Wharton Equity Partners, collectively referred to as Wharton, which at that time owned more than 5% of the outstanding shares of our capital stock. One of our directors at that time, Peter Lewis, is a founder and principal of Wharton Equity Partners. Also at that time, David Eisenberg, the Chief Executive Officer of Wharton Equity Partners, had the right to observe the meetings of our board.

We entered into these agreements in connection with the sale by Wharton of up to all of the shares of our capital stock held by them to purchasers unaffiliated with Wharton. In connection with the contemplated sale, each investor in the funds maintained by Wharton was given the choice by Wharton of either agreeing to sell a pro-rata portion of the shares of our capital stock held in such fund or having a pro-rata portion of such shares distributed to such investor in kind. Wharton then entered into a series of stock purchase agreements with certain entities and individuals affiliated with Fred Alger Management, Inc. and certain other stockholders of ours, pursuant to which Wharton sold to such entities and individuals 1,158,006 shares of our series B convertible preferred stock, 1,207,437 shares of our series C convertible preferred stock and 74,799 shares of our series D convertible preferred stock and distributed to its investors, in kind, 1,712,071 shares of our series B convertible preferred stock, 2,762,917 shares of our series C convertible preferred stock and 449,058 shares of our series D convertible preferred stock.

In connection with Wharton's sale and distribution of its shares of our capital stock, Wharton agreed to take all necessary actions to remove certain of the special rights of the series B convertible preferred stock, which had been negotiated for by Wharton as the majority holder of the series B convertible preferred stock. These rights included the right to designate and have one director elected to our board, the right to designate one individual to observe meetings of our board and rights to vote or act as a separate class with respect to, among other things, significant corporate events and transactions. In addition, Mr. Eisenberg and Mr. Lewis resigned from all positions they held with us.

In connection with these transactions, we entered into a voting and standstill agreement with Wharton and its affiliates, including Mr. Eisenberg and Mr. Lewis, pursuant to which they granted a proxy to the chairman of our board to cause any shares held by Wharton and its affiliates, including Mr. Eisenberg and Mr. Lewis, to be voted in the same proportions as our stockholders who cast votes on the matter in question. In addition, Wharton and its affiliates, including Mr. Eisenberg and Mr. Lewis, also agreed not to (1) sell, assign, transfer or pledge any shares of our capital stock or any interest therein or any securities convertible into or exercisable for shares of our capital stock or any voting rights with respect thereto without our

prior written consent, (2) grant any proxies with respect to any shares of our capital stock or (3) enter into any voting trust or other agreement with respect to the voting of any shares of our capital stock or our other securities. They also agreed not to, without our prior consent or in certain limited situations, acquire or seek to acquire any additional securities of ours, to acquire or license any of our assets, to engage in a merger or other business combination involving us or to act alone or in concert in an effort to seek control of or to influence our management or board. This voting and standstill agreement terminates upon the first to occur of a sale of all or substantially all of our assets, a merger or other acquisition that results in our stockholders prior to the merger or acquisition owning less than 50% of the equity of the surviving corporation or parent entity and the fifth anniversary of the date of the agreement, which is August 2015.

In addition, in connection with the sale of the shares of our capital stock owned by Wharton:

- we extended the exercise period of all options held by Mr. Lewis so that the ability to exercise each such option expires 10 years after its original date of grant, to which we assigned an incremental fair value as a result of the modification of $206,896;
- we consented to a transfer from Mr. Lewis to Mr. Eisenberg of 50% of all options held by Mr. Lewis;
- we extended the exercise period of all warrants previously issued to Wharton to purchase 2,596,000 shares of our common stock for an additional four years and increased the exercise price from $2.12 and $2.47 per share to $3.00 per share, which we valued using a Black-Scholes option valuation model and accounted for the $1,803,000 of incremental value within the equity section of the balance sheet;
- we reimbursed Wharton for an aggregate of $150,000 of its expenses incurred in connection with these transactions; and
- we granted to Mr. Lewis, in respect of his board service, an option to purchase 20,000 shares of common stock at an exercise price of $2.69 per share, the fair value on the date of grant, and with a term of 10 years, with a grant date fair value of $34,796.

Silver Creek

We have established a subsidiary named Silver Creek Pharmaceuticals, Inc., or Silver Creek. Silver Creek's mission is to apply our Network Biology approach to the discovery and development of innovative therapeutics in the field of regenerative medicine. In August 2010, we acquired 12,000,000 shares of series A convertible preferred stock of Silver Creek in exchange for technology licenses. See "Business—Silver Creek" for more information regarding these licenses.

In addition, in August and December 2010, Silver Creek issued and sold an aggregate of 4,189,904 shares of its series A convertible preferred stock at a price per share of $1.00 to other investors for an aggregate purchase price of $4,189,904. 850,000 of such shares of series A convertible preferred stock of Silver Creek were issued and sold to Crocker Ventures LLC, an entity controlled by our director Mr. Crocker.

Registration rights

We are a party to an investor rights agreement with certain holders of our common stock, certain holders of our series B convertible preferred stock, series C convertible preferred stock, series D convertible preferred stock, series E convertible preferred stock, series F convertible preferred stock and series G convertible preferred stock, certain holders of warrants to purchase our common stock and the holder of a warrant to purchase shares of our series C convertible preferred stock, including some of our 5% stockholders and their affiliates and entities affiliated with our directors. In addition, we have agreed to grant to the holder of the warrant to purchase shares of our Series D convertible preferred stock the same registration rights as are provided under the investor rights agreement. The investor rights agreement provides these holders the right, following the completion of this offering, to demand that we file a registration statement or request that their shares be covered by a registration statement that we are otherwise filing. See "Description of capital stock—registration rights" for additional information regarding these registration rights.

Indemnification agreements

Our certificate of incorporation provides that we will indemnify our directors and officers to the fullest extent permitted by Delaware law. In addition, we have entered into indemnification agreements with our directors and executive officers. See "Executive compensation—limitation of liability and indemnification" for additional information regarding these agreements.

Policies and procedures for related person transactions

Our board of directors has adopted written policies and procedures for the review of any transaction, arrangement or relationship in which Merrimack is a participant, the amount involved exceeds $120,000 and one of our executive officers, directors, director nominees or 5% stockholders, or their immediate family members, each of whom we refer to as a "related person," has a direct or indirect material interest.

If a related person proposes to enter into such a transaction, arrangement or relationship, which we refer to as a "related person transaction," the related person must report the proposed related person transaction to our corporate counsel. The policy calls for the proposed related person transaction to be reviewed and, if deemed appropriate, approved by our audit committee. Whenever practicable, the reporting, review and approval will occur prior to entry into the transaction. If advance review and approval is not practicable, the committee will review, and, in its discretion, may ratify the related person transaction. The policy also permits the chairman of the committee to review and, if deemed appropriate, approve proposed related person transactions that arise between committee meetings, subject to ratification by the committee at its next meeting. Any related person transactions that are ongoing in nature will be reviewed annually.

A related person transaction reviewed under the policy will be considered approved or ratified if it is authorized by the committee after full disclosure of the related person's interest in the transaction. As appropriate for the circumstances, the committee will review and consider:

- the related person's interest in the related person transaction;

- the approximate dollar value of the amount involved in the related person transaction;
- the approximate dollar value of the amount of the related person's interest in the transaction without regard to the amount of any profit or loss;
- whether the transaction was undertaken in the ordinary course of our business;
- whether the terms of the transaction are no less favorable to us than terms that could have been reached with an unrelated third party;
- the purpose of, and the potential benefits to us of, the transaction; and
- any other information regarding the related person transaction or the related person in the context of the proposed transaction that would be material to investors in light of the circumstances of the particular transaction.

The committee may approve or ratify the transaction only if the committee determines that, under all of the circumstances, the transaction is in, or is not inconsistent with, Merrimack's best interests. The committee may impose any conditions on the related person transaction that it deems appropriate.

In addition to the transactions that are excluded by the instructions to the SEC's related person transaction disclosure rule, our board of directors has determined that the following transactions do not create a material direct or indirect interest on behalf of related persons and, therefore, are not related person transactions for purposes of this policy:

- interests arising solely from the related person's position as an executive officer of another entity (whether or not the person is also a director of such entity), that is a participant in the transaction, where (a) the related person and all other related persons own in the aggregate less than a 10% equity interest in such entity, (b) the related person and his or her immediate family members are not involved in the negotiation of the terms of the transaction and do not receive any special benefits as a result of the transaction and (c) the amount involved in the transaction equals less than the greater of $200,000 or 5% of the annual gross revenues of the company receiving payment under the transaction; and
- a transaction that is specifically contemplated by provisions of our charter or bylaws.

The policy provides that transactions involving compensation of executive officers shall be reviewed and approved by the organization and compensation committee in the manner specified in its charter.

Principal stockholders

The following table sets forth information with respect to the beneficial ownership of our common stock as of September 30, 2011 by:

- each of our directors;
- each of our named executive officers;
- all of our directors and executive officers as a group; and
- each person, or group of affiliated persons, who is known by us to beneficially own more than 5% of our common stock.

The column entitled "Percentage of shares beneficially owned—before offering" is based on a total of 77,668,812 shares of our common stock outstanding as of September 30, 2011, assuming the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 66,254,763 shares of our common stock upon the closing of this offering. The column entitled "Percentage of shares beneficially owned—after offering" is based on shares of our common stock to be outstanding after this offering, including the shares of our common stock that we are selling in this offering, but not including any additional shares issuable upon exercise of outstanding options or warrants.

Beneficial ownership is determined in accordance with the rules and regulations of the SEC and includes voting or investment power with respect to our common stock. Shares of our common stock subject to options that are currently exercisable or exercisable within 60 days after September 30, 2011 are considered outstanding and beneficially owned by the person holding the options or warrants for the purpose of calculating the percentage ownership of that person but not for the purpose of calculating the percentage ownership of any other person. Except as otherwise noted, the persons and entities in this table have sole voting and investing power with respect to all of the shares of our common stock beneficially owned by them, subject to community property laws, where applicable. Except as otherwise set forth below, the address of the beneficial owner is c/o Merrimack Pharmaceuticals, Inc., One Kendall Square, Suite B7201, Cambridge, Massachusetts 02139.

Name and address of beneficial owner	Number of shares beneficially owned	Percentage of shares beneficially owned: Before offering	Percentage of shares beneficially owned: After offering
5% Stockholders:			
Fidelity Investments(1) 82 Devonshire St. Boston, MA 02109	5,524,135	7.11%	
CSFB Next Fund, Inc.(2) Eleven Madison Avenue New York, NY 10010	4,818,562	6.20	
Fred Alger Management, Inc.(3) 111 Fifth Avenue New York, NY 10003	4,349,368	5.60	
TPG-Axon Partners(4) 888 Seventh Avenue, 38th Floor New York, NY 10019	4,183,005	5.39	
Directors and executive officers:			
Robert J. Mulroy(5)	2,730,817	3.42	
Ulrik B. Nielsen, Ph.D.(6)	1,278,126	1.62	
Clet M. Niyikiza, Ph.D.(7)	229,165	*	
Edward J. Stewart(8)	492,216	*	
William A. Sullivan(9)	261,980	*	
Lisa A. Evren	—	—	
Gary L. Crocker(10)	3,573,592	4.58	
James van B. Dresser(11)	351,974	*	
Gordon J. Fehr(12)	381,715	*	
Robert C. Gay, Ph.D.(13)	789,346	1.01	
Walter M. Lovenberg, Ph.D.(14)	295,605	*	
Sarah E. Nash(15)	1,122,494	1.44	
Michael E. Porter, Ph.D.(16)	369,114	*	
Anthony J. Sinskey, Sc.D.(17)	592,376	*	
All executive officers and directors as a group (14 persons)(18)	13,188,519	15.65%	

* Represents beneficial ownership of less than one percent of our outstanding common stock.

(1) Consists of (i) 1,428,572 shares of common stock underlying shares of series G convertible preferred stock held by Fidelity Mt. Vernon Street Trust: Fidelity Growth Company Fund, (ii) 2,142,858 shares of common stock underlying shares of series G convertible preferred stock held by Fidelity Securities Fund: Fidelity Blue Chip Growth Fund, (iii) 380,800 shares of common stock underlying shares of series G convertible preferred stock held by Fidelity Securities Fund: Fidelity Series Small Cap Opportunities Fund, (iv) 80,373 shares of common stock underlying shares of series G convertible preferred stock held by Fidelity Advisor Series VII: Fidelity Advisor Health Care Fund, (v) 123,883 shares of common stock underlying shares of series G convertible preferred stock held by Fidelity Central Investment Portfolios LLC: Fidelity Health Care Central Fund, (vi) 14,977 shares of common stock underlying shares of series G convertible preferred stock held by Variable Insurance Products Fund IV: Health Care Portfolio, (vii) 391,134 shares of common stock underlying shares of series G convertible preferred stock held by Fidelity Capital Trust: Fidelity Stock Selector Small Cap Fund, (viii) 350,000 shares of common stock underlying shares of series G convertible preferred stock held by Fidelity Select Portfolios: Health Care Portfolio and (ix) 611,538 shares of common stock underlying shares of series G convertible preferred stock held by Fidelity Destiny Portfolios: Fidelity Advisor Capital Development Fund.

Fidelity Management & Research Company, or Fidelity, a wholly-owned subsidiary of FMR LLC, acts as investment adviser for the beneficial owners set forth above, or the funds. Edward C. Johnson 3d, the Chairman of FMR LLC, and his family members,

directly or through trust, are parties to a shareholders' agreement and may be deemed, under the Investment Act of 1940, to form a controlling group with respect to FMR LLC and therefore to be persons with the indirect control of Fidelity. Fidelity has the ability to make decisions with respect to the voting and disposition of the shares set forth above, subject to the oversight of the board of trustees (or similar entity) of each fund. The board of trustees of each fund has enacted a policy with respect to the voting of any investment property owned thereby and shares are voted for the funds by Fidelity in accordance with such policies. Under the terms of its management contract with each fund, Fidelity has overall responsibility for directing the investments of the fund in accordance with the fund's investment objective, policies and limitations. Each fund has one or more portfolio managers appointed by and serving at the pleasure of Fidelity who make the decisions with respect to the disposition of the shares.

(2) Consists of (i) 2,857,778 shares of common stock underlying shares of series E convertible preferred stock and (ii) 1,960,784 shares of common stock underlying shares of series F convertible preferred stock.

(3) Consists of (i) 396,775 shares of common stock underlying shares of series G convertible preferred stock held by Alger Capital Appreciation Fund, (ii) 496,510 shares of common stock underlying shares of series G convertible preferred stock held by Alger Capital Appreciation Institutional Fund, (iii) 129,055 shares of common stock underlying shares of series G convertible preferred stock held by Alger Capital Appreciation Portfolio, (iv) 17,984 shares of common stock underlying shares of series B convertible preferred stock and 12,149 shares of common stock underlying shares of series C convertible preferred stock held by Alger Dynamic Opportunities Fund, (v) 6,366 shares of common stock underlying shares of series B convertible preferred stock and 4,300 shares of common stock underlying shares of series C convertible preferred stock held by Alger Dynamic Return Fund, (vi) 268,966 shares of common stock underlying shares of series B convertible preferred stock and 181,700 shares of common stock underlying shares of series C convertible preferred stock held by Alger Health Sciences Fund, (vii) 343,768 shares of common stock underlying shares of series B convertible preferred stock and 232,232 shares of common stock underlying shares of series C convertible preferred stock held by Alger Mid Cap Growth Fund, (viii) 905,574 shares of common stock underlying shares of series B convertible preferred stock and 611,759 shares of common stock underlying shares of series C convertible preferred stock held by Alger Mid Cap Growth Institutional Fund, (ix) 200,531 shares of common stock underlying shares of series B convertible preferred stock and 135,469 shares of common stock underlying shares of series C convertible preferred stock held by Alger Mid Cap Growth Portfolio and (x) 406,230 shares of common stock underlying shares of series G convertible preferred stock held by Alger Spectra Fund. Fred Alger Management, Inc. is the investment advisor of each of the above listed funds and as such has sole voting and sole dispositive control over the securities owned by such funds.

(4) Consists of (i) 1,466,667 shares of common stock underlying shares of series E convertible preferred stock and 1,313,725 shares of common stock underlying shares of series F convertible preferred stock held by TPG-Axon International, L.P. and (ii) 755,555 shares of common stock underlying shares of series E convertible preferred stock and 647,058 shares of common stock underlying shares of series F convertible preferred stock held by TPG-Axon Partners, LP.

(5) Consists of (i) 474,603 shares of common stock, (ii) 40,397 shares of common stock underlying shares of series B convertible preferred stock, (iii) 29,019 shares of common stock underlying shares of series C convertible preferred stock and (iv) 2,124,998 shares of common stock underlying options that are exercisable as of September 30, 2011 or will become exercisable within 60 days after such date. Mr. Mulroy's wife, Jean Mulroy, holds (i) 57,143 shares of common stock underlying shares of series D convertible preferred stock and (ii) 4,657 shares of common stock underlying shares of series E convertible preferred stock. Mr. and Mrs. Mulroy share voting and investment control over the securities held by Mrs. Mulroy and, as a result, Mr. Mulroy may be deemed to be the beneficial owner of the securities held by Mrs. Mulroy.

(6) Consists of (i) 247,443 shares of common stock and (ii) 1,030,683 shares of common stock underlying options that are exercisable as of September 30, 2011 or will be come exercisable within 60 days after such date.

(7) Consists of 229,165 shares of common stock underlying options that are exercisable as of September 30, 2011 or will be come exercisable within 60 days after such date.

(8) Consists of 492,216 shares of common stock underlying options that are exercisable as of September 30, 2011 or will be come exercisable within 60 days after such date.

(9) Consists of 261,980 shares of common stock underlying options that are exercisable as of September 30, 2011 or will be come exercisable within 60 days after such date.

(10) Mr. Crocker owns directly 59,863 shares of common stock underlying shares of series C convertible preferred stock. Mr. Crocker also owns jointly with his wife, Ann Crocker, (i) 463,654 shares of common stock underlying shares of series D convertible preferred stock, (ii) 46,676 shares of common stock underlying shares of series E convertible preferred stock, (iii) 41,900 shares of common stock underlying shares of series F convertible preferred stock and (iv) 313,266 shares of common stock underlying shares of Series G convertible preferred stock. In addition, Mr. and Mrs. Crocker, certain members of Mr. Crocker's family, certain trusts established for members of Mr. Crocker's family and certain entities controlled by Mr. Crocker or members of his family are parties to a Shareholder Voting Agreement, dated December 20, 2010, or the Crocker voting agreement, pursuant to which the parties to the agreement have agreed to vote his, her or its shares as directed by Crocker Ventures, LLC. Mr. Crocker is the President, Manager and chairman of Crocker Ventures, LLC and in connection therewith shares voting control over all of the shares subject to the Crocker voting agreement. As a result, in addition to the shares of common stock underlying shares of convertible preferred stock held by Mr. Crocker individually and by Mr. and Mrs. Crocker jointly, Mr. Crocker may be deemed the beneficial owner of (i) 783,838 shares of common stock underlying shares of series C convertible preferred stock, (ii) 215,717 shares of common stock underlying shares of series D convertible preferred stock, (iii) 509,324 shares of common stock underlying shares of series E convertible preferred stock, (iv) 613,100 shares of common stock underlying shares of series F convertible preferred stock and (v) 170,004 shares of common stock underlying shares of series G convertible preferred stock held by the parties to the Crocker voting agreement. The number of shares beneficially

owned by Mr. Crocker also includes 356,250 shares of common stock underlying options that have been issued to Mr. Crocker and are exercisable as of September 30, 2011 or will become exercisable within 60 days after such date.

(11) Consists of (i) 87,500 shares of common stock, (ii) 11,111 shares of common stock underlying shares of series E convertible preferred stock, (iii) 4,901 shares of common stock underlying shares of series F convertible preferred stock and (iv) 248,462 shares of common stock underlying options that are exercisable as of September 30, 2011 or will become exercisable within 60 days after such date.

(12) Consists of (i) 141,031 shares of common stock, (ii) 22,222 shares of common stock underlying shares of series E convertible preferred stock and (iii) 218,462 shares of common stock underlying options that are exercisable as of September 30, 2011 or will become exercisable within 60 days after such date.

(13) Includes (i) 175,316 shares of common stock underlying shares of series B convertible preferred stock, (ii) 142,857 shares of common stock underlying shares of series D convertible preferred stock and (iii) 153,000 shares of common stock underlying options that are exercisable as of September 30, 2011 or will become exercisable within 60 days after such date. Dr. Gay is also the trustee of the Robert C. Gay 1998 Family Trust and has voting and investment control over, and may be deemed to be the beneficial owner of, (i) 175,316 shares of common stock underlying shares of series B convertible preferred stock and (ii) 142,857 shares of common stock underlying shares of series D convertible preferred stock held by the Robert C. Gay 1998 Family Trust.

(14) Consists of (i) 70,000 shares of common stock, (ii) 7,143 shares of common stock underlying shares of series D convertible preferred stock and (iii) 218,462 shares of common stock underlying options that are exercisable as of September 30, 2011 or will become exercisable within 60 days after such date.

(15) Includes (i) 44,440 shares of common stock, (ii) 120,161 shares of common stock underlying shares of series C convertible preferred stock, (iii) 28,571 shares of common stock underlying shares of series D convertible preferred stock, (iv) 222,222 shares of common stock underlying shares of series E convertible preferred stock, (v) 142,610 shares of common stock underlying shares of series F convertible preferred stock, (vi) 25,000 shares of common stock underlying shares of series G convertible preferred stock and (vii) 193,000 shares of common stock underlying options that are exercisable as of September 30, 2011 or will become exercisable within 60 days after such date. Ms. Nash is also the trustee of the Sarah E. Nash 2009 Grantor Retained Annuity Trust and, as such, has voting and investment control over, and may be deemed the beneficial owner of, 64,448 shares of common stock underlying shares of Series F convertible preferred stock held by the Sarah E. Nash 2009 Grantor Retained Annuity Trust. Ms. Nash's husband, Michael Sylvester, holds (i) 22,220 shares of common stock, (ii) 30,040 shares of common stock underlying shares of Series C convertible preferred stock, (iii) 14,286 shares of common stock underlying shares of Series D convertible preferred stock, (iv) 188,889 shares of common stock underlying shares of Series E convertible preferred stock, (v) 19,607 shares of common stock underlying shares of series F convertible preferred stock and (vi) 7,000 shares of common stock underlying shares of series G convertible preferred stock. Mr. Sylvester and Ms. Nash share voting and investment control over the securities held by Mr. Sylvester and, as a result, Ms. Nash may be deemed the beneficial owner of the securities held by Mr. Sylvester.

(16) Includes (i) 63,000 shares of common stock, (ii) 56,509 shares of common stock underlying shares of series C convertible preferred stock, (iii) 34,286 shares of common stock underlying shares of series D convertible preferred stock, (iv) 25,000 shares of common stock underlying shares of series E convertible preferred stock, (v) 33,000 shares of common stock underlying shares of series F convertible preferred stock, (vi) 28,570 shares of common stock underlying shares of series G convertible preferred stock and (vii) 128,749 shares of common stock underlying options that are exercisable as September 30, 2011 or will become exercisable within 60 days after such date.

(17) Consists of (i) 237,431 shares of common stock and (ii) 218,462 shares of common stock underlying options that are exercisable as of September 30, 2011 or will become exercisable within 60 dates after such date. Dr. Sinskey also owns jointly with his wife, Chokyun Rha-Sinskey, (i) 36,723 shares of common stock underlying shares of Series B convertible preferred stock and (ii) 18,024 shares of common stock underlying shares of series C convertible preferred stock. Dr. Sinskey is also the trustee of the Anthony J. Sinskey 2010 Grat I and, as such, has voting and investment control over, and may be deemed the beneficial owner of, 81,736 shares of common stock held by the Anthony J. Sinskey 2010 Grat I.

(18) Includes 6,593,888 shares of common stock underlying options that are exercisable as of September 30, 2011 or will be come exercisable within 60 days after such date.

Description of capital stock

The following description of our capital stock and provisions of our certificate of incorporation and bylaws are summaries and are qualified by reference to the certificate of incorporation and the bylaws that will be in effect upon the closing of this offering. We have filed copies of these documents with the SEC as exhibits to our registration statement of which this prospectus forms a part. The description of the capital stock reflects changes to our capital structure that will occur upon the closing of this offering.

Upon the closing of this offering, our authorized capital stock will consist of 200,000,000 shares of our common stock, $0.01 par value per share, and 10,000,000 shares of our preferred stock, $0.01 par value per share, all of which preferred stock will be undesignated.

As of September 30, 2011, we had issued and outstanding:

- 11,414,049 shares of our common stock outstanding held by 150 stockholders of record;
- 3,873,448 shares of our series B convertible preferred stock that are convertible into 5,978,479 shares of our common stock;
- 14,423,092 shares of our series C convertible preferred stock that are convertible into 14,423,092 shares of our common stock;
- 8,086,305 shares of our series D convertible preferred stock that are convertible into 8,086,305 shares of our common stock;
- 14,990,892 shares of our series E convertible preferred stock that are convertible into 14,990,892 shares of our common stock;
- 11,775,995 shares of our series F convertible preferred stock that are convertible into 11,775,995 shares of our common stock; and
- 11,000,000 shares of our series G convertible preferred stock that are convertible into 11,000,000 shares of our common stock.

As of September 30, 2011, we also had outstanding:

- options to purchase 17,521,906 shares of our common stock at a weighted average exercise price of $2.48 per share;
- warrants to purchase 2,937,049 shares of our common stock at a weighted average exercise price of $2.93 per share held by 76 persons;
- a warrant to purchase 1,033 shares of our series C convertible preferred stock at an exercise price of $1.889 per share held by General Electric Capital Corporation; and
- a warrant to purchase an aggregate of 302,143 shares of our series D convertible preferred stock at an exercise price of $3.50 per share held by Hercules Technology Growth Capital, Inc.

Upon the closing of this offering:

- all of the outstanding shares of our preferred stock will automatically convert into an aggregate of 66,254,763 shares of our common stock;

- the warrants to purchase an aggregate of 2,937,049 shares of our common stock will remain outstanding and exercisable to purchase shares of our common stock at a weighted average exercise price of $2.93;

- the warrant to purchase 1,033 shares of our series C convertible preferred stock at an exercise price of $1.889 per share held by General Electric Capital Corporation will automatically become a warrant to purchase 1,033 shares of our common stock at an exercise price of $1.889 per share; and

- the warrant to purchase 302,143 shares of our series D convertible preferred stock at an exercise price of $3.50 per share held by Hercules Technology Growth Capital, Inc. will automatically become a warrant to purchase 302,143 shares of our common stock at an exercise price of $3.50 per share.

Common stock

Holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders and do not have cumulative voting rights. Each election of directors by our stockholders will be determined by a plurality of the votes cast by the stockholders entitled to vote on the election. In general, except (1) for the election of directors, (2) as described below under "—Staggered board" and "—Super-majority voting," (3) in the future to the extent that we have two or more classes or series of stock outstanding with separate voting rights and (4) as otherwise required by law, any matter to be voted on by our stockholders at any meeting is decided by the vote of the holders of a majority in voting power of the votes cast by the holders of shares of our stock present or represented at the meeting and voting affirmatively or negatively on such matter. Holders of common stock are entitled to receive proportionately any dividends as may be declared by our board of directors, subject to any preferential dividend rights of outstanding preferred stock.

In the event of our liquidation or dissolution, the holders of our common stock are entitled to receive proportionately all assets available for distribution to stockholders after the payment of all debts and other liabilities and subject to the prior rights of any of our outstanding preferred stock. Holders of our common stock have no preemptive, subscription, redemption or conversion rights. The rights, preferences and privileges of holders of our common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of our preferred stock that we may designate and issue in the future.

Preferred stock

Under the terms of our certificate of incorporation, our board of directors is authorized to issue shares of preferred stock in one or more series without stockholder approval. Our board of directors has the discretion to determine the rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of preferred stock.

The purpose of authorizing our board of directors to issue preferred stock and determine its rights and preferences is to eliminate delays associated with a stockholder vote on specific issuances. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions, future financings and other corporate purposes, could have the effect of

making it more difficult for a third party to acquire, or could discourage a third party from seeking to acquire, a majority of our outstanding voting stock. Upon the closing of this offering, there will be no shares of preferred stock outstanding, and we have no present plans to issue any shares of preferred stock.

Warrants

As of September 30, 2011, we had outstanding warrants to purchase an aggregate of 2,937,049 shares of our common stock at a weighted average exercise price of $2.93 per share held by 76 persons; a warrant to purchase an aggregate of 1,033 shares of our series C convertible preferred stock at an exercise price of $1.889 per share held by General Electric Capital Corporation; and a warrant to purchase an aggregate of 302,143 shares of our series D convertible preferred stock at an exercise price of $3.50 per share held by Hercules Technology Growth Capital, Inc.

Upon the closing of this offering and after giving effect to the automatic conversion of our preferred stock into common stock:

- the warrants to purchase an aggregate of 2,937,049 shares of our common stock will remain outstanding and exercisable to purchase shares of our common stock and will continue to have a weighted average exercise price of $2.93;
- the warrant to purchase 1,033 shares of our series C convertible preferred stock at an exercise price of $1.889 per share held by General Electric Capital Corporation will automatically become a warrant to purchase an aggregate of 1,033 shares of our common stock at an exercise price of $1.889 per share; and
- the warrant to purchase 302,143 shares of our series D convertible preferred stock at an exercise price of $3.50 per share held by Hercules Technology Growth Capital, Inc. will automatically become a warrant to purchase an aggregate of 302,143 shares of our common stock at an exercise price of $3.50 per share.

The warrants that were exercisable for shares of common stock prior to the closing of this offering, which we refer to as the existing common warrants, require adjustment to the number of shares for which they are exercisable and their exercise prices in the event of any merger, consolidation, reorganization or dissolution of us, the sale of all of our assets or the declaration and payment of a stock dividend by us. All of the existing common warrants provide for cashless exercise. In addition, pursuant to their terms, the existing common warrants to purchase an aggregate of 49,750 shares of common stock held by General Electric Capital Corporation will be automatically exercised as of immediately prior to the expiration date of such warrant if not otherwise exercised prior to the expiration date. The existing common warrants held by General Electric Capital Corporation expire at various times between November 22, 2011 and June 30, 2013. The existing common warrants held by other persons do not automatically exercise immediately prior to their expiration. Such other existing common warrants expire at various times between December 17, 2011 and March 10, 2016.

The warrant to purchase 1,033 shares of our series C convertible preferred stock held by General Electric Capital Corporation requires adjustment to the number of shares for which it is exercisable and its exercise price in the event of any merger, consolidation, reorganization or dissolution of us, the sale of all of our assets or the declaration and payment of a stock

dividend by us. The warrant provides for cashless exercise and, if not exercised prior to the expiration date, pursuant to its terms, will be automatically exercised as of immediately prior to the expiration date of such warrant. The warrant expires on November 22, 2011.

The warrant to purchase 302,143 shares of our series D convertible preferred stock held by Hercules Technology Growth Capital, Inc also has certain anti-dilution protections and requires adjustment to the number of shares for which it is exercisable and its exercise price in the event of certain mergers or consolidations. This warrant provides for cashless exercise and expires two years after the closing of this offering.

Options

As of September 30, 2011, options to purchase 17,521,906 shares of our common stock at a weighted average exercise price of $2.48 per share were outstanding.

Delaware anti-takeover law and certain charter and bylaws provisions

Delaware law

We are subject to Section 203 of the Delaware General Corporation Law. Subject to certain exceptions, Section 203 prevents a publicly held Delaware corporation from engaging in a "business combination" with any "interested stockholder" for three years following the date that the person became an interested stockholder, unless either the interested stockholder attained such status with the approval of our board of directors, the business combination is approved by our board of directors and stockholders in a prescribed manner or the interested stockholder acquired at least 85% of our outstanding voting stock in the transaction in which it became an interested stockholder. A "business combination" includes, among other things, a merger or consolidation involving us and the "interested stockholder" and the sale of more than 10% of our assets. In general, an "interested stockholder" is any entity or person beneficially owning 15% or more of our outstanding voting stock and any entity or person affiliated with or controlling or controlled by such entity or person. The restrictions contained in Section 203 are not applicable to any of our existing stockholders that will own 15% or more of our outstanding voting stock upon the closing of this offering.

Staggered board

Our certificate of incorporation and our bylaws divide our board of directors into three classes with staggered three-year terms. In addition, our certificate of incorporation and our bylaws provide that directors may be removed only for cause and only by the affirmative vote of the holders of 75% of our shares of capital stock present in person or by proxy and entitled to vote. Under our certificate of incorporation and bylaws, any vacancy on our board of directors, including a vacancy resulting from an enlargement of our board of directors, may be filled only by vote of a majority of our directors then in office. Furthermore, our certificate of incorporation provides that the authorized number of directors may be changed only by the resolution of our board of directors. The classification of our board of directors and the limitations on the ability of our stockholders to remove directors, change the authorized number of directors and fill vacancies could make it more difficult for a third party to acquire, or discourage a third party from seeking to acquire, control of our company. We have agreed to include in the proxy statement for our first annual meeting of stockholders following the

completion of this offering a proposal that, if passed, would declassify our board of directors, so that each of our directors would be elected annually.

Stockholder action; special meeting of stockholders; advance notice requirements for stockholder proposals and director nominations

Our certificate of incorporation and our bylaws provide that any action required or permitted to be taken by our stockholders at an annual meeting or special meeting of stockholders may only be taken if it is properly brought before such meeting and may not be taken by written action in lieu of a meeting. Our certificate of incorporation and our bylaws also provide that, except as otherwise required by law, special meetings of the stockholders can only be called by our chairman of the board, our president or chief executive officer or our board of directors. In addition, our bylaws establish an advance notice procedure for stockholder proposals to be brought before an annual meeting of stockholders, including proposed nominations of candidates for election to our board of directors. Stockholders at an annual meeting may only consider proposals or nominations specified in the notice of meeting or brought before the meeting by or at the direction of our board of directors, or by a stockholder of record on the record date for the meeting, who is entitled to vote at the meeting and who has delivered timely written notice in proper form to our secretary of the stockholder's intention to bring such business before the meeting. These provisions could have the effect of delaying until the next stockholder meeting stockholder actions that are favored by the holders of a majority of our outstanding voting securities. These provisions also could discourage a third party from making a tender offer for our common stock, because even if it acquired a majority of our outstanding voting stock, it would be able to take action as a stockholder, such as electing new directors or approving a merger, only at a duly called stockholders meeting and not by written consent.

Super-majority voting

The Delaware General Corporation Law provides generally that the affirmative vote of a majority of the shares entitled to vote on any matter is required to amend a corporation's certificate of incorporation or bylaws, unless a corporation's certificate of incorporation or bylaws, as the case may be, requires a greater percentage. Our bylaws may be amended or repealed by a majority vote of our board of directors or the affirmative vote of the holders of at least 75% of the votes that all our stockholders would be entitled to cast in any annual election of directors. In addition, the affirmative vote of the holders of at least 75% of the votes that all our stockholders would be entitled to cast in any election of directors is required to amend or repeal or to adopt any provisions inconsistent with any of the provisions of our certificate of incorporation described above.

Registration rights

We have entered into a fifth amended and restated investor rights agreement, dated April 6, 2011, which we refer to as the investor rights agreement, with certain holders of shares of our common stock, series B convertible preferred stock, series C convertible preferred stock, series D convertible preferred stock, series E convertible preferred stock, series F convertible preferred stock and series G convertible preferred stock, certain holders of warrants to purchase our common stock and the holder of a warrant to purchase shares of our series C convertible preferred stock. In addition we have agreed to grant to the holder of the warrant to purchase

shares of our series D convertible preferred stock the same registration rights as are provided under the investor rights agreement. Upon the completion of this offering, holders of a total of up to shares of our common stock as of September 30, 2011, including shares of our common stock issuable upon exercise of outstanding warrants, will have the right to require us to register these shares under the Securities Act under specified circumstances. After registration pursuant to these rights, these shares will become freely tradable without restriction under the Securities Act. If not otherwise exercised, the rights described below will expire five years after the closing of this offering.

Demand registration rights

Beginning six months after the effective date of the registration statement of which this prospectus forms a part, subject to specified limitations set forth in the investor rights agreement, at any time, the holders of at least 20% of the then outstanding shares having rights under the investor rights agreement, which we refer to as registrable shares, including registrable shares of our common stock issuable upon exercise of outstanding warrants, acting together, may demand in writing that we register all or a portion of the registrable shares under the Securities Act so long as the total amount of registrable shares registered have an aggregate offering price of at least $5.0 million (based on the then current market price or fair value). We are not obligated to file a registration statement pursuant to this provision on more than two occasions, and we are not obligated to file a registration statement pursuant to this provision within six months of the effective date of any other registration statement that we may file.

Form S-3 registration rights

In addition, at any time after we become eligible to file a registration statement on Form S-3 under the Securities Act, subject to specified limitations, the holders of at least 10% of the registrable shares, including registrable shares of our common stock issuable upon exercise of outstanding warrants, may demand in writing that we register on Form S-3 all or a portion of the registrable shares so long as the total amount of registrable shares being registered have an aggregate offering price of at least $2.5 million (based on the then current market price). We are not obligated to file a Form S-3 pursuant to this provision on more than two occasions in any 12-month period.

Incidental registration rights

If, at any time after the closing of this offering, we propose to file a registration statement under the Securities Act, other than pursuant to the demand registration rights and Form S-3 registration rights described above, the holders of registrable shares will be entitled to notice of the registration and, subject to specified exceptions, we will be required to use our best efforts to register all or a portion of any registrable shares then held by them that they request that we register.

In the event that any registration in which the holders of registrable shares participate pursuant to our investor rights agreement is an underwritten public offering, we agree to enter into an underwriting agreement containing customary representation and warranties and covenants, including without limitation customary provisions with respect to indemnification by us of the underwriters of such offering.

In the event that any registration in which the holders of registrable shares participate pursuant to our investor rights agreement is an underwritten public offering, we will use our best efforts to include the requested registrable shares to be included, but may be limited by market conditions.

Expenses

Pursuant to the investor rights agreement, we are required to pay all registration expenses, including registration and filing fees, exchange listing fees, printing expenses and accounting fees and the fees and expenses of one counsel to represent the selling stockholders, other than any underwriting discounts and commissions, related to any demand or incidental registration. The investor rights agreement contains customary cross-indemnification provisions, pursuant to which we are obligated to indemnify the selling stockholders in the event of material misstatements or omissions in the registration statement attributable to us, and they are obligated to indemnify us for material misstatements or omissions in the registration statement attributable to them.

Transfer agent and registrar

The transfer agent and registrar for our common stock will be Computershare Trust Company, Inc.

NASDAQ Global Market

We have applied to have our common stock listed on The NASDAQ Global Market under the symbol "MACK."

Shares eligible for future sale

Prior to this offering, there has been no public market for our common stock, and a liquid trading market for our common stock may not develop or be sustained after this offering. Future sales of substantial amounts of our common stock in the public market, including shares issued upon exercise of outstanding options and warrants or in the public market after this offering, or the anticipation of these sales, could adversely affect market prices prevailing from time to time and could impair our ability to raise capital through sales of equity securities.

Upon the closing of this offering, we will have outstanding an aggregate of shares of our common stock, after giving effect to the issuance of shares of our common stock in this offering and the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 66,254,763 shares of our common stock and assuming no exercise by the underwriters of their over-allotment option, no exercise of options outstanding as of September 30, 2011 and no exercise of the warrants outstanding as of September 30, 2011.

Of the shares to be outstanding immediately after the closing of this offering, we expect that the shares to be sold in this offering will be freely tradable without restriction under the Securities Act unless purchased by our "affiliates," as that term is defined in Rule 144 under the Securities Act. The remaining shares of our common stock outstanding after this offering will be "restricted securities" under Rule 144, and we expect that substantially all of these restricted securities will be subject to the 180-day lock-up period under the lock-up agreements as described below. These restricted securities may be sold in the public market only if registered or pursuant to an exemption from registration, such as Rule 144 or Rule 701 under the Securities Act.

Rule 144

In general, under Rule 144, beginning 90 days after the date of this prospectus, any person who is not our affiliate and has held their shares for at least six months, including the holding period of any prior owner other than one of our affiliates, may sell shares without restriction, subject to the availability of current public information about us. In addition, under Rule 144, any person who is not our affiliate and has held their shares for at least one year, including the holding period of any prior owner other than one of our affiliates, would be entitled to sell an unlimited number of shares immediately upon the closing of this offering without regard to whether current public information about us is available.

Beginning 90 days after the date of this prospectus, a person who is our affiliate or who was our affiliate at any time during the preceding three months and who has beneficially owned restricted securities for at least six months, including the holding period of any prior owner other than one of our affiliates, is entitled to sell a number of shares within any three-month period that does not exceed the greater of:

- 1% of the number of shares of our common stock then outstanding, which will equal approximately shares immediately after this offering; and

- the average weekly trading volume of our common stock on The NASDAQ Global Market during the four calendar weeks preceding the filing of a Notice of Proposed Sale of Securities Pursuant to Rule 144 with respect to the sale.

Sales under Rule 144 by our affiliates are also subject to manner of sale provisions and notice requirements and to the availability of current public information about us.

Upon expiration of the 180-day lock-up period described below, approximately shares of our common stock will be eligible for sale under Rule 144, including shares eligible for resale immediately upon the closing of this offering as described above. We cannot estimate the number of shares of our common stock that our existing stockholders will elect to sell under Rule 144.

Rule 701

In general, under Rule 701 of the Securities Act, any of our employees, consultants or advisors, other than our affiliates, who purchased shares from us in connection with a qualified compensatory stock plan or other written agreement is eligible to resell these shares 90 days after the date of this prospectus in reliance on Rule 144, but without compliance with the holding period requirements of Rule 144 and without regard to the volume of such sales or the availability of public information about us. Subject to the 180-day lock-up period described below, approximately shares of our common stock will be eligible for sale in accordance with Rule 701.

Lock-up agreements

We and each of our directors and executive officers and certain holders of our outstanding common stock, who collectively own shares of our common stock, based on shares outstanding as of September 30, 2011, have agreed that, without the prior written consent of J.P. Morgan Securities LLC on behalf of the underwriters, we and they will not, subject to limited exceptions, during the period ending 180 days after the date of this prospectus, subject to extension in specified circumstances:

- offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase or otherwise transfer or dispose of, directly or indirectly, any shares of our common stock or any securities convertible into or exercisable or exchangeable for common stock, or publicly disclose the intention to make any offer, sale, pledge or disposition;

- enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of our common stock; or

- make any demand for or exercise any right with respect to the registration of any shares of our common stock or any security convertible into or exercisable or exchangeable for shares of our common stock.

The lock-up restrictions, specified exceptions and the circumstances under which the lock-up period may be extended are described in more detail under "Underwriting."

Registration rights

Subject to the lock-up agreements described above, upon the closing of this offering, the holders of an aggregate of up to shares of our common stock, including shares of our common stock issuable upon exercise of outstanding warrants, will have the right to require us to register these shares under the Securities Act under specified circumstances. After registration pursuant to these rights, these shares will become freely tradable without restriction under the Securities Act. See "Description of capital stock—registration rights" for additional information regarding these registration rights.

Stock options

As of September 30, 2011, we had outstanding options to purchase 17,521,906 shares of our common stock, of which options to purchase 13,059,793 shares were vested. Following this offering, we intend to file one or more registration statements on Form S-8 under the Securities Act to register all of the shares of our common stock subject to outstanding options and options and other awards issuable pursuant to our 2011 plan and shares of our common stock subject to outstanding options issued pursuant to our 1999 plan and our 2008 plan. See "Executive compensation—stock option and other employee benefit plans" for additional information regarding these plans. Accordingly, shares of our common stock registered under the registration statements will be available for sale in the open market, subject to Rule 144 volume limitations applicable to affiliates, and subject to any vesting restrictions and lock-up agreements applicable to these shares.

Warrants

Upon the closing of this offering, and after giving effect to the automatic conversion of our preferred stock into common stock, we will have outstanding warrants to purchase an aggregate of 3,240,225 shares of our common stock at a weighted average exercise price of $2.98 per share held by 77 persons. Any shares of common stock issued upon exercise of such warrants will be restricted securities and may be sold in the public market only if registered or pursuant to an exemption from registration, such as Rule 144, subject to the expiration of the lock-up period described above.

Material U.S. tax considerations for non-U.S. holders of common stock

The following is a general discussion of material U.S. federal income and estate tax considerations relating to ownership and disposition of our common stock by a non-U.S. holder. For purposes of this discussion, the term "non-U.S. holder" means a beneficial owner of our common stock that is not, for U.S. federal income tax purposes:

- an individual who is a citizen or resident of the United States;
- a corporation, or other entity treated as a corporation for U.S. federal income tax purposes, created or organized in or under the laws of the United States or of any political subdivision of the United States;
- an estate the income of which is subject to U.S. federal income taxation regardless of its source; or
- a trust, if a U.S. court is able to exercise primary supervision over the administration of the trust and one or more U.S. persons have authority to control all substantial decisions of the trust or if the trust has a valid election to be treated as a U.S. person under applicable U.S. Treasury Regulations.

An individual may be treated as a resident instead of a nonresident of the United States in any calendar year for U.S. federal income tax purposes if the individual was present in the United States for at least 31 days in that calendar year and for an aggregate of at least 183 days during the three-year period ending with the current calendar year. For purposes of this calculation, all of the days present in the current year, one-third of the days present in the immediately preceding year and one-sixth of the days present in the second preceding year are counted. Residents are taxed for U.S. federal income tax purposes as if they were U.S. citizens.

This discussion is based on current provisions of the U.S. Internal Revenue Code of 1986, as amended, which we refer to as the Code, existing and proposed U.S. Treasury Regulations promulgated thereunder, current administrative rulings and judicial decisions, all as in effect as of the date of this prospectus and all of which are subject to change or to differing interpretation, possibly with retroactive effect. Any change could alter the tax consequences to non-U.S. holders described in this prospectus. In addition, the Internal Revenue Service, or the IRS, could challenge one or more of the tax consequences described in this prospectus.

We assume in this discussion that each non-U.S. holder holds shares of our common stock as a capital asset (generally, property held for investment). This discussion does not address all aspects of U.S. federal income and estate taxation that may be relevant to a particular non-U.S. holder in light of that non-U.S. holder's individual circumstances nor does it address any aspects of U.S. state, local or non-U.S. taxes. This discussion also does not consider any specific facts or circumstances that may apply to a non-U.S. holder and does not address the special tax rules applicable to particular non-U.S. holders, such as:

- insurance companies;
- tax-exempt organizations;

- financial institutions;
- brokers or dealers in securities;
- regulated investment companies;
- pension plans;
- controlled foreign corporations;
- passive foreign investment companies;
- non-U.S. holders that hold our common stock as part of a straddle, hedge, conversion transaction, synthetic security or other integrated investment; and
- certain U.S. expatriates.

In addition, this discussion does not address the tax treatment of partnerships or persons who hold their common stock through partnerships or other entities which are pass-through entities for U.S. federal income tax purposes. A partner in a partnership or other pass-through entity that will hold our common stock should consult his, her or its own tax advisor regarding the tax consequences of the ownership and disposition of our common stock through a partnership or other pass-through entity, as applicable.

Prospective investors should consult their own tax advisors regarding the U.S. federal, state, local and non-U.S. income and other tax considerations of acquiring, holding and disposing of our common stock.

Dividends

If we pay distributions on our common stock, those distributions generally will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. If a distribution exceeds our current and accumulated earnings and profits, the excess will be treated as a tax-free return of the non-U.S. holder's investment, up to such holder's tax basis in the common stock. Any remaining excess will be treated as capital gain, subject to the tax treatment described below under the heading "Gain on disposition of common stock."

As discussed under "Dividend policy," we do not expect to pay cash dividends to holders of our common stock in the foreseeable future. In the event we do pay dividends, dividends paid to a non-U.S. holder generally will be subject to withholding of U.S. federal income tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence. If we determine, at a time reasonably close to the date of payment of a distribution on our common stock, that the distribution will not constitute a dividend because we do not anticipate having current or accumulated earnings and profits, we intend not to withhold any U.S. federal income tax on the distribution as permitted by U.S. Treasury Regulations.

Dividends that are treated as effectively connected with a trade or business conducted by a non-U.S. holder within the United States, and if an applicable income tax treaty so provides, that are attributable to a permanent establishment or a fixed base maintained by the non-U.S. holder within the United States, are generally exempt from the 30% withholding tax if the

non-U.S. holder satisfies applicable certification and disclosure requirements. However, such U.S. effectively connected income, net of specified deductions and credits, is taxed at the same graduated U.S. federal income tax rates applicable to U.S. persons (as defined in the Code). Any U.S. effectively connected income received by a non-U.S. holder that is a corporation may also, under certain circumstances, be subject to an additional "branch profits tax" at a 30% rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence.

A non-U.S. holder of our common stock who claims the benefit of an applicable income tax treaty between the United States and such holder's country of residence generally will be required to provide a properly executed IRS Form W-8BEN (or successor form) and satisfy applicable certification and other requirements. Non-U.S holders are urged to consult their own tax advisors regarding their entitlement to benefits under a relevant income tax treaty.

A non-U.S. holder that is eligible for a reduced rate of U.S. withholding tax under an income tax treaty may obtain a refund or credit of any excess amounts withheld by timely filing an appropriate claim with the IRS.

Gain on disposition of common stock

A non-U.S. holder generally will not be subject to U.S. federal income tax on gain recognized on a disposition of our common stock unless:

- the gain is effectively connected with the non-U.S. holder's conduct of a trade or business in the United States, and if an applicable income tax treaty so provides, the gain is attributable to a permanent establishment or fixed base maintained by the non-U.S. holder in the United States; in these cases, the non-U.S. holder will be taxed on a net income basis at the regular graduated rates and in the manner applicable to U.S. persons, and if the non-U.S. holder is a foreign corporation, an additional branch profits tax at a rate of 30%, or a lower rate as may be specified by an applicable income tax treaty, may also apply;

- the non-U.S. holder is a nonresident alien present in the United States for 183 days or more in the taxable year of the disposition and certain other requirements are met, in which case the non-U.S. holder will be subject to a 30% tax (or such lower rate as may be specified by an applicable income tax treaty) on the net gain derived from the disposition, which may be offset by U.S.-source capital losses of the non-U.S. holder, if any; or

- we are, or have been at any time during the five-year period preceding such disposition (or the non-U.S. holder's holding period, if shorter), a "U.S. real property holding corporation," unless our common stock is regularly traded on an established securities market and the non-U.S. holder held no more than 5% of our outstanding common stock, directly or indirectly, during the shorter of the five-year period ending on the date of the disposition or the period that the non-U.S. holder held our common stock. Generally, a corporation is a "U.S. real property holding corporation" if the fair market value of its "U.S. real property interests" equals or exceeds 50% of the sum of the fair market value of its worldwide real property interests plus its other assets used or held for use in a trade or business. Although there can be no assurance, we believe that we are not currently, and we do not anticipate becoming, a "U.S. real property holding corporation" for U.S. federal income tax purposes.

No assurance can be provided that our common stock will be regularly traded on an established securities market for purposes of the rule described above.

Information reporting and backup withholding

We must report annually to the IRS and to each non-U.S. holder the gross amount of the distributions on our common stock paid to such holder and the tax withheld, if any, with respect to such distributions. Non-U.S. holders may have to comply with specific certification procedures to establish that the holder is not a U.S. person (as defined in the Code) in order to avoid backup withholding at the applicable rate, currently 28%, with respect to dividends on our common stock. Generally, a holder will comply with such procedures if it provides a properly executed IRS Form W-8BEN (or other applicable Form W-8) or otherwise meets documentary evidence requirements for establishing that it is a non-U.S. holder, or otherwise establishes an exemption. Dividends paid to non-U.S. holders subject to withholding of U.S. federal income tax, as described above under the heading "Dividends," will generally be exempt from U.S. backup withholding.

Information reporting and backup withholding generally will apply to the proceeds of a disposition of our common stock by a non-U.S. holder effected by or through the U.S. office of any broker, U.S. or foreign, unless the holder certifies its status as a non-U.S. holder and satisfies certain other requirements, or otherwise establishes an exemption. Generally, information reporting and backup withholding will not apply to a payment of disposition proceeds to a non-U.S. holder where the transaction is effected outside the United States through a non-U.S. office of a broker. However, for information reporting purposes, dispositions effected through a non-U.S. office of a broker with substantial U.S. ownership or operations generally will be treated in a manner similar to dispositions effected through a U.S. office of a broker. Non-U.S. holders should consult their own tax advisors regarding the application of the information reporting and backup withholding rules to them.

Copies of information returns may be made available to the tax authorities of the country in which the non-U.S. holder resides or is incorporated under the provisions of a specific treaty or agreement.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules from a payment to a non-U.S. holder can be refunded or credited against the non-U.S. holder's U.S. federal income tax liability, if any, provided that an appropriate claim is timely filed with the IRS.

Federal estate tax

Common stock owned or treated as owned by an individual who is a non-U.S. holder (as specially defined for U.S. federal estate tax purposes) at the time of death will be included in the individual's gross estate for U.S. federal estate tax purposes and, therefore, may be subject to U.S. federal estate tax, unless an applicable estate tax or other treaty provides otherwise.

Legislation affecting certain non-U.S. holders

Legislation enacted in 2010 generally imposes a U.S. federal withholding tax at a rate of 30% on dividends and the gross proceeds of a disposition of our common stock paid after

December 31, 2012 to certain foreign entities (including foreign financial institutions and foreign intermediaries), unless such foreign entity satisfies various U.S. information reporting and due diligence requirements (generally relating to ownership by U.S. persons of interests in or accounts with the entity). Under certain circumstances, a non-U.S. holder may be eligible for refunds or credits of the tax. Non-U.S. holders should consult their own tax advisors regarding the possible implications of this legislation on their investment in our common stock.

The preceding discussion of material U.S. federal tax considerations is for general information only. It is not tax advice. Prospective investors should consult their own tax advisors regarding the particular U.S. federal, state, local and non-U.S. tax consequences of purchasing, holding and disposing of our common stock, including the consequences of any proposed changes in applicable laws.

Underwriting

We are offering the shares of our common stock described in this prospectus through a number of underwriters. J.P. Morgan Securities LLC is acting as book running manager of the offering and as representative of the underwriters. We have entered into an underwriting agreement with the underwriters. Subject to the terms and conditions of the underwriting agreement, we have agreed to sell to the underwriters, and each underwriter has severally agreed to purchase, at the public offering price less the underwriting discounts and commissions set forth on the cover page of this prospectus, the number of shares of our common stock listed next to its name in the following table:

Name	Number of shares
J.P. Morgan Securities LLC	
Merrill Lynch, Pierce, Fenner & Smith Incorporated	
Cowen and Company, LLC	
Oppenheimer & Co. Inc.	
Total	

The underwriters are committed to purchase all the shares of our common stock offered by us if they purchase any shares. The underwriting agreement also provides that if an underwriter defaults, the purchase commitments of non-defaulting underwriters may also be increased or the offering may be terminated.

The underwriters propose to offer the shares of our common stock directly to the public at the initial public offering price set forth on the cover page of this prospectus and to certain dealers at that price less a concession not in excess of $ per share. Any such dealers may resell shares to certain other brokers or dealers at a discount of up to $ per share from the initial public offering price. After the initial public offering of the shares, the offering price and other selling terms may be changed by the underwriters. Sales of shares made outside of the United States may be made by affiliates of the underwriters. The representative has advised us that the underwriters do not intend to confirm discretionary sales in excess of 5% of the shares of our common stock offered in this offering.

The underwriters have an option to buy up to additional shares of our common stock from us to cover sales of shares by the underwriters which exceed the number of shares specified in the table above. The underwriters have 30 days from the date of this prospectus to exercise this over-allotment option. If any shares are purchased with this over-allotment option, the underwriters will purchase shares in approximately the same proportion as shown in the table above. If any additional shares of our common stock are purchased, the underwriters will offer the additional shares on the same terms as those on which the shares are being offered.

The underwriting fee is equal to the public offering price per share of our common stock less the amount paid by the underwriters to us per share of our common stock. The underwriting fee is $ per share. The following table shows the per share and total underwriting discounts and commissions to be paid to the underwriters assuming both no exercise and full exercise of the underwriters' option to purchase additional shares.

	Without over-allotment exercise	With full over-allotment exercise
Per Share	$	$
Total	$	$

We estimate that the total expenses of this offering, including registration, filing and listing fees, printing fees and legal and accounting expenses, but excluding the underwriting discounts and commissions, will be approximately $. The underwriters have agreed to reimburse a portion of our expenses for this offering.

A prospectus in electronic format may be made available on the web sites maintained by one or more underwriters, or selling group members, if any, participating in the offering. The underwriters may agree to allocate a number of shares to underwriters and selling group members for sale to their online brokerage account holders. Internet distributions will be allocated by the representative to underwriters and selling group members that may make Internet distributions on the same basis as other allocations.

We have agreed that we will not (1) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, or otherwise transfer or dispose of, directly or indirectly, or file with the SEC a registration statement under the Securities Act relating to, any shares of our common stock or securities convertible into or exchangeable or exercisable for any shares of our common stock, or publicly disclose the intention to make any offer, sale, pledge, disposition or filing, or (2) enter into any swap or other agreement that transfers all or a portion of the economic consequences associated with the ownership of any shares of our common stock or any such other securities (regardless of whether any of these transactions are to be settled by the delivery of shares of our common stock, or such other securities, in cash or otherwise), in each case without the prior written consent of J.P. Morgan Securities LLC for a period of 180 days after the date of this prospectus, and in each case except for (A) shares of common stock to be sold pursuant to the underwriting agreement, (B) shares of common stock issued upon the exercise of options granted under our stock incentive plans or warrants described as outstanding in this prospectus, (C) options and other awards granted under our stock incentive plans, (D) the filing by us of any registration statement on Form S-8 and (E) shares of common stock or other securities issued in connection with a transaction that includes a commercial relationship or any acquisition of assets or not less than a majority or controlling portion of the equity of another entity. In the case of clause (E), the aggregate number of shares issued may not exceed 5.0% of the total number of outstanding shares of our common stock immediately following the issuance and sale of the shares of common stock in this offering, and the recipient of any such shares of common stock and securities issued during the 180-day restricted period described above must enter into a lock-up agreement.

Notwithstanding the foregoing, if (1) during the last 17 days of the 180-day restricted period, we issue an earnings release or material news or a material event relating to our company occurs; or (2) prior to the expiration of the 180-day restricted period, we announce that we will release earnings results during the 16-day period beginning on the last day of the 180-day period, the restrictions described above shall continue to apply until the expiration of the 18-day period beginning on the issuance of the earnings release or the occurrence of the material news or material event.

All of our directors and executive officers and our significant stockholders have entered into lock-up agreements with the underwriters prior to the commencement of this offering pursuant to which we and each of these persons or entities, for a period of 180 days after the date of this prospectus, may not, without the prior written consent of J.P. Morgan Securities LLC, (1) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, or otherwise transfer or dispose of, directly or indirectly, any shares of our common stock or any securities convertible into or exercisable or exchangeable for common stock (including, without limitation, common stock or such other securities which may be deemed to be beneficially owned by such persons in accordance with the rules and regulations of the SEC and securities which may be issued upon exercise of a stock option or warrant), or publicly disclose the intention to make any offer, sale, pledge or disposition, (2) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of our common stock or such other securities, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of our common stock or such other securities, in cash or otherwise or (3) make any demand for or exercise any right with respect to the registration of any shares of our common stock or any security convertible into or exercisable or exchangeable for our common stock, in each case subject to certain exceptions, including (A) shares of common stock to be sold pursuant to the underwriting agreement, (B) transfers of shares of common stock or other securities as bona fide gifts, (C) transfers or dispositions of shares of common stock or other securities to any trust for the direct or indirect benefit of the director, officer or stockholder or the immediate family of such person in a transaction not involving a disposition for value, (D) transfers or dispositions of shares of common stock or other securities to any corporation, partnership, limited liability company or other entity all of the beneficial ownership interests of which are held by the director, officer or stockholder or the immediate family of such person in a transaction not involving a disposition for value, (E) transfers or dispositions of shares of common stock or other securities by will, other testamentary document or intestate succession to the legal representative, heir, beneficiary or a member of the immediate family of the director, officer or stockholder, and (F) distributions of shares of common stock or other securities to partners, members or stockholders of the stockholder. In the case of any transfer, disposition or distribution pursuant to clause (B), (C), (D), (E) or (F), each transferee, donee or distributee must execute and deliver to J.P. Morgan Securities LLC a lock-up agreement. In addition, in the case of any transfer, disposition or distribution pursuant to clause (B), (C), (D) or (F), no filing by any party under the Exchange Act, or other public announcement reporting a reduction in the beneficial ownership of common stock held by the director, officer or stockholder, may be required or voluntarily made in connection with such transfer, disposition or distribution, other than a filing on a Form 5 made after the expiration of the 180-day period referred to above.

In addition, notwithstanding the foregoing restrictions, the director, officer or stockholder may (i) exercise an option to purchase shares of common stock granted under any stock incentive plan or stock purchase plan, provided that the underlying shares of common stock continue to be subject to the restrictions on transfer set forth in the lock-up agreement, (ii) establish a trading plan pursuant to Rule 10b5-1 under the Exchange Act for the transfer of common stock, provided that such plan does not provide for any transfers of common stock, and no filing with the SEC or other public announcement shall be required or voluntarily made by the director, officer or stockholder or any other person in connection therewith, in each case

during the 180-day restricted period or any extension thereof pursuant to the lock-up agreement, and (iii) transfer or dispose of shares of common stock acquired in the offering, subject to certain restrictions with respect to company directed shares, or on the open market following the offering, provided that certain limitations on filings under the Exchange Act or other public announcements reporting a reduction in the beneficial ownership of common stock held by the director, officer or stockholder apply in connection with such transfer or disposition.

Notwithstanding the foregoing, if (1) during the last 17 days of the 180-day restricted period, we issue an earnings release or material news or a material event relating to our company occurs; or (2) prior to the expiration of the 180-day restricted period, we announce that we will release earnings results during the 16-day period beginning on the last day of the 180-day period, the restrictions described above shall continue to apply until the expiration of the 18-day period beginning on the issuance of the earnings release or the occurrence of the material news or material event.

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act.

We have applied to have our common stock approved for listing on The NASDAQ Global Market under the symbol "MACK."

In connection with this offering, the underwriters may engage in stabilizing transactions, which involves making bids for, purchasing and selling shares of our common stock in the open market for the purpose of preventing or retarding a decline in the market price of our common stock while this offering is in progress. These stabilizing transactions may include making short sales of our common stock, which involves the sale by the underwriters of a greater number of our shares of common stock than they are required to purchase in this offering, and purchasing shares of our common stock on the open market to cover positions created by short sales. Short sales may be "covered" shorts, which are short positions in an amount not greater than the underwriters' over-allotment option referred to above, or may be "naked" shorts, which are short positions in excess of that amount. The underwriters may close out any covered short position either by exercising their over-allotment option, in whole or in part, or by purchasing shares in the open market. In making this determination, the underwriters will consider, among other things, the price of shares available for purchase in the open market compared to the price at which the underwriters may purchase shares through the over-allotment option. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of our common stock in the open market that could adversely affect investors who purchase in this offering. To the extent that the underwriters create a naked short position, they will purchase shares in the open market to cover the position.

The underwriters have advised us that, pursuant to Regulation M of the Securities Act, they may also engage in other activities that stabilize, maintain or otherwise affect the price of our common stock, including the imposition of penalty bids. This means that if the representative of the underwriters purchases shares of our common stock in the open market in stabilizing transactions or to cover short sales, the representative can require the underwriters that sold those shares as part of this offering to repay the underwriting discount received by them.

These activities may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock, and, as a result, the price of the common stock may be higher than the price that otherwise might exist in the open market. If the underwriters commence these activities, they may discontinue them at any time. The underwriters may carry out these transactions on The NASDAQ Global Market, in the over-the-counter market or otherwise.

Prior to this offering, there has been no public market for our common stock. The initial public offering price will be determined by negotiations between us and the representative of the underwriters. In determining the initial public offering price, we and the representative of the underwriters expect to consider a number of factors including:

- the information set forth in this prospectus and otherwise available to the representative;
- our prospects and the history and prospects for the industry in which we compete;
- an assessment of our management;
- our prospects for future earnings;
- the general condition of the securities markets at the time of this offering;
- the recent market prices of, and demand for, publicly traded common stock of generally comparable companies; and
- other factors deemed relevant by the underwriters and us.

Neither we nor the underwriters can assure investors that an active trading market will develop for our common stock, or that the shares will trade in the public market at or above the initial public offering price.

Other than in the United States, no action has been taken by us or the underwriters that would permit a public offering of the securities offered by this prospectus in any jurisdiction where action for that purpose is required. The securities offered by this prospectus may not be offered or sold, directly or indirectly, nor may this prospectus or any other offering material or advertisements in connection with the offer and sale of any such securities be distributed or published in any jurisdiction, except under circumstances that will result in compliance with the applicable rules and regulations of that jurisdiction. Persons into whose possession this prospectus comes are advised to inform themselves about and to observe any restrictions relating to the offering and the distribution of this prospectus. This prospectus does not constitute an offer to sell or a solicitation of an offer to buy any securities offered by this prospectus in any jurisdiction in which such an offer or a solicitation is unlawful.

Selling restrictions

European economic area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a "Relevant Member State") an offer to the public of any shares which are the subject of the offering contemplated by this Prospectus (the "Shares") may not be made in that Relevant Member State, except that an offer to the public in that Relevant

Member State of any Shares may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

(a) to any legal entity which is a qualified investor as defined in the Prospectus Directive;

(b) to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150, natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of representative of the underwriters for any such offer; or

(c) in any other circumstances falling within Article 3(2) of the Prospectus Directive, provided that no such offer of Shares shall result in a requirement for the publication by us or any underwriter of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer to the public" in relation to any Shares in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any Shares to be offered so as to enable an investor to decide to purchase any Shares, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State, the expression "Prospectus Directive" means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in the Relevant Member State, and the expression "2010 PD Amending Directive" means Directive 2010/73/EU.

United Kingdom

Each underwriter has represented and agreed that:

(a) it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the FSMA) received by it in connection with the issue or sale of the Shares in circumstances in which Section 21(1) of the FSMA does not apply to us; and

(b) it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the Shares in, from or otherwise involving the United Kingdom.

Switzerland

The Shares may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange ("SIX") or on any other stock exchange or regulated trading facility in Switzerland. This document has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this document nor any other offering or marketing material relating to the Shares or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this document nor any other offering or marketing material relating to the offering, the Company, the Shares have been or will be filed with or approved by any Swiss regulatory

authority. In particular, this document will not be filed with, and the offer of Shares will not be supervised by, the Swiss Financial Market Supervisory Authority ("FINMA"), and the offer of Shares has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes ("CISA"). The investor protection afforded to acquirers of interests in collective investment schemes under the CISA does not extend to acquirers of Shares.

Dubai international financial centre

This prospectus relates to an Exempt Offer in accordance with the Offered Securities Rules of the Dubai Financial Services Authority ("DFSA"). This prospectus is intended for distribution only to persons of a type specified in the Offered Securities Rules of the DFSA. It must not be delivered to, or relied on by, any other person. The DFSA has no responsibility for reviewing or verifying any documents in connection with Exempt Offers. The DFSA has not approved this prospectus nor taken steps to verify the information set forth herein and has no responsibility for the prospectus. The Shares to which this prospectus relates may be illiquid and/or subject to restrictions on their resale. Prospective purchasers of the Shares offered should conduct their own due diligence on the Shares. If you do not understand the contents of this prospectus you should consult an authorized financial advisor.

Certain of the underwriters and their affiliates have provided in the past to us and our affiliates and may provide from time to time in the future certain commercial banking, financial advisory, investment banking and other services for us and such affiliates in the ordinary course of their business, for which they have received and may continue to receive customary fees and commissions. In addition, from time to time, certain of the underwriters and their affiliates may effect transactions for their own account or the account of customers, and hold on behalf of themselves or their customers, long or short positions in our debt or equity securities or loans, and may do so in the future.

Legal matters

The validity of the shares of our common stock offered hereby is being passed upon for us by Wilmer Cutler Pickering Hale and Dorr LLP. Davis Polk & Wardwell LLP is acting as counsel for the underwriters in connection with this offering.

Experts

The financial statements as of December 31, 2010 and 2009 and for each of the three years in the period ended December 31, 2010 included in this prospectus have been so included in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

Where you can find more information

We have filed with the SEC a registration statement on Form S-1 under the Securities Act with respect to the shares of common stock we are offering to sell. This prospectus, which constitutes part of the registration statement, does not include all of the information contained in the registration statement and the exhibits, schedules and amendments to the registration statement. For further information with respect to us and our common stock, we refer you to the registration statement and to the exhibits and schedules to the registration statement. Statements contained in this prospectus about the contents of any contract, agreement or other document are not necessarily complete, and, in each instance, we refer you to the copy of the contract, agreement or other document filed as an exhibit to the registration statement. Each of these statements is qualified in all respects by this reference to such contract, agreement or other document.

You may read and copy the registration statement of which this prospectus is a part at the SEC's public reference room, which is located at 100 F Street, N.E., Room 1580, Washington, DC 20549. You can request copies of the registration statement by writing to the SEC and paying a fee for the copying cost. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the SEC's public reference room. In addition, the SEC maintains an Internet website, which is located at http://www.sec.gov, that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC. You may access the registration statement of which this prospectus is a part at the SEC's Internet website. Upon completion of this offering, we will be subject to the information reporting requirements of the Exchange Act, and we will file reports, proxy statements and other information with the SEC.

Merrimack Pharmaceuticals, Inc.
Index to consolidated financial statements

Report of independent registered public accounting firm

To the Board of Directors and Stockholders of
Merrimack Pharmaceuticals, Inc.

In our opinion, the accompanying consolidated balance sheets and the related consolidated statements of operations, statements of convertible preferred stock, non-controlling interest and stockholders' deficit, and statements of cash flows present fairly, in all material respects, the financial position of Merrimack Pharmaceuticals, Inc. and its subsidiaries ("the Company") at December 31, 2010 and 2009, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2010 in conformity with accounting principles generally accepted in the United States of America. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits of these statements in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
July 8, 2011

Merrimack Pharmaceuticals, Inc.
Consolidated balance sheets

(in thousands, except par value amounts)	December 31, 2009	December 31, 2010	September 30, 2011 Actual (unaudited)	September 30, 2011 Pro forma (unaudited)
Assets				
Current assets:				
Cash and cash equivalents	$ 58,387	$ 30,713	$ 59,232	$ 59,232
Restricted cash	95	—	—	—
Accounts receivable	1,770	3,745	5,329	5,329
Prepaid expenses and other current assets	1,259	1,830	4,970	4,970
Total current assets	61,511	36,288	69,531	69,531
Restricted cash	381	381	381	381
Property and equipment, net	6,491	7,458	6,137	6,137
Other assets	33	30	23	23
Intangible assets, net	3,125	2,805	2,565	2,565
In-process research and development	7,010	7,010	7,010	7,010
Goodwill	3,605	3,605	3,605	3,605
Total assets	**$ 82,156**	**$ 57,577**	**$ 89,252**	**$ 89,252**
Liabilities, Convertible Preferred Stock, Non-controlling Interest and Stockholders' Deficit				
Current liabilities:				
Accounts payable	$ 2,270	$ 1,440	$ 4,886	$ 4,886
Accrued expenses	6,232	7,256	10,839	10,839
Capital lease obligations	847	443	97	97
Deferred revenue	5,076	6,462	6,879	6,879
Deferred lease benefit	394	454	244	244
Deferred tax incentives	—	270	512	512
Series F amount	69,275	—	—	—
Accrued dividends	—	—	—	4,263
Total current liabilities	84,094	16,325	23,457	27,720
Capital lease obligations	508	48	—	—
Deferred revenues	55,861	67,320	68,637	68,637
Deferred lease benefits	426	102	—	—
Deferred tax incentives	—	810	1,577	1,577
Contingent consideration	178	—	—	—
Convertible preferred stock warrants	578	652	1,394	—
Total liabilities	$ 141,645	$ 85,257	$ 95,065	$ 97,934
Commitments and contingencies (Note 18)				
Convertible preferred stock	131,273	191,257	268,220	—
Non-controlling interest	—	1,027	679	679
Stockholders' deficit:				
Common stock, 90,000 authorized no par shares at December 31, 2009, 125,000 authorized $0.01 par value shares at December 31, 2010, 138,500 authorized $0.01 par value shares at September 30, 2011 (actual, unaudited) and 200,000 authorized $0.01 par value shares at September 30, 2011 (pro forma, unaudited), 10,868, 11,073 and 11,414 issued and outstanding at December 31, 2009 and 2010, and September 30, 2011 (actual, unaudited), respectively, and 77,669 shares at September 30, 2011 (pro forma, unaudited)	17,364	111	114	777
Additional paid-in capital	8,744	45,096	51,452	314,746
Common stock warrants	4,642	6,445	6,445	7,839
Accumulated deficit	(221,512)	(271,616)	(332,723)	(332,723)
Total stockholders' deficit	$ (190,762)	$ (219,964)	$ (274,712)	$ (9,361)
Total liabilities, convertible preferred stock, non-controlling interest and stockholders' deficit	**$ 82,156**	**$ 57,577**	**$ 89,252**	**$ 89,252**

The accompanying notes are an integral part of these consolidated financial statements.

Merrimack Pharmaceuticals, Inc.
Consolidated statements of operations

(in thousands, except per share amounts)	Years ended December 31, 2008	2009	2010	Nine-months ended September 30, 2010 (unaudited)	2011 (unaudited)
Research and development revenues	$ 365	$ 2,148	$ 20,305	$ 13,996	$ 21,638
Operating expenses					
Research and development	34,528	37,658	58,278	41,860	73,101
General and administrative	8,836	12,178	11,381	8,555	11,239
Contingent consideration	—	—	(178)	37	—
Total operating expenses	43,364	49,836	69,481	50,452	84,340
Loss from operations	(42,999)	(47,688)	(49,176)	(36,456)	(62,702)
Other income and expenses					
Interest income	1,243	81	74	54	51
Interest expense	(4,403)	(4,909)	(3,726)	(3,638)	(12)
Other, net	607	41	2,669	12	1,208
Net loss before income taxes and non-controlling interest	(45,552)	(52,475)	(50,159)	(40,028)	(61,455)
Benefit from income taxes	—	3,402	—	—	—
Net loss	(45,552)	(49,073)	(50,159)	(40,028)	(61,455)
Less net loss attributable to non-controlling interest	—	—	(55)	(19)	(348)
Net loss attributable to Merrimack Pharmaceuticals, Inc.	$ (45,552)	$ (49,073)	$ (50,104)	$ (40,009)	$ (61,107)
Net loss per share available to common stockholders—basic and diluted	$ (8.17)	$ (7.28)	$ (5.57)	$ (3.94)	$ (5.92)
Weighted-average common shares used in computing net loss per share available to common stockholders—basic and diluted	6,199	7,387	10,994	10,970	11,292
Pro forma net loss per share available to common stockholders—basic and diluted (unaudited)			$		$
Weighted-average common shares used in computing pro forma net loss per share available to common stockholders—basic and diluted (unaudited)					

The accompanying notes are an integral part of these consolidated financial statements.

Merrimack Pharmaceuticals, Inc.
Consolidated statements of convertible preferred stock, non-controlling interest and stockholders' deficit

(in thousands)	Series B-F convertible preferred stock Shares	Series B-F convertible preferred stock Amount	Non-controlling interest	Common stock Shares	Common stock Amount	Additional paid-in capital	Common stock warrants	Accumulated deficit	Total stockholders' deficit
Balance at January 1, 2008	42,028	$ 132,739	$ —	6,180	$ 7,822	$ 3,023	$ 4,618	$ (126,887)	$ (111,424)
Exercise of employee stock options	—	—	—	43	67	—	—	—	67
Stock-based compensation	—	—	—	—	—	2,417	—	—	2,417
Issuance of common stock warrants in connection with equipment financing loans	—	—	—	—	—	—	24	—	24
Net loss	—	—	—	—	—	—	—	(45,552)	(45,552)
Balance at December 31, 2008	42,028	$ 132,739	$ —	6,223	$ 7,889	$ 5,440	$ 4,642	$ (172,439)	$ (154,468)
Exercise of employee stock options	—	—	—	262	183	—	—	—	183
Stock-based compensation	—	—	—	—	—	3,304	—	—	3,304
Return of Series C stock as a result of license agreement	(662)	(1,469)	—	—	—	—	—	—	—
Issuance of Series C stock as a result of warrant exercise	2	3	—	—	—	—	—	—	—
Issuance of common stock in connection with acquisition	—	—	—	4,383	9,292	—	—	—	9,292
Net loss	—	—	—	—	—	—	—	(49,073)	(49,073)
Balance at December 31, 2009	41,368	$ 131,273	$ —	10,868	$ 17,364	$ 8,744	$ 4,642	$ (221,512)	$ (190,762)
Exercise of employee stock options	—	—	—	205	294	—	—	—	294
Stock-based compensation	—	—	—	—	—	4,551	—	—	4,551
Issuance of Series F stock	11,776	59,973	—	—	—	—	—	—	—
Issuance of Series C stock as a result of warrant exercises	4	11	—	—	—	—	—	—	—
Series F amount interest	—	—	—	—	—	12,974	—	—	12,974
Common stock warrant modification	—	—	—	—	—	(1,803)	1,803	—	—
Change in par value	—	—	—	—	(17,547)	17,547	—	—	—
Ownership change in non-controlling interest	—	—	1,082	—	—	3,083	—	—	3,083
Loss attributable to non-controlling interest	—	—	(55)	—	—	—	—	55	55
Net loss	—	—	—	—	—	—	—	(50,159)	(50,159)
Balance at December 31, 2010	53,148	$ 191,257	$ 1,027	11,073	$ 111	$ 45,096	$ 6,445	$ (271,616)	$ (219,964)
Exercise of employee stock options (unaudited)	—	—	—	341	3	783	—	—	786
Stock-based compensation (unaudited)	—	—	—	—	—	5,573	—	—	5,573
Issuance of Series G stock (unaudited)	11,000	76,949	—	—	—	—	—	—	—
Issuance of Series C stock as a result of warrant exercises (unaudited)	2	14	—	—	—	—	—	—	—
Loss attributable to non-controlling interest (unaudited)	—	—	(348)	—	—	—	—	348	348
Net loss (unaudited)	—	—	—	—	—	—	—	(61,455)	(61,455)
Balance at September 30, 2011 (unaudited)	64,150	$ 268,220	$ 679	11,414	$ 114	$ 51,452	$ 6,445	$ (332,723)	$ (274,712)

The accompanying notes are an integral part of these consolidated financial statements.

Merrimack Pharmaceuticals, Inc.
Consolidated statements of cash flows

(in thousands)	Years ended December 31, 2008	2009	2010	Nine-months ended September 30, 2010 (unaudited)	2011 (unaudited)
Cash flows from operating activities					
Net loss	$ (45,552)	$ (49,073)	$ (50,159)	$ (40,028)	$ (61,455)
Adjustments to reconcile net loss to net cash (used in) provided by operating activities					
Noncash benefit on release of tax valuation allowance	—	(3,402)	—	—	—
Noncash interest expense	4,223	4,805	3,673	3,594	—
(Gain) loss on mark-to-market on preferred stock warrants and contingent consideration	(514)	10	(104)	24	742
(Gain) loss on disposal of property and equipment	(18)	32	(26)	—	—
Amortization of premiums on marketable securities	(261)	—	—	—	—
Amortization of deferred lease benefits and tax incentives	(131)	(317)	(751)	(512)	(567)
Depreciation and amortization	2,058	2,755	4,379	3,019	4,029
Stock-based compensation	2,616	3,304	4,551	3,416	5,573
Changes in operating assets and liabilities, net of effect of acquisition					
Accounts receivable	—	(1,770)	(1,975)	214	(1,584)
Prepaid expenses and other current assets	(148)	(94)	(571)	(1,521)	(3,140)
Accounts payable	(997)	(220)	(830)	(1,325)	3,446
Accrued expenses	934	2,768	1,024	(319)	3,583
Deferred revenues	—	59,469	12,845	11,482	1,734
Deferred lease benefits	—	786	217	217	52
Deferred tax incentive	—	—	1,350	1,350	1,212
Other assets and liabilities, net	(219)	2	8	(1)	13
Net cash (used in) provided by operating activities	(38,009)	19,055	(26,369)	(20,390)	(46,362)
Cash flows from investing activities					
Purchase of property and equipment	(1,528)	(5,038)	(5,025)	(4,492)	(2,468)
Proceeds from sale of property and equipment	18	—	26	—	—
Purchase of marketable securities	(3,447)	—	—	—	—
Sale of marketable securities	24,650	—	—	—	—
Cash acquired in acquisition	—	92	—	—	—
(Assignment) release of restricted cash	(192)	95	95	95	—
Other investing activities, net	—	—	4	—	8
Net cash provided by (used in) investing activities	19,501	(4,851)	(4,900)	(4,397)	(2,460)
Cash flows from financing activities					
Proceeds from issuance of Series G, net of offering costs	—	—	—	—	76,949
Proceeds received in advance of Series F issuance	24,499	—	—	—	—
Proceeds from issuance of common stock	67	183	294	294	786
Proceeds from issuance of convertible preferred stock of Silver Creek Pharmaceuticals, Inc.	—	—	4,165	2,980	—
Principal payment on capital lease obligations	(1,021)	(974)	(864)	(640)	(394)
Proceeds from sale-lease back	675	—	—	—	—
Principal payment of long-term debt	(1,024)	—	—	—	—
Net cash provided by (used in) financing activities	23,196	(791)	3,595	2,634	77,341
Net increase (decrease) in cash and cash equivalents	4,688	13,413	(27,674)	(22,153)	28,519
Cash and cash equivalents, beginning of period	40,286	44,974	58,387	58,387	30,713
Cash and cash equivalents, end of period	$ 44,974	$ 58,387	$ 30,713	$ 36,234	$ 59,232
Noncash financing and investing activities					
Accrued interest on Series F amount relieved to additional paid-in capital (Note 13)	$ —	$ —	$ 12,974	$ —	$ —
Issuance of shares from Series F amount (Note 13)	—	—	59,973	—	—
Series F convertible preferred stock issuable for consulting services rendered	199	—	—	—	—
Series C convertible preferred stock received for technology license	—	1,469	—	—	—
Fair value of assets acquired in acquisition	—	10,252	—	—	—
Fair value of liabilities assumed in acquisition	—	4,479	—	—	—
Fair value of equity issued in acquisition	—	9,292	—	—	—
Supplemental disclosure of cash flows					
Cash paid for interest	$ 219	$ 109	$ 55	$ 46	$ 12

The accompanying notes are an integral part of these consolidated financial statements.

Merrimack Pharmaceuticals, Inc.
Notes to consolidated financial statements
December 31, 2008, 2009, and 2010
(information as of September 30, 2011 and for the nine-months ended September 30, 2010 and 2011 is unaudited)

1. Nature of the business

Merrimack Pharmaceuticals, Inc. (the "Company") is a biopharmaceutical company discovering, developing and preparing to commercialize innovative medicines consisting of novel therapeutics paired with companion diagnostics. The Company has four targeted therapeutic oncology candidates in clinical development (MM-398, MM-121, MM-111 and MM-302), one additional targeted therapeutic oncology candidate expected to enter clinical development in early 2012, subject to our obtaining regulatory clearance (MM-151), multiple product candidates in preclinical development and a discovery effort advancing additional candidate medicines. The Company uses its interdisciplinary Network Biology approach in drug discovery and development. The Company was incorporated in the Commonwealth of Massachusetts in 1993 and reincorporated in the State of Delaware in October 2010.

The Company is subject to risks and uncertainties common to companies in the biopharmaceutical industry, including, but not limited to, ability to secure additional capital to fund operations, development by competitors of new technological innovations, dependence on collaborative arrangements, protection of proprietary technology, compliance with government regulations and dependence on key personnel. Product candidates currently under development will require significant additional research and development efforts, including extensive preclinical and clinical testing and regulatory approval prior to commercialization. These efforts require significant amounts of additional capital, adequate personnel infrastructure and extensive compliance reporting capabilities.

The accompanying consolidated financial statements have been prepared on a basis which assumes that the Company will continue as a going concern and which contemplates the realization of assets and satisfaction of liabilities and commitments in the normal course of business. As of December 31, 2010 and September 30, 2011, the Company had cash and cash equivalents of $30,713,000 and $59,232,000, respectively. On April 6, 2011, the Company raised approximately $77.0 million by issuing 11 million shares of Series G convertible preferred stock. The Company expects its existing cash and cash equivalents on hand at December 31, 2010 together with the proceeds from its Series G financing to be sufficient to fund operations through at least the second quarter of 2012. However, the Company may seek additional funding through public or private financings, or existing or new collaboration arrangements. The Company may not be able to obtain financing on acceptable terms or at all, and the Company may not be able to enter into additional collaborative arrangements. Arrangements with collaborators or others may require the Company to relinquish rights to certain of its technologies or product candidates. The terms of any financing may adversely affect the holdings or the rights of the Company's stockholders. If the Company needs additional funds and it is unable to obtain funding on a timely basis, the Company may need to significantly curtail its research and development programs in an effort to provide sufficient funds to continue its operations, which could adversely affect its business prospects.

2. Summary of significant accounting policies

Significant accounting policies followed by the Company in the preparation of its consolidated financial statements are as follows:

Unaudited interim financial data

The accompanying unaudited September 30, 2011 consolidated balance sheet, the consolidated statements of operations and cash flows for the nine-months ended September 30, 2010 and 2011, and the consolidated statements of convertible preferred stock, non-controlling interest and stockholders' deficit for the nine-months ended September 30, 2011 and the related interim information contained within the notes to the consolidated financial statements have been prepared in accordance with the rules and regulations of the Securities and Exchange Commission for interim financial information. Accordingly, they do not include all of the information and the notes required by accounting principles generally accepted in the United States of America for complete financial statements. In the opinion of management, the unaudited interim consolidated financial statements reflect all adjustments, consisting of normal and recurring adjustments, necessary for the fair statement of the Company's financial position at September 30, 2011 and results of its operations and its cash flows for the nine-months ended September 30, 2010 and 2011. The results for the nine-months ended September 30, 2011 are not necessarily indicative of future results.

Unaudited pro forma balance sheet and pro forma loss per common share

On June 28, 2011, the Company's Board of Directors authorized management of the Company to file a registration statement with the Securities and Exchange Commission permitting the Company to sell shares of its common stock to the public. The unaudited pro forma balance sheet as of September 30, 2011 reflects the conversion of all Series B, Series C, Series D, Series E, Series F and Series G convertible preferred stock outstanding as of that date into 66,255,000 shares of common stock, occurring immediately prior to the closing of the Company's proposed initial public offering. In addition, the unaudited pro forma balance sheet as of September 30, 2011 reflects the impact of the reclassification of warrants to purchase convertible preferred stock into warrants to purchase common stock immediately prior to the closing of the Company's proposed initial public offering and $4,263,000 of accrued dividends payable to the holders of Series B convertible preferred stock upon conversion into common stock.

Unaudited pro forma net loss per share is computed using the weighted-average number of common shares outstanding after giving effect to the pro forma effect of the conversion of all convertible preferred stock, including the Series G convertible preferred stock that was issued in April 2011, during the year ended December 31, 2010 and the nine-months ended September 30, 2011 into shares of the Company's common stock as if such conversion had occurred at the beginning of the period presented, or the date of original issuance, if later. The numerator in the pro forma basic and diluted net loss per share calculation has been adjusted to remove gains and losses resulting from remeasurements of the outstanding convertible preferred stock warrant liabilities through September 30, 2011 as these warrants will be converted into warrants to purchase common stock immediately prior to the closing of the Company's proposed initial public offering. The denominator in the pro forma basic and diluted net loss per share calculation has been adjusted to reflect additional shares of common stock related to preferred stock dividends of $4,263,000.

Principles of consolidation

These consolidated financial statements include the accounts of the Company, its wholly-owned subsidiary Hermes Biosciences, Inc. ("Hermes"), which has subsequently been merged with and into the Company, and its 74% majority-owned subsidiary Silver Creek Pharmaceuticals, Inc. ("Silver Creek"). All intercompany transactions and balances have been eliminated in consolidation.

Use of estimates

The accompanying consolidated financial statements have been prepared in conformity with generally accepted accounting principles ("GAAP") in the United States of America. GAAP requires the Company's management to make estimates and judgments that may affect the reported amounts of assets, liabilities, revenues, expenses and related disclosures. The Company bases estimates and judgments on historical experience and on various other factors that it believes to be reasonable under the circumstances. The significant estimates in these consolidated financial statements include revenue recognition, useful lives with respect to long-lived assets and intangibles, valuation of stock options, convertible preferred stock warrants, contingent consideration, accrued expenses, intangible assets, goodwill, in-process research and development and tax valuation reserves. The Company's actual results may differ from these estimates under different assumptions or conditions. The Company evaluates its estimates on an ongoing basis. Changes in estimates are reflected in reported results in the period in which they become known by the Company's management.

Segment and geographic information

Operating segments are defined as components of an enterprise engaging in business activities for which discrete financial information is available and regularly reviewed by the chief operating decision maker in deciding how to allocate resources and in assessing performance. The Company views its operations and manages its business in one operating segment and the Company operates in only one geographic segment.

Cash, cash equivalents and restricted cash

Cash and cash equivalents are short-term, highly liquid investments with an original maturity of three months or less at the date of purchase. Investments qualifying as cash equivalents primarily consist of money market funds.

Cash accounts with any type of restriction are classified as restricted cash. If restrictions are expected to be lifted in the next twelve months, the restricted cash account is classified as current. As of December 31, 2009 and 2010 and September 30, 2011, the Company recorded restricted cash of $476,000, $381,000 and $381,000, respectively.

Concentration of credit risk

Financial instruments that subject the Company to credit risk consist primarily of cash and cash equivalents and accounts receivable. The Company places its cash and cash equivalents in accredited financial institutions and therefore the Company's management believes these funds are subject to minimal credit risk. The Company has no significant off-balance sheet concentrations of credit risk such as foreign currency exchange contracts, option contracts or other hedging arrangements. For both the years ended December 31, 2009 and 2010, Sanofi represented 98% of research and development revenues. For the nine-months ended September 30, 2010 and 2011, Sanofi represented 97% and greater than 99% of research and

development revenues, respectively. As of December 31, 2009 and 2010, and September 30, 2011, Sanofi represented 91%, 98% and greater than 99% of accounts receivable, respectively.

Property and equipment

Property and equipment are recorded at cost and depreciated when placed into service using the straight-line method, based on their estimated useful lives as follows:

Asset classification	Estimated useful life (in years)
Lab equipment	3
IT equipment	3 - 7
Leaseholds improvements	Lesser of useful life or lease term
Furniture and fixtures	3

Upon retirement or sale, the cost of assets disposed of and the related accumulated depreciation are removed from the accounts and any resulting gain or loss is recognized. Repairs and maintenance costs are expensed as incurred.

The Company reviews its long-lived assets for impairment whenever events or changes in business circumstances indicate that the carrying amount of assets may not be fully recoverable or that the useful lives of these assets are no longer appropriate. Each impairment test is based on a comparison of the undiscounted cash flow to the recorded value of the asset. If an impairment is indicated, the asset will be written down to its estimated fair value on a discounted cash flow basis.

Government contracts and grants

Funds received pursuant to awarded grants or cost reimbursement contracts are recorded as a liability and subsequently recognized as revenue as the Company performs the underlying research and development activities.

In 2006, the Company was awarded a federally funded research grant from the National Cancer Institute with a total value of $750,000. This grant supported studies related to antibody microarrays for cancer diagnostics and was completed during 2008. Revenue of $365,000, $0 and $0 was recognized for costs reimbursed under this grant for the years ended December 31, 2008, 2009 and 2010, respectively. No grant revenue was recognized during the nine-months ended September 30, 2010 or 2011.

Non-controlling interest

Non-controlling interest represents the non-controlling stockholders' proportionate share of preferred stock and net loss of the Company's majority-owned consolidated subsidiary Silver Creek. On August 20, 2010, the Company acquired a controlling interest in Silver Creek (Note 6). The non-controlling stockholders' proportionate share of the preferred stock in Silver Creek of $1,027,000 and $679,000 was reflected as non-controlling interest in the Company's consolidated balance sheets as of December 31, 2010 and September 30, 2011, respectively, as a component of mezzanine equity.

Revenue recognition

The Company enters into biopharmaceutical product development agreements with collaborative partners for the research and development of therapeutic and diagnostic

products. The terms of the agreements may include nonrefundable signing and licensing fees, funding for research, development and manufacturing, milestone payments and royalties on any product sales derived from collaborations. These multiple element arrangements are analyzed to determine whether the deliverables can be separated or whether they must be accounted for as a single unit of accounting.

The Company recognizes upfront license payments as revenue upon delivery of the license only if the license has stand-alone value and the fair value of the undelivered performance obligations can be determined. If the fair value of the undelivered performance obligations can be determined, such obligations are accounted for separately as the obligations are fulfilled. If the license is considered to either not have stand-alone value or have stand-alone value but the fair value of any of the undelivered performance obligations cannot be determined, the arrangement is accounted for as a single unit of accounting and the license payments and payments for performance obligations are recognized as revenue over the estimated period of when the performance obligations will be performed.

Whenever the Company determines that an arrangement should be accounted for as a single unit of accounting, it must determine the period over which the performance obligations will be performed and revenue will be recognized. If the Company cannot reasonably estimate the timing and the level of effort to complete its performance obligations under the arrangement, then revenue under the arrangement is recognized on a straight-line basis over the period the Company is expected to complete its performance obligations.

The Company's collaboration agreements may include additional payments upon the achievement of performance-based milestones. As milestones are achieved, a portion of the milestone payment, equal to the percentage of the total time that the Company has performed the performance obligations to date over the total estimated time to complete the performance obligations, multiplied by the amount of the milestone payment, will be recognized as revenue upon achievement of such milestone. The remaining portion of the milestone will be recognized over the remaining performance period. Milestones that are tied to regulatory approval are not considered probable of being achieved until such approval is received. Milestones tied to counter-party performance are not included in the Company's revenue model until the performance conditions are met.

Royalty revenue will be recognized upon the sale of the related products provided the Company has no remaining performance obligations under the arrangement.

Research and development expenses

Research and development expenses are charged to expense as incurred. Research and development expenses comprise costs incurred in performing research and development activities, including personnel-related costs, stock-based compensation, facilities, research-related overhead, clinical trial costs, contracted services, manufacturing, license fees and other external costs. The Company accounts for nonrefundable advance payments for goods and services that will be used in future research and development activities as expenses when the service has been performed or when the goods have been received rather than when the payment is made.

Stock-based compensation

The Company expenses the fair value of employee stock options over the vesting period. Compensation expense is measured using the fair value of the award at the grant date, net of estimated forfeitures, and is adjusted annually to reflect actual forfeitures. The fair value of each stock-based award is estimated using the Black-Scholes option valuation model and is expensed straight-line over the vesting period.

The Company records stock options issued to nonemployees at fair value, periodically remeasures to reflect the current fair value at each reporting period, and recognizes expense over the related service period. When applicable, these equity instruments are accounted for based on the fair value of the consideration received or the fair value of the equity instrument issued, whichever is more reliably measurable.

Convertible preferred stock

Preferred stock that may be redeemed by the holder based on the occurrence of events not under the Company's control is initially recorded at the proceeds received, net of issuance costs and warrants, where applicable. Subsequently, if redemption is probable, the carrying value is adjusted to its redemption value at each balance sheet date. If redemption is not certain, the carrying value is not adjusted to its full redemption value until redemption is probable.

Accumulated other comprehensive income (loss)

GAAP establishes standards for reporting and displaying a full set of general purpose financial statements to be expanded to include the reporting of comprehensive income, which includes net income and other comprehensive income. For all periods presented the comprehensive loss was equal to the net loss.

Convertible preferred stock warrants

The Company accounts for freestanding warrants as liabilities at their fair value. The Company measures the fair value of the preferred stock warrants at the end of each reporting period and records the change in fair value to other income (expense). For the years ended December 31, 2008, 2009 and 2010, the Company recorded other income (expense) of $514,000, $(10,000) and $(74,000), respectively. For the nine-months ended September 30, 2010 and 2011, the Company recorded other income (expense) of $13,000 and $(742,000), respectively.

Other income (expense)

The Company records gains and losses on the change in value and time to expiration of preferred stock warrants, the recognition of federal and state sponsored tax incentives and other one-time income or expense-related items in other income (expense) on the Company's consolidated statement of operations. Other income for the nine-months ended September 30, 2011 included a cash settlement of $1.8 million from a former service provider.

Income taxes

The Company accounts for income taxes under the asset and liability method. Under this method, deferred tax assets and liabilities are recognized for the estimated future tax consequences attributable to differences between financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted rates in effect for the year in which these temporary differences are expected to be recovered or settled. Valuation allowances are provided if based on the weight of available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized.

The Company provides reserves for potential payments of tax to various tax authorities related to uncertain tax positions and other issues. Reserves are based on a determination of whether and how much of a tax benefit taken by the Company in its tax filing is more likely than not to be realized following resolution of any potential contingencies present related to the tax benefit. Potential interest and penalties associated with such uncertain tax positions are recorded as components of income tax expense. To date, the Company has not taken any uncertain tax positions or recorded any reserves, interest or penalties.

Goodwill and intangible assets

Goodwill and indefinite-lived intangible assets, including in-process research and development, are evaluated for impairment on an annual basis or more frequently if an indicator of impairment is present. No impairment of goodwill or indefinite-lived intangible assets resulted from the Company's most recent evaluation which occurred in the third quarter of 2011. The Company's next annual impairment evaluation will be made in the third quarter of 2012 unless indicators arise that would require the Company to evaluate at an earlier date. The Company commences amortization of indefinite-lived intangible assets once the assets have reached technological feasibility or are determined to have an alternative future use and amortizes the assets over their estimated future life.

Definite-lived intangible assets, such as core technology, are evaluated for impairment whenever events or circumstances indicate that the carrying value may not be fully recoverable. Definite-lived intangible assets are separate from goodwill and indefinite-lived intangible assets and are deemed to have a definite life. The Company amortizes these assets over their estimated useful life.

Reclassifications

Certain prior period amounts have been reclassified to be consistent with the current year presentation. In 2009, certain general and administrative expenses were misclassified in the consolidated statement of operations between the research and development and general and administrative expense lines. Research and development expense was overstated by $718,000 and the general and administrative expense was understated by the same amount. The Company revised the consolidated statement of operations for the year ended December 31, 2009 to correct this immaterial error in classification. This revision does not impact the consolidated balance sheets or the consolidated statements of cash flows for any periods.

Recent accounting pronouncements

In October 2009, the Financial Accounting Standards Board ("FASB") issued Accounting Standard Update ("ASU") No. 2009-13, *Multiple Deliverable Revenue Arrangements*

("ASU 2009-13"), which amends existing revenue recognition accounting pronouncements for multiple-deliverable revenue arrangements. ASU 2009-13 provides accounting principles and application guidance on whether multiple deliverables exist, how the arrangement should be separated and the consideration allocated. ASU 2009-13 eliminates the requirement to establish the fair value of undelivered products and services and instead provides for separate revenue recognition based upon management's estimate of the selling price for an undelivered item in circumstances when there is no other means to determine the fair value of that undelivered item. Multiple-deliverable revenue arrangement guidance previously required that the fair value of the undelivered item be the price of the item either sold in a separate transaction between unrelated third parties or the price charged for each item when the item is sold separately by the vendor. This was difficult to determine when the product was not individually sold because of its unique features. Under the previous guidance, if the fair value of all of the elements in the arrangement was not determinable, then revenue was deferred until all of the items were delivered or fair value was determined. ASU 2009-13 was effective prospectively for revenue arrangements entered into or materially modified in fiscal years beginning on or after June 15, 2010. The Company adopted this standard on a prospective basis on January 1, 2011 with no impact.

In April 2010, the FASB issued ASU No. 2010-17, *Revenue Recognition—Milestone Method* ("ASU 2010-17"). ASU 2010-17 provides guidance in applying the milestone method of revenue recognition to research or development arrangements. Under this guidance companies may recognize revenue contingent upon the achievement of a milestone in its entirety, in the period in which the milestone is achieved, only if the milestone meets all the criteria within the guidance to be considered substantive. ASU 2010-17 is effective on a prospective basis for research and development milestones achieved in fiscal years, beginning on or after June 15, 2010. The Company adopted this standard on a prospective basis on January 1, 2011 with no impact.

In September 2011, the FASB amended the authoritative guidance regarding the testing for goodwill impairment. Under the amendments, an entity has the option to first assess qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If, after assessing the totality of events or circumstances, an entity determines it is not more likely than not that the fair value reporting of a reporting unit is less than the carrying amount, then performing the two-step impairment test is unnecessary. The changes are effective for annual and interim goodwill impairment tests performed for fiscal years beginning after December 15, 2011, however, early adoption is permitted. The Company plans to adopt this authoritative guidance on January 1, 2012 and expects there will be no impact.

3. Net loss per common share

Basic net loss per share is calculated by dividing the net loss attributable to common stockholders by the weighted-average number of common shares outstanding during the period, without consideration for common stock equivalents. Diluted net loss per share is computed by dividing the net loss attributable to common stockholders by the weighted-average number of common share equivalents outstanding for the period determined using the treasury-stock method. For purposes of this calculation, convertible preferred stock, stock options and warrants are considered to be common stock equivalents and are only included in the calculation of diluted net loss per share when their effect is dilutive.

The following table presents the computation of basic and diluted net loss per share available to common stockholders and pro forma net loss per share available to common stockholders (unaudited):

	Years ended December 31,			Nine-months ended September 30,	
(in thousands, except per share amount)	**2008**	**2009**	**2010**	**2010**	**2011**
				(unaudited)	**(unaudited)**
Net Loss Per Share:					
Numerator:					
Net loss attributable to Merrimack Pharmaceuticals, Inc.	$ (45,552)	$ (49,073)	$ (50,104)	$ (40,009)	$ (61,107)
Plus: Unaccreted dividends on convertible preferred stock	(5,100)	(4,684)	(11,185)	(3,166)	(5,728)
Net loss available to common stockholders—basic and diluted	(50,652)	(53,757)	(61,289)	(43,175)	(66,835)
Denominator:					
Weighted-average common shares—basic and diluted	6,199	7,387	10,994	10,970	11,292
Net loss per share available to common stockholders—basic and diluted	$ (8.17)	$ (7.28)	$ (5.57)	$ (3.94)	$ (5.92)
Pro Forma Net Loss Per Share (unaudited):					
Numerator:					
Net loss attributable to Merrimack Pharmaceuticals, Inc			$ (50,104)		$ (61,107)
Less:					
Pro forma adjustment to reverse the mark-to-market adjustment related to the convertible preferred stock warrant liability			74		742
Net loss used to compute pro forma net loss per share available to common stockholders			$ (50,030)		$ (60,365)
Denominator:					
Weighted-average number of common shares used in net loss per share available to common stockholders—basic and diluted			10,994		11,292
Plus:					
Pro forma adjustments to reflect assumed weighted-average effect of conversion of convertible preferred stock					
Pro forma adjustment to reflect additional shares of common stock related to preferred stock dividends declared in excess of earnings of $4,263					
Weighted-average shares used to compute pro forma net loss per share available to common stockholders—basic and diluted					
Pro forma net loss per share available to common stockholders basic and diluted			$		$

The following potentially dilutive securities have been excluded from the computation of diluted weighted average shares outstanding as of December 31, 2008, 2009 and 2010 and September 30, 2010 and 2011 as the Company recorded a net loss in all periods and, therefore, they would be anti-dilutive:

	Years ended December 31,			Nine-months ended September 30,	
(in thousands)	2008	2009	2010	2010	2011
				(unaudited)	(unaudited)
Convertible preferred stock	42,028	41,368	53,148	41,372	64,150
Options to purchase common stock	11,483	14,660	16,214	14,646	17,522
Preferred stock warrants	323	317	306	306	303
Common stock warrants	2,937	2,937	2,937	2,937	2,937

4. License and collaboration agreements

Sanofi

On September 30, 2009, the Company entered into a license and collaboration agreement with Sanofi for the development and commercialization of a drug candidate being developed by the Company under the name MM-121. The agreement became effective on November 10, 2009 and Sanofi paid the Company a nonrefundable, noncreditable upfront license fee of $60 million. During the third quarter of 2010, the Company received a milestone payment of $10 million associated with the dosing of the first patient in a Phase 2 clinical trial. The Company is eligible to receive future development, regulatory and sales milestone payments as well as future royalty payments depending on the success of MM-121.

Under the agreement, Sanofi is responsible for all MM-121 development and manufacturing costs. The Company retained the right to participate in the development of MM-121 through Phase 2 proof of concept trials. The Company also has the option to co-promote MM-121 in the United States. Sanofi reimburses the Company for direct costs incurred in development and compensates the Company for its internal development efforts based on a full time equivalent ("FTE") rate. Also as part of the agreement, the Company was required to manufacture certain quantities of MM-121 and, at Sanofi's and the Company's option, may continue to manufacture additional quantities of MM-121 in the future. Sanofi reimburses the Company for direct costs incurred in manufacturing and compensates the Company for its internal manufacturing efforts based on a FTE rate. The Company satisfied its manufacturing obligations during 2010 and has elected to continue to manufacture quantities of MM-121.

The Company applied revenue recognition guidance to determine whether the performance obligations under this collaboration including the license, the right to future technology, back-up compounds, participation on steering committees, development services and manufacturing services could be accounted for separately or as a single unit of accounting. The Company determined that its development services performance obligation is considered a separate unit of accounting as it is set at the Company's option, has stand-alone value and the FTE rate is considered fair value. Therefore, the Company recognizes cost reimbursements for MM-121 development services as incurred. The Company determined that the license, the right to future technology, back-up compounds, participation on steering committees and manufacturing services performance obligations represented a single unit of accounting. As the

Company cannot reasonably estimate its level of effort over the collaboration, the Company recognizes revenue from the upfront payment, milestone payment and manufacturing services payments using the contingency-adjusted performance model over the expected development period, which is currently estimated to be 12 years from the effective date of the agreement. Under this model, when a milestone is earned or manufacturing services are rendered and product is delivered, revenue is immediately recognized on a pro-rata basis in the period the milestone was achieved or product was delivered based on the time elapsed from the effective date of the agreement. Thereafter, the remaining portion is recognized on a straight-line basis over the remaining development period.

During the years ended December 31, 2009 and 2010, and the nine-months ended September 30, 2010 and 2011, the Company recognized revenue based on the following components of the Sanofi agreement:

	Years ended December 31,		Nine-months ended September 30,	
(in thousands)	**2009**	**2010**	**2010**	**2011**
			(unaudited)	**(unaudited)**
Upfront payment	$ 694	$ 5,000	$ 3,750	$ 3,750
Milestone payment	—	949	741	625
Development services	1,410	13,279	8,642	15,976
Manufacturing services and other	—	630	477	1,214
Total	$ 2,104	$ 19,858	$ 13,610	$ 21,565

As of December 31, 2009 and 2010 and September 30, 2011, the Company had deferred revenue of $59,505,000, $72,426,000 and $74,217,000, respectively, related to the collaboration. As of December 31, 2009 and 2010 and September 30, 2011, the Company had accounts receivable of $1,610,000, $3,683,000 and $5,307,000, respectively, under the collaboration of which $783,000, $2,796,000 and $2,906,000 were unbilled as of December 31, 2009 and 2010 and September 30, 2011, respectively.

GTC Biotherapeutics, Inc.

In July 2009, the Company entered into a license agreement with GTC Biotherapeutics, Inc. ("GTC") for the development of MM-093 by GTC. As consideration, GTC returned 662,000 shares of the Company's Series C convertible preferred stock to the Company. The Company determined the fair value of the consideration transferred to be $1,469,000. The Company applied revenue recognition guidance to determine that the performance obligations under this agreement, including the license, the right to future technology, and manufacturing support should be accounted for as a single unit of accounting. The consideration received is being recognized on a straight-line basis over the expected performance period, which is currently estimated to be 19 years from the effective date of the agreement. During the years ended December 31, 2009 and 2010, the Company recognized revenue of $37,000 and $76,000, respectively. During both the nine-months ended September 30, 2010 and 2011, the Company recognized revenue of $57,000. As of December 31, 2009 and 2010 and September 30, 2011, the Company had $1,432,000, $1,356,000 and $1,299,000 of deferred revenue, respectively, and accounts receivable related to the reimbursement of intellectual property costs of $153,000, $42,000 and $7,000, respectively.

PharmaEngine, Inc.

On May 5, 2011, the Company entered into an assignment, sublicense and collaboration agreement with PharmaEngine, Inc. ("PharmaEngine") under which the Company reacquired rights in Europe and certain countries in Asia to a drug being developed under the name MM-398. In exchange, the Company agreed to pay PharmaEngine a nonrefundable, noncreditable upfront payment of $10.0 million and will be required to make up to an aggregate of $80.0 million in development and regulatory milestone payments and $130.0 million in sales milestone payments upon the achievement of specified development, regulatory and annual net sales milestones. PharmaEngine is also entitled to tiered royalties on net sales of MM-398 in Europe and certain countries in Asia. The Company is responsible for all future development costs of MM-398 except those required specifically for regulatory approval in Taiwan. The Company determined that PharmaEngine is a variable interest entity based on an analysis of PharmaEngine's capitalization. However, the Company determined that the Company cannot control the activities of PharmaEngine, and therefore, the Company is not the primary beneficiary and should not consolidate the financial results of PharmaEngine.

During the nine-months ended September 30, 2011, the Company recognized research and development expenses of $10,881,000 related to the agreement with PharmaEngine. As of September 30, 2011, the Company had amounts payable of $881,000 related to the agreement with PharmaEngine.

5. Fair value of financial instruments

The carrying amounts of cash and cash equivalents, restricted cash, prepaid expenses, accounts receivable, accounts payable and accrued expenses approximates fair value due to the short-term nature of these instruments. The capital lease obligations, convertible preferred stock warrants and contingent consideration are also carried at fair value.

Fair value is an exit price, representing the amount that would be received from the sale of an asset or paid to transfer a liability in an orderly transaction between market participants. Fair value is determined based on observable and unobservable inputs. Observable inputs reflect readily obtainable data from independent sources, while unobservable inputs reflect certain market assumptions. As a basis for considering such assumptions, GAAP establishes a three-tier value hierarchy, which prioritizes the inputs used to develop the assumptions and for measuring fair value as follows: (Level 1) observable inputs such as quoted prices in active markets for identical assets; (Level 2) inputs other than the quoted prices in active markets that are observable either directly or indirectly; and (Level 3) unobservable inputs in which there is little or no market data, which requires the Company to develop its own assumptions. This hierarchy requires the Company to use observable market data, when available, and to minimize the use of unobservable inputs when determining fair value.

The following tables show assets and liabilities measured at fair value on a recurring basis as of December 31, 2009 and 2010 and September 30, 2011 and the input categories associated with those assets and liabilities:

As of December 31, 2009 (in thousands)	**Level 1**	**Level 2**	**Level 3**
Assets			
Cash equivalents	$ 56,627	$ —	$ —
Liabilities			
Convertible preferred stock warrants	—	—	578
Contingent consideration (Note 6)	—	—	178

As of December 31, 2010 (in thousands)	Level 1	Level 2	Level 3
Assets			
Cash equivalents	$ 15,500	$ —	$ —
Liabilities			
Convertible preferred stock warrants	—	—	652

As of September 30, 2011 (in thousands)	Level 1	Level 2	Level 3
		(unaudited)	
Assets			
Cash equivalents	$ 55,456	$ —	$ —
Liabilities			
Convertible preferred stock warrants	—	—	1,394

The Company's cash and cash equivalents are invested in a U.S. treasury and federal agency-backed money market fund that approximates its face value. The fair value of the convertible preferred stock warrants was determined using the Black-Scholes option valuation model. The fair value of contingent consideration was determined by performing a probability weighted analysis of the likelihood of occurrence of potential future financing events.

The following table provides a roll-forward of the fair value of the convertible preferred stock warrants and contingent consideration, categorized as Level 3 instruments, for the years ended December 31, 2009 and 2010 and the nine-months ended September 30, 2011:

(in thousands)	Contingent consideration	Convertible preferred stock warrants
Balance, December 31, 2008	$ —	$ 568
Acquisition of Hermes	178	—
Unrealized loss in other expense	—	10
Balance, December 31, 2009	178	578
Realized gain	(178)	—
Unrealized loss included in other expense	—	74
Balance, December 31, 2010	—	652
Unrealized loss included in other expense (unaudited)	—	742
Balance, September 30, 2011 (unaudited)	$ —	$ 1,394

6. Consolidated subsidiaries

Hermes BioSciences, Inc.

On October 6, 2009, (the "Acquisition Date"), the Company completed the acquisition of all outstanding shares of Hermes BioSciences, Inc. ("Hermes"), a privately-held biotechnology company developing lipidic nano-carriers to allow for targeted delivery of small molecule drugs, including chemotherapies, with the goal of improving cancer treatment safety and efficacy.

As consideration for the acquisition, the Company issued 4,383,000 shares of common stock with an estimated fair value of $9,292,000 based on an internal valuation prepared by the Company. The acquisition also included a contingent consideration arrangement that required additional shares to be issued by the Company to Hermes' former stockholders based on the occurrence and timing of certain potential future financing events. The range of additional shares that the Company could have been required to issue on the Acquisition Date as contingent consideration was between 0 and 1,100,000 and issuance could have occurred up to 24 months after the Acquisition Date. The estimated fair value of the contingent consideration recognized on the acquisition date of $178,000 was determined by performing a probability weighted analysis of the likelihood of occurrence of potential future financing events. That estimate was based on significant inputs not observable in the market, which FASB Accounting Standards Codification ("ASC") No. 820, *Fair Value Measurements and Disclosures* ("ASC 820"), refers to as Level 3 inputs. Key assumptions included management's estimates of the probabilities of such potential future financing events occurring.

As of December 31, 2010, 400,000 additional shares could have been issued as contingent consideration. However, the Company determined a zero probability that the contingent consideration would ultimately be paid and recognized a gain of $178,000 for the year ended December 31, 2010. On July 8, 2011, the Company satisfied the contingent consideration triggering event, which reduced the shares that could be issued from 400,000 to zero.

The following table summarizes the consideration transferred to Hermes and the amounts of identified assets acquired and liabilities assumed on the Acquisition Date:

Fair value of consideration transferred:

(in thousands)	
Common shares of Merrimack Pharmaceuticals, Inc.	$ 9,292
Contingent consideration	178
	$ 9,470

Recognized amounts of identifiable assets acquired and liabilities assumed:

(in thousands)	
Cash acquired from Hermes	$ 92
Prepaid expenses	9
Other long-term assets	33
In-process research and development ("IPR&D")	7,010
Intangible assets	3,200
Accounts payable	(1,042)
Accrued expenses	(35)
Deferred tax liabilities, net of deferred tax assets	(3,402)
Total identifiable net assets	5,865
Goodwill	3,605
Total net assets	$ 9,470

The value assigned to IPR&D of $7,010,000 related to several development programs: an antibody-targeted nanotherapeutic which contains a chemotherapy drug, a nanotherapeutic which contains a chemotherapy drug and other programs in the amounts of $2,800,000, $3,400,000 and $810,000, respectively. These values were estimated by applying an income approach which includes significant inputs not observable in the market, which ASC 820 refers to as Level 3 inputs. These values were determined by estimating the costs to develop the acquired IPR&D into commercially viable products, estimating the net cash flows from such projects and discounting the net cash flows back to their present values. The probability of success factors and discount rates used for each project considered the uncertainty surrounding the successful development of the acquired IPR&D. Key assumptions included estimated forecasted future product revenues based on actual sales from similar marketed products, estimated expenses necessary to bring these products to market and margins based on historical company and industry data, application of a company specific discount rate in the range of 25% to 30%, program specific probability of success factors based on management's estimate of the likelihood of occurrence of future events and the estimated timing of product approvals, which were assumed no earlier than 2016, based on company and industry data for similar products in similar markets. The value assigned to intangible assets of $3,200,000 related to core nano-carrier technology acquired from Hermes. The goodwill recognized is not tax deductable.

The following unaudited pro forma summary presents consolidated information of the Company after applying the Company's accounting policies as if the business combination had occurred on January 1, 2008:

(in thousands)	Pro forma year ended December 31, 2008	Pro forma year ended December 31, 2009
Research and development revenues	$ 2,298	$ 3,100
Net loss	$ 45,747	$ 49,257

In 2009, the Company incurred $309,000 of third party acquisition-related costs. These expenses are included in general and administrative expense in the Company's consolidated statement of operations for the year ended December 31, 2009.

As of December 31, 2010 and September 30, 2011, none of the IPR&D projects have reached technological feasibility nor do they have any alternative future use; therefore, the Company has not commenced amortization of those assets. The core technology asset is being amortized on a straight-line basis over a period of ten years which is management's best estimate of the useful life of this technology.

Silver Creek Pharmaceuticals, Inc.

Silver Creek was incorporated on June 22, 2010 and commenced operations on August 20, 2010. On August 20, 2010, the Company purchased 12,000,000 shares of Silver Creek Convertible Series A Preferred Stock ("Silver Creek Series A") in exchange for technology licenses. On August 20, 2010 and December 17, 2010, Silver Creek issued a total of 4,190,000 shares of Silver Creek Series A to other investors in exchange for $4,165,000, net of $25,000 of issuance costs. The Company consolidated Silver Creek on August 20, 2010 as the Company concluded that Silver Creek is a variable interest entity and the Company is the primary

beneficiary. The Company has the ability to direct the activities of Silver Creek through its ownership percentage and through the board of director seats controlled by the Company and its related parties and de facto agents. As of December 31, 2010 and September 30, 2011, the Company owned 74% of the voting stock of Silver Creek and as of December 31, 2010 and September 30, 2011, the Company recorded a non-controlling interest of $1,027,000 and $679,000, respectively, as a component of mezzanine equity on the Company's consolidated balance sheets based on the terms of the Silver Creek Series A.

As of December 31, 2010, the Company consolidated Silver Creek total assets and total liabilities of $3,976,000 and $61,000, respectively. As of September 30, 2011, the Company consolidated Silver Creek total assets and total liabilities of $2,714,000 and $31,000, respectively.

As of December 31, 2010 and September 30, 2011, employees and directors of the Company owned approximately 7% of Silver Creek Series A.

7. Goodwill and intangible assets, net

Changes in the carrying value of goodwill, IPR&D and intangible assets for the years ended December 31, 2009 and 2010 and nine-months ended September 30, 2011 were as follows:

(in thousands)	Intangible assets	IPR&D	Goodwill
Balance, December 31, 2008	$ —	$ —	$ —
Acquisition of Hermes	3,200	7,010	3,605
Amortization	(75)	—	—
Balance, December 31, 2009	3,125	7,010	3,605
Amortization	(320)	—	—
Balance, December 31, 2010	2,805	7,010	3,605
Amortization (unaudited)	(240)	—	—
Balance, September 30, 2011 (unaudited)	$ 2,565	$ 7,010	$ 3,605

Definite-lived intangible assets subject to amortization consist of core technology acquired from Hermes. The Company commenced amortization of these assets as of the Acquisition Date on a straight-line basis over a period of ten years, which is the estimated useful life of this technology. Amortization expense is expected to be as follows for the next five-year period:

Year Ended December 31,	(in thousands)
2011	$ 320
2012	320
2013	320
2014	320
2015	320

Indefinite-lived intangible assets not subject to amortization consist of IPR&D acquired from Hermes. As of December 31, 2010 and September 30, 2011, the Company had not commenced amortization of IPR&D as it has not yet reached technological feasibility and has no alternative future use; accordingly, the full value of the IPR&D recorded at the Acquisition Date remained recorded as of December 31, 2010 and September 30, 2011.

8. Cash equivalents

The Company's investment portfolio consists of investments classified as cash equivalents. All highly liquid investments with an original maturity of three months or less when purchased are considered to be cash equivalents. All cash equivalents are carried at cost, which approximates fair value. Cash equivalents included in cash and cash equivalents were $56,627,000, $15,500,000 and $55,456,000 as of December 31, 2009 and 2010 and September 30, 2011, respectively.

9. Property and equipment, net

Property and equipment consisted of the following:

(in thousands)	December 31, 2009	December 31, 2010	September 30, 2011 (unaudited)
Lab equipment	$ 6,515	$ 9,221	$ 10,873
IT equipment	1,090	1,301	1,409
Leasehold improvements	5,773	7,564	7,698
Furniture and fixtures	284	314	331
Construction in process	—	182	739
	13,662	18,582	21,050
Less: Accumulated depreciation and amortization	(7,171)	(11,124)	(14,913)
	$ 6,491	$ 7,458	$ 6,137

Depreciation expense was $2,058,000, $2,680,000 and $4,059,000 for the years ended December 31, 2008, 2009 and 2010, respectively. Depreciation expense was $2,779,000 and $3,789,000 for the nine-months ended September 30, 2010 and 2011, respectively.

During 2010, the Company disposed of fixed assets of $106,000 with accumulated depreciation of $106,000. During 2008 and 2010, the Company sold fully depreciated fixed assets of $18,000 and $26,000, respectively, resulting in a gain on disposal. During 2009, the Company disposed of fixed assets of $658,000 with accumulated depreciation of $626,000. This resulted in a loss on disposal of $32,000. No fixed assets were disposed of or sold during the nine-month periods ended September 30, 2010 and 2011.

In August 2004, the Company entered into an equipment financing agreement with a leasing company. The agreement involved the sale of some of the Company's fixed assets to and the leasing of those assets back from the leasing company. The Company's option to draw further on this lease facility expired during 2008. Property and equipment under capital leases as of December 31, 2009 and 2010 and September 30, 2011 was $4,219,000, $2,669,000 and $804,000, respectively. For the years ended December 31, 2008, 2009 and 2010, depreciation of

property and equipment under capital leases totaled $1,255,000, $1,067,000, and $409,000, respectively. For the nine-months ended September 30, 2010 and 2011, depreciation of property and equipment under capital lease totaled $359,000 and $26,000, respectively.

10. Accrued expenses

Accrued expenses as of December 31, 2009 and 2010 and September 30, 2011 consisted of the following:

(in thousands)	December 31, 2009	December 31, 2010	September 30, 2011
			(unaudited)
Goods and services	$ 2,061	$ 4,395	$ 7,687
Payroll and related benefits	2,171	2,861	3,152
Accrued consulting services	2,000	—	—
Total accrued expenses	$ 6,232	$ 7,256	$ 10,839

11. Debt

In April 2005, the Company entered into a $9 million senior loan agreement with a financing company, in exchange for cash proceeds of $9 million and warrants to purchase 302,000 shares of Series D convertible preferred stock at $3.50 per share. The Company allocated $739,000 of the borrowings to the value of the warrants. This reduction in the recorded principal amount of the debt was amortized as interest expense over the term of the senior loans using the effective interest method. The Company recorded interest expense of $135,000, $0, $0, $0 and $0 for the years ended December 31, 2008, 2009 and 2010 and the nine-month periods ended September 30, 2010 and 2011, respectively. As of December 31, 2010 and September 30, 2011, the warrants remain issued and outstanding. The debt matured and was fully repaid during 2008.

12. Convertible preferred stock

The following is a summary of the Company's convertible and nonconvertible redeemable preferred stock:

(in thousands, except per share amounts)	Shares authorized	Shares issued and outstanding	Carrying value	Liquidation preference (per share)	Conversion price (per share)
As of December 31, 2008					
Series A	86	—	$ —	$ —	$ —
Series B	6,000	3,874	14,046	4.40	2.85
Series C	15,100	15,077	25,895	1.89	1.89
Series D	11,500	8,086	28,267	3.50	3.50
Series E	15,000	14,991	64,531	4.50	4.50
	47,686	42,028	$ 132,739		
As of December 31, 2009					
Series A	86	—	$ —	$ —	$ —
Series B	6,000	3,874	14,046	4.40	2.85
Series C	15,100	14,417	24,429	1.89	1.89
Series D	11,500	8,086	28,267	3.50	3.50
Series E	15,000	14,991	64,531	4.50	4.50
	47,686	41,368	$ 131,273		
As of December 31, 2010					
Series B	6,000	3,874	$ 14,046	$ 4.40	$ 2.85
Series C	15,100	14,421	24,440	1.89	1.89
Series D	11,500	8,086	28,267	3.50	3.50
Series E	15,000	14,991	64,531	4.50	4.50
Series F	15,680	11,776	59,973	5.10	5.10
	63,280	53,148	$ 191,257		
As of September 30, 2011 (unaudited)					
Series B	6,000	3,874	$ 14,046	$ 4.40	$ 2.85
Series C	15,100	14,423	24,454	1.89	1.89
Series D	11,500	8,086	28,267	3.50	3.50
Series E	15,000	14,991	64,531	4.50	4.50
Series F	15,680	11,776	59,973	5.10	5.10
Series G	11,000	11,000	76,949	7.00	7.00
	74,280	64,150	$ 268,220		

During 2010, the Company amended its articles of organization to remove Series A nonconvertible redeemable preferred stock and as a result, as of December 31, 2010, Series A was no longer authorized.

The following is the carrying value activity of convertible preferred stock for the years ended December 31, 2008, 2009 and 2010 and the nine-months ended September 30, 2011:

	Convertible preferred stock						
(in thousands)	Series B convertible preferred stock amount	Series C convertible preferred stock amount	Series D convertible preferred stock amount	Series E convertible preferred stock amount	Series F convertible preferred stock amount	Series G convertible preferred stock amount	Total
Balance at December 31, 2007 and 2008	$ 14,046	$ 25,895	$ 28,267	$ 64,531	$ —	$ —	$ 132,739
Return of Series C stock as result of license agreement	—	(1,469)	—	—	—	—	(1,469)
Issuance of Series C stock as result of warrant exercises	—	3	—	—	—	—	3
Balance at December 31, 2009	14,046	24,429	28,267	64,531	—	—	131,273
Issuance of Series F stock	—	—	—	—	59,973	—	59,973
Issuance of Series C stock as result of warrant exercises	—	11	—	—	—	—	11
Balance at December 31, 2010	14,046	24,440	28,267	64,531	59,973	—	191,257
Issuance of Series C stock as result of warrant exercises (unaudited)	—	14	—	—	—	—	14
Issuance of Series G stock (unaudited)	—	—	—	—	—	76,949	76,949
Balance at September 30, 2011 (unaudited)	$ 14,046	$ 24,454	$ 28,267	$ 64,531	$ 59,973	$ 76,949	$ 268,220

There was no change in the carrying value of the Company's convertible preferred stock for the year ended December 31, 2008.

The following is the issued and outstanding share activity of the Company's convertible preferred stock for the years ended December 31, 2008, 2009 and 2010 and nine-months ended September 30, 2011:

	Convertible preferred stock						
(in thousands)	Series B convertible preferred stock shares	Series C convertible preferred stock shares	Series D convertible preferred stock shares	Series E convertible preferred stock shares	Series F convertible preferred stock shares	Series G convertible preferred stock shares	Total
Balance at December 31, 2007 and 2008	3,874	15,077	8,086	14,991	—	—	42,028
Return of Series C stock as result of license agreement	—	(662)	—	—	—	—	(662)
Issuance of Series C stock as result of warrant exercises	—	2	—	—	—	—	2
Balance at December 31, 2009	3,874	14,417	8,086	14,991	—	—	41,368
Issuance of Series F stock	—	—	—	—	11,776	—	11,776
Issuance of Series C stock as result of warrant exercises	—	4	—	—	—	—	4
Balance at December 31, 2010	3,874	14,421	8,086	14,991	11,776	—	53,148
Issuance of Series C stock as result of warrant exercises (unaudited)	—	2	—	—	—	—	2
Issuance of Series G stock (unaudited)	—	—	—	—	—	11,000	11,000
Balance at September 30, 2011 (unaudited)	3,874	14,423	8,086	14,991	11,776	11,000	64,150

There was no change in the issued and outstanding shares of the Company's convertible preferred stock for the year ended December 31, 2008.

The rights and preferences at December 31, 2010 of the Series B, Series C, Series D, Series E, Series F and Series G (collectively, the "Preferred Stock") are as follows:

Voting rights

Series B, Series C, Series D, Series E, Series F and Series G stockholders are entitled to vote together with all other classes and series of stock as a single class on all matters and are entitled to the number of votes equal to the number of shares of common stock into which each share of Preferred Stock is then convertible.

Dividends

Shares of Series B, Series C, Series D, Series E, Series F and Series G accrue cumulative dividends at the annual rate of 4% of the respective purchase prices of each series, up to a maximum of 25% of the respective purchase prices, as provided in the Company's Restated Certificate of Incorporation (the "Accrued Dividends"). The Accrued Dividends are payable only upon an actual liquidation, dissolution or winding-up of the Company, a Deemed Liquidation (as defined in the Company's Restated Certificate of Incorporation), or as to the Series B, a conversion of the Series B into common stock. No dividends shall be declared, paid or set aside on any other series or class of capital stock unless a comparable dividend is declared, paid or set aside for each share of Preferred Stock on an as-converted basis. As of December 31, 2010 and September 30, 2011, no dividends have been declared or paid by the Company.

Liquidation preference

In the event of an actual liquidation, dissolution or winding-up of the Company, the holders of the Preferred Stock shall be entitled to elect to convert their respective shares and/or any Accrued Dividends into common stock or receive a payment out of the assets of the Company available for distribution to its stockholders and prior to any distributions to the holders of common stock, in the amount of $4.40 per share of Series B plus applicable, unpaid Accrued Dividends (the "Series B Liquidation Preference") in the case of Series B, $1.89 per share of Series C plus applicable, unpaid Accrued Dividends (the "Series C Liquidation Preference") in the case of Series C, $3.50 per share of Series D plus applicable, unpaid Accrued Dividends (the "Series D Liquidation Preference") in the case of Series D, $4.50 per share of Series E plus applicable, unpaid Accrued Dividends (the "Series E Liquidation Preference") in the case of Series E, $5.10 per share of Series F plus applicable, unpaid Accrued Dividends (the "Series F Liquidation Preference") in the case of Series F and $7.00 per share of Series G plus applicable, unpaid Accrued Dividends (the "Series G Liquidation Preference") in the case of Series G.

Unless the holders of at least two thirds of the outstanding shares of Series B, Series C, Series D, Series E, Series F and Series G each vote (as a separate class) that such events shall not be a deemed liquidation, upon the occurrence of (i) a consolidation of the Company with, or merger of the Company with or into, another business organization, other than a merger with an affiliate of the Company or a merger in which the Company is the surviving Company and the stockholders of the Company prior to such merger continue to hold a majority of the voting power, or (ii) the sale of all or substantially all of the Company 's business assets (a "Deemed Liquidation"), the holders of shares of Preferred Stock will be entitled to either elect (A) to convert the shares of Preferred Stock and/or any Accrued Dividends into common stock or (B) to receive, prior to any distribution to holders of common stock, a liquidation preference less the amount of any Accrued Dividends converted into common stock; provided that the

aggregate amount received by the holders of Series B, Series C, Series D, Series E, Series F and Series G for each share of Series B, Series C, Series D, Series E, Series F and Series G shall not exceed 125% of the Series B, Series C, Series D, Series E, Series F and Series G purchase price (each as defined in the Company's Restated Certificate of Incorporation), as applicable. After payment of Series B Liquidation Preference, Series C Liquidation Preference, Series D Liquidation Preference, Series E Liquidation Preference, Series F Liquidation Preference and Series G Liquidation Preference, the holders of common stock shall be entitled to receive the remaining assets of the Company available for distributions.

Conversion

Each share of the Preferred Stock is convertible at the option of the holder into common stock of the Company based on a defined conversion ratio, adjustable for certain standard antidilution adjustments. At December 31, 2009 and 2010 and September 30, 2011, the conversion prices for shares of Series B, Series C, Series D, Series E, Series F and Series G were $2.85, $1.89, $3.50, $4.50, $5.10 and $7.00, respectively. If at any time the Company effects a firm commitment underwritten initial public offering for shares of common stock with a per share offering price equal to or greater than the greater of $4.40 or 250% of the Series C conversion price, which results in aggregate gross proceeds to the Company of at least $50 million, then all outstanding shares of the Preferred Stock automatically convert to shares of common stock, with Accrued Dividends of approximately $4,263,000 on the Series B paid in cash.

13. Series F amount

During 2010, management determined that the Company may not have obtained all of the stockholder approvals required with respect to the Restated Articles of Organization that it filed with the Secretary of the Commonwealth of the Commonwealth of Massachusetts (the "Massachusetts Secretary") on November 2, 2007 (the "2007 Restated Articles"). Among other changes, the 2007 Restated Articles were intended to authorize the 11,776,000 shares of Series F Convertible Preferred Stock (the "Series F") that the Company agreed to issue to purchasers in 2007 and 2008. In addition, the Company filed Articles of Amendment to the 2007 Restated Articles with the Massachusetts Secretary on November 5, 2009 (the "2009 Amendment") that the Company believes were ineffective as a result of the failure to obtain the requisite stockholder approvals for the 2007 Restated Articles. As a result, the Series F was not legally issued preferred stock, but rather an unsettled obligation to issue Series F.

In order to properly authorize and issue the Series F, in July and August 2010, the board of directors and stockholders of the Company, respectively, approved new Restated Articles of Organization (the "2010 Restated Articles") that provided for the amendments contemplated by the 2007 Restated Articles and the 2009 Amendment. In order to provide the purchasers with shares of Series F having the economic benefit of the accruing dividends to which they would have been entitled had the Series F been properly authorized and issued as originally intended, the 2010 Restated Articles authorized the Series F in sub-series, with each sub-series corresponding to a closing date in 2007 or 2008. The preferences, limitations and relative rights of the shares of each sub-series of Series F authorized by the 2010 Restated Articles are the same as to the preferences, limitations and relative rights of the shares of Series F intended to be authorized by the 2007 Restated Articles and the 2009 Amendment. The 2010 Restated Articles were filed with the Massachusetts Secretary of State on October 6, 2010.

Following the filing of the 2010 Restated Articles, the Company entered into an Exchange Agreement with each individual and entity that originally agreed to purchase shares of Series F in 2007 or 2008. Pursuant to the Exchange Agreements, the Company agreed to exchange the rights to receive the shares of Series F that it had agreed to issue in 2007 and 2008 for the same number of shares of the applicable sub-series of Series F authorized by the 2010 Restated Articles. Such exchanges were completed on October 6, 2010.

The Company had a liability of $69,275,000 recorded as of December 31, 2009. The Company recorded imputed noncash interest expense for financial reporting purposes of $4,064,000, $4,805,000, $3,673,000 and $3,594,000 for the years ended December 31, 2008, 2009 and 2010 and the nine-month period ended September 30, 2010, respectively, due to the delayed delivery of Series F. Upon completion of the exchanges of Series F on October 6, 2010, the Company issued 11,776,000 shares of Series F. The Series F amount was relieved and the initial investment of $5.10 per share was recorded as convertible preferred stock and the accrued noncash interest expense of $12,974,000 was recorded as additional paid-in capital during the fourth quarter of 2010.

14. Stock warrants

The following is a description of the common stock warrant activity of the Company:

(in thousands, except per share amounts)	Warrants for the purchase of common stock	Weighted average exercise price
Balance—January 1, 2008	2,926	$ 2.35
Issued	11	1.89
Balance—December 31, 2008	2,937	2.35
Balance—December 31, 2009	2,937	2.35
Balance—December 31, 2010	2,937	2.93
Balance—September 30, 2011 (unaudited)	2,937	$ 2.93

During 2008, 11,000 warrants held by a stockholder were issued to purchase common stock at an exercise price of $1.89. The warrants were valued at $24,000 using a Black-Scholes option valuation model.

During the third quarter of 2010, 2,596,000 warrants held by a related party stockholder were modified to extend the expiration dates by 4 years and increase the exercise prices from $2.12 and $2.47 to $3.00 per share. The modification was valued using a Black-Scholes option valuation model and the Company accounted for the $1,803,000 of incremental value within the equity section of the accompanying balance sheets as a capital transaction.

The following is a description of the preferred stock warrant activity of the Company:

	Warrants for the purchase of preferred stock			
(in thousands, except per share amounts)	Series C	Weighted average exercise price	Series D	Weighted average exercise price
Balance, December 31, 2008	21	$1.89	302	$3.50
Exercised	(6)	1.89	—	—
Balance, December 31, 2009	15	1.89	302	3.50
Exercised	(11)	1.89	—	—
Balance, December 31, 2010	4	1.89	302	3.50
Exercised (unaudited)	(3)	1.89	—	—
Balance, September 30, 2011 (unaudited)	1	$1.89	302	$3.50

15. Common stock

As of December 31, 2010 and September 30, 2011, the Company had 125.0 million shares and 138.5 million shares, respectively, of $0.01 par common stock authorized. As of December 31, 2009, the Company had 90 million shares of no par common stock authorized. During the fourth quarter of 2010, the Company changed the par value of its common stock from no par to $0.01 par and recognized a $17,547,000 reduction to common stock and a corresponding increase to additional paid-in capital. There were 10,868,000, 11,073,000 and 11,414,000 common shares issued and outstanding as of December 31, 2009 and 2010 and September 30, 2011, respectively. The shares reserved for future issuance as of December 31, 2010 and September 30, 2011 consisted of the following:

(in thousands)	December 31, 2010	September 30, 2011
		(unaudited)
Conversion of Series B, Series C, Series D, Series E, Series F and Series G preferred stock	55,253	66,255
Preferred stock warrants	306	303
Common stock warrants	2,937	2,937
Contingent consideration	400	—
1999 Stock Option Plan and 2008 Stock Incentive Plan	16,214	17,522
	75,110	87,017

16. Stock-based compensation

Prior to 2008, the Company granted equity awards to employees, officers and consultants under the 1999 Stock Option Plan (the "1999 Plan"). In 2008, the Company adopted the 2008 Stock Incentive Plan (the "2008 Plan") for employees, officers, directors, consultants and advisors and decided that no additional shares of common stock would be issued under the 1999 Plan. The 2008 Plan, which is administered by the Board of Directors of the Company, permitted the Company to grant incentive and nonqualified stock options, restricted stock, restricted stock units and other stock-based awards, up to a maximum of 12.4 million shares. In 2009 and 2011, the Board of Directors and Stockholders of the Company amended the 2008

Plan to increase the number of shares that may be issued under the plan by 4.7 million and 2.5 million, respectively, up to a maximum of 19.6 million shares. Awards typically vest over three years for employees and immediately for directors, at the discretion of the Board of Directors, and options typically have a maximum term of ten years. As of December 31, 2010 and September 30, 2011, there were 201,000 and 1,052,000 shares, respectively, available to be issued under the 2008 Plan.

In 2009, as allowed under the 2008 Plan, the Board of Directors of the Company voted to lower the exercise prices of certain outstanding stock options held by nonexecutive employees which had exercise prices greater than the fair market value of the underlying common stock. As a result, options to purchase 1.9 million shares of common stock with exercise prices greater than $2.12 per share were amended to reflect the new exercise price of $2.12 per share. Share-based compensation recognized as a result of this amendment was $59,000 and $103,000 for the years ended December 31, 2009 and 2010, respectively, and $86,000 and $20,000 for the nine-months ended September 30, 2010 and 2011, respectively.

During 2008, 2009 and 2010 and the nine-months ended September 30, 2010 and 2011, the Company issued options to purchase 2.7 million, 4.2 million, 2.9 million, 1.0 million and 1.9 million shares of common stock, respectively, to its directors and employees. These options generally vest over a three-year period for employees and immediately for directors.

During 2008, 2009 and 2010 and the nine-months ended September 30, 2010 and 2011, the Company granted options to purchase 65,000, 85,000, 40,000, 0 and 83,000 shares of common stock, respectively, to nonemployees. The assumptions used to determine the fair value of options granted to nonemployees were consistent with those used for employee grants.

The Company recognized stock-based compensation expense as follows:

	Year ended December 31,			Nine-months ended September 30,	
(in thousands)	**2008**	**2009**	**2010**	**2010**	**2011**
				(unaudited)	**(unaudited)**
Employee awards:					
Research and development	$ 1,352	$ 1,941	$ 2,787	$ 1,919	$ 2,654
General and administrative	981	1,314	1,706	1,333	2,453
Stock-based compensation for employee awards	2,333	3,255	4,493	3,252	5,107
Stock-based compensation for nonemployee awards	84	49	58	164	466
Total stock-based compensation	$ 2,417	$ 3,304	$ 4,551	$ 3,416	$ 5,573

The fair value of options granted for 2008, 2009 and 2010 and the nine-months ended September 30, 2011, were estimated at the date of grant using the following assumptions:

	Year ended December 31,			Nine-months ended September 30,
	2008	**2009**	**2010**	**2011**
Risk-free interest rate	3.3 - 3.5%	2.4 - 3.2%	1.7 - 2.8%	1.6 - 2.5%
Expected dividend yield	0%	0%	0%	0%
Expected term	5 - 5.9 years	5 - 5.9 years	5 - 5.9 years	5 - 5.9 years
Expected volatility	65 - 67%	69 - 76%	73 - 77%	73%

The Company uses the simplified method to calculate the expected term as it does not have sufficient historical exercise data to provide a reasonable basis upon which to estimate expected term. The computation of expected volatility is based on the historical volatility of comparable companies from a representative peer group selected based on industry and market capitalization. The risk-free interest rate is based on a treasury instrument whose term is consistent with the expected life of the stock options. Management estimates expected forfeitures based on historical experience and recognizes compensation costs only for those equity awards expected to vest.

The following table summarizes stock option activity, including options issued to nonemployees:

(in thousands, except per share amounts)	Number of shares	Weighted average exercise price	Aggregate intrinsic value
Outstanding, December 31, 2007	9,252	$2.07	$11,449
Granted	2,731	2.00	
Exercised	(43)	1.53	
Forfeited	(457)	2.22	
Outstanding, December 31, 2008	11,483	$2.06	$(2,858)
Granted	4,239	2.08	
Exercised	(430)	0.99	
Forfeited	(632)	2.20	
Outstanding, December 31, 2009	14,660	$2.02	$1,492
Granted	2,984	2.52	
Exercised	(205)	1.44	
Forfeited	(1,225)	2.26	
Outstanding, December 31, 2010	16,214	$2.10	$9,628
Granted (unaudited)	2,034	5.57	
Exercised (unaudited)	(341)	2.32	
Forfeited (unaudited)	(385)	2.38	
Outstanding, September 30, 2011 (unaudited)	17,522	$2.48	$75,324
Exercisable, December 31, 2010	11,374	$2.01	$7,737
Exercisable, September 30, 2011 (unaudited)	13,060	$2.14	$60,592
Vested and expected to vest, December 31, 2010	15,797	$2.09	$9,464
Vested and expected to vest, September 30, 2011 (unaudited)	17,178	$2.45	$74,341

The aggregate intrinsic value was calculated as the difference between the exercise price of the stock options and the fair value of the underlying common stock as of the respective balance sheet date. The aggregate intrinsic value of options exercised for 2008, 2009 and 2010 and the nine-months ended September 30, 2011 was $62,000, $226,000, $145,000 and $752,000, respectively.

As of December 31, 2010 and September 30, 2011, there was $7,275,000 and $8,763,000, respectively, of total unrecognized compensation cost related to nonvested stock awards. As of December 31, 2010 and September 30, 2011, the Company expects to recognize those costs over weighted average periods of approximately 1.6 years and 1.8 years, respectively.

The following table summarizes information including the range of exercise prices for stock options outstanding and exercisable at December 31, 2010:

	Options outstanding			Options exercisable		
Exercise Price	Number of shares (in thousands)	Weighted average remaining contractual life (years)	Weighted average exercise price	Number of shares exercisable (in thousands)	Weighted average remaining contractual life (years)	Weighted average exercise price
$0.05	51	0.97	$ 0.05	51	0.97	$ 0.05
0.32	152	0.97	0.32	152	0.97	0.32
1.25	1,115	3.66	1.25	1,115	3.66	1.25
1.71	1,755	4.57	1.71	1,755	4.57	1.71
1.81	2,440	7.82	1.81	1,964	7.80	1.81
2.12	6,153	8.14	2.12	3,571	7.57	2.12
2.19	540	1.88	2.19	540	1.88	2.19
2.25	9	0.12	2.25	9	0.12	2.25
2.47	640	5.69	2.47	640	5.69	2.47
2.59	1,049	6.77	2.59	1,049	6.77	2.59
2.69	2,095	9.83	2.69	313	9.83	2.69
4.40	215	0.51	4.40	215	0.51	4.40
	16,214	7.03	2.10	11,374	7.03	2.01
Vested and expected to vest	15,797	6.97	2.09			

17. Income taxes

As a result of losses incurred, the Company did not provide for any income taxes in the years ended December 31, 2008, 2009 and 2010. A reconciliation of the Company's effective tax rate to the statutory federal income tax rate is as follows:

	Year ended December 31,		
	2008	2009	2010
Federal statutory rate	34.0%	35.0%	35.0%
State taxes, net of Federal benefit	3.3	2.5	4.6
Permanent differences	(2.7)	(3.2)	(2.6)
Stock Compensation	(1.2)	(2.0)	(2.9)
Change in valuation allowance	(37.6)	(30.3)	(39.2)
Tax Credits	3.0	4.5	5.1
Other	1.2	—	—
	—%	6.5%	—%

Temporary differences that give rise to significant net deferred tax assets as of December 31, 2009 and 2010 are as follows:

(in thousands)	2009	2010
Deferred tax assets		
Net operating losses	$ 32,325	$ 34,035
Capitalized research and development expenses	42,963	36,865
Credit carryforwards	7,526	10,262
Depreciation	529	1,080
Deferred compensation	1,429	1,603
Deferred revenue	—	22,495
Accrued expenses	130	608
Other	639	886
Total gross deferred tax asset	85,541	107,834
Intangible assets	(4,121)	(3,953)
Valuation allowance	(81,420)	(103,881)
Net deferred taxes	$ —	$ —

As of December 31, 2010, the Company had federal and state net operating loss ("NOL") carryforwards of $88.9 million and $54.2 million, respectively, which will begin to expire in 2011. As of December 31, 2010, the Company had federal and state research and development ("R&D") and investment tax credit carryforwards of $7.9 million and $3.6 million, respectively, which will begin to expire in 2011. Management has evaluated the positive and negative evidence bearing upon the realizability of its deferred tax assets, which are comprised principally of net operating loss carryforwards. Management has determined that it is more likely than not that the Company will not recognize the benefits of federal and state deferred tax assets and, as a result, a valuation allowance of $81.4 million and $103.9 million have been established at December 31, 2009 and 2010, respectively.

Additionally, the future utilization of the Company's NOL and R&D credit carryforwards to offset future taxable income may be subject to a substantial annual limitation under Section 382 of the Internal Revenue Code due to ownership changes that have occurred previously or that could occur in the future. Ownership changes, as defined in Section 382 of the Internal Revenue Code, may have limited the amount of net operating loss carryforwards and research and development credit carryforwards that the Company can use each year to offset future taxable income and taxes payable. Subsequent ownership changes could impose additional limitations. The Company has not performed a complete 382 study. Any limitation to all or a portion of the NOL or R&D credit carryforwards, before they can be utilized, would reduce the Company's gross deferred tax asset.

The Company adopted the provisions of ASC 740-10, *Accounting for Uncertainty in Income Taxes—an interpretation of ASC 740,* on January 1, 2007. ASC 740-10 clarifies the accounting for uncertainty in income taxes recognized in an enterprise's financial statements in accordance with ASC 740, *Income Taxes*, and prescribes a recognition threshold and measurement process for financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return. ASC 740-10 also provides guidance on derecognition, classification, interest and penalties, accounting in interim periods, disclosure and transition. The Company

concluded that there are no significant uncertain tax positions requiring recognition in the consolidated financial statements. The Company's evaluation was performed for the tax years ended December 31, 2007 through 2010, the tax years which remain subject to examination by major tax jurisdictions as of December 31, 2010. However, to the extent the Company utilizes net operating losses from years prior to 2007, the statute remains open to the extent of the net operating losses utilized.

The change in the valuation allowance against the deferred tax assets in the years ended December 31, 2008, 2009 and 2010 was as follows:

(in thousands)	Balance at beginning of period	Additions	Deductions	Balance at end of period
December 31, 2008	$ 50,052	16,959	—	$ 67,011
December 31, 2009	$ 67,011	17,811	(3,402)	$ 81,420
December 31, 2010	$ 81,420	22,461	—	$ 103,881

As a result of the acquisition of Hermes during 2009, the Company recognized a portion of its valuation allowance. The Company recorded intangible assets and IPR&D for which there is no tax basis. As a result, the Company recorded a net deferred tax liability in connection with the acquisition. The net deferred tax liability was offset with deferred tax assets previously recorded by the Company which resulted in a reduction in the valuation allowance. The decrease in the valuation allowance resulted in a $3,402,000 income tax benefit for the year ended December 31, 2009.

The Company's net deferred tax asset at December 31, 2010 was subject to a full valuation allowance.

In January 2010, the Massachusetts Life Sciences Center ("MLSC"), an independent agency of The Commonwealth of Massachusetts, awarded the Company $1,500,000 of tax incentives under its Life Sciences Tax Incentive Program. These incentives allowed the Company to monetize approximately $1,350,000 of state research and development tax credits. The Company received this monetization in 2010. In exchange for these incentives, the Company pledged to hire 50 employees in 2010 and retain these employees until at least December 31, 2014. Failure to do so could result in repayment of incentives. The Company deferred and is amortizing the benefit of this monetization on a straight-line basis over the 5 year performance period and for the year ended December 31, 2010 and the nine-months ended September 30, 2011, the Company recognized $270,000 and $203,000, respectively, of benefit in other income.

In October 2010, the Company received grants totaling $2,445,000 under the Federal Qualifying Therapeutic Discovery Projects program as provided for under section 48D of the Internal Revenue Code, enacted as part of the Patient Protection and Affordable Care Act of 2010. The Company received $1,941,000 during 2010 and $504,000 during the first quarter of 2011 related to these grants. For the year ended December 31, 2010, the Company recognized $2,445,000 as other income related to these grants.

In January 2011, the MLSC awarded the Company $1,347,000 of tax incentives under its Life Sciences Tax Incentive Program. These incentives allowed the Company to monetize approximately $1,212,000 of state research and development tax credits. The Company received

this monetization in the second quarter of 2011. In exchange for these incentives, the Company has pledged to hire 50 employees in 2011 and retain these employees until at least December 31, 2015. Failure to do so could result in repayment of incentives. As of September 30, 2011, the Company has not recognized any benefit associated with these tax incentives.

18. Commitments and contingencies

Operating leases

The Company leases its office and manufacturing space and certain office equipment under noncancelable operating leases. Total rent expense under these operating leases was $1,387,000, $2,082,000, $2,866,000, $2,145,000 and $2,342,000 for the years ended December 31, 2008, 2009 and 2010 and the nine-months ended September 30, 2010 and 2011, respectively.

Future minimum lease payments under noncancelable operating leases at December 31, 2010 are as follows:

Year ended December 31,	(in thousands)
2011	$ 2,617
2012	1,086
2013	—

During 2008, the Company expanded its existing facility and amended its office and manufacturing space operating lease. As part of this amendment, the landlord agreed to reimburse the Company for a portion of tenant improvements made to the facility. During 2009, the Company received $786,000 from the landlord. In January and June 2010, the Company entered into lease amendments to further expand its office and manufacturing space. These lease amendments are co-terminous with the Company's existing facility lease which expires in April 2012. As part of these amendments, the landlord agreed to reimburse the Company for a portion of tenant improvements made to the facility. During 2010, the Company received $217,000 from the landlord. These amounts were recorded in deferred lease benefits on the Company's balance sheets and are being amortized over the term of the lease as reductions to rent expense. On March 31, 2011, the Company amended its existing office and manufacturing lease to extend the term on a portion of its leased space until April 2015 and extend the term on the remainder of leased space until April 2013 with options to extend until April 2015. Incremental future minimum lease payments as a result of this amendment are $1,695,000, $1,986,000, $1,429,000 and $480,000 for the years ended December 31, 2012, 2013, 2014 and 2015, respectively. As part of this amendment, the landlord agreed to reimburse the Company for a portion of tenant improvements made to the facility, up to a total of $381,000. As of September 30, 2011, the Company had earned reimbursement of $51,000 from the landlord.

Capital leases

In August 2004, the Company entered into an agreement with a leasing company under which the Company was authorized to borrow up to $1.4 million of noncourse debt through sale/lease-back and loan structured transactions which were collateralized by equipment. In January 2006, the agreement was amended increasing the Company's total borrowing capacity to

$4.5 million. Each lease is to be repaid over a four year period. The interest rate was established based on a percentage above treasury interest rates. Borrowings made under this agreement were $675,000 for the year ended December 31, 2008. The Company's option to draw further on this lease facility expired during 2008.

Future minimum lease payments under noncancelable capital leases at December 31, 2010 are as follows:

Year ended December 31,	(in thousands)
2011	$ 456
2012	49
2013	—
	505
Less interest	14
Present value of minimum lease payments	491
Less current portion of capital lease obligations	443
Capital lease obligations, net of current portion	$ 48

19. Retirement plan

On May 31, 2002, the Company established a 401(k) defined contribution savings plan for its employees who meet certain service period and age requirements. Contributions are permitted up to the maximum allowed under the Internal Revenue Code of each covered employee's salary. The savings plan permits the Company to contribute at its discretion. For the years ended December 31, 2008, 2009 and 2010 and the nine-months ended September 30, 2010 and 2011, the Company made contributions of $260,000, $270,000, $380,000, $284,000 and $368,000, respectively, to the plan.

20. Subsequent events

Subsequent events have been evaluated through July 8, 2011, the date the accompanying financial statements were issued, and October 26, 2011, when the accompanying financial statements were re-issued.

shares

Common stock

Prospectus

J.P. Morgan

BofA Merrill Lynch

Cowen and Company **Oppenheimer & Co.**

, 2011

We have not authorized anyone to provide you with information other than that contained in this prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We are offering to sell, and seeking offers to buy, shares of common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus or of any sale of our common stock.

No action is being taken in any jurisdiction outside the United States to permit a public offering of the common stock or possession or distribution of this prospectus in that jurisdiction. Persons who come into possession of this prospectus in jurisdictions outside the United States are required to inform themselves about and to observe any restrictions as to this offering and the distribution of this prospectus applicable to that jurisdiction.

Until , 2011, all dealers that buy, sell or trade in our common stock, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to the dealers' obligation to deliver a prospectus when acting as underwriters and with respect to their unsold allotments or subscriptions.

Part II
Information not required in prospectus

Item 13. Other expenses of issuance and distribution.

The following table sets forth the expenses to be incurred in connection with the offering described in this Registration Statement, other than underwriting discounts and commissions. The underwriters have agreed to reimburse a portion of our expenses for this offering. All amounts are estimates except the SEC registration fee and the Financial Industry Regulatory Authority, Inc. filing fee.

	Amount
Securities and Exchange Commission registration fee	$ 20,028
Financial Industry Regulatory Authority, Inc. filing fee	17,750
NASDAQ listing fee	*
Accountants' fees and expenses	*
Legal fees and expenses	*
Blue Sky fees and expenses	*
Transfer Agent's fees and expenses	*
Printing and engraving expenses	*
Miscellaneous	*
Total Expenses	$ *

* To be filed by amendment.

Item 14. Indemnification of directors and officers.

Section 102 of the Delaware General Corporation Law permits a corporation to eliminate the personal liability of its directors or its stockholders for monetary damages for a breach of fiduciary duty as a director, except where the director breached his or her duty of loyalty, failed to act in good faith, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of Delaware corporate law or obtained an improper personal benefit. Our certificate of incorporation provides that no director shall be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duty as a director, notwithstanding any provision of law imposing such liability, except to the extent that the Delaware General Corporation Law prohibits the elimination or limitation of liability of directors for breaches of fiduciary duty.

Section 145 of the Delaware General Corporation Law provides that a corporation has the power to indemnify a director, officer, employee or agent of the corporation and certain other persons serving at the request of the corporation in related capacities against expenses (including attorneys' fees), judgments, fines and amounts paid in settlements actually and reasonably incurred by the person in connection with an action, suit or proceeding to which he or she is or is threatened to be made a party by reason of such position, if such person acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the corporation, and, in any criminal action or proceeding, had no reasonable cause to believe his or her conduct was unlawful, except that, in the case of actions brought by or in the right of the corporation, no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to the

corporation unless and only to the extent that the Court of Chancery or other adjudicating court determines that, despite the adjudication of liability but in view of all of the circumstances of the case, such person is fairly and reasonably entitled to indemnify for such expenses which the Court of Chancery or such other court shall deem proper.

Our certificate of incorporation provides that we will indemnify each person who was or is a party or threatened to be made a party to any threatened, pending or completed action, suit or proceeding whether civil, criminal, administrative or investigative (other than an action by or in the right of us) by reason of the fact that he or she is or was, or has agreed to become, our director or officer, or is or was serving, or has agreed to serve, at our request as a director, officer, partner, employee or trustee of, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise (all such persons being referred to as an "Indemnitee"), or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding and any appeal therefrom, if such Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, our best interests, and, with respect to any criminal action or proceeding, he or she had no reasonable cause to believe his or her conduct was unlawful.

Our certificate of incorporation also provides that we will indemnify any Indemnitee who was or is a party to an action or suit by or in the right of us to procure a judgment in our favor by reason of the fact that the Indemnitee is or was, or has agreed to become, our director or officer, or is or was serving, or has agreed to serve, at our request as a director, officer, partner, employee or trustee or, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise, or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees) and, to the extent permitted by law, amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding, and any appeal therefrom, if the Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, our best interests, except that no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to us, unless a court determines that, despite such adjudication but in view of all of the circumstances, he or she is entitled to indemnification of such expenses. Notwithstanding the foregoing, to the extent that any Indemnitee has been successful, on the merits or otherwise, he or she will be indemnified by us against all expenses (including attorneys' fees) actually and reasonably incurred by him or her or on his or her behalf in connection therewith. If we don't assume the defense, expenses must be advanced to an Indemnitee under certain circumstances.

We have entered into indemnification agreements with our directors and executive officers. In general, these agreements provide that we will indemnify the director or executive officer to the fullest extent permitted by law for claims arising in his or her capacity as a director or officer of our company or in connection with their service at our request for another corporation or entity. The indemnification agreements also provide for procedures that will apply in the event that a director or executive officer makes a claim for indemnification and establish certain presumptions that are favorable to the director or executive officer.

We maintain a general liability insurance policy which covers certain liabilities of our directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers.

The underwriting agreement we will enter into in connection with the offering of common stock being registered hereby provides that the underwriters will indemnify, under certain conditions, our directors and officers (as well as certain other persons) against certain liabilities arising in connection with such offering.

Item 15. Recent sales of unregistered securities.

Set forth below is information regarding shares of common stock and preferred stock issued, and options and warrants granted, by us within the past three years that were not registered under the Securities Act. Also included is the consideration, if any, received by us for such shares, options and warrants and information relating to the section of the Securities Act, or rule of the SEC, under which exemption from registration was claimed.

(a) Issuances of securities

Between November 2007 and April 2008, we agreed to issue an aggregate of 11,775,995 shares of our series F convertible preferred stock at a price per share of $5.10 for an aggregate purchase price of $60,057,575. In July 2010, in connection with a review of our corporate records, we determined that we may not have obtained all of the required stockholder approvals to amend our articles of organization to authorize the shares of series F convertible preferred stock that we agreed to issue in 2007 and 2008. As a result, we conducted an exchange offer in which we provided investors to whom we had agreed to issue and sell shares of series F convertible preferred stock in the series F convertible preferred stock financing in 2007 and 2008 with the opportunity to acquire shares of properly authorized series F convertible preferred stock. All of the holders of shares of series F convertible preferred stock accepted our offer and received new, properly authorized shares of series F convertible preferred stock. Each such holder received a sub-series of the properly authorized series F convertible preferred stock that is intended to provide the investor with the economic benefit of the accrued dividends to which the investor would be entitled had the properly authorized shares of series F convertible preferred stock been issued on the date that we originally agreed to do so in 2007 and 2008. In the exchange offer, we issued an aggregate of 11,775,995 shares of our properly authorized series F convertible preferred stock. All outstanding shares of series F preferred stock will automatically convert into an aggregate of 11,775,995 shares of common stock upon completion of this offering.

In October 2010, our stockholders approved an agreement and plan of merger that had the effect of changing the state in which we were incorporated from Massachusetts to Delaware by merging our predecessor entity, Merrimack Pharmaceuticals, Inc., a Massachusetts corporation, or Merrimack Massachusetts, with and into a Delaware corporation formed for purposes of the merger that was a wholly owned subsidiary of Merrimack Massachusetts. As a result, we are now a Delaware corporation with the name Merrimack Pharmaceuticals, Inc. At the effective time of the merger in October 2010, all of the outstanding shares of each class and series of capital stock of Merrimack Massachusetts were converted into corresponding shares of our capital stock on a one-to-one basis. In connection with the merger, we issued an aggregate of 11,215,211 shares of our common stock, 3,873,448 shares of our series B

convertible preferred stock, 14,417,702 shares of our series C convertible preferred stock, 8,086,305 shares of our series D convertible preferred stock, 14,990,892 shares of our series E convertible preferred stock and 11,775,995 shares of our series F convertible preferred stock. In addition, all options and warrants to purchase shares of Merrimack Massachusetts capital stock that were outstanding at the effective time of the merger in October 2010 were automatically converted into options and warrants to purchase corresponding shares of our capital stock.

In October 2009, we issued an aggregate of 4,382,993 shares of our common stock to 20 stockholders as consideration for their shares of Hermes BioSciences, Inc. in connection with our acquisition of Hermes BioSciences, Inc. For purposes of the merger agreement and the escrow agreement entered into in connection with the acquisition, the per share value of our common stock was deemed to be $5.68.

In April 2011, we issued an aggregate of 11,000,000 shares of our series G convertible preferred stock at a price per share of $7.00 for an aggregate purchase price of $77,000,000. All outstanding shares of series G preferred stock will automatically convert into an aggregate of 11,000,000 shares of common stock upon completion of this offering.

No underwriters were involved in the foregoing sales of securities. The securities described in this section (a) of Item 15 were issued to investors in reliance upon the exemption from the registration requirements of the Securities Act, as set forth in Section 4(2) under the Securities Act and Regulation D promulgated thereunder relative to transactions by an issuer not involving any public offering, to the extent an exemption from such registration was required. All purchasers of shares of convertible preferred stock described above represented to us in connection with their purchase that they were accredited investors and were acquiring the shares for their own account for investment purposes only and not with a view to, or for sale in connection with, any distribution thereof and that they could bear the risks of the investment and could hold the securities for an indefinite period of time. The purchasers received written disclosures that the securities had not been registered under the Securities Act and that any resale must be made pursuant to a registration statement or an available exemption from such registration.

(b) Stock option grants

Between January 1, 2008 and September 30, 2011, we issued to certain employees, directors and consultants options to purchase an aggregate of 11,988,158 shares of common stock, of which, as of September 30, 2011, options to purchase 26,252 shares of common stock had been exercised, options to purchase 964,910 shares of common stock had been forfeited and options to purchase 10,996,996 shares of common stock remained outstanding at a weighted average exercise price of $2.79 per share.

The issuance of stock options and the common stock issuable upon the exercise of such options as described in this section (b) of Item 15 were issued pursuant to written compensatory plans or arrangements with our employees, directors and consultants, in reliance on the exemption from the registration requirements of the Securities Act provided by Rule 701 promulgated under the Securities Act or the exemption set forth in Section 4(2) under the Securities Act and Regulation D promulgated thereunder relative to transactions by an issuer not involving any public offering. All recipients either received adequate information about us or had access, through employment or other relationships, to such information.

(c) Issuance of warrants

In connection with certain equipment financing transactions undertaken pursuant to a master lease agreement dated August 13, 2004 between us and General Electric Capital Corporation, as amended in February, March and June of 2008, we issued to General Electric Capital Corporation warrants to purchase 10,726 shares of common stock at an exercise price of $1.889 per share. All such warrants to purchase common stock will remain outstanding upon completion of this offering.

The sale and issuance of these warrants were made in reliance on the exemption provided by Section 4(2) of the Securities Act and Regulation D promulgated thereunder. The recipients of warrants in the transaction described above represented that they were accredited investors and were acquiring the warrants for their own account for investment purposes only and not with a view to, or for sale in connection with, any distribution thereof and that they could bear the risks of the investment and could hold the warrants for an indefinite period of time and appropriate legends were affixed to the instruments representing such warrants issued in such transactions. Such recipients either received adequate information about us or had, through its relationship with us, access to such information.

All of the foregoing securities are deemed restricted securities for purposes of the Securities Act. All certificates representing the issued shares of capital stock described in this Item 15 included appropriate legends setting forth that the securities had not been registered and the applicable restrictions on transfer.

Item 16. Exhibits and financial statement schedules.

The exhibits to the registration statement are listed in the Exhibit Index attached hereto and incorporated by reference herein.

Item 17. Undertakings.

(a) The undersigned registrant hereby undertakes to provide to the underwriter at the closing specified in the underwriting agreements, certificates in such denominations and registered in such names as required by the underwriter to permit prompt delivery to each purchaser.

(b) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that, in the opinion of the Securities and Exchange Commission, such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

(c) The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

Signatures

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this Amendment No. 3 to the Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Cambridge, Commonwealth of Massachusetts, on this 26th day of October, 2011.

MERRIMACK PHARMACEUTICALS, INC.

By: /s/ ROBERT J. MULROY

Robert J. Mulroy
President and Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1933, this Amendment No. 3 to the Registration Statement has been signed by the following persons in the capacities held on the dates indicated.

Signature	Title	Date
/s/ ROBERT J. MULROY Robert J. Mulroy	President, Chief Executive Officer and Director (Principal executive officer)	October 26, 2011
/s/ WILLIAM A. SULLIVAN William A. Sullivan	Chief Financial Officer and Treasurer (Principal financial and accounting officer)	October 26, 2011
* Gary L. Crocker	Director	October 26, 2011
* James van B. Dresser	Director	October 26, 2011
* Gordon J. Fehr	Director	October 26, 2011
* Robert C. Gay, Ph.D.	Director	October 26, 2011

Signature	Title	Date
*	Director	October 26, 2011
Walter M. Lovenberg, Ph.D.		
*	Director	October 26, 2011
Sarah E. Nash		
*	Director	October 26, 2011
Michael E. Porter, Ph.D.		
*	Director	October 26, 2011
Anthony J. Sinskey, Sc.D.		

*By: /s/ ROBERT J. MULROY

Robert J. Mulroy
Attorney-in-Fact

Exhibit index

Exhibit number	Description of exhibit
1.1**	Underwriting Agreement
3.1*	Restated Certificate of Incorporation of the Registrant
3.2*	Bylaws of the Registrant
3.3**	Certificate of Amendment of Restated Certificate of Incorporation of the Registrant to be effective prior to the effectiveness of this Registration Statement
3.4**	Restated Certificate of Incorporation of the Registrant to be effective upon the closing of this offering
3.5**	Amended and Restated Bylaws of the Registrant to be effective upon the closing of this offering
4.1	Specimen certificate evidencing shares of common stock
4.2*	Fifth Amended and Restated Investor Rights Agreement, dated April 6, 2011, by and among the Registrant and the other parties thereto
4.3*	Warrant to purchase shares of Series D Convertible Preferred Stock, dated April 6, 2005, issued by the Registrant to Hercules Technology Growth Capital, Inc.
4.4*	Warrant to purchase shares of Series C Convertible Preferred Stock, dated November 22, 2006, issued by the Registrant to General Electric Capital Corporation
4.5*	Form of warrant to purchase shares of Common Stock issued by the Registrant to HF Holding—ABI, MS Seed Capital Partners, LP and Wren Holdings LLC
4.6*	Form of warrant to purchase shares of Common Stock issued by the Registrant to General Electric Capital Corporation
4.7*	Form of warrant to purchase shares of Common Stock issued by the Registrant to various parties expiring on December 10, 2015
4.8*	Form of warrant to purchase shares of Common Stock issued by the Registrant to various parties expiring on December 17, 2015
4.9*	Form of warrant to purchase shares of Common Stock issued by the Registrant to various parties expiring on March 10, 2016
5.1**	Opinion of Wilmer Cutler Pickering Hale and Dorr LLP
10.1*	1999 Stock Option Plan
10.2*	2008 Stock Incentive Plan
10.3**	2011 Stock Incentive Plan
10.4**	Form of Incentive Stock Option Agreement under 2011 Stock Incentive Plan
10.5**	Form of Non-Qualified Stock Option Agreement under 2011 Stock Incentive Plan
10.6*	Amended and Restated Employment Agreement, dated as of August 16, 2011, by and between the Registrant and Fazal R. Khan
10.7*	Amended and Restated Employment Agreement, dated as of August 16, 2011, by and between the Registrant and Robert J. Mulroy
10.8*	Amended and Restated Employment Agreement, dated as of August 16, 2011, by and between the Registrant and Ulrik B. Nielsen
10.9*	Amended and Restated Employment Agreement, dated as of August 16, 2011, by and between the Registrant and Clet M. Niyikiza
10.10*	Amended and Restated Employment Agreement, dated as of August 16, 2011, by and between the Registrant and Edward J. Stewart
10.11*	Amended and Restated Employment Agreement, dated as of August 16, 2011, by and between the Registrant and William A. Sullivan

Exhibit number	Description of exhibit
10.12*	Form of Indemnification Agreement between the Registrant and each director and executive officer
10.13*	Indenture of Lease, dated as of May 16, 2006, by and between the Registrant and RB Kendall Fee, LLC, as amended on March 23, 2007, July 1, 2007, April 1, 2008, November 17, 2008, July 6, 2009, January 27, 2010, June 29, 2010 and March 31, 2011
10.14*	Sublease, dated as of August 20, 2010, by and between Silver Creek Pharmaceuticals, Inc. and FibroGen, Inc., as amended on January 20, 2011, May 4, 2011, May 26, 2011 and August 1, 2011
10.15†	Patent License Agreement, dated as of February 20, 2008, by and between the Registrant and the United States Public Health Service
10.16†	License Agreement, dated as of September 26, 2005, by and between the Registrant (as successor-in-interest to Hermes BioSciences, Inc.) and Merrimack Pharmaceuticals (Bermuda) Ltd. (as assignee from PharmaEngine, Inc.), as amended on June 30, 2011
10.17†	Assignment, Sublicense and Collaboration Agreement, dated as of May 5, 2011, by and between Merrimack Pharmaceuticals (Bermuda) Ltd. and PharmaEngine, Inc.
10.18†	License and Collaboration Agreement, dated as of September 30, 2009, by and between the Registrant and Sanofi, as amended on February 18, 2011
10.19*†	Commercial License Agreement, dated as of June 6, 2008, by and between the Registrant and Selexis SA, as amended on January 8, 2010
10.20†	Exclusive License Agreement, dated as of November 1, 2000, by and between the Registrant (as successor-in-interest to Hermes BioSciences, Inc.) and The Regents of the University of California, as amended on October 6, 2003, September 13, 2006, June 6, 2007 and September 28, 2007
10.21†	Exclusive License Agreement, dated as of March 16, 2005, by and between the Registrant and The Regents of the University of California, as amended on November 17, 2009
10.22†	Collaboration Agreement, dated as of November 16, 2009, by and between the Registrant and Adimab LLC, as amended on April 27, 2010, June 2, 2010 and October 11, 2011
10.23*†	Sublicense Agreement, dated as of June 30, 2008, by and between the Registrant and Dyax Corp.
10.24†	Amended and Restated Collaboration Agreement, dated as of January 24, 2007, by and between the Registrant and Dyax Corp., as amended on July 31, 2008 and November 6, 2009
10.25*	Non-Employee Director Compensation and Reimbursement Policy
21.1*	Subsidiaries of the Registrant
23.1	Consent of PricewaterhouseCoopers LLP, an independent registered public accounting firm
23.2**	Consent of Wilmer Cutler Pickering Hale and Dorr LLP (included in Exhibit 5.1)
24.1*	Power of Attorney (included on signature page)

* Previously filed.

** To be filed by amendment.

† Confidential treatment requested as to portions of the exhibit. Confidential materials omitted and filed separately with the Securities and Exchange Commission.

Exhibit 4.1

Merrimack Pharmaceuticals, Inc.
PO BOX 43004, Providence, RI 02940-3004
MR A SAMPLE
(DESIGNATION (IF ANY))
ADD 1
ADD 2
ADD 3
ADD 4
ADD 5
ADD 6

CUSIP
Holder ID
Insurance Value
Number of Shares
DTC

Certificate Numbers	Num	No.	Denom.	Total
12345678(12345678)12345678	1	1	1	1
12345678(12345678)12345678	2	2	2	2
12345678(12345678)12345678	3	3	3	3
12345678(12345678)12345678	4	4	4	4
12345678(12345678)12345678	5	5	5	5
12345678(12345678)12345678	6	6	6	6
Total Transaction				7

016570| 003590|127C|RESTRICTED||4|057-423

COMMON STOCK
$0.01 PAR VALUE PER SHARE

COMMON STOCK
THIS CERTIFICATE IS TRANSFERABLE IN CANTON, MA AND NEW YORK, NY

Certificate Number
ZQ 000000

Shares
000000****
000000**
****000000****
*****000000***
******000000**

MERRIMACK PHARMACEUTICALS, INC.
INCORPORATED UNDER THE LAWS OF THE STATE OF DELAWARE

THIS CERTIFIES THAT
MR. SAMPLE & MRS. SAMPLE & MR. SAMPLE & MRS. SAMPLE

CUSIP 590328 10 0
SEE REVERSE FOR CERTAIN DEFINITIONS

is the owner of
ZERO HUNDRED THOUSAND ZERO HUNDRED AND ZERO

FULLY-PAID AND NON-ASSESSABLE SHARES OF THE COMMON STOCK OF

Merrimack Pharmaceuticals, Inc. (the "Company"), transferable on the books of the Company in person or by duly authorized attorney, upon surrender of this Certificate properly endorsed. This Certificate and the shares represented hereby are issued and shall be held subject to all of the provisions of the Certificate of Incorporation and the Bylaws of the Company, each as amended and/or restated from time to time (copies of which are on file with the Company and the Transfer Agent), to all of which each holder, by acceptance hereof, assents. This Certificate is not valid unless countersigned and registered by the Transfer Agent and Registrar.

Witness the facsimile seal of the Company and the facsimile signatures of its duly authorized officers.

President

Treasurer

MERRIMACK PHARMACEUTICALS, INC. SEAL 2010 DELAWARE

DATED <<Month Day, Year>>

COUNTERSIGNED AND REGISTERED:
COMPUTERSHARE TRUST COMPANY, N.A.
TRANSFER AGENT AND REGISTRAR,

By _____
AUTHORIZED SIGNATURE

1234567

MERRIMACK PHARMACEUTICALS, INC.

THE COMPANY WILL FURNISH WITHOUT CHARGE TO EACH STOCKHOLDER WHO SO REQUESTS A SUMMARY OF THE POWERS, DESIGNATIONS, PREFERENCES AND RELATIVE, PARTICIPATING, OPTIONAL OR OTHER SPECIAL RIGHTS OF EACH CLASS OF STOCK OF THE COMPANY AND THE QUALIFICATIONS, LIMITATIONS OR RESTRICTIONS OF SUCH PREFERENCES AND RIGHTS, AND THE VARIATIONS IN RIGHTS, PREFERENCES AND LIMITATIONS DETERMINED FOR EACH SERIES, WHICH ARE FIXED BY THE CERTIFICATE OF INCORPORATION OF THE COMPANY, AS AMENDED AND/OR RESTATED FROM TIME TO TIME, AND THE RESOLUTIONS OF THE BOARD OF DIRECTORS OF THE COMPANY, AND THE AUTHORITY OF THE BOARD OF DIRECTORS TO DETERMINE VARIATIONS FOR FUTURE SERIES. SUCH REQUEST MAY BE MADE TO THE OFFICE OF THE SECRETARY OF THE COMPANY OR TO THE TRANSFER AGENT. THE OWNER OF A LOST OR DESTROYED STOCK CERTIFICATE, OR HIS LEGAL REPRESENTATIVES, MAY BE REQUIRED TO GIVE THE COMPANY A BOND TO INDEMNIFY IT AND ITS TRANSFER AGENTS AND REGISTRARS AGAINST ANY CLAIM THAT MAY BE MADE AGAINST THEM ON ACCOUNT OF THE ALLEGED LOSS OR DESTRUCTION OF ANY SUCH CERTIFICATE.

The following abbreviations, when used in the inscription on the face of this certificate, shall be construed as though they were written out in full according to applicable laws or regulations:

TEN COM	- as tenants in common	UNIF GIFT MIN ACT	- .....(Cust).....Custodian.....(Minor).....
TEN ENT	- as tenants by the entireties		under Uniform Gifts to Minors Act.....(State).....
JT TEN	- as joint tenants with right of survivorship and not as tenants in common	UNIF TRF MIN ACT	- .....(Cust).....Custodian (until age .....)
			.....(Minor).....under Uniform Transfers to Minors Act .....(State)

Additional abbreviations may also be used though not in the above list.

For value received, _____hereby sell, assign and transfer unto

PLEASE INSERT SOCIAL SECURITY OR OTHER IDENTIFYING NUMBER OF ASSIGNEE

_____

(PLEASE PRINT OR TYPEWRITE NAME AND ADDRESS, INCLUDING POSTAL ZIP CODE, OF ASSIGNEE)

_____

_____

_____ Shares

of the common stock represented by the within Certificate, and do hereby irrevocably constitute and appoint

_____ Attorney

to transfer the said stock on the books of the within-named Company with full power of substitution in the premises.

Dated: _____20_____

Signature: _____

Signature: _____

Notice: The signature to this assignment must correspond with the name as written upon the face of the certificate, in every particular, without alteration or enlargement, or any change whatever.

Signature(s) Guaranteed: Medallion Guarantee Stamp

THE SIGNATURE(S) SHOULD BE GUARANTEED BY AN ELIGIBLE GUARANTOR INSTITUTION (Banks, Stockbrokers, Savings and Loan Associations and Credit Unions) WITH MEMBERSHIP IN AN APPROVED SIGNATURE GUARANTEE MEDALLION PROGRAM, PURSUANT TO S.E.C. RULE 17Ad-15.

SECURITY INSTRUCTIONS

THIS IS WATERMARKED PAPER. DO NOT ACCEPT WITHOUT NOTING WATERMARK. HOLD TO LIGHT TO VERIFY WATERMARK.

The IRS requires that we report the cost basis of certain shares acquired after January 1, 2011. If your shares were covered by the legislation and you have sold or transferred the shares and requested a specific cost basis calculation method, we have processed as requested. If you did not specify a cost basis calculation method, we have defaulted to the first in, first out (FIFO) method. Please visit our website or consult your tax advisor if you need additional information about cost basis.

If you do not keep in contact with us or do not have any activity in your account for the time periods specified by state law, your property could become subject to state unclaimed property laws and transferred to the appropriate state.

1234567

Exhibit 10.15

Confidential Materials omitted and filed separately with the
Securities and Exchang Commission. Asterisks denote omissions.

PUBLIC HEALTH SERVICE

PATENT LICENSE AGREEMENT — *NONEXCLUSIVE*

COVER PAGE

For PHS internal use only:

License Number:

License Application Number: [**]

Serial Number(s) of Licensed Patent(s) or Patent Application(s):

See. Appendix A

Licensee:

Merrimack Pharmaceuticals

Cooperative Research and Development Agreement (CRADA) Number (if a subject invention):

NONE

Additional Remarks:

NONE

Public Benefit(s):

See, Paragraphs 5.1, 10.3 and 10.4

This Patent License Agreement, hereinafter referred to as the "**Agreement**", consists of this Cover Page, an attached **Agreement**, a Signature Page, Appendix A (List of Patent(s) or Patent Application(s)), Appendix B (Fields of Use and Territory), Appendix C (Royalties), Appendix D ((Benchmarks and Performance), Appendix E (Commercial Development Plan), Appendix F (Example Royalty Report), and Appendix G (Royalty Payment Options). The Parties to this **Agreement** are:

1) The National Institutes of Health ("**NIH**") or the Food and Drug Administration ("**FDA**"), hereinafter singly or collectively referred to as "**PHS**", agencies of the United States Public Health Service within the Department of Health and Human Services ("**HHS**"); and

2) Merrimack Pharmaceuticals, Inc., a Massachusetts corporation, having offices at One Kendall Square, Building 700, Second Floor, Cambridge, Massachusetts 02139, and its **Subsidiaries**, as defined in Paragraph 2.16, hereinafter referred to as "**Licensee**."

PHS PATENT LICENSE AGREEMENT—*NONEXCLUSIVE*

PHS and **Licensee** agree as follows:

1. BACKGROUND

1.1 In the course of conducting biomedical and behavioral research, **PHS** investigators made inventions that may have commercial applicability.

1.2 By assignment of rights from **PHS** employees and other inventors, **HHS**, on behalf of the **Government**, owns intellectual property rights claimed in any United States or foreign patent applications or patents corresponding to the assigned inventions. **HHS** also owns any tangible embodiments of these inventions actually reduced to practice by **PHS**.

1.3 The Secretary of **HHS** has the authority to enter into this **Agreement** for the licensing of rights to these inventions under 35 U.S.C. §§200-212, the Federal Technology Transfer Act of 1986, 15 U.S.C. §3710(a), and the regulations governing the licensing of Government-owned inventions, 37 CFR Part 404. The Secretary of **HHS** has delegated to **PHS** the authority to enter into this **Agreement**.

1.4 **PHS** desires to transfer these inventions to the private sector through commercialization licenses to facilitate the commercial development of products and processes for public use and benefit.

1.5 **Licensee** desires to acquire commercialization rights to certain of these inventions in order to develop processes, methods, or marketable products for public use and benefit.

2. DEFINITIONS

2.1 "**Benchmarks**" mean the performance milestones that are set forth in Appendix D.

2.2 "**Collaborator**" means a third party to whom **Licensee** grants a sublicense, as provided for in Paragraph 4.1, for furthering research and development of the **Licensed Products** and **Licensed Processes** and where such sublicense does not include the right to (a) sell **Licensed Products**, (b) import or export **Licensed Products** for sale, (c) sell products produced using **Licensed Processes**, or (d) import or export products produced using **Licensed Processes** for sale.

2.3 "**Commercial Development Plan**" means the written commercialization plan detailed in Appendix E.

2.4 "**First Commercial Sale**" means the initial transfer by or on behalf of **Licensee** of **Licensed Products** or the initial practice of a **Licensed Process** by or on behalf of **Licensee**, or its **Sublicensees**, in exchange for cash or some equivalent to which value can be assigned for the purpose of determining **Net Sales**.

2.5 "**Government**" means the Government of the United States of America.

2.6 "**Licensed Fields of Use**" means the fields of use identified in Appendix B, Section I.

2.7 "**Licensed Patent Rights**" shall mean:

(a) Patent applications and PCT patent applications or patents listed in Appendix A, all divisions and continuations of these applications, all patents issuing from these applications, divisions, and continuations, and any reissues, reexaminations, and extensions of all these patents;

(b) to the extent that the following contain one or more claims directed to the invention or inventions disclosed in 2.7(a):

(i) continuations-in-part of 2.7(a);

(ii) all divisions and continuations of these continuations-in-part;

(iii) all patents issuing from these continuations-in-part, divisions, and continuations;

(iv) priority patent application(s) of 2.7(a); and

(v) any reissues, reexaminations, and extensions of all these patents; and

(c) to the extent that the following contain one or more claims directed to the invention or inventions disclosed in 2.7(a): all counterpart foreign and U.S. patent applications and patents to 2.7(a) and 2.7(b), including those listed in Appendix A; and

(d) Subject to the proviso that if the claims in any continuation-in-part as set forth in 2.7(b) or 2.7(c) are subject to a terminal disclaimer they would be considered part of the **Licensed Patent Rights**, **Licensed Patent Rights** shall *not* include 2.7(b) or 2.7(c) to the extent that they contain one or more claims directed to new matter which is not the subject matter disclosed in 2.7(a).

2.8 "**Licensed Processes**" means processes, which in the course of being practiced, would be within the scope of one or more claims of the **Licensed Patent Rights** that have not been held unpatentable, invalid or unenforceable by an unappealed or unappealable judgment of a court of competent jurisdiction. Notwithstanding the foregoing, for purposes of calculating **Net Sales** only **Licensed Processes** shall not include processes which are the subject of a patent application within the **Licensed Patent Rights** which patent application has been pending in excess of [**] years from the date it was actually filed and not its effective filing date.

2.9 "**Licensed Products**" means tangible materials, which in the course of manufacture, use, sale, or importation, would be within the scope of one or more claims of the **Licensed Patent Rights** that have not been held unpatentable, invalid or unenforceable by an unappealed or unappealable judgment of a court of competent jurisdiction. Notwithstanding the foregoing, for purposes of calculating **Net Sales** only **Licensed Products** shall not include processes which are the subject of a patent application within the **Licensed Patent Rights** which patent application has been pending in excess of [**] years from the date it was actually filed and not its effective filing date.

2.10 "**Licensed Territory**" means the geographical area identified in Appendix B, Section II.

2.11 "**Most Favored Licensee**" means that **Licensee** will not, with respect to any royalty payment to which said status is accorded, be subject to terms and conditions which are less favorable to **Licensee** than any other third party paying the same royalty payment with respect to a **Licensed Product** or **Licensed Process** within the **Licensed Field of Use**.

2.12 "**Net Sales**" means the total gross receipts for sales of **Licensed Products** or practice of **Licensed Processes** by or on behalf of **Licensee** or its **Sublicensees**, and from leasing, renting, or otherwise making **Licensed Products** available to others without sale or other dispositions, whether invoiced or not, less returns and allowances, discounts and charge-backs, rebates and refunds, retroactive price adjustments, packing costs, insurance costs, freight out, taxes or excise duties imposed on the transaction (if separately invoiced), and wholesaler and cash discounts in amounts customary in the trade to the extent actually granted. For avoidance of doubt, payment made to **PHS** shall only be due once for sales of **Licensed Products** or practice of **Licensed Processes** whereby such payments are made either by **Licensee** or its **Sublicensees**, not both. No deductions shall be made for commissions paid to individuals, whether they are with independent sales agencies or regularly employed by **Licensee** or its **Sublicensees**, and on its payroll, or for the cost of collections.

2.13 "**Practical Application**" means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and in each case, under these conditions as to establish that the invention is being utilized and that its benefits are to the extent permitted by law or **Government** regulations available to the public on reasonable terms.

2.14 "**Pro Rata Share**" is used in reference to the amount of patent expenses to be reimbursed by **Licensee** in accordance with Paragraph 6.7 of this **Agreement**, and is calculated to be equal to one (1) divided by the total number of agreements including the **Licensed Patent Rights** that include the **Licensed Fields of Use** and is measured (a) for Future Patent Prosecution Expenses as set forth in Appendix C, Section VII(B) at the time when a request for payment thereof is made or (b) with respect to the calculation of the amount of any credit due to **Licensee** at the time of **First Commercial Sale** by **Licensee**.

2.15 "**Sublicensee(s)**" means a third party to whom **Licensee** grants a sublicense of the rights hereunder as described in Article 4.

2.16 "**Subsidiary**" of a party means any corporation, company, or other entity more than fifty percent (50%) of whose outstanding securities representing the right, other than as affected by events of default, to vote for the election of directors or other governing authorities are now or hereafter owned or controlled, directly or indirectly by such party, and where such party has the legal right to bind such **Subsidiary** to the terms of this **Agreement**, but such corporation, company or other entity shall be deemed to be a **Subsidiary** only so long as such control exists.

3. GRANT OF RIGHTS

3.1 **PHS** hereby grants and **Licensee** accepts, subject to the terms and conditions of this **Agreement**, (a) a nonexclusive license under the **Licensed Patent Rights** in the **Licensed Territory** to make and have made, to use and have used, to sell and have sold, to offer to sell, and to import any **Licensed Products** in the **Licensed Fields of Use** set forth in Appendix B, Section I, Paragraphs (a) and (b) and to practice and have practiced any **Licensed Processes** in the **Licensed Fields of Use** set forth in Appendix B, Section I, Paragraphs (a) and (b) and (b) a nonexclusive license under the **Licensed Patent Rights** and in the **Licensed Territory** to make and have made, to use and have used, but not to sell and have sold or to offer to sell and to import and **Licensed Products** in the **Licensed Field of Use** set forth in Appendix B, Section I, Paragraph (c) and to practice and have practiced any **Licensed Processes** in the **Licensed Field of Use** set forth in Appendix B, Section I, Paragraph (c).

3.2 This **Agreement** confers no license or rights by implication, estoppel, or otherwise under any patent applications or patents of **PHS** other than the **Licensed Patent Rights** regardless of whether these patents are dominant or subordinate to the **Licensed Patent Rights**.

3.3 Upon the Effective Date of this **Agreement**, the prior license, [**] effective August 30, 2005 by and between **PHS** and **Licensee** will be terminated.

4. SUBLICENSING

4.1 Upon written approval, which shall include prior review of any sublicense agreement by **PHS** and which shall not be unreasonably withheld and subject to the provisions regarding sublicenses granted to a **Collaborator** as set forth in this paragraph, **Licensee** may enter into sublicensing agreements in the **Licensed Fields of Use** and in the **Licensed Territory** for the **Licensed Patent Rights** only when **Licensee** is sublicensing additional intellectual property rights that belong to **Licensee** in conjunction with the **Licensed Patent Rights** to the **Sublicensee**. In the event that **Licensee** is granting the sublicense to a **Collaborator** for purposes of engaging in collaborative research efforts involving the **Licensed Patent Rights** such a sublicense is not required to include additional intellectual property that belongs to **Licensee**.

4.2 **Licensee** agrees that any sublicenses granted by it shall provide that the obligations to **PHS** of Paragraphs 8.1, 10.1, 10.2, 12.5, and 13.7-13.9 of this **Agreement** shall be binding upon the **Sublicensee** as if it were a party to this **Agreement**. **Licensee** further agrees to attach copies of these Paragraphs to all sublicense agreements.

4.3 Any sublicenses granted by **Licensee** shall provide for the termination of the sublicense, or the conversion to a license directly between the **Sublicensees** and **PHS**, at the option of the **Sublicensee**, upon termination of this **Agreement** under Article 13. This conversion is subject to **PHS** approval and contingent upon acceptance by the **Sublicensee** of the remaining provisions of this **Agreement**.

4.4 **Licensee** agrees to forward to **PHS** a complete copy of each fully executed sublicense agreement postmarked within thirty (30) days of the execution of the agreement. To the extent permitted by law, **PHS** agrees to maintain each sublicense agreement in confidence.

5. STATUTORY AND PHS REQUIREMENTS AND RESERVED GOVERNMENT RIGHTS

5.1 Prior to the **First Commercial Sale**, **Licensee** agrees to provide **PHS**, upon **PHS** request and subject to availability, with reasonable quantities of **Licensed Products** or materials made through the **Licensed Processes** for **PHS** *in vitro* research use.

5.2 **Licensee** agrees that products used or sold in the United States embodying **Licensed Products** or produced through use of **Licensed Processes** shall be manufactured substantially in the United States, unless a written waiver is obtained in advance from **PHS**.

6. ROYALTIES AND REIMBURSEMENT

6.1 **Licensee** agrees to pay **PHS** a noncreditable, nonrefundable license issue royalty ("Execution Fee") as set forth in Appendix C, Section I.

6.2 **Licensee** agrees to pay **PHS** a nonrefundable Annual Royalty as set forth in Appendix C, Section II.

6.3 **Licensee** agrees to pay **PHS** earned royalties as set forth in Appendix C, Section III.

6.4 **Licensee** agrees to pay **PHS** benchmark royalties ("Development Milestone Payments") as set forth in Appendix C, Section IV.

6.5 In addition to any earned royalties due to **PHS** on behalf of **Sublicensees** as provided for in Paragraph 6.3 of this **Agreement**, **Licensee** agrees to pay to **PHS** an additional royalty as a milestone payment tied to the sublicensing of the **Licensed Patent Rights** ("Sublicensing Milestone Payment"). The specific terms and conditions associated with this Sublicensing Milestone Payment are set forth in Appendix C, Section V.

6.6 In addition to any royalty payments described in Paragraphs 6.1 through 6.5 of this **Agreement**, in the event that **Licensee** assigns this **Agreement** to any third party other than a **Sublicensee**, **Licensee** shall pay **PHS**, as an additional royalty, the "Assignment Consideration" as set forth in Appendix C, Section VI.

6.7 With regard to expenses incurred by **PHS** and associated with the preparation, filing, prosecution, and maintenance of all patent applications and patents included within the **Licensed Patent Rights**, **Licensee** shall reimburse **PHS**, as an additional royalty, in the manner set forth in Appendix C, Section VII.

6.8 A patent or patent application licensed under this **Agreement** shall cease to fall within the **Licensed Patent Rights** for the purpose of computing earned royalty payments in any given country on the earliest of the dates that:

(a) the application has been abandoned and not continued;

(b) the patent expires or irrevocably lapses; or

(c) all of the claims have been held to be invalid or unenforceable by an unappealed or unappealable decision of a court of competent jurisdiction or administrative agency.

6.9 When calculating **Net Sales** for purposes of determining the Earned Royalty due pursuant to Paragraph 6.3, no multiple royalties shall be payable because any **Licensed Products** or **Licensed Processes** are covered by more than one of the **Licensed Patent Rights**.

6.10 On sales of **Licensed Products** by **Licensee** to **Sublicensees** or on sales made in other than an arms-length transaction, the value of the **Net Sales** attributed under this Article 6 to this transaction shall be that which would have been received in an arms-length transaction, based on sales of like quantity and quality products on or about the time of this transaction

6.11 Under exceptional circumstances, for example if **Licensee** comes to be the only party with rights under and of the particular **Licensed Patent Rights**, **Licensee** may be given the right to assume responsibility for the preparation, filing, prosecution, or maintenance of any patent application or patent included with the **Licensed Patent Rights**. In that event, **Licensee** shall directly pay the attorneys or agents engaged to prepare, file, prosecute, or maintain these patent applications or patents and shall provide **PHS** with copies of each invoice associated with these services as well as documentation that these invoices have been paid.

6.12 **PHS** agrees, upon written request, to provide **Licensee** with summaries of patent prosecution invoices for which **PHS** has requested payment from the **Licensee** under Paragraph 6.7.

6.13 **Licensee** may elect to surrender its rights in any country of the **Licensed Territory** under any of the **Licensed Patent Rights** upon sixty (60) days written notice to **PHS** and owe no payment obligation under Paragraph 6.7 for patent-related expenses incurred in that country after the effective date of the written notice.

7. PATENT FILING, PROSECUTION, AND MAINTENANCE

7.1 Except in exceptional circumstances, as provided for in Paragraph 6.11 above, **PHS** agrees to take responsibility for the preparation, filing, prosecution, and maintenance of any and all patent applications or patents included in the **Licensed Patent Rights**. **PHS** agrees to keep **Licensee** fully informed as to the status of the preparation, filing, prosecution, and maintenance of all patent applications and patents included in the **Licensed Patent Rights. PHS** will take any comments received from **Licensee** with respect to the preparation, filing, prosecution, and maintenance of all patent applications and patents included in the **Licensed Patent Rights** into good faith consideration. In the event that **PHS** decides to abandon the preparation, filing, prosecution, and maintenance of any of the patent applications and patents included in the **Licensed Patent Rights**, it will provide notice of such decision to **Licensee** and will allow **Licensee** to assume responsibility for such activities in any such **Licensed Patent Rights** to **Licensee.**

8. RECORD KEEPING

8.1 **Licensee** agrees to keep accurate and correct records of **Licensed Products** made, used, sold, or imported and **Licensed Processes** practiced under this **Agreement** appropriate to determine the amount of royalties due **PHS**. These records shall be retained for at least [**] years following a given reporting period and shall be available during normal business hours for inspection, at the expense of **PHS**, by an independent accountant or other designated auditor selected by **PHS** for the sole purpose of verifying reports and royalty payments hereunder. The accountant or auditor shall only disclose to **PHS** information relating to the accuracy of reports and royalty payments made under this **Agreement**. If an inspection shows an underreporting or underpayment in excess of five percent (5%) for any twelve (12) month period, then **Licensee** shall reimburse **PHS** for the cost of the inspection at the time **Licensee** pays the unreported royalties, including any additional royalties as required by Paragraph 9.8. All royalty payments required under this Paragraph shall be due within [**] days of the date **PHS** provides **Licensee** notice of the payment due.

9. REPORTS ON PROGRESS, BENCHMARKS, SALES, AND PAYMENTS

9.1 Prior to signing this **Agreement**, **Licensee** has provided **PHS** with the **Commercial Development Plan** referred to in more detail in Appendix E, and under which **Licensee** intends to bring the subject matter of the **Licensed Patent Rights** to the point of **Practical Application**. This **Commercial Development Plan** is hereby incorporated by reference into this **Agreement**. Based on this plan, performance **Benchmarks** are determined as specified in Appendix D.

9.2 **Licensee** shall provide written reports on its product development progress or efforts to commercialize under the **Commercial Development Plan** for each of the **Licensed Fields of Use**. These written reports are due within [**] days after [**] of each calendar year beginning on [**]. The first written report will detail the progress made from the Effective Date of this **Agreement** through [**]. These progress reports shall include, but not be limited to: progress on research and development, status of applications for regulatory approvals, manufacturing, marketing, importing, and sales during the preceding calendar year, as well as, plans for the present calendar year. **PHS** also encourages these reports to include information on any of **Licensee's** public service activities that relate to the **Licensed Patent Rights**. If reported progress differs from that projected in the **Commercial Development Plan** and **Benchmarks**, **Licensee** shall explain the reasons for such differences. In any annual report, **Licensee** may propose amendments to the **Commercial Development Plan**, acceptance of which by **PHS** may not be denied unreasonably. **Licensee** agrees to provide any additional information reasonably required by **PHS** to evaluate **Licensee's** performance under this **Agreement**. **Licensee** may amend the **Benchmarks** at any time upon written approval by **PHS**. **PHS** shall not unreasonably withhold approval of any request of **Licensee** to extend the time periods of this schedule if the request is supported by a reasonable showing by **Licensee** of diligence in its performance under the **Commercial Development Plan** and toward bringing the **Licensed Products** to the point of **Practical Application**.

9.3 **Licensee** shall report to **PHS** the dates for achieving **Benchmarks** specified in Appendix D and the **First Commercial Sale** in each country in the **Licensed Territory** within [**] days of such occurrences.

9.4 Commencing with **First Commercial Sale**, **Licensee** shall submit to **PHS**, within [**] days after each [**] ending [**], a royalty report, as described in the example in Appendix F, setting forth for the preceding [**] period the amount of the **Licensed Products** sold or **Licensed Processes** practiced by or on behalf of **Licensee** in each country within the **Licensed Territory**, the **Net Sales**, and the amount of royalty accordingly due. With each royalty report, **Licensee** shall submit payment of earned royalties due. If no earned royalties are due to **PHS** for any reporting period, the written report shall so state. The royalty report shall be certified as correct by an authorized officer of **Licensee** and shall include a detailed listing of all deductions made under Paragraph 2.10 to determine **Net Sales** made under Article 6 to determine royalties due.

9.5 **Licensee** agrees to forward to **PHS**, on a [**] basis, a copy of reports received by **Licensee** from its sublicensees during the preceding [**] period as shall be pertinent to a royalty accounting to **PHS** by **Licensee** for activities under the sublicense.

9.6 Royalties due under Article 6 shall be paid in U.S. dollars and payment options are listed in Appendix G. For conversion of foreign currency to U.S. dollars, the conversion rate shall be the New York foreign exchange rate quoted in *The Wall Street Journal* on the day that the payment is due, and any loss of exchange, value, taxes, or other expenses incurred in the transfer or conversion to U.S. dollars shall be paid entirely by **Licensee**. The royalty report required by Paragraph 9.4 shall be mailed to **PHS** at its address for Agreement Notices indicated on the Signature Page.

9.7 **Licensee** shall be solely responsible for determining if any tax on royalty income is owed outside the United States and shall pay this tax and be responsible for all filings with appropriate agencies of foreign governments.

9.8 Additional royalties may be assessed by **PHS** on any payment that is more than [**] days overdue at the rate of [**] percent ([**]%) per month. This [**] percent ([**]%) per month rate may be applied retroactively from the original due date until the date of receipt by **PHS** of the overdue payment and additional royalties. The payment of any additional royalties shall not prevent **PHS** from exercising any other rights it may have as a consequence of the lateness of any payment.

9.9 All plans and reports required by this Article 9 and marked "confidential" by **Licensee** shall, to the extent permitted by law, be treated by **PHS** as commercial and financial information obtained from a person and as privileged and confidential, and any proposed disclosure of these records by the **PHS** under the Freedom of Information Act (FOIA), 5 U.S.C. §552 shall be subject to the predisclosure notification requirements of 45 CFR §5.65(d).

10. PERFORMANCE

10.1 **Licensee** shall use its reasonable commercial efforts to bring the **Licensed Products** and **Licensed Processes** to **Practical Application**. "Reasonable commercial efforts" for the purposes of this provision shall include adherence to the **Commercial Development Plan** in Appendix E and performance of the **Benchmarks** in Appendix D as may be amended from time to time in accordance with the provisions of Paragraphs 9.2 and 14.4. The efforts of the **Sublicensee** will be considered the efforts of the **Licensee**.

10.2 Upon the **First Commercial Sale**, until the expiration or termination of this **Agreement**, **Licensee** shall use its reasonable commercial efforts to make **Licensed Products** and **Licensed Processes** reasonably accessible to the United States public.

10.3 **Licensee** agrees, after its **First Commercial Sale,** to make reasonable quantities of **Licensed Products** or materials produced through the use of **Licensed Processes** available on a compassionate use basis to patients, either through the patient's physician(s) or the medical center treating the patient.

10.4 **Licensee** agrees, after its **First Commercial Sale** and as part of its marketing and product promotion, to develop educational materials (e.g., brochures, website, etc.) directed to patients and physicians detailing the **Licensed Products** or medical aspects of the prophylactic and therapeutic uses of the **Licensed Products**.

10.5 **Licensee** agrees to supply, to the Mailing Address for Agreement Notices indicated on the Signature Page, the Office of Technology Transfer, **NIH** with inert samples of the **Licensed Products** or **Licensed Processes** or their packaging for educational and display purposes only.

11. INFRINGEMENT AND PATENT ENFORCEMENT

11.1 **PHS** and **Licensee** agree to notify each other promptly of each infringement or possible infringement of the **Licensed Patent Rights**, as well as, any facts which may affect the validity, scope, or enforceability of the **Licensed Patent Rights** of which either Party becomes aware.

11.2 In the event that a declaratory judgment action alleging invalidity of any of the **Licensed Patent Rights** shall be brought against **PHS**, **PHS** agrees to notify **Licensee** that an action alleging invalidity has been brought. **PHS** does not represent that it shall commence legal action to defend against a declaratory action alleging invalidity. **Licensee** shall take no action to compel the **Government** either to initiate or to join in any declaratory judgment action. Should the **Government** be made a party to any suit by motion or any other action of **Licensee**, **Licensee** shall reimburse the **Government** for any costs, expenses, or fees, which the **Government** incurs as a result of the motion or other action. Upon **Licensee's** payment of all costs incurred by the **Government** as a result of **Licensee's** joinder motion or other action, these actions by **Licensee** shall not be considered a default in the performance of any material obligation under this **Agreement**.

12. NEGATION OF WARRANTIES AND INDEMNIFICATION

12.1 **PHS** offers no warranties other than those specified in Article 1.

12.2 **PHS** does not warrant the validity of the **Licensed Patent Rights** and makes no representations whatsoever with regard to the scope of the **Licensed Patent Rights**, or that the **Licensed Patent Rights** may be exploited without infringing other patents or other intellectual property rights of third parties.

12.3 **PHS** MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF ANY SUBJECT MATTER DEFINED BY THE CLAIMS OF THE **LICENSED PATENT RIGHTS** OR TANGIBLE MATERIALS RELATED THERETO.

12.4 **PHS** does not represent that it shall commence legal actions against third parties infringing the **Licensed Patent Rights**.

12.5 **Licensee** shall indemnify and hold **PHS**, its employees, students, fellows, agents, and consultants harmless from and against all liability, demands, damages, expenses, and losses, including but not limited to death, personal injury, illness, or property damage in connection with or arising out of:

(a) the use by or on behalf of **Licensee**, its directors, employees, its **Sublicensees**, or third parties of any **Licensed Patent Rights**; or

(b) the design, manufacture, distribution, or use of any **Licensed Products**, **Licensed Processes** or materials by **Licensee** or its **Sublicensees**, or other products or processes developed in connection with or arising out of the **Licensed Patent Rights**.

12.6 **Licensee** agrees to maintain a liability insurance program consistent with sound business practice.

13. TERM, TERMINATION, AND MODIFICATION OF RIGHTS

13.1 This **Agreement** is effective when signed by all parties "Effective Date", unless the provisions of Paragraph 14.15 are not fulfilled, and shall extend to the expiration of the last to expire of the **Licensed Patent Rights** unless sooner terminated as provided in this Article 13.

13.2 In the event that **Licensee** is in default in the performance of any material obligations under this **Agreement**, including but not limited to the obligations listed in Paragraph 13.5, and if the default has not been remedied within [**] days after the date of notice in writing of the default, **PHS** may terminate this **Agreement** by written notice and pursue outstanding royalties owed through procedures provided by the Federal Debt Collection Act.

13.3 In the event that **Licensee** becomes insolvent, files a petition in bankruptcy, has such a petition filed against it, determines to file a petition in bankruptcy, or receives notice of a third party's intention to file an involuntary petition in bankruptcy, **Licensee** shall immediately notify **PHS** in writing. Furthermore, **PHS** shall have the right to terminate this **Agreement** immediately upon **Licensee's** receipt of written notice.

13.4 **Licensee** shall have a unilateral right to terminate this **Agreement** in any country or territory by giving **PHS** sixty (60) days written notice to that effect.

13.5 **PHS** shall specifically have the right to terminate or modify, at its option, this **Agreement**, if **PHS** determines that the **Licensee**:

(a) is not executing the **Commercial Development Plan,** as may be amended from time to time in accordance with the provisions of Paragraphs 9.2 and 14.4, submitted with its request for a license and the **Licensee** cannot otherwise demonstrate to **PHS'** satisfaction that the **Licensee** has taken, or can be expected to take within a reasonable time, effective steps to achieve **Practical Application** of the **Licensed Products** or **Licensed Processes**;

(b) has not achieved the **Benchmarks,** as may be amended from time to time in accordance with the provisions of Paragraphs 9.2 and 14.4, as may be modified under Paragraph 9.2;

(c) has willfully made a false statement of, or willfully omitted, a material fact in the license application or in any report required by this **Agreement**;

(d) has committed a material breach of a covenant or agreement contained in this **Agreement**;

(e) is not keeping **Licensed Products** or **Licensed Processes** reasonably available to the public after commercial use commences;

(f) cannot reasonably satisfy unmet health and safety needs; or

(g) cannot reasonably justify a failure to comply with the domestic production requirement of Paragraph 5.2, unless waived.

13.6 In making the determination referenced in Paragraph 13.5, **PHS** shall take into account the normal course of such commercial development programs conducted with sound and reasonable business practices and judgment and the annual reports submitted by **Licensee** under Paragraph 9.2. Prior to invoking termination or modification of this **Agreement** under Paragraph 13.5, **PHS** shall give written notice to **Licensee** providing **Licensee** specific notice of, and a [**] day opportunity to respond to, **PHS'** concerns as to the items referenced in 13.5(a)-13.5(g). If **Licensee** fails to alleviate **PHS'** concerns as to the items referenced in 13.5(a)-13.5(g) or fails to initiate corrective action to **PHS'** satisfaction, **PHS** may terminate this **Agreement**.

13.7 **PHS** reserves the right according to 35 U.S.C. §209(d)(3) to terminate or modify this **Agreement** if it is determined that the action is necessary to meet the requirements for public use specified by federal regulations issued after the date of the license and these requirements are not reasonably satisfied by **Licensee**.

13.8 Within [**] days of receipt of written notice of **PHS'** unilateral decision to modify or terminate this **Agreement**, **Licensee** may, consistent with the provisions of 37 CFR §404.11, appeal the decision by written submission to the designated **PHS** official. The decision of the designated **PHS** official shall be the final agency decision. **Licensee** may thereafter exercise any and all administrative or judicial remedies that may be available.

13.9 Within [**] days of expiration or termination of this **Agreement** under this Article 13, a final report shall be submitted by **Licensee**. Any royalty payments, including those incurred but not yet paid (such as the full minimum annual royalty), and those related to patent expense, due to **PHS** shall become immediately due and payable upon termination or expiration. If terminated under this Article 13, **Sublicensees** may elect to convert their sublicenses to direct licenses with **PHS** pursuant to Paragraph 4.3. Unless otherwise specifically provided for under this **Agreement**, upon termination or expiration of this **Agreement**, **Licensee** shall return all **Licensed Products** or other materials included within the **Licensed Patent Rights** to **PHS** or provide **PHS** with written certification of the destruction thereof.

14. GENERAL PROVISIONS

14.1 Neither party may waive or release any of its rights or interests in this **Agreement** except in writing. The failure of the **Government** to assert a right hereunder or to insist upon compliance with any term or condition of this **Agreement** shall not constitute a waiver of that right by the **Government** or excuse a similar subsequent failure to perform any of these terms or conditions by **Licensee**.

14.2 This **Agreement** constitutes the entire agreement between the Parties relating to the subject matter of the **Licensed Patent Rights**, **Licensed Products** and **Licensed Processes**, and all prior negotiations, representations, agreements, and understandings are merged into, extinguished by, and completely expressed by this **Agreement**.

14.3 The provisions of this **Agreement** are severable, and in the event that any provision of this **Agreement** shall be determined to be invalid or unenforceable under any controlling body of law, this determination shall not in any way affect the validity or enforceability of the remaining provisions of this **Agreement**.

14.4 If either party desires a modification to this **Agreement**, the parties shall, upon reasonable notice of the proposed modification by the party desiring the change, confer in good faith to determine the desirability of the modification. No modification shall be effective until a written amendment is signed by the signatories to this **Agreement** or their designees.

14.5 The construction, validity, performance, and effect of this **Agreement** shall be governed by Federal law as applied by the Federal courts in the District of Columbia.

14.6 All Agreement Notices required or permitted by this **Agreement** shall be given by prepaid, first class, registered or certified mail or by an express/overnight delivery service provided by a commercial carrier, properly addressed to the other party at the address designated on the Signature Page, or to any other address as may be designated in writing by such other party. Agreement Notices shall be considered timely if such notices are received on or before the established deadline date or sent on or before the deadline date as verifiable by U.S. Postal Service postmark or dated receipt from a commercial carrier. Parties should request a legibly dated U.S. Postal Service postmark or obtain a dated receipt from a commercial carrier or the U.S. Postal Service. Private metered postmarks shall not be acceptable as proof of timely mailing.

14.7 This **Agreement** shall not be assigned by **Licensee** except:

(a) with the prior written consent of **PHS**, this consent shall not to be withheld unreasonably; or

(b) as part of a sale or transfer of substantially the entire business of **Licensee** relating to operations which concern this **Agreement**; and

(c) **Licensee** shall notify **PHS** within [**] days of any assignment of this **Agreement** by **Licensee**.

14.8 **Licensee** agrees in its use of any **PHS**-supplied materials to comply with all applicable statutes, regulations, and guidelines, including **PHS** and **HHS** regulations and guidelines. **Licensee** agrees not to use the materials for research involving human subjects or clinical trials in the United States without complying with 21 CFR Part 50 and 45 CFR Part 46. **Licensee** agrees not to use the materials for research involving human subjects or clinical trials outside of the United States without notifying **PHS**, in writing, of the research or trials and complying with the applicable regulations of the appropriate national control authorities. Written notification to **PHS** of research involving human subjects or clinical trials outside of the United States shall be given no later than [**] days prior to commencement of the research or trials.

14.9 **Licensee** acknowledges that it is subject to and agrees to abide by the United States laws and regulations (including the Export Administration Act of 1979 and Arms Export Control Act) controlling the export of technical data, computer software, laboratory prototypes, biological materials, and other commodities. The transfer of these items may require a license from the appropriate agency of the **Government** or written assurances by **Licensee** that it shall not export these items to certain foreign countries without prior approval of the agency. **PHS** neither represents that a license is or is not required or that, if required, it shall be issued.

14.10 **Licensee** agrees to mark the **Licensed Products** or their packaging sold in the United States with all applicable U.S. patent numbers and similarly to indicate “Patent Pending” status. All **Licensed Products** manufactured in, shipped to, or sold in other countries shall be marked in a manner to preserve **PHS** patent rights in those countries.

14.11 By entering into this **Agreement**, **PHS** does not directly or indirectly endorse any product or service provided, or to be provided, by **Licensee** whether directly or indirectly related to this **Agreement**. **Licensee** shall not state or imply that this **Agreement** is an endorsement by the **Government**, **PHS**, any other **Government** organizational unit, or any **Government** employee. Additionally, **Licensee** shall not use the names of **NIH**, **PHS**, **FDA** or **HHS** or the **Government** or their employees in any advertising, promotional, or sales literature without the prior written approval of **PHS**.

14.12 The Parties agree to attempt to settle amicably any controversy or claim arising under this **Agreement** or a breach of this **Agreement**, except for appeals of modifications or termination decisions provided for in Article 13. **Licensee** agrees first to appeal any unsettled claims or controversies to the designated **PHS** official, or designee, whose decision shall be considered the final agency decision. Thereafter, **Licensee** may exercise any administrative or judicial remedies that may be available.

14.13 Nothing relating to the grant of a license, nor the grant itself, shall be construed to confer upon any person any immunity from or defenses under the antitrust laws or from a charge of patent misuse, and the acquisition and use of rights pursuant to 37 CFR Part 404 shall not be immunized from the operation of state or Federal law by reason of the source of the grant.

14.14 Paragraphs 4.3, 6.4, 8.1, 9.5-9.9, 12.1-12.5, 13.8, 13.9, 14.12 and 14.14 of this **Agreement** shall survive termination of this **Agreement**.

14.15 The terms and conditions of this **Agreement** shall, at **PHS’** sole option, be considered by **PHS** to be withdrawn from **Licensee’s** consideration and the terms and conditions of this **Agreement**, and the **Agreement** itself to be null and void, unless this **Agreement** is executed by the **Licensee** and a fully executed original is received by **PHS** within sixty (60) days from the date of **PHS** signature found at the Signature Page.

SIGNATURES BEGIN ON NEXT PAGE

SIGNATURE PAGE

For **PHS**:

/s/ Steven M. Ferguson — 2/8/08
Steven M. Ferguson — Date
Director, Division of Technology Development and Transfer
Office of Technology Transfer
National Institutes of Health

Mailing Address for **Agreement** notices:

Chief, Monitoring & Enforcement Branch
Office of Technology Transfer
National Institutes of Health
6011 Executive Boulevard, Suite 325
Rockville, Maryland 20852-3804 U.S.A.

For **Licensee** (Upon, information and belief, the undersigned expressly certifies or affirms that the contents of any statements of **Licensee** made or referred to in this document are truthful and accurate.):

by:

/s/ Edward J. Stewart — 2/20/08
Signature of Authorized Official — Date

Edward J. Stewart — Lisa A. Evren
Printed Name

Vice President, Business Development — 2/20/08 SVP and CFO
Title

I. Official and Mailing Address for **Agreement** notices:

Edward J. Stewart

Vice President, Business Development

Merrimack Pharmaceuticals

One Kendall Square

Building 700; 2nd Floor

Cambridge, MA 02139

II. Official and Mailing Address for Financial notices (**Licensee's** contact person for royalty payments)

Edward J. Stewart
Name

Vice President, Business Development
Title

Mailing Address:

Merrimack Pharmaceuticals

One Kendall Square

Building 700; 2nd Floor

Cambridge, MA 02139

Email Address: tstewart@merrimackpharma.com

Phone: 617.441.1000

Fax: 617.491.1386

Any false or misleading statements made, presented, or submitted to the **Government**, including any relevant omissions, under this **Agreement** and during the course of negotiation of this **Agreement** are subject to all applicable civil and criminal statutes including Federal statutes 31 U.S.C. §§3801-3812 (civil liability) and 18 U.S.C. §1001 (criminal liability including fine(s) and/or imprisonment).

APPENDIX A — PATENT(S) OR PATENT APPLICATION(S)

Patent(s) or Patent Application(s):

I. U.S. Patents and Patent Applications

[**]

II. PCT Application and Foreign Patents and Patent Applications

[**]

APPENDIX B — LICENSED FIELDS OF USE AND TERRITORY

I. **Licensed Fields of Use**:

As provided for in Paragraph 2.5 the **Licensed Fields of Use** are set forth below:

(a) Therapeutics:

Research, development and commercialization of **Licensed Products** or **Licensed Processes** for the treatment of erbB-3 related diseases using the **Licensed Patent Rights**.

(b) Diagnostics;

Research, development and commercialization of diagnostic products for the identification, detection and management of disease related to the activity or levels of expression of erbB-3 ("erbB-3 related disease") using the **Licensed Patent Rights**. For purposes of this **Agreement** Diagnostics includes prognostic or predictive assays as well as assays used to monitor or select patients for treatment with the **Licensed Products** or **Licensed Processes**.

(c) Internal Research:

Research and development efforts which require the **Licensed Patent Rights** including drug screening programs where the **Licensed Products** and **Licensed Processes** would not be within the **Licensed Fields of Use** set forth in Paragraphs (a) and (b) above.

II. **Licensed Territory**:

(a) As provided for in Paragraph 2.10 the **Licensed Territory** is worldwide.

APPENDIX C — ROYALTIES

Royalties:

I. EXECUTION FEE

As provided for in Paragraph 6.1 of this **Agreement**, **Licensee** agrees to pay to **PHS** a noncreditable, nonrefundable Execution Fee, in the amount of [**] Dollars ($[**]). The Execution Fee accrues as of the Effective Date of the **Agreement** and is payable to **PHS** in two installments as follows:

(a) A first installment in the amount of [**] Dollars ($[**]) is payable within [**] days from the Effective Date of this **Agreement**; and

(b) A second installment in the amount of [**] Dollars ($[**]) is payable to **PHS** on the [**] anniversary of the Effective Date of this **Agreement**.

II. ANNUAL ROYALTY

As provided for in Paragraph 6.2 of this **Agreement**, **Licensee** agrees to pay to **PHS** a nonrefundable Annual Royalty, The Annual Royalty is apportioned as follows:

(a) For the period up to and including the year of **[**]** the amount of the Annual Royalty due and payable to **PHS** is [**] Dollars ($[**]). The first Annual Royalty payment, will be due [**] and is payable to **PHS** within [**] days thereof. For each subsequent year of the **Agreement** the Annual Royalty is due on [**] and is payable to **PHS** within [**] days thereof. The Annual Royalty payments for the time period up to **[**]** are [**] against any other royalty payments as set forth in Paragraphs 6.1through 6.6 of this **Agreement**.; and

(b) Beginning with the [**] following **[**]** and on each subsequent [**] thereafter until the expiration or termination of this **Agreement**, the Annual Royalty will be considered a minimum annual royalty payment ("MAR"). The MAR will be in the amount of [**] Dollars ($[**]). The MAR is creditable only against [**]payments as provided for by Paragraph 6.3 and will only be creditable against [**]payments due for that [**] (e.g. The MAR is paid [**] it will be creditable against earned royalties for the calendar year [**] only). The MAR will be due on [**] of each calendar year and is payable to **PHS** within [**] days thereof.

III. EARNED ROYALTY PAYMENTS

As provided for in Paragraph 6.3 of this **Agreement** and subject to the **Most Favored Licensee** definition of Paragraph 2.11, **Licensee** agrees to pay **PHS** earned royalties as set forth below:

(a) For sales within the **Licensed Field of Use** set forth in Appendix B, Section I, Paragraph (a) (Therapeutics), **Licensee** agrees to pay to **PHS**, a nonrefundable earned royalty on **Net Sales** in an amount equal to [**] percent ([**]%) divided by the [**] of the value of **Net Sales** by or on behalf of **Licensee** or its **Sublicensees**. The earned royalty as set forth herein is to be paid in accordance with the reporting provisions of Paragraph 9.4 of this **Agreement** and calculated in accordance with the conditions set forth in Paragraph 9.5 of this **Agreement**. Notwithstanding the forgoing the total number of **Licensed Products** which may be used to reduce the royalty rate from the initial rate of [**] percent ([**]%) is [**].

(b) For sales within the **Licensed Field of Use** set forth in Appendix B, Section I, Paragraph (b) (Diagnostics), **Licensee** agrees to pay to **PHS**, a nonrefundable earned royalty on **Net Sales** in an amount equal to [**] percent ([**]%) divided by the [**] of the value of **Net Sales** by or on behalf of **Licensee** or its **Sublicensees**. The earned royalty as set forth herein is to be paid in accordance with the reporting provisions of Paragraph 9.4 of this **Agreement** and calculated in accordance with the conditions set forth in Paragraph 9.5 of this **Agreement**. Notwithstanding the forgoing the total number of **Licensed Products** which may be used to reduce the royalty rate from the initial rate of [**] percent ([**]%) is [**].

IV. DEVELOPMENTAL MILESTONE PAYMENTS

As provided for in Paragraph 6.4 of this **Agreement** and subject to the **Most Favored Licensee** definition of Paragraph 2.11, **Licensee** agrees to pay **PHS** a nonrefundable developmental milestone payments associated with specific **Licensed Fields of Use** as set forth below:

(a) For the development of Therapeutics (Appendix B(I)(a))

(1) A Validation Milestone Payment, as additional consideration indicative of the value of the **Licensed Patent Rights**, in the amount of [**] Dollars ($[**]). The Validation Milestone Payment is due upon each occurrence of the [**], and where [**] (a) is for a **Licensed Product** or (b) for a product produced by a **Licensed Process**, or (c) contains descriptions of materials or methods within the scope of the **Licensed Patent Rights**. Notwithstanding the foregoing, the total amount of any benchmark payments under this Paragraph (a)(1) shall not exceed [**] Dollars ($[**]). Each payment is due upon achieving the milestone and is payable within [**] days thereof. The obligation to pay the Validation Milestone Payment survives any termination or expiration of this **Agreement**.

(2) A Clinical Milestone Payment upon achieving the first [**] in the amount of [**] Dollars ($[**]). The Clinical Milestone Payment is due upon achieving the milestone and is payable to **PHS** within [**] days thereof. The obligation to pay the Clinical Milestone Payment survives any termination or expiration of this **Agreement**

(3) A Regulatory Approval Milestone Payment, upon achieving the first occurrence of, [**], for example [**], for a **Licensed Product**, a **Licensed Process**, or a product made by a **Licensed Process** or from a **Licensed Product**, from the [**], in the amount of [**] Dollars ($[**]). The Regulatory Approval Milestone Payment is due upon achieving the milestone and is payable to **PHS** within [**] days thereof. The obligation to pay the Regulatory Milestone Payment survives any termination or expiration of this **Agreement**.

(b) For the development of Diagnostics (Appendix B(I)(b))

(1) A Regulatory Milestone Payment, in the amount of [**] Dollars ($[**]), upon the first occurrence of the [**], where such [**] is for a diagnostic and/or prognostic product that [**]. For purposes of this Paragraph activity includes but is not limited to [**]. This milestone payment is due upon achieving the milestone and is payable to **PHS** within [**] days thereof. The obligation to pay the Regulatory Milestone Payment survives any termination or expiration of this **Agreement**.

Upon the Effective Date of this **Agreement** the obligation to pay the Milestone Payments set forth in Appendix C, Section C of the prior license between **PHS** and **Licensee** having **PHS** reference number [**] and effective August 30, 2005 is extinguished and replaced by the obligation to make certain milestone payments as set forth in this, Section IV, Paragraphs (a)(1) and (b)(1).

V. SUBLICENSING MILESTONE

As provided for by Paragraph 6.5, **Licensee** agrees to pay **PHS**, upon sublicensing any or all of the **Licensed Patent Rights** to a third party, an additional Milestone Payment in the amount of [**] Percent ([**]%) of the value of the [**] consideration due to **Licensee** as of the effective date of the sublicense excluding those amounts (a) received by **Licensee** as [**] of this **Agreement** and (b) those amounts received by **Licensee** as [**] for the **Licensed Products** and **Licensed Processes** [**] by **Licensee** after the Effective Date of the prior license, [**] effective August 30, 2005 by and between **PHS** and **Licensee**. The Sublicensing Milestone Payment accrues as of the effective date of the sublicense and is payable to **PHS** within [**] days thereof. Notwithstanding the foregoing, in the event the sublicense is one granted to a **Collaborator**, **Licensee** shall owe no sublicensing royalty under Paragraph 6.5.

VI. ASSIGNMENT CONSIDERATION

As provided for by Paragraph 6.6, and subject to the **Most Favored Licensee** definition of Paragraph 2.11 **Licensee** agrees to pay **PHS**, as consideration for receiving **PHS** consent to the assignment of the **Agreement** as required by Paragraph 14.7, a royalty in the amount of:

(a) [**] Dollars ($[**]), in the event that the assignment of the **Agreement** is required because **Licensee** is selling substantially all of their assets as part of a merger or acquisition. In addition to the aforementioned **Assignment Consideration** outlined within this paragraph, the **Assigned Licensee** shall provide to **PHS** an updated **Development Plan** and **Benchmarks** within [**] days of the Assignment ; or

(b) [**] Percent ([**]%) of the value of the cash consideration due to the **Licensee** as of the effective date of the assignment, excluding (1) [**] of this **Agreement** and (2) those [**] by and between **PHS** and **Licensee**, in the event that the assignment of this **Agreement** is required because **Licensee** is selling only the assets associated with the commercialization of a product requiring access to this **Agreement**. In addition to the aforementioned **Assignment Consideration** outlined within this paragraph, the **Assigned Licensee** shall provide to **PHS** an updated **Development Plan** and **Benchmarks** within [**] days of the Assignment

VII. REIMBURSEMENT OF PATENT PROSECUTION COSTS

As provided for in Paragraph 6.7 of this **Agreement**, **Licensee** agrees to pay to **PHS**, as an additional, nonrefundable royalty representing reimbursement to **PHS** for the expenses incurred by or on behalf of **PHS** in the prosecution and maintenance of the **Licensed Patent Rights**. Unless specifically provided for this royalty is not creditable against any other payment obligations set forth in this **Agreement**. The specific terms and conditions associated with the reimbursement of **PHS'** patent expenses are as follows:

(a) For patent expenses incurred through [**] and not previously reimbursed to **PHS** by a third party(prior patent expenses), **Licensee** agrees to pay **PHS** [**]. This amount is equal to [**] percent ([**]%) of the expenses incurred by **PHS** through [**] (CY [**]) for each issued patent and PCT application as set forth in Appendix A. This payment is due as of the Effective Date of the **Agreement** and is payable to **PHS** within [**] days thereof.

(b) For patent expenses incurred beginning [**] and not previously reimbursed to **PHS** by a third party (Future Patent Expenses), **Licensee** agrees to reimburse **PHS** as follows:

(1) For any pending application within the **Licensed Patent Rights**, with the exception of one that is involved in any administrative proceeding as noted in Paragraphs (b)(3) and (b)(4) below, as long as the application is pending and no patent has issued, **Licensee** shall not be responsible for reimbursing **PHS'** Future Patent Expenses. At the time of issuance of a patent for any pending application within the **Licensed Patent Rights**, **Licensee** shall pay to **PHS** an amount equal to (a) [**] Percent ([**]%) or (b) a **[**]**, whichever is less, of the expenses incurred by **PHS**, until issuance of the patent. After issuance of the patent Future Patent Expenses are subject to the provisions of Paragraph (b)(2).

(2) For each issued patent within the **Licensed Patent Rights**, with the exception of a patent that is involved in any administrative proceeding as noted in Paragraphs (b)(3) and (b)(4) below, **Licensee**, shall pay to **PHS**, an amount equal to [**] Percent ([**]%), or a **[**]**

(3) In the event of an interference, reexamination, reissue, opposition proceeding or other administrative proceeding of similar nature conducted before a National Patent Office and initiated by **Licensee** or at **Licensee's** request, by **PHS** on behalf of **Licensee**, **Licensee** will pay to **PHS** an amount equal to [**] Percent ([**]%) of **PHS'** Future Patent Prosecution Expenses related to the administrative proceedings; and

(4) In the event of an interference, reexamination, reissue, opposition proceeding or other administrative procedure of a similar nature conducted before a National Patent Office initiated by a third party, **Licensee** will pay to **PHS** an amount equal to [**] Percent ([**]%) or a **[**]**, whichever is less, of **PHS'** Future patent Expenses related to the administrative proceedings.

For any Future Patent Expenses payment described in Paragraphs (b)(1) through (b)(4) above, the amount of the Future Patent Expenses is based on **PHS'** Future Patent Expenses incurred with respect to the **Licensed Patent Rights** for any given calendar year, and may be billed to **Licensee** on an annual basis, although the interval for billing such expenses may be greater. Any Future Patent Prosecution Expenses to be reimbursed by **Licensee** are due as of the date which **PHS** incurs such expenses but are not payable by **Licensee** until a period not to exceed [**] calendar days after **PHS'** request for reimbursement thereof.

With respect to any Future Patent Expenses due or paid to **PHS** under Paragraph (b)(3) above and in such cases where **Licensee** initiates the administrative proceeding or where **PHS** has initiated the administrative proceeding on behalf of **Licensee**, at the time of **First Commercial Sale, Licensee** will be entitled to a [**] as provided for in Paragraph 6.3 of this **Agreement**. The amount of the [**] available will be equal to the amount of [**] at the time of **Licensee's First Commercial Sale**. Notwithstanding the foregoing, any credit due in accordance with this Paragraph shall not reduce the amount of the earned royalty due for any given calendar year below the minimum annual royalty and may, if necessary, be carried forward until the amount of the credit is exhausted.

APPENDIX D — BENCHMARKS AND PERFORMANCE

Licensee will use commercially reasonable efforts to achieve the following **Benchmarks** for its performance under this **Agreement** and, within [**] days of achieving a **Benchmark**, shall notify **PHS** that the **Benchmark** has been achieved.

I. For the **Licensed Field of Use** set forth in Appendix B, Section I(a)

(a) Development of antibody therapy for cancers

Benchmark	Projected Time to Achieve Benchmark
1. Generation of monoclonal hybridoma cell lines, antibody gene sequencing and antibody production.	Completed
2. Preclinical xenograft studies in an animal model to evaluate two human cancer indications	December 2007
3. GMP production of antibody to supply human clinical trials	June 2008
4. File an Investigational New Drug Application (IND) with the United States Food and Drug Administration (FDA) or an equivalent request with an equivalent regulatory body outside of the United States	December 2008
5. Initiate phase I clinical study dosing in cancer patients to test safety and toxicity. A wide variety of cancer indications may be included in these studies, for example, breast cancer, melanoma, colon cancer, pancreatic cancer and prostate cancer.	June 2009
[**]	[**]
[**]	[**]
[**]	[**]

(b) Development of second therapeutic

Benchmark	Expected Date
[**]	[**]
[**]	[**]
[**]	[**]
[**]	[**]

II. For the **Licensed Field of Use** as set forth in Appendix B, Section I(b)

Benchmark	Expected Date

[**]	[**]
[**]	[**]

APPENDIX E — COMMERCIAL DEVELOPMENT PLAN

In accordance with the provisions of 37 CFR Part 404 and Paragraph 9.1 of this **Agreement**, **Licensee** is providing a detailed **Commercial Development Plan** for the period January 1, 2007 through December 31, 2008. This detailed **Commercial Development Plan** will be updated on an annual basis by **Licensee** through the submission of the annual progress reports required by Paragraph 9.2 of this **Agreement**. In addition to this detailed **Commercial Development Plan**, for the next and following calendar years, **Licensee** has previously outlined their general plans for commercialization over the life of the license in the license application submitted November 2, 2006 and which has been given **NIH** Reference Number [**]. The **Licensee's** general plans for commercial development have been reduced to the specific **Benchmarks** as set forth in Appendix D.

I. Research and Development

[**]

II. Regulatory Activities

[**]

III. Manufacturing

[**]

IV. Sublicensing

[**]

V. Marketing, Importing and Sales

[**]

APPENDIX F — EXAMPLE ROYALTY REPORT

Required royalty report information includes:

- OTT license reference number (L-XXX-200X/0)
- Reporting period
- Catalog number and units sold of each Licensed Product (domestic and foreign)
- Gross Sales per catalog number per country
- Total Gross Sales
- Itemized deductions from Gross Sales
- Total Net Sales
- Earned Royalty Rate and associated calculations
- Gross Earned Royalty
- Adjustments for Minimum Annual Royalty (MAR) and other creditable payments made
- Net Earned Royalty due

Example

Catalog Number	Product Name	Country	Units Sold	Gross Sales (US$)
1	A	US	[**]	[**]
1	A	UK	[**]	[**]
1	A	France	[**]	[**]
2	B	US	[**]	[**]
3	C	US	[**]	[**]
4	D	US	[**]	[**]

Total Gross Sales	[**]
Less Deductions:	
Freight	[**]
Returns	[**]
Total Net Sales	[**]
Royalty Rate	[**]
Royalty Due	[**]
Less Creditable Payments	[**]
Net Royalty Due	**[**]**

APPENDIX G — ROYALTY PAYMENT OPTIONS

NIH/PHS License Agreements

****In order to process payment via Electronic Funds Transfer sender MUST supply the following information:***

Procedure for Transfer of Electronic Funds to NIH for Royalty Payments

Bank Name: [**]

ABA# [**]
TREAS NYC
BNF=/[**]
OBI=Licensee Name and OTT Reference Number
Dollar Amount Wired=$$

NOTE: Only U.S. banks can wire directly to the Federal Reserve Bank. Foreign banks cannot wire directly to the Federal Reserve Bank, but must go through an intermediary U.S. bank. Foreign banks may send the wire transfer to the U.S. bank of their choice, who, in turn forwards the wire transfer to the Federal Reserve Bank.

Checks drawn on a U.S. bank account should be sent to the following address:

National Institutes of Health (NIH)
P.O. Box 979071
St. Louis, MO 63197-9000 USA

Overnight or courier deliveries should be sent to the following address:

US Bank
Government Lockbox SL-MO-C2GL
1005 Convention Plaza
St. Louis, MO 63101
Phone: 314-418-4087

Checks drawn on a foreign bank account should be sent directly to the following address:

National Institutes of Health (NIH)
Office of Technology Transfer
Royalties Administration Unit
6011 Executive Boulevard
Suite 325, MSC 7660
Rockville, MD 20852
Phone: 301-496-7057

All checks should be made payable to: NIH/Patent Licensing

The OTT Reference Number MUST appear on checks, reports and correspondence

Confidential Materials omitted and filed separately with the Securities and Exchange Commission. Asterisks denote omissions.

LICENSE AGREEMENT

Between

Hermes Biosciences, Inc.

And

PharmaEngine, Inc.

Dated As of September 26, 2005

Table of Contents

LICENSE AGREEMENT

This agreement ("Agreement") is entered into as of this 26th day of September, 2005 by and between Hermes Biosciences, Inc., a corporation organized under the laws of California, United States of America with its principal place of business at 61 Airport Boulevard, Suite D, South San Francisco, CA 94080, United States of America (hereinafter referred to as "HERMES") and PharmaEngine, Inc., a corporation organized under the laws of the Republic of China with its principal place of business at 16F, 237, Sung-Chiang Road, Taipei, Taiwan 104, Republic of China (hereinafter referred to as "PHARMAENGINE"). The parties hereto may be referred to collectively as the "Parties" and individually as the "Party", as the case may be.

RECITALS

WHEREAS, HERMES is a biotechnology company engaged in developing drug delivery technologies for therapeutic and other biomedical applications, and has developed certain HERMES owned patents, patent applications and know-how relating to liposomal irinotecan;

WHEREAS, PHARMAENGINE is a biopharmaceutical company focusing on development and commercialization of novel drugs, and is interested in developing camptothecin derivatives based liposomal drugs;

WHEREAS, PHARMAENGINE is currently conducting phase 1 clinical trial for liposomal irinotecan which is based on the technologies that HERMES originally licensed to TTY Biopharm Company Ltd., a corporation organized under the laws of the Republic of China with its principal place of business at 4F, 170, Section 3, Min-Chuan East Road, Taipei, Taiwan 104, Republic of China (hereinafter referred to as "TTY") under the Research and Development Agreement between HERMES and TTY dated April 1, 2001, (the "TTY Research and Development Agreement") and TTY subsequently assigned all its licensed rights and obligations under the TTY Research and Development Agreement to PHARMAENGINE without conditions on June 10, 2003 with the consent of HERMES;

WHEREAS, PHARMAENGINE has paid NT$14,285,714 to TTY and US$50,000 to HERMES as the assignment fee for such assignment;

WHEREAS, based on the existing licensing relationship between PHARMAENGINE and HERMES under the TTY Research and Development Agreement in which HERMES grants the exclusive right to PHARMAENGINE in certain countries in the area of Asia, PHARMAENGINE now desires to further acquire the exclusive right in all countries in Europe to develop and commercialize the irinotecan based liposomal drug product(s);

WHEREAS, HERMES agrees to grant such rights to PHARMAENGINE, and both Parties desire to revise the terms of the existing TTY Research and Development Agreement and further expand their relationship to a licensing and co-development relationship regarding the liposomal irinotecan based drugs as set forth under this Agreement; and

WHEREAS, this Agreement is to replace and supersede the TTY Research and Development Agreement;

NOW THEREFORE, based in the foregoing premises and the mutual covenants and obligations set forth below, the Parties agree as follows:

ARTICLE 1 - DEFINITION

GENERAL. As used in this Agreement, unless context dictates otherwise, the following terms shall have the meanings set forth in this Article 1 and words denoting the singular shall include the plural and vice versa.

1.1 **"Adverse Event"** shall mean any unfavourable and unintended sign (including an abnormal laboratory finding), symptom or disease associated with the administration of a medicinal product whether or not considered related to the Licensed Product;

1.2 **"Affiliate"** shall mean in relation to either Party any person or entity who directly or indirectly controls, is controlled by or is under common control with that Party. A person or entity shall be regarded as in control of another person if it owns directly or indirectly more than 40% (forty percent) of the voting stock or other ownership or income interest of another person or entity or if it directly or indirectly possesses the power to direct or cause the direction of the management and policies of another person or entity by any means whatsoever;

1.3 **"Business Day"** shall mean a day other than a Saturday, Sunday, Bank Holiday or other public or national holiday in the Territory or Retained Territory;

1.4 **"CMC"** shall mean chemistry, manufacture and controls;

1.5 **"Commercial Launch"** shall mean the first shipment by PHARMAENGINE, its Affiliate or Sub-Licensee of the Licensed Product to its wholesalers in any country of the Territory after all necessary marketing authorizations in said country have been obtained by PHARMAENIGINE in such commercial quantities of the Licensed Product as may reasonably be appropriate to establish the Licensed Product throughout the Territory (in the case of PHARMAENGINE), or the first shipment by HERMES, its Affiliate or Sub-Licensee of the Licensed Product to its wholesalers in the Retained Territory after all necessary marketing authorizations in said country have been obtained by PHARMAENIGINE in such commercial quantities of the Licensed Product as may reasonably be appropriate to establish the Licensed Product throughout the Retained Territory;

1.6 **"Commercially Reasonable Efforts"** shall mean exerting such effort and employing such resources as would normally be exerted or employed by a reasonable third party pharmaceutical company for a product of similar market potential at a similar stage of its product life, when utilizing sound and reasonable scientific, business and medical practice and judgment in order to develop the product in a timely manner and maximize the economic return to the Parties from its commercialization;

1.7 **"Development Plan"** shall mean a plan for the undertaking of all appropriate activities for the development of Licensed Product in the Territory (in the case of PHARMAENGINE) and in the Retained Territory (in the case of HERMES), to be prepared in accordance with Article 3.2;

1.8 **"Effective Date"** shall mean 26th September 2005;

1.9 **"HERMES Intellectual Property"** shall mean Intellectual Property solely owned or controlled by HERMES as listed in the Exhibit A and includes the following technologies:

(a) Patent Rights and Know-How existing as of the Effective Date and listed in the Exhibit A hereto;

(b) all divisions, substitutions, continuations, continuations-in-part (to the extent supported by the parent application), reissues, reexaminations, or extensions to the Patent Rights in Article 1.9(a);

(c) all foreign and domestic pending patent applications and all priority rights claiming priority of, or derived from the Patent Rights in Articles 1.9(a) and 1.9(b), in all jurisdictions, including any patents issuing from any of the foregoing; and

(d) any Patent Right which is issued subsequent to the Effective Date and is an improvement, modification or species invention of the Patent Rights set forth in Articles 1.9(a), 1.9(b) and 1.9(c); provided, however, that the utilization of such improvement, modification or species invention into the Licensed Product does not cause a separate application for the regulatory approval which is not merely filed due to the differences in the indication, dosage or administration route, provided such improvement or modification or species invention does not add a new functionality. Such improvement, modification or species invention shall include, without limitations, the invention(s) regarding the loading and the stability of Licensed Product.

1.10 **"ICH"** shall mean International Conference of Harmonization;

1.11 **"IND"** shall mean an investigational new drug application or any equivalent of it issued by any of the Regulatory Authorities;

1.12 **"Intellectual Property"** shall mean Patent Rights and Know-How;

1.13 **"JDC"** shall mean a Joint Development Committee to be formed in accordance with Article 2.1;

1.14 **"JDC Meeting"** shall mean the meeting(s) of JDC held by the representatives of the Parties as defined in Article 2.2;

1.15 **"Joint Project Team"** shall mean the task force to be formed by the Parties pursuant to Article 2.5;

1.16 **"Know-How"** shall mean all information relating to the Product not in the public domain of whatsoever nature, including without limitations any information regarding the manufacturing process, any non-clinical and clinical data;

1.17 **"Launch Date"** shall mean the date of first Commercial Launch by PHARMAENIGINE of the Licensed Product in a country within the Territory;

1.18 **"Licensed Product"** shall mean any Product which is covered, in whole or in part, by a Valid Claim or Know How; made by a process covered, in whole or in part, by a Valid Claim or Know-How; or whose use is covered, in whole or in part, by a Valid Claim or Know-How.

1.19 **"Marketing Plan"** shall mean a plan for the undertaking of all appropriate activities for commercialization of Licensed Product in the Territory, including pre-Commercial Launch and post-Commercial Launch marketing activities, to be prepared in accordance with Articles 3.3;

1.20 **"NDA"** shall mean a new drug application or any equivalent of it issued by any of the Regulatory Authorities;

1.21 **"Net Sales"** shall mean all purchase price amounts invoiced to the ultimate purchaser by PHARMAENGINE or its Affiliates, or any Sub-Licensees, or their respective agents or distributors, in respect of the sale of the Licensed Product less the following items to the extent that they are actually paid or allowed and specified on any documents related to such sale:

(a) normal discounts actually granted;

(b) packaging, transportation and prepaid insurance charges on shipments or deliveries to customers;

(c) cost of samples for regulatory testing, promotional and hospital listing purposes as set out in the Marketing Plan from time to time; and

(d) sales or value added taxes actually incurred and paid by PharmaEngine, its Affiliates or any Sub-licensees in connection with the sale or delivery of the Licensed Products to customers.

Provided that the total, aggregate amount of deductions under paragraphs (a), (b), (c) and (d) above with respect to any unit of Licensed Product shall not exceed [**]% of the selling price;

1.22 **"Parties"** shall mean HERMES and PHARMAENGINE, and **"Party"** shall mean either of them;

1.23 **"Patent Rights"** shall mean all issued patents (including without limitations all reissues, extensions, substitutions, confirmations, re-registrations, re-examinations, invalidations, supplementary protection certificates and patents of addition) and all pending patent applications (including without limitation all provisional applications, continuations, continuations-in-part and divisions) which relate to the Product and the identification, characterization, synthesis, use or production of the Product and which are reasonably

useful or necessary or are required for developing, using, formulating, manufacturing, filling and finishing, registering, distributing and/or selling of the Product;

1.24 **"PHARMAENGINE Intellectual Property"** shall mean Intellectual Property solely owned or controlled by PHARMAENGINE;

1.25 **"Plans"** shall mean the Development Plan and the Marketing Plan;

1.26 **"Product"** shall mean any pharmaceutical composition comprising liposomally encapsulated Irinotecan [**], including salts thereof;

1.27 **"Quarter"** shall mean each three calendar-month period in any year during the term of this Agreement ending on 31st March, 30th June, 30th September and 31st December in each year and **"Quarterly"** has a corresponding meaning;

1.28 **"Regulatory Authorities"** shall mean the body with responsibility for reviewing and granting the clinical development and marketing authorizations of the Licensed Product in each country of the Territory or outside the Territory;

1.29 **"Retained Territory"** shall mean all countries outside the Territory;

1.30 **"Royalties"** shall mean the royalties payable to HERMES in accordance with Article 8.3;

1.31 **"Serious Adverse Event"** shall mean an Adverse Event that:

(a) results in death;

(b) is life threatening;

(c) requires prolongation of existing hospitalization;

(d) results in persistent or significant disability or incapacity; or

(e) results in congenital anomaly or birth defect;

and/or other medically significant events that may jeopardise the patient or may require intervention to prevent one of the outcomes listed in the previous paragraphs of this definition;

1.32 **"Sub-licensee"** shall mean any sub-licensee set forth in Article 5;

1.33 **"Subsequent Intellectual Property"** shall mean any Know-How or Patent Rights owned or controlled by either Party with respect to the Licensed Product which is issued subsequent to the Effective Date and is not included in HERMES Intellectual Property. Subsequent Intellectual Property includes without limitations improvements or modifications or species invention which adds a new functionality to the Licensed Product;

1.34 **"Territory"** shall mean Democratic People's Republic of Korea, Indonesia, Japan, Malaysia, People's Republic of China, Republic of the Philippines, Republic of Korea, Singapore, Taiwan, Thailand, Vietnam and all countries in Europe: including Albania, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, , Latvia, Lithuania, Macedonia, Moldova, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia and Montenegro, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, and Untied Kingdom;

1.35 **"Year"** shall mean a calendar year commencing from 1st January and ending on 31st December; and

1.36 **"Valid Claim"** shall mean:

(a) any claim in any of the Patent Rights issued to HERMES, or to PHARMAENGINE in the future, relating to, derived from or useful for the use, making, or sale of the Product, which has not been held invalid or unenforceable by decision of a court or other governmental agency of competent jurisdiction, unappealable or unappealed within the time allowed for appeal, and which is not admitted to be invalid through disclaimer or otherwise not admitted by such Party who is the patentee to be invalid; and

(b) any pending claim of any Patents filed by HERMES or by PHARMAENGINE relating to, derived from or useful for the use, making, or sale of the Product; provided that examination has been timely requested for such pending claims and they are otherwise being diligently prosecuted in an effort to have them allowed and granted in an issued patent.

ARTICLE 2 - MANAGEMENT

GENERAL. The Parties shall establish a Joint Development Committee (JDC) and a Joint Project Team. The purposes of JDC shall be to serve as a decision-making body to undertake the responsibilities set forth in Article 2.3, and preventing or amicably resolving disputes between the Parties regarding the development of Licensed

Product in both the Territory and the Retained Territory. JDC shall have the responsibilities and authority set forth in this Article 2 and in other provisions of this Agreement.

2.1 FORMATION & MEMBERSHIP OF JDC.

(a) Within [**] days after the Effective Date, both Parties shall establish JDC by designating its representatives by each Party to serve on JDC ("JDC Members") and by notifying the other Party of its dates of availability for the first JDC Meeting.

(b) JDC shall consist of [**] JDC Members, [**] from each of the Parties, and HERMES and PHARMAENGINE shall designate [**] representatives with appropriate expertise to serve as JDC Members. Such representatives shall at all times include each such Party's [**] of each such Party. Each of the Parties may replace any or all of its representatives of JDC at any time upon written notice to the other Party in accordance with Article 13.8 of this Agreement specifying the prior representative(s) to be replaced and the replacement(s) therefor.

2.2 MEETING.

(a) JDC shall meet at least [**] during each Year or more frequently as the Parties deem necessary, and each such meeting of JDC (JDC Meeting) of each such Year shall be held prior to [**]. JDC Meetings shall be held on such dates and times and at such places as are mutually agreed and may be held in person or by teleconference or videoconference as the Parties agree; however, at least [**] face-to-face JDC Meeting shall be held per Year. JDC Members may also communicate, discuss, or make majority voting consensus decisions in compliance with Article 2.4 from time to time by means of telecommunications, video conferences, electronic mail or correspondence, as deemed necessary or appropriate. Each party shall be responsible for all its expenses of participating in JDC Meeting.

(b) If a representative of a Party is unable to attend a JDC Meeting, such Party may designate an alternate to attend such meeting. In addition, each Party may, at its discretion, invite a reasonable number of other employees, consultants or scientific advisors to attend JDC Meeting, provided that such invitees are bound by appropriate confidential obligations.

2.3 RESPONSIBILITIES. During the term of this Agreement, JDC shall:

(a) discuss, review and coordinate the Development Plan of each Party;

(b) facilitate the license of Patent Rights and the transfer of Know-How and other information deemed necessary for the non-clinical and clinical development, regulatory activities, commercialization of the Licensed Product or its activities under this Agreement;

(c) seek the potential opportunities to plan global clinical trials for the Licensed Product and further facilitate the conduct of such global clinical trials;

(d) discuss and resolve any disputes or problems under this Agreement brought by any Party;

(e) cooperate to cope with any infringement as mentioned in Articles 9.3 and 9.4; and

(f) perform such other functions as appropriate to further the purposes of this Agreement as determined by the Parties.

2.4 DECISION MAKING.

(a) JDC Meetings shall be effective only if at least [**] representatives of each Party are present or participating. All matters brought to JDC shall be determined by consensus if possible. However, except as otherwise provided by JDC, where a decision cannot be arrived at by consensus in JDC, the matter at issue shall be decided by majority of votes made by all JDC Members present or participating in JDC Meeting. Each representative of each Party on JDC shall have one vote.

(b) If a majority vote can not be reached, each Party shall refer such matter to the Chief Executive Officer (or other nominated officers(s)) of each Party to discuss and seek to settle the matter in dispute.

(c) Notwithstanding the foregoing, PHARMAENGINE will have final decision making authorities with respect to Territory; and HERMES will have final decision making authorities with respect to Retained Territories; excepting in the event of a breach of performance by a Party under its obligations under this Agreement, in which event a dispute as to the breach shall be resolved pursuant to the Articles 13.5 and 13.10.

2.5 JOINT PROJECT TEAM.

(a) The Parties shall establish a Joint Project Team which shall meet at least [**] times per Year [**], or more frequently as the Parties deem necessary, to ensure the technical and regulatory development of the Licensed Product under this Agreement will be timely and cooperatively executed. Such meetings of Joint Project Team shall be held at times and dates and on the locations as are mutually agreed. Each Party shall have the responsibility to supply or assign appropriate personnel and all relevant data and other information needed to implement and accomplish the obligations set forth below in Article 2.5(b).

(b) The Joint Project Team shall have its principal obligations specifically to:

(1) discuss and update the development project(s) in the Development Plan under this Agreement;

(2) facilitate the coordination of the non-clinical development and clinical trials conducted by respective Parties in either the Territory or the Retained Territory;

(3) exchange and share any useful or necessary information regarding the development activities under this Agreement; and

(4) manage and oversee the development activities conducted by a Party under this Agreement pursuant to the terms of this Agreement.

ARTICLE 3 - DEVELOPMENT & COMERCIALIZATION

3.1 DEVELOPMENT ACTIVITIES.

(a) The Parties agree that, during the term of this Agreement, PHARMAENGINE shall be responsible for funding and managing all clinical supply manufacture, non-clinical, clinical development and regulatory activities in respect of the Licensed Product in the Territory in accordance with the Development Plan of PHARMAENGINE. Such activities shall include without limitation:

(1) CMC studies regarding process research, scale up and manufacture of the Licensed Product;

(2) non-clinical studies of systemic treatment in solid tumors regarding the Licensed Product;

(3) clinical trials regarding the Licensed Product;

(4) regulatory filings regarding the Licensed Product in the Territory;

(5) establishment of strategic alliance to develop the Licensed Product in the Territory, where applicable; and

(6) appointment of Sub-licenses pursuant to Article 5.4, 5.5 and 5.6, where applicable.

(b) The Parties agree that, during the term of this Agreement, HERMES shall be responsible for funding and managing all non-clinical and clinical development activities in respect of the Licensed Product in the Retained Territory in accordance with the Development Plan of HERMES. Such activities shall include without limitation:

(1) CMC studies regarding formulation research of the Licensed Product;

(2) non-clinical studies of the local treatment for brain tumors regarding the Licensed Product;

(3) clinical trials regarding the Licensed Product; and

(4) regulatory filings regarding the Licensed Product.

3.2 DEVELOPMENT PLAN.

(a) The Development Plan shall include the scientific, experimental, process development, non-clinical, clinical and regulatory activities, goals and timelines for the development of the Licensed Product for the coming Year in the Territory (in the case of PHARMAENGINE) and the Retained Territory (in the case of HERMES). The Development Plan shall be updated annually and be finalized

only after review by JDC. The Development Plan in all other provisions under this Agreement shall mean the finalized Development Plan reviewed by JDC. The annual Development Plan of each of the Parties shall be submitted to JDC for discussion and review prior to [**] in each Year (the deadline for submitting the initial Development Plan may be determined by JDC if necessary).

(b) Under the auspices of each of the Parties, the Parties shall have the following responsibilities:

(1) Each of the Parties shall be responsible for the preparation of all protocols and the conduct of all activities for which such Party is designated as the Party responsible for such activities in the Development Plan or the determination of JDC;

(2) PHARMAENGINE shall be responsible for preparing all necessary applications for regulatory approval of the Licensed Products in the countries in the Territory for which PHARMAENGINE is designated as the Party responsible for such preparation in the Development Plan or the determination of JDC, and PHARMAENGINE shall also be responsible to conduct all communications with the regulatory authorities in the Territory during the registration process. HERMES shall be responsible for preparing all necessary applications for regulatory approval of the Licensed Products in the Retained Territory for which HERMES is designated as the Party responsible for such preparation in the Development Plan or the determination of JDC, and HERMES shall also be responsible to conduct all communications with the Regulatory Authorities in the Retained Territory during the registration process; and

(3) Each of the Parties shall provide all technical data and support necessary to assist the responsible Party to prepare such applications.

(c) PHARMAENGINE shall use its best efforts to implement the development of the Licensed Product in the Territory in accordance with the timeline(s) approved by JDC or set forth in the Development Plan and in accordance with the terms of this Agreement. PHARMAENGINE shall further require its Sub-licensee in the Territory to use its best efforts to develop the Licensed Product in the Territory.

3.3 MARKETING PLAN. The Marketing Plan shall include the detailed projected pre-Commercial Launch and post-Commercial Launch activities, goals and timelines for the commercialization of the Licensed Product for the coming Year in the Territory. Not less than [**] months subsequent to the first regulatory approval date, PHARMAENGINE shall prepare and provide to HERMES an initial Marketing Plan and the annual Marketing Plan of each subsequent Year shall be provided to HERMES prior to [**] in each such Year.

3.4 STATUS REPORTING. Each Party shall prepare a [**] Development Report regarding each [**]-month period, which shall show the status and progress of the development in

respect of the Licensed Product that this Party has made during such [**]-month period against the activities and timelines listed in the Development Plan or decided in writing by JDC. Except as may be otherwise agreed upon in writing by the other party, such [**] Development Report shall be submitted to the other party within [**] days past each [**]-month period [**] and at least [**] days prior to JDC Meeting set for in Article 2. The [**] Development Report due on [**] of the year [**] shall be the [**], which details the progress that the Party has made against the activities and timelines listed in the Development Plan or decided in writing by JDC during the [**].

3.5 DETERMINATION OF DILIGENCE. If HERMES believes that PHARMAENGINE does not meet its diligence obligations pursuant to this Article 3 with respect to the Licensed Product, HERMES shall notify PHARMAENGINE with a written notice, stating the fact(s) and reason(s) held by HERMES. PHARMAENGINE shall respond in writing to this notice within [**] days on receipt of this notice from HERMES. If the Parties still can not resolve this dispute, it shall be brought to and decided by JDC as set forth in Article 2 and if necessary resolved pursuant to Articles 13.5 and 13.10.

ARTICLE 4 - REGULATORY

4.1 REGULATORY APPROVAL. In connection with the obligations set forth in Article 3.2, PHARMAENGINE shall use all of its best endeavors to obtain regulatory approval for the Licensed Product in accordance with the Development Plan in the Territory during the term of this Agreement. Each Party, subject to Articles 6.2 and 6.3 hereunder, shall have the right to access and cross-reference the IND(s) and NDA(s) held by the other Parties or any regulatory filing made under this Agreement to the extent necessary or useful, in the case of PHARMAENGINE, to exercise the licenses and rights granted under this agreements, and in the case of HERMES, to exercise any retained right in respect of Licensed Product.

4.2 ADVERSE EVENT REPORT. During the term of this Agreement, each Party shall report any actual or suspected Serious Adverse Event and non-Serious Adverse Event in respect of the Licensed Product or any information relevant to such Serious Adverse Event to:

(a) the Regulatory Authorities in compliance with the applicable laws or regulations with respect to the adverse drug reaction reports in the Territory (in case of PHARMAENGINE) and in the Retained Territory (in the case of HERMES);

(b) the primary liaison person (as set forth in Article 4.3) of the other Party any Serious Adverse Event information obtained by such Party concerning drug reactions that are life-threatening or cause death by telephone or in writing within [**] Business Days [**] days after initial determination by such Party that the Adverse Event is serious;

(c) the primary liaison person (as set forth in Article 4.3) of the other Party any Serious Adverse Event information obtained by such Party and not falling within this Article 4.2 (b) by telephone or in writing within [**] Business Days after initial determination by such Party that the Adverse Event is serious; and

(d) the primary liaison person (as set forth in Article 4.3) of the other Party any non-Serious Adverse Event information obtained by such Party in writing within [**] days after the end of the [**].

4.3 COMMUNICATION. Within [**] days of the Effective Date, each Party shall appoint a primary liaison person to communicate with each other with regard to information to be exchanged pursuant to this Article 4.2.

4.4 RECALLS. HERMES may at its discretion and shall, if requested to do so by PHARMAENGINE, recall any Licensed Product provided by PHARMAENGINE under Article 7.1 in the Retained Territory. The costs and expenses incurred by HERMES in connection with such recall shall be borne by HERMES, unless such recall is both:

(a) requested by PHARMAENGINE or the Regulatory Authorities in the Retained Territory by reason of safety consideration caused from the manufacturing process of PHARMAENGINE; and

(b) does not arise from any material breach of this Agreement by HERMES or negligence or intentional misconduct on the part of HERMES.

ARTICLE 5 - LICENSES & [**]

5.1 LICENSES OF HERMES INTELLECTUAL PROPERTY. HERMES hereby grants to PHARMAENGINE an exclusive right and license under HERMES Intellectual Property applicable to the Licensed Product to develop, manufacture, market, sell, use, offer for sale and import the Licensed Product in the Territory during the term of this Agreement.

5.2 LICENSES OF PHARMAENGINE INTELLECTUAL PROPERTY. PHARMAENGINE hereby grant to HERMES an exclusive right and license under PHARMAENGINE Intellectual Property applicable to the Licensed Product to develop, manufacture, market, sell, use, offer for sale and import the Licensed Product in the Retained Territory during the term of this Agreement.

5.3 RIGHTS OF FIRST REFUSAL. During the term of this Agreement, if HERMES proposes to grant license rights to a third party to develop and commercialize Subsequent Intellectual Property, then HERMES shall first give to PHARMAENGINE a right of first refusal to acquire rights to use said Subsequent Intellectual Property for the purpose to develop, manufacture, market, sell, use, offer for sale and import Licensed Product based on said Subsequent Intellectual Property in the Territory. Once HERMES identifies and describes in writing a particular Subsequent Intellectual Property, together with the proposed terms offered by a third party and deemed acceptable by HERMES for rights to develop and commercialize the Subsequent Intellectual Property in conjunction with the Licensed Product in the Territory (the "Third Party Proposal"), and delivers to PHARMAENGINE the Third Party Proposal, then PHARMAENGINE shall have ninety (90) days thereafter to give to HERMES a written notice of PHARMAENGINE's agreement to obtain license rights to use said Subsequent Intellectual Property on the same financial terms and other terms for such license rights as are set forth in the Third Party Proposal. If PHARMAENGINE does not elect to agree to the terms of the Third Party Proposal, then HERMES shall be free to commercialize said Subsequent Intellectual Property rights through a license to a third party, so long as HERMES does not, during the term of this Agreement, grant license rights to a third party on terms more favorable to the third party than were the terms in the Third Party Proposal. In order to preserve the confidentiality of the third party which makes the Third Party Proposal, the identity of the third party will not be

disclosed to PHARMAENGINE (unless the third party expressly authorizes such disclosure), but a general description of the nature of the third party will be furnished to PHARMAENGINE (e.g., approximate size, and general nature of business).

5.4 SUB-LICENSE.

(a) HERMES agrees PHARMAENGINE may, with HERMES' prior written consent, grant sub-licenses under the license granted in Article 5.1 to develop and commercialize the Licensed Product in the Territory so long as such Sub-licensee(s) honors all the terms of this Agreement for the benefit of HERMES.

(b) In the case of HERMES as a licensee pursuant to Article 5.2, PHARMAENGINE agrees HERMES may grant sub-licenses under such granted license in Article 5.2 to develop or commercialize the Licensed Product in the Retained Territory so long as such Sub-licensee(s) honors all the terms of this Agreement for the benefit of PHARMAENGINE.

5.5 FREE CHOICE OF MARKETING AND SALES PARTNER. Notwithstanding the foregoing in this Article 5, PHARMAENGINE may at its sole discretion, without the limitations set forth in Article 5.4, to select and grant the right to any third parties to market, sell and distribute the Licensed Product in the Territory; provided, however, that such third parties shall agree to be bound by the obligations of confidentiality at least as stringent as those set forth in Article 11 prior to the disclosure of any confidential or proprietary information obtained from HERMES.

5.6 FREE CHOICE OF CONTRACT MANUFACTURER AND CONTRACT RESEARCH ORGANIZATION. Notwithstanding the foregoing in this Article 5, PHARMAENGINE may at its sole discretion, without the limitations set forth in Article 5.4, to select and have any third-party contract manufacturer to manufacture on behalf of PHARMAENGINE the Licensed Product in the Territory, or to select and have any third-party contract research organization use the Licensed Product in the Territory to perform studies on behalf of PHARMAENGINE; provided, however, that such third parties shall agree to be bound by the obligations of confidentiality at least as stringent as those set forth in Article 11 prior to the disclosure of any confidential or proprietary information obtained from HERMES.

5.7 IRINOTECAN. PHARMAENGINE acknowledges that it is aware of the fact that a third party [**] holds patent rights in some countries for the composition of matter for the irinotecan compound, which is marketed by [**] under the product name of [**]; and which patent rights are expected to expire in the year [**].

ARTICLE 6 - INFORMATION TRANSFER

6.1 INFORMATION TRANSFER.

(a) During the term of this Agreement, each Party shall provide to the other Party any material, data or other information to the extent necessary or useful for developing, making regulatory filings, or marketing the Licensed Product, including without limitations any such information relating to Patent Rights and Know-How, from time to time as such data and information is developed or acquired by such Party. HERMES agrees to make available to PHARMAENGINE, including without limitations:

(1) its Know-How and experiences in respect of the Licensed Product and the process research in liposomal formulations and scale up, and their relevant biological data; and

(2) the data of the preclinical pharmacology studies, toxicology studies and clinical trials in respect of the Licensed Product for local cancer treatment.

PHARMAENGINE agrees to make available to HERMES, including without limitations, its Know-How and experiences in respect of the Licensed Product and scale-up procedures and all data of the preclinical pharmacology studies, toxicology studies and clinical trials.

(b) All such data and information exchanged or required to be exchanged by any Party pursuant to this Article 6 or other provisions under this Agreement shall be owned by such transferring Party.

6.2 PERMISSION OF HERMES. HERMES hereby grants PHARMAENGINE the right of access, the right of reference and the right to use and incorporate all information provided to PHARMAENGINE pursuant to this Article 6 or other provisions under this Agreement in obtaining the regulatory approval of the Licensed Product within the Territory and in performing the development, commercialization and all PHARMAENGINE's obligations in respect of the Licensed Product under this Agreement.

6.3 PERMISSION OF PHARMAENGINE. PHARMAENGINE hereby grants HERMES the right of access, the right of reference and the right to use and incorporate all information provided to PHARMAENGINE pursuant to this Article 6 or other provisions under this Agreement in regulatory approval of Licensed Product within the Retained Territory and in performing the development, commercialization and all HERMES' obligations in respect of the Licensed Product under this Agreement.

ARTICLE 7 - MANUFACTURE & SUPPLY

GENERAL. PHARMAENGINE shall be responsible for the manufacture, supply and the export permit of the Licensed Product to HERMES at the supplier's premises. HERMES shall be responsible for obtaining the import permit from the FDA, or other Regulatory Authority in the Retained Territory as the case may be, and paying any costs associated with the delivery, including the costs of shipping, shipment insurance and any import or export duty, and for labeling and packaging the Licensed Product.

7.1 CLINICAL SUPPLY. During the term of this Agreement, HERMES shall have the option to obtain Licensed Product from PHARMAENGINE under the terms and conditions stipulated herein. PHARMAENGINE shall supply HERMES the Licensed Product for use by HERMES in the conduct of non-clinical or clinical trials and other activities regarding the development of the Licensed Product under this Agreement in the Retained Territory, and:

(a) any Licensed Product which is supplied by PHARMAENGINE pursuant to this Article 7.1 and is used in the first phase I clinical trial conducted by HERMES in the Retained Territory shall be provided [**]; and

(b) any Licensed Product which is supplied by PHARMAENGINE pursuant to this Article 7.1 and is used in the development activities, except as set forth in (a) of this Article 7.1, shall be supplied at PHARMAENGINE's [**] including such [**].

7.2 COMMERCIAL SUPPLY. The Parties, at their option, agree to negotiate in good faith on commercial terms and enter into a supply agreement regarding the commercial supply in the future.

7.3 QUALITY. PHARMAENGINE agrees that any Licensed Product to be manufactured by or on behalf of PHARMAENGINE for the conduct of Plans or any purposes contemplated by this Agreement shall be manufactured in compliance with ICH guidelines and any applicable laws, guidelines and regulations, and to the best of PHARMAENGINE's knowledge and ability shall be compliant with the requirements of the United States laws, guidelines, and regulations, including the U.S. Food and Drug Administration regulations on the manufacture of pharmaceutical products for human use.

ARTICLE 8 - PAYMENTS, TAXES & RECORDS

8.1 CONSIDERATION. In consideration of the rights and licenses granted hereunder to PHARMAENGINE in respect of the Licensed Product, PHARMAENGINE shall pay HERMES the amounts described in this Article 8.

8.2 UPFRONT AND MILESTONE PAYMENTS. PHARMAENGINE shall pay to HERMES:

(a) the upfront payment of one million United States Dollars (US $1,000,000) within [**] days after the Effective Date of this Agreement;

(b) the milestone payment of [**] United States Dollars (US $[**]) within [**] days after the initiation of the [**];

(c) the milestone payment of [**] United States Dollars (US $[**]) within [**] days after the initiation of the [**]; and

(d) the milestone payment of [**] United States Dollars (US $[**]) within [**] days after the approval of the [**].

8.3 ROYALTIES. PHARMAENGINE shall pay to HERMES the Royalties equals to the sum of [**] percent ([**]%) of the Net Sales of the Licensed Product in Europe plus [**] percent ([**]%) of the Net Sales of the Licensed Product in the Territory in Asia. PHARMAENGINE shall prepare a statement in respect of each Quarter, which shall show for the Quarter the aggregate Net Sales. Such statement shall be submitted to HERMES within [**] days of the end of the Quarter to which it relates together with remittance for the Royalties in respect of such Quarter.

8.4 RECORDS. PHARMAENGINE shall during the term of this Agreement following the first Launch Date keep accurate records of all Net Sales and books of account containing all the data necessary for the calculation of the Royalties for [**] prior years.

8.5 AUDITING. The records and books of account referred to in Article 8.4 shall, on a reasonable prior written notice not less than [**] Business Days having been given by HERMES, be open during normal working hours on any Business Day for inspection by a public accounting firm of HERMES' own selection, except the one to which PHARMAENGINE or PHARMAENGINE'S Sub-licensee may have reasonable objection, not more often than [**] each Year, for not more than [**] prior years. HERMES may exercise such right until the end of [**] after termination or expiration of this Agreement. The cost of such inspection shall be borne by HERMES, provided, however, if an audit discloses an underpayment of more than five percent (5%) of the amount due for the records so audited, then the costs for such audit shall be paid by PHARMAENGINE.

8.6 LATE PAYMENT. If any payment under this Article 8 is overdue, PHARMAENGINE shall pay interest thereon at an annual rate of the prime rate quoted by the Bank of America, such interest to run from the date upon which payment of such sum became due

until payment thereof in full together with such interest by PHARMAENGINE (whether before or after any judgment).

8.7 TAXES. All sums due to HERMES shall be paid in full without deduction of withholding taxes, charges and other duties except insofar as HERMES shall be capable of obtaining a full credit therefore. The Parties agree to cooperate in all respects necessary to take advantage of such double taxation agreements as may be available. In the event that PHARMAENGINE is prohibited by law from making such payments unless such deductions are made or withheld therefrom, then PHARMAENGINE shall pay such additional amounts as necessary in order that the net amount(s) received by HERMES, after such deduction or withholding prepaid by PHARMAENGINE, equal to the amount(s) which would have been received if such deduction or withholding had not occurred; provided, however, that any approved rebate of such tax subject to Article 8.8 shall be returned to and owned by PHARMAENGINE.

8.8 AUTHORIZATION. HERMES agrees to authorize and provide adequate assistances to PHARMAENGINE to file and prosecute on HERMES' behalf all applications for and only for the tax rebate and/or exemption or reduction in accordance with Article 4 and/or Article 25 of Taiwan's applicable Income Tax Act regarding the income of HERMES paid by PHARMAENGINE and/or the technical services rendered by HERMES to PHARMAENGINE under this Agreement.

8.9 CURRENCY. Unless otherwise agreed by the Parties, all payments required to be made under this Agreement shall be made in United States Dollars via wire transfer to an account designated in advance by the receiving Party. Where any Royalties or other sums falling due are calculated in a currency other than United States Dollars, they shall be converted into United States Dollars by reference to the exchange rate when the monies are actually converted into United States Dollars if this occurs during the payment term set forth in Articles 8.2, 8.3 and 8.6; or in the event the monies are not actually converted into United States Dollars, spot rate of currency exchange published in The Wall Street Journal, Eastern Edition for the last day of the payment term of such Quarter.

ARTICLE 9 - INTELLECTUAL PROPERTY

9.1 OWNERSHIP OF INVENTIONS. HERMES shall own the entire right, title and interest in and to all Patent Rights and Know-How made solely by employees or consultants of HERMES or acquired solely by HERMES. PHARMAENGINE shall own the entire right, title and interest in and to all Patent Rights and Know-How made solely by employees or consultants of PHARMAENGINE or acquired solely by PHARMAENGINE. The Parties shall jointly own all right, title and

interest in and to all Patent Rights and Know-How made jointly by employees or consultants of both HERMES and PHARMAENGINE during the term of this Agreement; and said joint ownership rights shall be pursuant to the U.S. patent laws, that is, each joint owner is entitled to use the jointly owned rights without consent from or accounting to the other joint owner.

9.2 PROSECUTION OF PATENTS.

(a) HERMES shall have the sole right (and not the obligation) to prosecute and maintain patent protection in the Territory for HERMES Intellectual Property solely owned by HERMES. PHARMAENGINE shall reimburse HERMES on a [**] basis for the expenses incurred for the prosecution and maintenance of patent protection for HERMES Intellectual Property in the Territory ("Expenses"). In the event that such patent protection licensed to PHARMAENGINE is licensed to one or more HERMES' licensees in any country of the Territory at the time when HERMES invoices PHARMAENGINE for the aforesaid reimbursement, in said country PHARMAENGINE shall only bear the amount equal to [**]. HERMES shall bear the expense of prosecution and maintenance of HERMES Intellectual Property that HERMES elects to prosecute or maintain outside the Territory.

(b) PHARMAENGINE shall have the sole right (and not the obligation) to prosecute and maintain patent protection in the Territory for PHARMAENGINE Intellectual Property solely owned by PHARMAENGINE. In the event that such PHARMAENGINE Intellectual Property is licensed to HERMES pursuant to Article 5.2, HERMES shall reimburse or subsidize PHARMAENGINE on a Quarterly basis for the expenses incurred for the prosecution and maintenance of patent protection for such PHARMAENGINE Intellectual Property in the Retained Territory; provided, however, that in the event that such patent protection licensed to HERMES is licensed to one or more PHARMAENGINE's licensees in any country of the Retained Territory at the time when PHARMAENGINE invoices HERMES for the aforesaid reimbursement, in said country HERMES shall only bear the amount equal to [**]. PHARMAENGINE shall bear the expense of prosecution and maintenance of PHARMAENGINE Intellectual Properly that PHARMAENGINE elects to prosecute or maintain outside the Retained Territory.

(c) Except as otherwise decided in writing by JDC, HERMES shall have the right (and not the obligation) to prosecute and maintain patent protection in the Territory for any Patent Rights jointly made by HERMES and

PHARMAENGINE during the term of this Agreement in the name of both HERMES and PHARMAENGINE. PHARMAENGINE shall make available to HERMES or its authorized attorneys, agents, or representatives, such of its employees whom HERMES in its reasonable judgment deems necessary, in order to assist it in obtaining patent protection for such jointly made patent right. Each Party shall [**] for prosecution and maintenance for any jointly made Patent Rights under this Article 9.2(c) in the Territory and the Retained Territory.

(d) In the event that a Party elects not to seek or continue to seek, or maintain, patent or secrecy protection of all or part of its Intellectual Property with respect to the Licensed Product under this Agreement (whether jointly owned by the Parties or solely owned by a Party) (the "Elected Intellectual Property"), such Party shall promptly notify the other Party in writing of such election, and the other Party shall have the right to seek or continue to seek or maintain patent or secrecy protection of said Elected Intellectual Property in its respective territory (in the Territory, if PHARMAENGINE, or in Retained Territory, if HERMES) at its own risk and expense. In any such case, the Party that has, under this Agreement, control over seeking, continuing to seek, or maintaining protection of such Elected Intellectual Property shall, based on good faith, and upon written request from the other Party, assign its rights in and to such Elected Intellectual Property to that other Party in the other Party's respective territory, and shall continually prosecute and maintain such Elected Intellectual Property until the completion of this assignment.

9.3 INFRINGEMENT.

(a) Each Party shall report in writing to the other Party during the term of this Agreement any known or suspected infringement of any Patent Rights owned by a Party, or unauthorized use or misappropriation of any Know-How owned by a Party, and will provide the other Party with all available evidence supporting such infringement or unauthorized use or misappropriation.

(b) PHARMAENGINE shall have the right to initiate an infringement or other appropriate suit anywhere in the Territory against any third party who at any time has infringed, or is suspected of infringing, any of HERMES Patent Rights or jointly made Patent Right in this Article 9 during the term of this Agreement applicable to the Licensed Products in the Territory, or has used without proper authorization all or any portion of the Know-How of HERMES applicable to the Licensed Products in the Territory. HERMES shall cooperate fully with and provide all necessary assistance to PHARMAENGINE in the proceeding of such claim, at the expense of PHARMAENGINE. HERMES may initiate such claim at its sole discretion only if PHARMAENGINE fails to initiate such claim within [**] days after receipt of a written request from HERMES which stating the infringer (or suspected infringer) and the relevant fact.

(c) HERMES shall have the right to initiate an infringement or other appropriate suit anywhere in the Retained Territory against any third party who at any time has

infringed, or is suspected of infringing, any of PHARMAENGINE Patent Rights or jointly made Patent Right in this Article 9 during the term of this Agreement applicable to the Licensed Products in the Retained Territory, or has used without proper authorization all or any portion of the Know-How of PHARMAENGINE applicable to the Licensed Products in the Retained Territory. PHARMAENGINE shall cooperate fully with and provide all necessary assistance to HERMES in the proceeding of such claim, at the expense of HERMES. PHARMAENGINE may initiate such claim at its sole discretion only if HERMES fails to initiate such claim within [**] days after receipt of a written request from PHARMAENGINE which stating the infringer (or suspected infringer) and the relevant fact.

(d) Neither Party shall settle any claims or suits involving Patent Rights of the other Party without obtaining the prior written consent of the other Party, which consent shall not be unreasonably held.

(e) Any recovery realized from pursuing an infringement claim against a third party shall be distributed and allocated (i) first to reimburse [**] percents ([**]%) of the [**] costs incurred to pursue the infringement action, and (ii) the remainder shall be distributed and allocated between the Parties [**] to the damages caused to each Party by the infringement.

9.4 CLAIMED INFRINGEMENT.

(a) In the event that a third party at any time provides a written notice of a claim to, or brings an action, suit or proceeding against, either Party, or any of their respective Affiliates or Sub-licensee, claiming infringement of its patent rights or unauthorized use or misappropriation of its know-how, based

upon an assertion or claim arising out of the development, use, manufacture, distribution, importation or sale of Licensed Product under this Agreement ("Third Party Claim"), such Party shall promptly notify the other Party of such Third Party Claim or the commencement of the action, suit or proceeding thereof, enclosing a copy of such Third Party Claim and all papers served. Each Party agrees to make available to the other Party its advice and counsel regarding the technical merits of any such Third Party Claim at no cost to the other Party and to offer reasonable assistance to the other Party at no cost to the other Party.

(b) Except as otherwise decided by JDC, the Party against which such Third Party Claim is brought shall defend against such Third Party Claim at its sole expense and the other Party shall have the option to participate in any such suit at its own expense. Such other Party shall reasonably cooperate with the Party conducting the defense against such Third Party Claim.

(c) If, in any country in the Territory, PHARMAENGINE is required (either by final judgment from a court of competent jurisdiction or pursuant to the terms of any settlement that complies with the provisions of Article 9.4) to pay a third party a royalty or make any payment of any kind for the right to practice HERMES

Intellectual Property in said country (Payment to Third Party), except as otherwise negotiated with good faith and determined by both Parties in JDC, an amount:

(1) equal to the [**] percent ([**] %) of Payment to Third Party shall be deducted on a [**] basis from the Royalties payable in said country under Article 8 to the extent that such deduction shall be not more than [**] percents ([**] %) of the Royalties payable in said country under Article 8, in the event that the infringed patent right of such third party is a prior art of the technology at issue, or that the claim(s) of HERMES Patent Rights at issue is invalid or may be invalidated by such third party; and

(2) equal to the Royalty to Third Party shall be deducted on a [**] basis from the Royalties payable in said country under Article 8 to the extent that such deduction shall be not more than [**] percents ([**] %) of the Royalties payable in said country under Article 8, in the event that PHARMAENGINE is necessary to acquire the license(s) from such third party while practicing the technology in accordance with HERMES Intellectual Property;

However, in no case shall the Royalties payable in said country after said deductions be less than [**] percent ([**] %) of Net Sales in said country.

(d) Neither Party shall settle any Third Party Claim involving rights of the other Party without obtaining the prior written consent of the other Party, which consent shall not be unreasonably withheld.

ARTICLE 10 - WARRANTY AND INDEMNIFICATION

10.1 MUTUAL REPRESENTATIONS AND WARRANTIES. As of the Effective Date, each Party represents and warrants to the other that it is a corporation duly organized, validly existing and in good standing under the laws of the state in which it is incorporated, and has full corporate power and authority and the legal right to own and operate its property and assets and to carry on its business as it is now being conducted and is contemplated in this Agreement, including, without limitation, the right to grant the licenses granted hereunder.

10.2 AUTHORITY AND BINDING AGREEMENT. As of the Effective Date, each Party represents and warrants to the other that

(a) it has the corporate power and authority and the legal-right to enter into this Agreement and perform its obligations hereunder;

(b) it has taken all necessary corporate action on its part required to authorize the execution and delivery of the Agreement and the performance of its obligations hereunder; and

(c) the Agreement has been duly executed and delivered on behalf of such Party, and constitutes a legal, valid and binding obligation of such Party and is enforceable against it in accordance with its terms.

10.3 ABSENCE OF LITIGATION. As of the Effective Date, HERMES represents and warrants to PHARMAENGINE that it is not aware of any pending or threatened litigation (and has not received any communication relating thereto) which alleges that HERMES' activities, with respect to the Licensed Product or related to this Agreement, have infringed or misappropriated any of the intellectual property rights of any other person or entity. To the best of HERMES' knowledge, there is no material unauthorized use, infringement or misappropriation of any of its intellectual property rights licensed hereunder.

10.4 NO CONFLICT. Each Party represents and warrants to the other that it has not entered, and will not enter, into any agreement with any third party that is in conflict with rights granted to the other Party under this Agreement, and has not taken and will not take any action that would in any way prevent it from granting the rights granted to the other Party under this Agreement, or that would compete by way of commercialization of a product which is substantially similar to Licensed Product under this Agreement or otherwise materially conflict with or adversely affect the rights granted to the other Party under this Agreement. Its performance and execution of this Agreement will not result in a breach of any other contract to which it is a party.

10.5 DISCLAIMER OF WARRANTIES. EXCEPT AS SET FORTH IN THIS AGREEMENT, THIS LICENSE AND THE ASSOCIATED PATENT RIGHTS ARE PROVIDED WITHOUT ANY IMPLIED REPRESENTATIONS OR WARRANTIES, SUCH AS WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

10.6 NO PRIOR ART & SUFFICIENCY. Except as set forth in this Agreement or as HERMES has otherwise advised PHARMAENGINE in writing prior to the Effective Date, HERMES represents and warrants to PHARMAENGINE that as of the Effective Date,

(a) to the best of its knowledge, there is no prior art that would prevent at least one Valid Claim of the HERMES Patent Rights from issuance as set forth in Exhibit A(I) under any subsection of 35 U.S.C. Section 102;

(b) to the best of its knowledge, it has no knowledge of any public knowledge or use anywhere, by anyone, of the subject matter claimed in at least one Valid Claim in the HERMES Patent Rights as set forth in Exhibit A(I) before the invention date thereof;

(c) to the best of its knowledge, it has no knowledge of the subject matter claimed in at least one Valid Claim in the HERMES Patent Rights as set forth in Exhibit A(I) having been patented or described anywhere in a printed publication by anyone before the invention date thereof;

(d) to the best of its knowledge, it has sufficient legal and/or beneficial title and ownership under its Intellectual Property rights necessary for it to fulfill its obligations under this Agreement; and

(e) it has granted PHARMAENGINE a license to all Patent Rights under Hermes Intellectual Property which HERMES owns or controls in connection with the Licensed Product as of the Effective Date.

10.7 INFRINGEMENT OF PATENT BY THIRD PARTIES. HERMES represents and warrants to PHARMAENGINE that as of the Effective Date, to the best of its knowledge, there is no material unauthorized use, infringement or misappropriation of any of HERMES Intellectual Property rights by third parties relevant to the licensed Product under this Agreement.

10.8 LIMITATIONS OF LIABILITY. IN NO EVENT WILL EITHER PARTY BE LIABLE TO THE OTHER FOR ANY INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THIS AGREEMENT OR MANUFACTURE, SALE, OR USE OF THE LICENSED PRODUCT.

10.9 INDEMNIFICATION BY PHARMAENGINE. PHARMAENGINE will indemnify and hold harmless HERMES, its trustees, officers, agents and employees, from and against any and all liability, loss, damage, action, claim or expense suffered or incurred by any such indemnified party (including reasonable attorney's fees) (each, a "Liability") which results from or arises out of the gross negligence or willful conduct of PHARMAENGINE with respect to the development, use, manufacture, promotions, sale, distribution or other disposition of any Licensed Product by PHARMAENGINE, its Affiliates or Sub-licensee. However, in each case, such indemnification in this Article 10.8 shall not apply to the extent that:

(a) such Liability is attributable to the nature or unexpected properties of the Licensed Product; or

(b) such Liability is a result of the gross negligence or willful misconduct of HERMES, or of a breach by HERMES of its representations or warranties hereunder, or of any matter for which HERMES is required to indemnify PHARMAENGINE under Article 10.9; or

(c) such Liability is due to the fact that HERMES has not observed all reasonable instructions given by PHARMAENGINE in respect of the Licensed Product, including instructions as to warning to be given with respect to the potential or actual adverse effects of the Licensed Product, instructions to cease the administration or the sale of the Licensed Product or instructions to provide certain medical care of the patient in clinical trials under this Agreement; or

(d) such Liability is derived from the production or implementation process of the Licensed Product that HERMES has performed and fails to meet the instructions or documentation provided by PHARMAENGINE.

10.10 INDEMNIFICATION BY HERMES. HERMES will indemnify and hold harmless PHARMAENGINE, its trustees, officers, agents and employees from and against any Liability which results from or arises out of the gross negligence or willful conduct with respect to the development, use, manufacture, promotions, sale, distribution or other disposition of any Licensed Product by HERMES, its Affiliates or licensee. However, in each case, such indemnification in this Article 10.9 shall not apply to the extent that:

(a) such Liability is attributable to the nature or unexpected properties of the Licensed Product; or

(b) such Liability is a result of the gross negligence or willful misconduct of PHARMAENGINE, its Affiliates or Sub-licensee, or respective employees, agents, directors, officers or consultants, or of a breach by PHARMAENGINE of its representation or warranties hereunder, or of any matter for which PHARMAENGINE is required to indemnify HERMES under Article 10.8; or

(c) such Liability is due to the fact that PHARMAENGINE has not observed all reasonable instructions given by HERMES in respect of the Licensed Product, including instructions as to warning to be given with respect to the potential or actual adverse effects of the Licensed Product, instructions to cease the administration or the sale of the Licensed Product, or instructions to provide certain medical care of the patient in clinical trials under this Agreement; or

(d) such Liability is derived from the production or implementation process of the Licensed Product that PHARMAENGINE has performed and fails to meet the instructions or documentation provided by HERMES.

10.11 INSURANCE. Either Party shall, at its own expense, insure the Licensed Product against all liability claims to be in compliance with the laws and regulations in each country of

the Territory (in the case of PHARMAENGINE) and in the Retained Territory (in the case of HERMES), including both clinical trials insurance and product liability insurance, arising in respect of the Licensed Product.

ARTICLE 11 - CONFIDENTIALITY

11.1 CONFIDENTIALITY. Each of the Parties agrees that any confidential or proprietary information obtained from the other Party:

(a) shall not be used by the receiving Party except in connection with the activities contemplated by this Agreement or in order to further the purpose of this Agreement;

(b) shall be maintained in confidence by the receiving Party; and

(c) shall not be disclosed by the receiving Party to any third party who is not a consultant of, or an advisor to, the receiving Party or an Affiliates or Sub-licensee of the receiving Party without prior written permission of the disclosing Party. Notwithstanding the foregoing, the receiving Party shall be entitled to use and disclose any confidential or proprietary information obtained from the disclosing Party which:

(1) was known or used by the receiving Party or its Affiliates prior to its date of disclosure to the receiving Party as demonstrated by legally admissible evidence available to the receiving Party or its Affiliates; or

(2) either before or after the date of the disclosure to the receiving Party is lawfully disclosed to the receiving Party or its Affiliates by sources other than the disclosing Party rightfully in possession of the confidential or proprietary information obtained from the disclosing Party; or

(3) either before or after the date of the disclosure to the receiving Party becomes published or otherwise part of the public domain through no fault or omission of the receiving Party or its Affiliates; or

(4) is independently developed by or for the receiving Party or its Affiliates without reference to or in reliance upon the confidential or proprietary information obtained from the disclosing Party as demonstrated by competent written records; or

(5) is reasonably necessary to conduct clinical trials or to obtain regulatory approval of Licensed Product or for the prosecution and maintenance of Patent Right; or

(6) is reasonably necessary required in order for a Party obtain financing or conduct discussions with potential development or commercialization partner so long as third party recipients are bound by an obligation of confidentiality; or

(7) is required to be disclosed by the receiving Party to comply with applicable laws or regulations or legal process, provided that the receiving Party provides prior written notice of such disclosure to the disclosing

Party and takes reasonable and lawful actions to avoid or minimize the degree of such disclosure.

11.2 PERMITTED DISCLOSURES. Each Party agrees that it will provide the confidential or proprietary information obtained from the disclosing Party solely to its employees, consultants and advisors, and the employees, consultants and advisors of its Affiliates or Sub-licensee, who have a need to know and an obligation to maintain in confidence the confidential or proprietary information obtained from the disclosing Party. Either Party shall be liable for any breach of the non-disclosure obligation of its consultants, advisors, Affiliates and Sub-licensee(s).

11.3 PUBLICATIONS. Each Party shall have the right to publish the results of any studies under this Agreement conducted solely by such Party, consistent with the protection of the confidentiality as set forth in this Article 11, and after providing a copy of the material intended for publication or presentation to the other Party for review and comment at least [**] days prior to the date of publication or presentation. Any publication shall appropriately acknowledge the support of the other Party. Any results of global clinical trials or the studies conducted jointly by the Parties shall be published in accordance with a joint publication strategy. Such joint publication strategy shall be discussed and determined by JDC when appropriate.

ARTICLE 12 - TERM & TERMINATION

12.1 TERM. This Agreement shall be effective on the Effective Date and shall remain effective for the longer of: (i) fifteen (15) years after the Effective Date, or (ii) the last to expire of the Patent Rights under HERMES Intellectual Property unless earlier terminated pursuant to this Article 12.

12.2 TERMINATION FOR CAUSE. Each party shall have the right to terminate this Agreement, upon written notice to the other Party, in the event the other Party materially breaches its obligations under this Agreement, and does not remedy such breach within [**] days after receipt of written notice from the non-breaching Party specifically stating that such Party intends to terminate the Agreement if the breaching Party fails to remedy the breach within a [**]-day ([**]-day) time period.

12.3 TERMINATION BY HERMES. Without prejudice to any other right or remedy that it may have, HERMES may terminate this Agreement forthwith by notice in writing to PHARMAENGINE given at any time, if PHARMAENGINE fails to pursue Commercially Reasonable Effort as required for the Licensed Product, and such failure is not cured within a reasonable time decided by JDC, but not later than [**] months after written notice of failure is given to PHARMAENGINE.

12.4 TERMINATION BY PHARMAENGINE. PHARMAENGINE may:

(a) terminate the license(s), in one or more countries in the Territory, under this Agreement by service of six (6) months' written notice to HERMES at any time during the term of this Agreement; and

(b) terminate the license(s) under this Agreement, in one or more countries in the Territory, forthright upon written notice to HERMES at any time during the term of this Agreement, in the event that the Patent Rights of HERMES Intellectual Property is invalid, disclaimed, unenforceable, abandoned, or finally rejected.

12.5 CONSEQUENCES OF TERMINATION. In the event that this Agreement is terminated by HERMES under Articles 12.2 and 12.3, all licenses and right granted by HERMES to PHARMAENGINE under this Agreement shall terminate; provided, however, that to the extent such license and right are required in respect of clinical trials that are ongoing and cannot reasonably be terminated promptly due to "health or safety reasons or the requirements of the applicable law, such licenses and rights will continue in effect until such clinical trials are properly terminated; and all improvements, studies, approvals, data, patent rights applicable to the Licensed Product shall revert and assigned to HERMES. Payments made to HERMES under this Agreement prior to the date of termination are not recoverable by PHARMAENGINE, and any payments due HERMES under Article 8 of this Agreement shall be payable to HERMES as of the date of termination.

ARTICLE 13 - MISCELLANEOUS

13.1 ENTIRE AGREEMENT. This Agreement constitute the entire agreement pertaining to the subject matter hereof and supersede any and all prior understandings, negotiations, commitments, discussions, writings, including the TTY Research and Development Agreement, whether oral or written, of the parties with respect to the same subject matter. This Agreement shall not be waived, released, discharged, changed or modified in any manner, in whole or in part, except by an instrument signed by the duly authorized representative of both parties hereto, which document shall make specific reference to this Agreement and shall express the plan or intention to modify the same.

13.2 SEVERABILITY. If any term, clause, sentence or paragraph of this Agreement is declared or becomes unenforceable, invalid, or illegal in any respect under the law of any relevant jurisdiction, such term or provision or part thereof shall be deemed to have been severed from the remaining terms of this Agreement and the terms and conditions hereof shall remain in full force and effect as if this Agreement had been executed without the offending provision appearing herein.

13.3 NO IMPLIED WAIVERS, Any party's failure to enforce any provision of this Agreement shall not be construed as a waiver of such party's right to enforce such provision, and any waiver of a provision shall not in any way affect such party's right to enforce such provision at a later time.

13.4 PUBLICITY. Any public announcement with respect of the execution of this Agreement, the conduct of activities under the Plans or significant developments thereunder will be reviewed by the Parties in advance of such announcement.

13.5 DISPUTE RESOLUTION. In the event of any dispute, controversy or claim arising out of or relating to this Agreement and not expressly provided for elsewhere herein, the Parties shall try to settle such dispute, controversy or claim amicably in JDC meeting or by referring such dispute, controversy or claims to the Chief Executive Officer or other officer(s) designated by the Chief Executive Officer. In the event that after [**] days JDC or the Chief Executive officers of both Parties fail to resolve the matter, the Parties agree to finally settle such matter by arbitration set forth in Article 13.10.

13.6 FORCE MAJEURE. Either Party shall be excused from performing its obligations as required by this Agreement to the extent such performance is delayed or prevented by any events beyond such party's reasonable control, including but not limited to acts of God, acts of war or hostilities, acts or omissions of any civil or government agency or officer, invasion, revolution, civil commotion, fire, flood, severe earthquake, typhoon or cyclone, lightning, plague or other epidemic, or circumstances which are beyond reasonable control of the Party affected and which such Party could not reasonably be expected to have avoided or overcome it or its consequences by exercise of reasonable care and diligence, provided that such performance shall be excused only to the extent of and during such disability. Any time specified for completion of performance in this Agreement failing due to, during, or subsequent to the occurrence of any of such events shall be automatically extended for a period of time equal to the period of such disability.

13.7 ASSIGNMENT. Neither Party shall assign, charge or transfer this Agreement to a third party without the written consent of the other, which consent shall not unreasonably be withheld or delayed provided always that:

(a) either Party may assign and transfer its right and obligations under this Agreement (in whole but not in part) to any Affiliate without obtaining the prior consent of the other Party provided that the performance by its Affiliate of its obligations hereunder is guaranteed by the assignor and the assignor gives prior written notice to the other of such assignment; and

(b) HERMES may assign and transfer its rights and obligations under this Agreement (in whole but not in part) to any person or entity to whom it transfer all or substantially all of its assets or business relating the Licensed Product.

13.8 NOTICE.

(a) Any notice required to be given under this Agreement shall be in writing and delivered by hand and/or sent by an international courier ("Courier") or facsimile (in the case of facsimile to be confirmed in writing and delivered by hand and/or sent by Courier within four Business Days if being sent by facsimile) to the address as described below:

For HERMES:
Hermes Biosciences, Inc.
61 Airport Boulevard, Suite D
South San Francisco, CA 94080
U.S.A.
Attn: Raymond S. Poon, Ph.D.
Vice President, Business Development
Fax: 650-873-2501
cc: John W. Park, M.D.
President & Chief Executive Officer

For PHARMAENGINE:
PharmaEngine, Inc.
16F, 237, Sung-Chiang Road
Taipei, Taiwan 104
R.O.C.
Attn: Cherry Chen
Senior Director, Business Development
Fax: 886-2-2515-7558
cc: C. Grace Yeh, Ph. D.
President & Chief Executive Officer

(b) A notice shall be deemed to have been served as follows:

(1) if delivered by hand, at the time of delivery;

(2) if delivered by mail, the expiration of four (4) Business Days after the envelope containing the same was delivered into the custody of the Courier service; and

(3) if sent by facsimile, at the expiration of twelve (12) hours after the same was despatched,

except that if a notice or other communication would be deemed to be served under the above provisions on a day that is not a Business Day in the country of receipt or after 5:00 pm in that country, then it shall be deemed instead to have been delivered at 9:00 am on the next Business Day in that country.

13.9 INDEPENDENT CONTRACTORS. Each of the Parties is an independent contractor and not a partner, general agent or employee of the other Party. Nothing contained in the Agreement shall be construed to establish any partnership, joint venture or agency relationship between Parties. Except as may be expressly authorized in writing, neither Party shall, at any time, enter into or incur, or hold itself out to third parties as having authority to enter into or incur on behalf of the other party, any obligations, commitments, expenses or liabilities whatsoever.

13.10 GOVERNING LAW AND JURISDICTION, Any controversy or claim of whatsoever nature arising out of or relating in any manner whatsoever to this Agreement or any breach of any terms of this Agreement shall be governed by and construed in all respects in accordance with the laws of the State of California in the United States of America. Any dispute arising out of or in connection with this Agreement, including any dispute regarding its existing, validity or termination, shall be submitted to final and binding arbitration under the then current rules of the American Arbitration Association. ("AAA"), with a panel of three arbitrators. Such arbitration shall be held in San Francisco, California, USA. Such arbitrators shall be selected by the mutual agreement of the parties or, failing such agreement, shall be selected according to the aforementioned AAA rules. The parties shall bear the costs of the arbitration equally unless the arbitrators, pursuant to their right, but not their obligation, require the non-prevailing party to bear [**]. The arbitrators shall make their decision in accordance with applicable law and the factual evidence presented. The decision of the arbitrators shall be final and may be enforced by the party in whose favor it runs in any court of competent jurisdiction at the option of the successful party. The rights and obligations of the parties to arbitrate any dispute relating to the interpretation or performance of this Agreement or the grounds for the termination thereof shall survive the expiration or termination of this Agreement for any reason. The language of the arbitration shall be English.

13.11 COUNTERPARTS. This Agreement shall be executed in one or more counterparts, each of which shall be deemed an original, and all of which together shall constitute one and same instrument.

13.12 CONSTRUCTION OF AGREEMENT. This Agreement has been prepared jointly and shall not be strictly construed against either Party.

13.13 LANGUAGE. All communications between the Parties regarding this Agreement and activities contemplated hereunder shall be in the English language.

13.14 SURVIVING PROVISIONS. Any termination of this Agreement will not affect the rights and obligations set forth in the following Articles and Paragraphs:

Article 1	Definitions
Paragraph 8.4	Records
Paragraph 9.1	Ownership of Patents
Paragraph 9.2(c)	Prosecution of Patents for Jointly Owned Patent Rights
Article 10	Warranty and Indemnification
Article 11	Confidentiality
Paragraph 12.5	Consequences of Termination
Article 13	Miscellaneous

IN WITNESS WHEREOF, the Parties hereto have set their hand and seal as of the date first above written.

Hermes Biosciences, Inc.	PharmaEngine, Inc.
By: /s/ John W. Park	By: /s/ C. Grace Yeh
Name: John W. Park, M.D.	Name: C. Grace Yeh, Ph.D.
Title: President & Chief Executive Officer	Title: President & Chief Executive Officer
Date: 9/28/05	Date: Sept. 22, 2005

Exhibit A

I. HERMES Patent Rights

[**],

including all divisions, substitutions, continuations, continuations-in-part (to the extent supported by the parent application), reissues, reexaminations, or extensions thereto, foreign and domestic pending patent applications and all priority rights claiming priority thereof, or derived therefrom, in all jurisdictions, including any patents issuing from any of the foregoing.

II. All HERMES' rights or interests in any data, know-how, technology, designs, plans, specifications, prototype devices, improvements, manufacturing know-how, clinical data, research results, and any other intellectual property rights useful in making, using, or selling the Licensed Product, including, but not limited, to the Report from Hermes Biosciences, Inc. to[**].

III. All HERMES' registered and unregistered trade names, trademarks, service marks, trademark registrations, copyrights, copyright registrations and copyright registration applications related to, or used in connection with, any of the foregoing.

AMENDMENT TO LICENSE AGREEMENT

This Amendment (this "Amendment") to the Agreement (as defined below) is made as of this 30th day of June, 2011 (the "Execution Date") with effect from and after May 5, 2011 (the "Amendment Effective Date") by and between Merrimack Pharmaceuticals, Inc., a Delaware corporation ("Merrimack Parent"), and Merrimack Pharmaceuticals (Bermuda) Ltd., a company organized and existing under the laws of Bermuda ("Merrimack Bermuda").

WHEREAS, PharmaEngine, Inc. ("PEI") and Hermes BioSciences, Inc. ("Hermes"), a California corporation that was later acquired by and merged with and into Merrimack Parent, entered into a License Agreement, dated as of September 26, 2005 (the "Agreement"), pursuant to which PEI received a license under certain intellectual property rights of Hermes to develop and commercialize the Licensed Product (as defined in the Agreement) in the Territory (as defined in the Agreement);

WHEREAS, on May 5, 2011, Merrimack Bermuda entered into an Assignment, Sublicense and Collaboration Agreement ("Assignment Agreement") with PEI, pursuant to which (a) PEI assigned all of its rights, interests and obligations under the Agreement to Merrimack Bermuda, and Merrimack Bermuda assumed all of PEI's obligations under the Agreement, (b) Merrimack Bermuda granted a sublicense back to PEI under certain technology to develop and commercialize the Licensed Product in the Republic of China (Taiwan) and (c) PEI and Merrimack Bermuda agreed to collaborate in the development of the Licensed Product; and

WHEREAS, Merrimack Parent and Merrimack Bermuda desire to amend the Agreement to transfer back to Merrimack Parent the right to develop and commercialize the Licensed Product in certain countries in Asia and in consideration therefor Merrimack Parent will make certain payments to Merrimack Bermuda as provided herein.

NOW, THEREFORE, in consideration of the mutual provisions and covenants contained herein, the receipt and sufficiency of which are hereby acknowledged, Merrimack Parent and Merrimack Bermuda hereby agree as follows:

1. Amendment of the Definition of Territory. Section 1.34 of the Agreement is hereby amended to add the words that are in bold and underlined and delete the words that appear in strikethrough text as follows:

1.34 "**Territory**" shall mean ~~Democratic People's Republic of Korea, Indonesia, Japan, Malaysia, People's Republic of China, Republic of the Philippines, Republic of Korea, Singapore,~~ Taiwan~~, Thailand, Vietnam~~ and ~~all countries in~~ **the** Europe **Territory**~~: including Albania, Austria, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Macedonia, Moldova, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia and Montenegro, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, and Untied Kingdom~~.

2. Addition of Definitions. Article 1 of the Agreement is hereby amended to add the following definitions:

1.37 "Asia Territory" shall mean Democratic People's Republic of Korea, Indonesia, Japan, Malaysia, People's Republic of China, Republic of the Philippines, Republic of Korea, Singapore, Thailand and Vietnam.

1.38 "Europe Territory" shall mean all countries in Europe, including Albania, Austria, Belarus, Belgium, Bosnia, Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Malta, Moldova, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia and Montenegro, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine and the United Kingdom.

3. Deletion of Right of First Refusal. Section 5.3 of the Agreement is hereby deleted in its entirety.

4. Amendment of Royalty Provision. Section 8.3 of the Agreement is hereby amended to add the words that are in bold and underlined and delete the words that appear in strikethrough text as follows:

8.3 ROYALTIES. PHARMAENGINE shall pay to HERMES ~~the~~ Royalties equal~~s~~ to ~~the sum of~~ [**] percent ([**]%) of the Net Sales of the Licensed Product in **the** Europe **Territory** ~~plus [**] percent ([**]%) of the Net Sales of the Licensed Product in the Territory in Asia~~. **No Royalties shall be due hereunder with respect to Net Sales of the Licensed Product in Taiwan.** PHARMAENGINE shall prepare a statement in respect of each Quarter, which shall show for the Quarter the aggregate Net Sales **for which Royalties are due hereunder**. Such statement shall be submitted to HERMES within [**] days of the end of the Quarter to which it relates together with remittance for the Royalties in respect of such Quarter.

5. Payments from Merrimack Parent to Merrimack Bermuda.

5.1 Merrimack Parent acknowledges that pursuant to the Assignment Agreement, Merrimack Bermuda agreed to pay PEI (a) an upfront amount of Ten Million dollars ($10,000,000), (b) certain development and regulatory milestone payments related to the development of the Licensed Product in the Europe Territory and the Asia Territory, (c) sales milestone payments based on Annual Net Sales (as defined in the Assignment Agreement) of the Licensed Product in the Europe Territory and the Asia Territory, (d) tiered royalty payments based on Annual Net Sales of the Licensed Product in the Europe Territory and the Asia Territory and (e) a percentage of Sublicense Revenue (as defined in the Assignment Agreement) based on the licensing or sublicensing of rights to develop and/or commercialize the Licensed Product in the Europe Territory and the Asia Territory.

5.2 In consideration for the transfer by Merrimack Bermuda to Merrimack Parent of rights with respect to the Licensed Product in the Asia Territory as provided herein, Merrimack Parent agrees to make the following payments to Merrimack Bermuda in connection with amounts paid or payable to PEI under the Assignment Agreement that are allocable to the Licensed Product in the Asia Territory:

(a) Upfront Payment. [**] dollars ($[**]) due within [**] days after the Execution Date.

(b) Development and Regulatory Milestones. Merrimack Parent shall pay Merrimack Bermuda the amounts set forth below for achievement of the corresponding event milestones with respect to the Licensed Compound (as defined in the Assignment Agreement) or the Licensed Product:

Development and Regulatory Milestone Events for the Licensed Compound or the Licensed Product		Dollars
(i)	[**]	[**]
(ii)	[**]	[**]
(iii)	[**]	[**]
(iv)	[**]	[**]

If the relevant milestone events noted above are first achieved by Merrimack Parent or its licensees or sublicensees (in each case, other than Merrimack Bermuda), Merrimack Parent shall provide notice to Merrimack Bermuda within [**] days after such achievement. If the milestone event noted in 5.2(b)(i) is first achieved by Merrimack Bermuda or its licensees or sublicensees (in each case, other than Merrimack Parent), Merrimack Bermuda shall provide notice to Merrimack Parent within [**] days after such achievement. Merrimack Parent shall make the corresponding payment within [**] days after achievement.

(c) Sales Milestones. Merrimack Parent shall pay Merrimack Bermuda the amounts set forth below upon the first achievement of the corresponding sales milestone by the Licensed Product in the Europe Territory and the Asia Territory:

Sales Milestone Events for the Licensed Product	Dollars
Annual Net Sales in the Europe Territory and the Asia Territory for the Licensed Product exceed $[**]	[**]
Annual Net Sales in the Europe Territory and the Asia Territory for the Licensed Product exceed $[**]	[**]
Annual Net Sales in the Europe Territory and the Asia Territory for the Licensed Product exceed $[**]	[**]

For purposes of this Section 5.2(c), Asian Sales Milestone Percentage means the percentage equal to the portion of Annual Net Sales of the Licensed Product in the Asia Territory in the year in which the applicable milestone is achieved, divided by Annual Net Sales of the Licensed Product in both the Europe Territory and the Asia Territory in the year in which the applicable milestone is achieved.

(d) Royalties. As to Annual Net Sales of the Licensed Product, subject to adjustment as set forth below, Merrimack Parent shall pay Merrimack Bermuda royalties during the Royalty Term (as defined in the Assignment Agreement) at the incremental royalty rates set forth below:

Annual Net Sales (in US Dollars) of the Licensed Product in the Europe Territory and the Asia Territory	Incremental Royalty Rates as a Percentage of Annual Net Sales
Portion of Annual Net Sales for the Licensed Product in the Europe Territory and the Asia Territory up to and including $[**]	[**]
Portion of Annual Net Sales for the Licensed Product in the Europe Territory and the Asia Territory that is equal to or exceeds $[**], up to and including $[**]	[**]
Portion of Annual Net Sales for the Licensed Product in the Europe Territory and the Asia Territory that is equal to or exceeds $[**], up to and including $[**]	[**]
Portion of Annual Net Sales for the Licensed Product in the Europe Territory and the Asia Territory that is equal to or exceeds $[**]	[**]

The calculation of the Asian Royalty Rate Percentage shall be conducted on a Quarter-by-Quarter basis. For purposes of this Section 5.2(d), Asian Royalty Rate Percentage means the percentage equal to the portion of Annual Net Sales of the Licensed Product in the Asia Territory in the Quarter for which the applicable royalty payment is due, divided by Annual Net Sales of the Licensed Product in both the Europe Territory and the Asia Territory in the Quarter for which the applicable royalty payment is due.

In the event that the royalty rate applicable to Annual Net Sales of the Licensed Product in a country in the Asia Territory is adjusted in accordance with Section 9.4(c) or 9.4(d) of the Assignment Agreement, Merrimack Bermuda shall provide Merrimack Parent notice of such reduction and such reduced royalty rate shall apply to the percentages specified above in

this Section 5.2(d) before applying the Asian Royalty Rate Percentage (i.e., **[**]** %) to the same extent as such reduction applies in the Assignment Agreement.

(e) Sublicense Revenue. Merrimack Parent shall pay to Merrimack Bermuda a portion of all Sublicense Revenue with respect to the Asia Territory as follows:

Sublicense Timeframe	Portion of Sublicense Revenue to be paid to PEI
Sublicense agreement executed prior to [**].	[**]
Sublicense agreement executed on or after [**].	[**]
Sublicense agreement executed on or after [**].	[**]

(f) Reports and Payments. Within (i) [**] days after Merrimack Parent receives the royalty statement from Merrimack Bermuda pursuant to Section 8.3 of the Agreement, or (ii) if there are no Net Sales in the Europe Territory during a Quarter, within [**] days after the end of each Quarter during which there

are Net Sales or Sublicense Revenue in the Asia Territory giving rise to a payment obligation under Section 5.2(c), (d) or (e), Merrimack Parent shall deliver to Merrimack Bermuda reasonably detailed written accountings of Net Sales of the Licensed Product in the Asia Territory and royalties, sales milestone payments and Sublicense Revenue, if any, due to Merrimack Bermuda for such Quarter. Such quarterly reports shall indicate the Asian Sales Milestone Percentage, Asian Royalty Rate Percentage, gross sales on a country-by-country basis, deductions from gross sales used in calculating Net Sales and the resulting calculation of royalties and sales milestone payments. When Merrimack Parent delivers such accountings to Merrimack Bermuda, Merrimack Parent shall also deliver all royalty, sales milestone and Sublicense Revenue payments due hereunder to Merrimack Bermuda for the Quarter.

6. Payments from Merrimack Bermuda to Merrimack Parent. Within [**] days after the Execution Date, Merrimack Bermuda shall pay to Merrimack Parent [**] dollars ($[**]). Effective upon Merrimack Parent's receipt of such payment, the license grant from Merrimack Parent to Merrimack Bermuda with respect to the Licensed Product in Taiwan shall be deemed a fully paid-up, royalty free license, and Merrimack Bermuda shall have no further obligation to deliver statements under Section 8.3 of the Agreement with respect to Net Sales of the Licensed Product in Taiwan.

7. Miscellaneous. Capitalized terms used herein and not otherwise defined herein shall have the respective meanings set forth in the Agreement, as amended by this Amendment. Except as amended by this Amendment, the Agreement shall be and remain in full force and effect. If there is any conflict or inconsistency between this Amendment and the Agreement, this Amendment shall prevail. The Agreement, as modified by this Amendment, contains the entire agreement between Merrimack Parent and Merrimack Bermuda with respect to the subject matter

contemplated herein and shall not be modified or amended except by a written instrument signed by both parties hereto.

8. Counterparts. This Amendment may be executed in two counterparts, each of which shall be effective as of the Amendment Effective Date, and which shall constitute one and the same instrument. This Amendment shall be deemed executed by the Parties when any one or more counterparts hereof, individually or taken together, bears the signatures of each of Merrimack Parent and Merrimack Bermuda.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, Merrimack Parent and Merrimack Bermuda have caused this Amendment to be executed by their respective authorized representatives as of the Execution Date.

MERRIMACK PHARMACEUTICALS, INC.

By: /s/ William A. Sullivan
William A. Sullivan
Chief Financial Officer

MERRIMACK PHARMACEUTICALS (BERMUDA) LTD.

By: /s/ Jeffrey A. Munsie
Jeffrey A. Munsie
Vice President

Exhibit 10.17

CONFIDENTIAL **EXECUTION COPY**

Confidential Materials omitted and filed separately with the
Securities and Exchange Commission. Asterisks denote omissions.

ASSIGNMENT, SUBLICENSE AND COLLABORATION AGREEMENT

by and between

PHARMAENGINE, INC.

and

MERRIMACK PHARMACEUTICALS (BERMUDA) LTD.

TABLE OF CONTENTS

ASSIGNMENT, SUBLICENSE AND COLLABORATION AGREEMENT

This Assignment, Sublicense and Collaboration Agreement (this "Agreement"), dated the 5th day of May, 2011 (the "Effective Date"), is by and between PharmaEngine, Inc., a company organized and existing under the laws of the Republic of China with its principal offices at 16F, 237, Sung-Chiang Road, Taipei, Taiwan 104, Republic of China ("PEI"), and Merrimack Pharmaceuticals (Bermuda) Ltd., a company organized and existing under the laws of Bermuda with an address of c/o Appleby Services (Bermuda) Ltd., Canon's Court, 22 Victoria Street, Hamilton, HM EX, Bermuda ("MERRIMACK").

INTRODUCTION

1. PEI and Hermes BioSciences, Inc. ("Hermes"), a California corporation that was later acquired by and merged with and into Merrimack Parent (as defined below) prior to the Effective Date, entered into a License Agreement dated September 26, 2005 (the "2005 License Agreement") pursuant to which PEI received a license to develop and commercialize the Licensed Compound and the Licensed Product (each as defined below) in Europe and certain countries in Asia.

2. PEI wishes to assign PEI's rights and obligations under the 2005 License Agreement to MERRIMACK, and MERRIMACK wishes to assume PEI's rights and obligations under the 2005 License Agreement.

3. MERRIMACK and PEI wish to enter into this Agreement pursuant to which MERRIMACK will grant PEI a license under the MERRIMACK Licensed Technology (as defined below) to Develop and Commercialize (each as defined below) the Licensed Compound and the Licensed Product in the PEI Territory (as defined below) and PEI will grant MERRIMACK a license under the PEI Licensed Technology (as defined below) to Develop and Commercialize the Licensed Compound and the Licensed Product outside the PEI Territory.

4. MERRIMACK and PEI will collaborate on certain Development activities related to the Licensed Compound and the Licensed Product on the terms and conditions set forth herein.

NOW, THEREFORE, in consideration of the mutual covenants contained herein and other good and valuable consideration, the receipt of which is hereby acknowledged, MERRIMACK and PEI agree as follows:

Article I
Definitions

When used in this Agreement, each of the following terms shall have the meanings set forth in this Article I:

Section 1.1 "Accounting Standards". Accounting Standards means, (a) with regard to MERRIMACK, US generally accepted accounting principles, and (b) with regard to PEI, for matters arising through December 31, 2011, Republic of China accounting standards and for

matters arising after January 1, 2012, international financial reporting standards, in each case as consistently applied.

Section 1.2 "Affiliate". Affiliate means, with respect to a Party, any Person that controls, is controlled by, or is under common control with such Party. For purposes of this Section 1.2, "control" shall refer to (a) in the case of a Person that is a corporate entity, direct or indirect ownership of more than fifty percent (50%) of the stock or shares having the right to vote for the election of directors of such Person, or (b) in the case of a Person that is not a corporate entity, the possession, directly or indirectly, of the power to direct, or cause the direction of, the management or policies of such Person, whether through the ownership of voting securities, by contract or otherwise.

Section 1.3 "Annual Net Sales". Annual Net Sales means aggregate Net Sales of the Licensed Compound or the Licensed Product by MERRIMACK or its Affiliates or sublicensees in the MERRIMACK Territory in any Calendar Year or, with regard to the first and last years of the Term, the portion of such Calendar Year during which this Agreement is in effect.

Section 1.4 "Bankruptcy Code". Bankruptcy Code means 11 U.S.C. §§ 101-1330 of the United States Code, as amended, and similar laws governing bankruptcy and insolvency in countries outside the United States.

Section 1.5 "Business Day". Business Day means a day on which banking institutions in Boston, Massachusetts and Taipei, Taiwan are open for business, excluding any Saturday or Sunday.

Section 1.6 "Calendar Quarter". Calendar Quarter means a calendar quarter ending on the last day of March, June, September or December.

Section 1.7 "Calendar Year". Calendar Year means a period of time commencing on January 1 and ending on the following December 31.

Section 1.8 "Clinical Trial". Clinical Trial means any human clinical trial, including any Phase I Clinical Study, Phase II Clinical Study, Phase III Clinical Study or Phase IV Clinical Study.

Section 1.9 "Commercially Reasonable Efforts". Commercially Reasonable Efforts means, with respect to the performing Party, exerting such efforts and employing such resources on a consistent basis throughout the Term as would normally be exerted or employed by a company of comparable size and resources with expertise in developing similar products for a product of similar market potential, profit potential and strategic value at a similar stage of its product life, taking into account the competitiveness of the relevant marketplace, the patent, intellectual property and development positions of Third Parties, the applicable regulatory situation, the commercial viability of the product and other relevant development and commercialization factors based upon then-prevailing conditions, but excluding from consideration any financial obligations of one Party to the other under this Agreement.

Section 1.10 "Commercialization" or "Commercialize". Commercialization or Commercialize means activities directed to obtaining pricing and reimbursement approvals, marketing, promoting, distributing, importing or selling a product.

Section 1.11 "Confidential Information". Confidential Information means all Know-How or other confidential or proprietary information of a Party that is disclosed (whether in written, graphic, oral, electronic or other form) by or on behalf of such Party to the other Party pursuant to this Agreement, including information regarding a Party's technology, products, business, business plans, financial status, biological substances, chemical substances, formulations, techniques, methodology, equipment, sources of supply and patent positioning.

Section 1.12 "Control" or "Controlled". Control or Controlled means with respect to any Know-How, Patent Right or other intellectual property right, the possession (whether by license (other than pursuant to this Agreement), ownership, control over an Affiliate with such a license or ownership, or otherwise) by a Party of the ability to grant to the other Party access or a license as provided herein without violating the terms of any agreement or arrangement with any Third Party existing before or after the Effective Date; provided, however, that any Know-How or Patent Rights licensed or acquired by a Party after the Effective Date pursuant to an agreement with a Third Party shall be deemed to be Controlled by such Party only if the other Party agrees to assume any financial obligations arising from the sublicensing thereof to such other Party in accordance with Section 4.5.

Section 1.13 "Cover", "Covering" or "Covered". Cover, Covering or Covered means, with respect to a Patent Right, that, but for a license granted to a Party under a Valid Claim included in such Patent Right, the practice, manufacture, use, offer for sale, sale, or importation by such Party of any invention claimed in such Patent Right would infringe such Valid Claim (or, in the case of a Valid Claim that has not yet issued, would infringe such Valid Claim if it were to issue).

Section 1.14 "CPT-11". CPT-11 means irinotecan, including salts thereof.

Section 1.15 "Development" or "Develop". Development or Develop means non-clinical and clinical research and drug development activities, including toxicology, pharmacology and other discovery efforts, test method development and stability testing, process development, formulation development, delivery system development, quality assurance and quality control development, statistical analysis, preclinical studies, animal studies, Clinical Trials and other clinical studies (including pre- and post-approval studies and investigator sponsored clinical studies), regulatory affairs, and Regulatory Approval and clinical study regulatory activities (excluding regulatory activities directed principally to obtaining pricing and reimbursement approvals).

Section 1.16 "Development Costs". Development Costs means the costs and expenses incurred by or on behalf of a Party attributable to, or reasonably allocable to, the Development of the Licensed Compound or the Licensed Product and that are materially consistent, as applicable, with the Development Plan (including the budget for Development activities included in the Development Plan). Except to the extent such costs are built into the FTE Rate, Development Costs shall not include costs and expenses that are allocable to or in respect of management,

financial, legal or business development personnel. "Development Costs", to the extent covered by the Development Plan, shall include:

(a) the costs of Clinical Trials (including all costs of insurance), the preparation, collation and validation of data from such Clinical Trials and the preparation of medical writing and publishing;

(b) the FTE costs of the relevant Party or its Affiliates with respect to any of the matters specified in clause (a);

(c) all Out-of-Pocket Costs incurred by the Parties or their Affiliates, including payments made to Third Parties with respect to any of the matters specified in clause (a) (except to the extent that such costs have been included in FTE costs);

(d) Regulatory Expenses;

(e) the cost of contract research organizations (CROs); and

(f) the Manufacturing Costs of clinical supplies.

Section 1.17 "Development Plan". Development Plan means the plan for the Development of the Licensed Compound and the Licensed Product in the MERRIMACK Territory and the PEI Territory (other than Development activities conducted by PEI pursuant to Section 4.2(b)(iii)) attached to this Agreement as Exhibit D, as prepared, updated and amended from time to time in accordance with Section 3.1(b), Section 3.2(b), Section 4.1(b), Section 4.2(b) and Section 4.2(c).

Section 1.18 "Development Program". Development Program means the Development activities of the Parties directed to the Licensed Compound and the Licensed Product and undertaken in accordance with the Development Plan.

Section 1.19 "DOH". DOH means the Department of Health, Executive Yuan, R.O.C. or any successor agency thereto having the same or similar functions.

Section 1.20 "EMA". EMA means the European Medicines Agency or any successor agency thereto having the same or similar functions.

Section 1.21 "EU". EU means the European Union, as it may be constituted from time to time.

Section 1.22 "Executive Officers". Executive Officers mean the Chief Executive Officer of MERRIMACK (or a senior executive officer of MERRIMACK designated by the Chief Executive Officer of MERRIMACK) and the Chief Executive Officer of PEI (or a senior executive officer designated by the Chief Executive Officer of PEI).

Section 1.23 "FDA". FDA means the United States Food and Drug Administration or any successor agency thereto having the same or similar functions.

Section 1.24 "Field". Field means all human and veterinary fields of use, including therapeutic, prophylactic, palliative and diagnostic uses in all possible indications.

Section 1.25 "First Commercial Sale". First Commercial Sale means, with respect to the Licensed Product in a given country, the date on which the Licensed Product is first sold following Marketing Authorization of the Licensed Product in such country (or, in a country in which no Marketing Authorization is required, the date on which the Licensed Product is first sold) by, on behalf of or under the authority of MERRIMACK or any of MERRIMACK's Affiliates or sublicensees (other than PEI) in arm's-length transactions to Third Parties (but not including sales relating to transactions among MERRIMACK and MERRIMACK's Affiliates and sublicensees).

Section 1.26 "FTE". FTE means a full time equivalent person year (consisting of a total of [**] hours per year) of scientific or technical work or scientific or technical managerial work on or directly related to activities undertaken by a Party hereunder.

Section 1.27 "FTE Rate". FTE Rate means $[**] per FTE, increased or decreased annually on January 1 of each year, commencing with January 1, 2012, by the percentage increase or decrease in the Consumer Price Index ("CPI") as of the then-most-recent December 31 over the CPI as of December 31, 2010. As used in this Section 1.27, Consumer Price Index or CPI means the Consumer Price Index — Urban Wage Earners and Clerical Workers, US City Average, All Items, 1982-84 = 100, published by the United States Department of Labor, Bureau of Labor Statistics (or its successor equivalent index).

Section 1.28 "Generic Product". Generic Product means, with respect to the Licensed Product, on a country-by-country basis, a product (a) that contains the Licensed Compound (or equivalent as determined by the relevant Regulatory Authority); and (b) that has received Marketing Authorization in such country through a regulatory approval process by which the sponsor or the regulatory agency references the Licensed Product or relies, in whole or in part, upon the data supporting the Licensed Product and such product is considered a "generic" version of the Licensed Product (including any therapeutically equivalent or substitutable version of the Licensed Product and any extended-release version of the Licensed Product). "Generic Product" shall not include any products sold or authorized for sale by MERRIMACK or its Affiliates or sublicensees, including through the granting of a Right of Reference or Use.

Section 1.29 "IND". IND means an application submitted to a Regulatory Authority to initiate human clinical trials, including (a) an Investigational New Drug application or any successor application or procedure filed with the FDA; (b) any non-US equivalent of a United States Investigational New Drug application; and (c) all supplements and amendments that may be filed with respect to the foregoing.

Section 1.30 "Joint Know-How". Joint Know-How means Know-How that is developed by one or more employees, agents or consultants of PEI (or any of its Affiliates) on the one hand, and one or more employees, agents or consultants of MERRIMACK (or any of its Affiliates), on the other hand, in the performance of activities under this Agreement.

Section 1.31 "Joint Patent Rights". Joint Patent Rights means all Patent Rights that Cover any Joint Know-How.

Section 1.32 "Joint Technology". Joint Technology means the Joint Know-How and Joint Patent Rights.

Section 1.33 "Know-How". Know-How means any technical, scientific and business information, data and materials, including all biological, chemical, pharmacological, toxicological, preclinical, clinical, and assay information, data and materials, analyses, ideas, discoveries, inventions, methods, techniques, improvements, concepts, designs, processes, procedures, compositions, plans, formulae, specifications and trade secrets, whether or not patentable, including documents and other media (including paper, notebooks, books, files, ledgers, records, tapes, discs, diskettes, CD-ROM, trays and containers and any other media developed following the Effective Date) containing or storing any of the foregoing, including all Regulatory Documentation.

Section 1.34 "Laws". Laws means all laws, statutes, rules, regulations, orders, judgments, or ordinances having the effect of law of any federal, national, multinational, state, provincial, county, city or other political subdivision.

Section 1.35 "Licensed Compound". Licensed Compound means (a) the nanoliposomal formulation of CPT-11 known as PEP02 or MM-398, as more fully described on Exhibit A, and (b) any modification to such nanoliposomal formulation of CPT-11.

Section 1.36 "Licensed Know-How". Licensed Know-How means the MERRIMACK Know-How, Joint Know-How and PEI Know-How.

Section 1.37 "Licensed Patent Rights". Licensed Patent Rights means the MERRIMACK Patent Rights, Joint Patent Rights and PEI Patent Rights.

Section 1.38 "Licensed Product". Licensed Product means any pharmaceutical product including or comprising the Licensed Compound as an active ingredient. For purposes of clarity, unless the context otherwise dictates, all references to "Licensed Product" shall include the Licensed Compound contained in the Licensed Product.

Section 1.39 "Licensed Technology". Licensed Technology means the Licensed Patent Rights and Licensed Know-How.

Section 1.40 "Major Asian Country". Major Asian Country means any of the People's Republic of China, Japan, the Republic of Korea or Singapore.

Section 1.41 "Major EU Country". Major EU Country means any of France, Germany, Italy, Spain or the United Kingdom.

Section 1.42 "Manufacturing Costs". Manufacturing Costs means, as to a Party, such Party's direct and identifiable internal and external costs of manufacturing, quality control testing, stability monitoring, re-release, relabeling, packaging and shipment (including insurance) of the Licensed Compound or the Licensed Product, consisting of the following:

(a) with regard to a Party's internal costs, Manufacturing Costs shall consist of all FTE costs of such Party's personnel engaged in manufacturing, quality control testing, stability monitoring, re-release, relabeling, packaging and shipment of the Licensed Compound or the Licensed Product, at the FTE Rate;

(b) with regard to a Party's external costs and charges, Manufacturing Costs shall consist of the Out-of-Pocket Costs of suppliers of goods, including raw materials, and services, including contract manufacturing organizations (CMO), directly related to the manufacture, quality control testing, stability monitoring, re-release, relabeling, packaging and shipment (including insurance) of the Licensed Compound or the Licensed Product; and

(c) import and export duties, value added taxes and other taxes imposed upon and paid directly with respect to the sale or delivery of the Licensed Compound or the Licensed Product.

Section 1.43 "Manufacturing Technology". Manufacturing Technology means Regulatory Documentation and other Know-How that are necessary or useful for a Party (or the Affiliate or Third Party manufacturer identified by such Party) to manufacture the Licensed Compound and Licensed Product, including manufacturing processes, analytical methods, specifications, protocols, assays, batch records, quality control data, transportation and storage requirements, and other manufacturing documentation or files.

Section 1.44 "Marketing Authorization". Marketing Authorization means the authorization issued by the relevant Regulatory Authority (including, where required, any governmental price or reimbursement approvals or inclusion on the official list of reimbursable drugs, as applicable) necessary to commercially market the Licensed Product in any country or regulatory jurisdiction. For clarification, Marketing Authorization does not include the approval or becoming effective of an IND.

Section 1.45 "MERRIMACK Asia Territory". MERRIMACK Asia Territory means Democratic People's Republic of Korea, Indonesia, Japan, Malaysia, People's Republic of China, Republic of the Philippines, Republic of Korea, Singapore, Thailand and Vietnam.

Section 1.46 "MERRIMACK Europe Territory". MERRIMACK Europe Territory means all countries in Europe, including Albania, Austria, Belarus, Belgium, Bosnia, Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Malta, Moldova, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia and Montenegro, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine and the United Kingdom.

Section 1.47 "MERRIMACK Know-How". MERRIMACK Know-How means all Know-How that (a) as of the Effective Date or during the Term is Controlled by MERRIMACK or any of its Affiliates which conduct Development activities related to the Licensed Compound or the Licensed Product; and (b) (i) is reasonably necessary or useful to Develop, manufacture or Commercialize the Licensed Compound or the Licensed Product or (ii) is used by MERRIMACK or any of its Affiliates in the Development, manufacture or Commercialization of

the Licensed Compound or the Licensed Product; provided, however, that MERRIMACK Know-How specifically excludes Joint Know-How. For purposes of clarity, the MERRIMACK Know-How includes Know-How included in the Hermes Intellectual Property (as defined in the 2005 License Agreement).

Section 1.48 "MERRIMACK Licensed Technology". MERRIMACK Licensed Technology means MERRIMACK Know-How and MERRIMACK Patent Rights.

Section 1.49 "Merrimack Parent". Merrimack Parent means Merrimack Pharmaceuticals, Inc., a Delaware corporation with its principal offices at One Kendall Square, Suite B7201, Cambridge, MA 02139-1670, USA.

Section 1.50 "MERRIMACK Patent Rights". MERRIMACK Patent Rights means all Patent Rights that (a) as of the Effective Date and thereafter during the Term are Controlled by MERRIMACK or its Affiliates which conduct Development activities related to the Licensed Compound or the Licensed Product; and (b) Cover any MERRIMACK Know-How or the manufacture, use, offer for sale, sale or importation of the Licensed Compound or the Licensed Product; provided, however, that MERRIMACK Patent Rights specifically excludes Joint Patent Rights. For purposes of clarity, the MERRIMACK Patent Rights include Patent Rights included in the Hermes Intellectual Property (as defined in the 2005 License Agreement).

Section 1.51 "MERRIMACK ROW Territory". MERRIMACK ROW Territory means all areas outside the PEI Territory and the MERRIMACK Territory.

Section 1.52 "MERRIMACK ROW Territory Breach". MERRIMACK ROW Territory Breach means (a) a breach by MERRIMACK of Section 8.4(b), Section 11.1 or Section 11.2, or (b) MERRIMACK's use of PEI Licensed Technology outside the scope of the licenses granted under Section 8.2.

Section 1.53 "MERRIMACK Territory". MERRIMACK Territory means the MERRIMACK Asia Territory and MERRIMACK Europe Territory, but excluding any Terminated Territory.

Section 1.54 "NDA". NDA means an application submitted to a Regulatory Authority for marketing approval of a product, including (a) a New Drug Application or Biologics License Application filed with the FDA, or any successor applications or procedures; (b) any non-US equivalent of a United States New Drug Application or Biologics License Application; and (c) all supplements and amendments that may be filed with respect to the foregoing.

Section 1.55 "Net Sales". Net Sales means, with respect to the Licensed Product, the gross amount invoiced by MERRIMACK, its Affiliates or its sublicensees on sales of the Licensed Product to non-sublicensee Third Party customers in the MERRIMACK Territory, less the following deductions:

(a) Trade, cash or quantity discounts actually allowed and taken directly with respect to such sales, and amounts repaid or credited by reason of rebates, chargebacks and

retroactive price reductions, in each case to the extent such discount, repayment and credit amounts are included in the amount invoiced;

(b) Tariffs, duties, excises, sales taxes or other taxes imposed upon and paid directly with respect to the production, sale, delivery or use of the Licensed Product (excluding taxes based on the income or profits of the selling party), to the extent such amounts are included in the amount invoiced, that are actually borne by the selling party without reimbursement from a Third Party;

(c) Amounts repaid or credited by reason of rejections, defects, recalls or returns or because of refunds;

(d) Price concessions either mandated or negotiated with commercial or governmental payers;

(e) Invoiced amounts that MERRIMACK, its Affiliates or sublicensees write off as uncollectible (provided that the relevant selling party follows commercially reasonable invoicing and collections processes and, if any such written off amounts are subsequently collected, such collected amounts shall thereupon be included in Net Sales); and

(f) Freight, insurance and other transportation charges incurred in shipping the Licensed Product to Third Parties, to the extent such amounts are included in the amount invoiced.

Such amounts shall be determined from the books and records of MERRIMACK, its Affiliates or its sublicensees, as applicable, maintained in accordance with the Accounting Standards that such Person consistently applies in preparing its financial statements. Further, the total, aggregate amount of deductions under paragraphs (b), (c), (e) and (f) above with respect to any Licensed Compound or Licensed Product shall not exceed [**] percent ([**]%) of the selling price. Discounts, repayments, credits and concessions included in deductions under paragraphs (a) and (d) shall be limited to those allowed or granted in good faith by the selling party as part of its Commercialization and pricing strategy for the Licensed Product and that are, in each case, (i) consistent with such selling party's past practice with regard to such Licensed Product and its practice with regard to its other products (to the extent the selling party has established such practices and allowing for commercially reasonable modifications of such practices over time), and (ii) not for the purpose of inducing the purchase or sale of products other than Licensed Products or Licensed Compound.

In the case of any sale of the Licensed Product for consideration other than cash, such as barter or countertrade, Net Sales shall be calculated on average sales price for the Licensed Product in the applicable country in the entire applicable Calendar Year. Notwithstanding the foregoing, Net Sales shall not be imputed to transfers of Licensed Product for use in clinical trials or non-clinical Development activities, for *bona fide* charitable purposes or for compassionate use.

In the event that the Licensed Product is sold as part of a Combination Product (as defined below), the Net Sales from the Combination Product, for the purposes of determining royalty payments, shall be determined by multiplying the Net Sales of the Combination Product during

the applicable royalty reporting period, by the fraction, A/A+B, where A is the average sale price of the Licensed Product when sold separately in finished form, and B is the average sale price of the other product(s) included in the Combination Product when sold separately in finished form, in each case during the applicable royalty reporting period or, if sales of both the Licensed Product and the other product(s) did not occur in such period, then in the most recent royalty reporting period in which sales of both occurred.

In the event that such average sale price cannot be determined for both the Licensed Product and all other products(s) included in the Combination Product, Net Sales for the purposes of determining royalty payments shall be calculated by multiplying the Net Sales of the Combination Product by the fraction of C/C+D where C is the fair market value of the Licensed Product and D is the fair market value of all other pharmaceutical product(s) included in the Combination Product. In such event, MERRIMACK shall in good faith make a determination of the respective fair market values of the Licensed Product and all other pharmaceutical products included in the Combination Product, and shall notify the other Party of such determination and provide the other Party with data to support such determination. The other Party shall have the right to review such determination and supporting data, and to notify MERRIMACK if it disagrees with such determination. If the other Party does not agree with such determination and if the Parties are unable to agree in good faith as to such respective fair market values, then such matter shall be referred to the Executive Officers for resolution pursuant to Section 14.1 and, if the Executive Officers are unable to resolve such matter in accordance with Section 14.1, such matter shall be referred to binding arbitration for resolution pursuant to Section 14.2.

As used above, the term "Combination Product" means any pharmaceutical product that consists of (a) a Licensed Product and (b) one or more active ingredients that are not Licensed Products or a delivery device (whether such elements are combined in a single formulation and/or package, as applicable, or formulated and/or packaged separately but sold together for a single price).

Section 1.56 "Ongoing Clinical Studies". Ongoing Clinical Studies means (a) the Phase II Clinical Study known as [**] sponsored by [**] which is described on Exhibit B-1; (b) the Phase I Clinical Study sponsored by [**], known as [**] which is described on Exhibit B-2; and (c) the Phase II Clinical Study sponsored by [**] known as [**] which is described on Exhibit B-3. All statements regarding the status of the Ongoing Clinical Studies in such Exhibits reflect such status as of the Effective Date only.

Section 1.57 "Out-of-Pocket Costs". Out-of-Pocket Costs means, with respect to certain activities hereunder, direct expenses paid or payable by either Party or its Affiliates to Third Parties (other than employees of such Party or its Affiliates) that are specifically identifiable and incurred to conduct such activities for the Licensed Product and have been recorded in accordance with Accounting Standards normally used by such Party or its Affiliates.

Section 1.58 "Party". Party means MERRIMACK or PEI; "Parties" means MERRIMACK and PEI.

Section 1.59 "Patent Right(s)". Patent Right(s) means each and every patent and patent application in any country in the world, including utility patents, utility models, design patents

and certificates of invention, and all divisionals, continuations, continuations-in-part, substitutions, provisionals, reissues, reexaminations, renewals, extensions (including any supplemental patent certificate) or additions to any such patent applications and patents and all counterparts of any of the foregoing in any country of the world.

Section 1.60 "PEI Know-How". PEI Know-How means all Know-How that (a) as of the Effective Date or during the Term is Controlled by PEI or any of its Affiliates which conduct Development activities related to the Licensed Compound or the Licensed Product; and (b) (i) is reasonably necessary or useful to Develop, manufacture or Commercialize the Licensed Compound or the Licensed Product or (ii) is used by PEI or any of its Affiliates in the Development, manufacture or Commercialization of the Licensed Compound or the Licensed Product; provided, however, that PEI Know-How specifically excludes Joint Know-How. Without limiting the generality of the foregoing, PEI Know-How includes all Know-How invented, discovered or developed by PEI prior to the Effective Date through the practice of the rights licensed to PEI under the 2005 License Agreement.

Section 1.61 "PEI Licensed Technology". PEI Licensed Technology means PEI Know-How and PEI Patent Rights.

Section 1.62 "PEI Patent Rights". PEI Patent Rights means all Patent Rights that (a) as of the Effective Date or during the Term are Controlled by PEI or any of its Affiliates which conduct Development activities related to the Licensed Compound or the Licensed Product; and (b) Cover any PEI Know-How or the manufacture, use, offer for sale, sale or importation of the Licensed Compound or the Licensed Product; provided, however, that PEI Patent Rights specifically excludes Joint Patent Rights.

Section 1.63 "PEI Territory". PEI Territory means Taiwan.

Section 1.64 "Person". Person means any natural person or any corporation, company, partnership, limited liability company, joint venture, firm, agency or other entity, including a Party.

Section 1.65 "Phase I Clinical Study". Phase I Clinical Study means a Clinical Trial of a product, including the initial introduction of such product into humans, that generally meets the requirements of 21 C.F.R. § 312.21(a), as amended (or its successor regulation or comparable laws in countries outside the United States).

Section 1.66 "Phase II Clinical Study". Phase II Clinical Study means a Clinical Trial that generally meets the requirements of 21 C.F.R. § 312.21(b), as amended (or its successor regulation or comparable laws in countries outside the United States) that is intended to support a preliminary determination as to whether a product is safe for its intended use, and to provide preliminary information about such product's efficacy, in order to permit the design of further Clinical Trial(s), including pivotal Phase III Clinical Studies.

Section 1.67 "Phase III Clinical Study". Phase III Clinical Study means, a controlled study in humans of the efficacy and safety of a product, which is prospectively designed to demonstrate statistically whether such product is effective and safe for use in a particular

indication in a manner sufficient to file an NDA to obtain Regulatory Approval to market the product, as further defined in 21 C.F.R. § 312.21(c) (or the non-United States equivalent thereof).

Section 1.68 "Phase IV Clinical Study". Phase IV Clinical Study means a human clinical study initiated in a country for the Licensed Product in an approved indication after receipt of Regulatory Approval for the Licensed Product for such indication in such country.

Section 1.69 "Prosecution and Maintenance" or "Prosecute and Maintain". Prosecution and Maintenance or Prosecute and Maintain means, with regard to a Patent Right, the preparation, filing, prosecution and maintenance of such Patent Right, including re-examinations, reissues, appeals, and requests for patent term adjustments and patent term extensions with respect to such Patent Right, together with the initiation or defense of interferences, the initiation or defense of oppositions and other similar proceedings with respect to the particular Patent Right, and any appeals therefrom. For clarification, "Prosecution and Maintenance" or "Prosecute and Maintain" shall not include any enforcement actions taken with respect to a Patent Right.

Section 1.70 "Regulatory Approval". Regulatory Approval means any and all approvals (including, where required, any applicable governmental price and reimbursement approvals), licenses, registrations or authorizations of any Regulatory Authority necessary for the manufacture, use, storage, import, promotion, marketing and sale of a product in a country or jurisdiction, including Marketing Authorizations. For clarification, Regulatory Approval does not include the approval or becoming effective of an IND.

Section 1.71 "Regulatory Authority". Regulatory Authority means any federal, national, multinational, state, provincial or local regulatory agency, department, bureau or other governmental entity with authority over the testing, approval, manufacture, use, storage, import, promotion, marketing or sale of a product in a country, including the FDA, EMA or DOH.

Section 1.72 "Regulatory Documentation". Regulatory Documentation means, with respect to the Licensed Compound or the Licensed Product, all INDs, NDAs, and other regulatory applications submitted to any Regulatory Authority, copies of Regulatory Approvals, regulatory materials, drug dossiers, master files (including Drug Master Files, as defined in 21 C.F.R. §314.420 and any non-United States equivalents), and any other reports, records, regulatory correspondence, meeting minutes, telephone logs, and other materials relating to Regulatory Approval of the Licensed Compound or the Licensed Product (including any underlying safety and effectiveness data whether or not submitted to any Regulatory Authority), or required to manufacture, distribute or sell the Licensed Product including any information that relates to pharmacology, toxicology, chemistry, manufacturing and controls data, batch records, safety and efficacy, and any safety database required to be maintained for Regulatory Authorities.

Section 1.73 "Regulatory Expenses". Regulatory Expenses means, with respect to the Licensed Compound or the Licensed Product, all FTE costs and Out-of-Pocket Costs incurred by or on behalf of a Party in connection with the preparation and filing of regulatory submissions for the Licensed Compound or the Licensed Product and obtaining of Regulatory Approvals.

Section 1.74 "Right of Reference or Use". Right of Reference or Use means a "Right of Reference or Use" as that term is defined in 21 C.F.R. §314.3(b), and equivalent rights outside the United States.

Section 1.75 "Royalty Term". Royalty Term means, on a country-by-country basis, the period of time beginning on the Effective Date and continuing until the later of (i) ten (10) years after the First Commercial Sale of the Licensed Product in such country, or (ii) May 2, 2024.

Section 1.76 "SEC". SEC means the United States Securities and Exchange Commission.

Section 1.77 "Solid Tumor Indication". Solid Tumor Indication means tumors or cancers of a particular tissue or organ type, regardless of severity or stage and regardless of the frequency or route of administration for which a Marketing Authorization may be filed or received. For example, tumors and cancers of the breast will be considered within the one single "solid tumor indication" of "breast cancer", those of the colorectal region will be within the one single "solid tumor indication" of "colorectal cancer", those of the stomach will be considered within the one single "solid tumor indication" of "gastric cancer", and so on.

Section 1.78 "Specifications". Specifications means the specifications for the Licensed Product attached hereto as Exhibit C, which specifications may be amended from time to time with the approval of the JMC.

Section 1.79 "Sublicense Revenue". Sublicense Revenue means cash or cash equivalent consideration received by MERRIMACK or an Affiliate of MERRIMACK from a Third Party as consideration for a license or sublicense of rights to Develop and/or Commercialize the Licensed Compound or the Licensed Product in the MERRIMACK Territory; provided, however, that, if MERRIMACK or an Affiliate of MERRIMACK receives compensation in the form of development, regulatory or approval milestone payments based on the same development, regulatory or approval milestones on which the development, regulatory or approval milestone payments payable by MERRIMACK to PEI under this Agreement are based, Sublicense Revenue will include only the portion of such milestone payments in excess of the milestone payments payable by MERRIMACK to PEI under this Agreement based on the same milestones. In addition, Sublicense Revenue shall specifically exclude:

(a) payments or reimbursements for the cost of MERRIMACK's or its Affiliates' research and development efforts for the Licensed Compound or the Licensed Product to be performed after the effective date of the applicable license or sublicense, accounted for at a reasonable and customary FTE rates (any excess over a reasonable and customary FTE rate shall be included in Sublicense Revenue) or in the form of external costs billed through on a pass-through basis with no markup;

(b) royalties and sales milestone payments (or, in the case of a profit sharing deal structure, shares of net profits);

(c) payments to MERRIMACK or its Affiliates of the purchase price of equity securities to the extent not exceeding the fair market value of such securities;

(d) loan proceeds paid to MERRIMACK or its Affiliates by a licensee or sublicensee in arm's length debt financing on non-preferential commercial terms that are, other than amounts forgiven upon or following termination of the applicable licensee's or sublicensee's rights, subject to repayment by MERRIMACK or its Affiliates (any amount of such a loan forgiven by the lender for any reason other than termination of the applicable licensee's or sublicensee's rights shall be included in Sublicense Revenue); and

(e) payment for material supplied by MERRIMACK or its Affiliates, including a reasonable and customary margin on such material (any excess over a reasonable and customary margin is included in Sublicense Revenue).

If MERRIMACK or an Affiliate of MERRIMACK receives consideration from a Third Party for a license or sublicense (x) of rights to Develop and/or Commercialize the Licensed Compound or the Licensed Product in both the MERRIMACK Territory and territories outside the MERRIMACK Territory, and/or (y) of rights to Develop and/or Commercialize the Licensed Compound or the Licensed Product in the MERRIMACK Territory and to Develop and/or Commercialize other compound(s) or product(s), then (1) such consideration shall be reasonably allocated by MERRIMACK between, as applicable, the MERRIMACK Territory and such other territories and/or the Licensed Compound and the Licensed Product and such other compound(s) and product(s), and the portion allocated to the Licensed Compound and the Licensed Product in the MERRIMACK Territory will be the proposed Sublicense Revenue for such Third Party agreement; and (2) MERRIMACK shall promptly notify PEI of, and provide PEI with a copy of, each such agreement with a Third Party, along with an explanation of any allocation with respect to the consideration under such Third Party agreement in accordance with the immediately preceding sentence. If PEI does not agree with MERRIMACK's allocation of such consideration, PEI shall provide MERRIMACK with written notice of PEI's disagreement within [**] days after MERRIMACK notifies PEI of such allocation and PEI and MERRIMACK will negotiate and endeavor to agree in good faith on an allocation within [**] days after the date MERRIMACK receives such written notice. If the Parties agree within such [**] day period, the Parties will use such agreed-upon allocation to determine the Sublicense Revenue for use in the calculation set forth in Section 9.5. If despite good faith efforts the Parties are unable to agree upon such allocation within such [**] day period, then either Party may request that the allocation be determined by arbitration in accordance with Section 14.2, and, if the arbitrators determine that a different allocation is appropriate, the Parties will use the allocation determined by the arbitrators to determine the Sublicense Revenue for use in calculation set forth in Section 9.5.

For avoidance of doubt, (i) the upfront payment required under Section 9.1 is not considered a development, regulatory or approval milestone payment for purposes of this Section 1.79 and any upfront payment received by MERRIMACK or an Affiliate from a Third Party will not be reduced by such upfront payment required under Section 9.1 for purposes of calculating Sublicense Revenue; and (ii) if MERRIMACK or its Affiliate receives any development, regulatory or approval milestone payments based on different development, regulatory or approval milestones than the milestones on which the development, regulatory or approval milestone payments payable by MERRIMACK to PEI under this Agreement are based, the full amount of such milestone payments will be included in Sublicense Revenue.

Section 1.80 "Taiwan". Taiwan means the Republic of China.

Section 1.81 "Terminated Territory". Terminated Territory means, as applicable, (a) with respect to a termination of this Agreement pursuant to Section 13.3 or Section 13.4 that is limited to the MERRIMACK Europe Territory, the MERRIMACK Asia Territory and/or the MERRIMACK ROW Territory, but not all of them, the MERRIMACK Europe Territory, the MERRIMACK Asia Territory and/or the MERRIMACK ROW Territory, as applicable; or (b) with respect to a termination of this Agreement pursuant to Section 13.3 or Section 13.4 that applies to all of the MERRIMACK Europe Territory, the MERRIMACK Asia Territory and the MERRIMACK ROW Territory, all of the MERRIMACK Europe Territory, the MERRIMACK Asia Territory and the MERRIMACK ROW Territory.

Section 1.82 "Terminated Territory Royalty Term". Terminated Territory Royalty Term means, on a country-by-country basis, the period of time beginning on the effective date of the termination of this Agreement with respect to a Terminated Territory and continuing until the expiration of the last Valid Claim of the MERRIMACK Patent Rights or Joint Patent Rights that Cover the manufacture, use, offer for sale, sale or importation of the Licensed Compound or the Licensed Product in such country.

Section 1.83 "Third Party". Third Party means any Person other than a Party or any of its Affiliates.

Section 1.84 "US" or "USA". US or USA means United States of America.

Section 1.85 "Valid Claim". Valid Claim means (a) a claim of an issued patent that has not expired or been abandoned, or been revoked, held invalid or unenforceable by a patent office, court or other governmental agency of competent jurisdiction in a final and non-appealable judgment (or judgment from which no appeal

was taken within the allowable time period); or (b) a pending claim within a patent application which claim has not been revoked, cancelled, withdrawn or abandoned; provided that examination has been timely requested for such pending claim and it is otherwise being diligently prosecuted in an effort to have it allowed and granted in an issued patent.

Section 1.86 Additional Definitions. Each of the following definitions is set forth in the section of this Agreement indicated below:

Definitions	Section
1974 Convention	Section 16.1
2005 License Agreement	Preamble
Agreement	Preamble
Arbitration Request	Section 14.2(a)
Biological Materials	Section 4.6(a)
Breaching Party	Section 13.3
Claims	Section 15.1
Clinical Trial Target Date	Section 4.3(a)(ii)(A)
Combination Product	Section 1.55

Definitions	Section
Competitive Infringement	Section 10.3(a)
Effective Date	Preamble
Hermes	Preamble
Indemnified Party	Section 15.3(a)
Indemnifying Party	Section 15.3(a)
JDC	Section 3.2(a)
JMC	Section 3.3(a)
JSC	Section 3.1(a)
LCIA	Section 14.2(c)
Licensed Compound Information	Section 4.2(d)(i)
Licensing Party	Section 4.5
Losses	Section 15.1
MERRIMACK	Preamble
MERRIMACK Invalidity Claim	Section 10.5(a)
Non-Arbitrable Dispute	Section 14.1(b)
Non-Breaching Party	Section 13.3
PEI	Preamble
PEI Invalidity Claim	Section 10.5(b)
SDEA	Section 5.6
Severed Clause	Section 16.14
Step-In Patent Rights	Section 10.2(b)
Term	Section 13.1

Article II

Assignment and Assumption of the 2005 License Agreement

Section 2.1 Assignment of the 2005 License Agreement. PEI hereby assigns and transfers to MERRIMACK all of PEI's rights and obligations under the 2005 License Agreement. PEI is released from all obligations, commitments and liabilities to be performed by PEI under the 2005 License Agreement before or after the Effective Date; except that, PEI will remain liable in accordance with the terms of Section 10.9 of the 2005 License Agreement for any Third Party claims against Merrimack Parent that relate to matters that occurred prior to the Effective Date; provided that PEI's liability for any such Third Party Claims relating to any Ongoing Clinical Study will be limited to the insurance available to PEI to cover such claims. Nothing in this Article II constitutes an assignment of any PEI Know-How or PEI Patent Rights.

Section 2.2 Assumption of the 2005 License Agreement. Effective as of the Effective Date, MERRIMACK hereby (a) assumes and agrees to pay, perform and discharge when due all of the obligations, commitments and liabilities of PEI to be performed under the 2005 License Agreement on or after the Effective Date; (b) agrees to be bound in all respects by the 2005 License Agreement; and (c) agrees that, subject to the second sentence of Section 2.1, PEI is no longer bound by the 2005 License Agreement and that all of PEI's rights and obligations with regard to the portion of the MERRIMACK Licensed Technology that is covered by the 2005 License Agreement are as set forth in this Agreement. Without limiting the generality of the

foregoing, MERRIMACK agrees that MERRIMACK will be solely liable to MERRIMACK Parent for any payments due under the 2005 License Agreement as a result of activities of PEI, its Affiliates or its sublicensees under this Agreement.

Article III

Governance; Decision-Making

Section 3.1 Joint Steering Committee.

(a) Formation and Membership. Within [**] days after the Effective Date, MERRIMACK and PEI shall establish a joint steering committee (the "JSC") to review, coordinate and provide overall strategic direction to their activities pursuant to the Development Plan. The JSC shall be comprised of [**] representatives of MERRIMACK and [**] representatives of PEI with appropriate experience and level of decision-making authority. Each Party may change any one or more of its representatives on the JSC at any time upon written notice to the other Party. From time to time, the JSC may, in its discretion, establish one or more subcommittees or project teams to oversee particular projects or activities, as the JSC deems necessary or advisable.

(b) Responsibilities. The JSC shall be responsible for:

(i) reviewing and approving changes to the initial Development Plan attached to the Agreement as Exhibit D recommended by the JDC, including all budgets relating to Development activities to be conducted by PEI hereunder;

(ii) periodically reviewing the Development Plan and suggesting or approving such updates or amendments to the Development Plan, including updates or amendments recommended by the JDC, as the JSC deems appropriate, including all budget amendments;

(iii) providing overall strategic direction with respect to Development activities conducted under the Development Plan;

(iv) overseeing the JDC, JMC and any subcommittees and the Parties' progress in the conduct of activities under the Development Plan hereunder;

(v) attempting to resolve disputes arising under this Agreement at the JSC or that are referred to the JSC by the JDC, JMC and any subcommittees or either of the Parties (for clarity, the JSC shall not have the authority to resolve disputes between the Parties regarding whether a Party has fulfilled or breached any obligation under this Agreement); and

(vi) performing such other tasks and undertaking such other responsibilities as may be set forth in this Agreement.

(c) Administrative Matters. The JSC shall appoint a chairperson from among its members, who shall be from MERRIMACK. The chairperson shall be responsible for calling meetings of the JSC and for leading the meetings. A JSC member of MERRIMACK shall serve

as secretary of such meetings. The secretary shall prepare and distribute to all members of the JSC draft minutes of the meeting for review and comment, including a list of any actions or decisions approved by the JSC, with the goal of distributing final approved minutes of each JSC meeting within thirty (30) days after the meeting.

(d) Decision-Making. Each Party shall have one (1) vote on the JSC. Both Parties must vote in the affirmative to allow the JSC to take any action that requires the approval of the JSC. Decisions on any matter may be taken at a meeting, by teleconference, videoconference or by written agreement. The chairperson may convene a special meeting of the JSC in accordance with Section 3.1(f)(iii) for the purpose of resolving any disagreement at the JDC level or, if applicable, JMC level, or other disputes within the JSC's jurisdiction, in case any of the foregoing represents a material issue the resolution of which cannot reasonably await until the next scheduled meeting of the JSC. Notwithstanding the foregoing, provided that a meeting is called with at least [**] days prior notice, if one Party's representatives fail to attend such meeting, the representatives of the Party attending such meeting shall have the right to decide any matters presented at such meeting.

(e) Dispute Resolution by Executive Officers. If the JSC is unable to resolve any dispute within the responsibilities of the JSC specified in Section 3.1(b), or to unanimously agree on any matter set forth in clause (iii) below, within [**] days after one Party notifies the other Party in writing of a dispute, such dispute or other matter shall be referred to the Executive Officers for resolution pursuant to Section 14.1. If the Executive Officers are unable to resolve any such matter that is within the responsibilities of the JSC pursuant to Section 14.1 then MERRIMACK shall have final decision-making authority with respect to all matters related to the (x) Development of the Licensed Compound or the Licensed Product and (y) Commercialization of the Licensed Compound or the Licensed Product outside the PEI Territory, provided that:

(i) MERRIMACK may not exercise its final decision-making authority to make a decision that [**] with the terms and conditions of this Agreement;

(ii) MERRIMACK may not exercise its final decision-making authority to make any decision regarding [**].

(iii) the following decisions must be decided [**], and MERRIMACK shall [**]:

(A) [**];

(B) resolve disputes regarding the Parties' rights and obligations under this Agreement;

(C) [**] make a decision that is expressly stated in this Agreement to require [**] prior approval or consent, or the mutual agreement of the Parties; or

(D) otherwise expand [**] rights or reduce [**] obligations under this Agreement in connection with the Licensed Compound or the Licensed Product.

For clarity, if any of the matters in the foregoing clauses (A)-(D) are not decided [**], they shall be resolved as provided in Article XIV.

(f) Meetings.

(i) The JSC shall meet at least twice annually. The location of JSC meetings shall be as determined by the chairperson, and may be held in person, alternating locations between the Parties, or by telephone conference call or by videoconference.

(ii) Each Party shall use reasonable efforts to cause its representatives to attend the meetings of the JSC. In addition, each Party may, with the prior consent of the chairperson, invite a reasonable number of non-voting employees or officers, consultants or scientific advisors, to attend meetings of the JSC or the relevant portion thereof; provided that any such consultants or scientific advisors are bound by written obligations of confidentiality that are at least as stringent as those set forth in this Agreement.

(iii) The chairperson may also call a special meeting of the JSC for the purpose of resolving disputes in connection with, or for the purpose of reviewing or making a decision pertaining to, any material matter within the purview of the JSC, the examination or resolution of which cannot reasonably be postponed until the next scheduled JSC meeting, by providing written notice to the Parties. Such meeting shall be convened at such time as may be mutually agreed upon by the Parties, but in any event shall be held within [**] days after the date of such notice.

(iv) PEI may also call a special meeting of the JSC for the purpose of resolving disputes in connection with, or for the purpose of reviewing or making a decision pertaining to, any material matter within the purview of the JSC, the examination or resolution of which cannot reasonably be postponed until the next

scheduled JSC meeting, by providing written notice to the Parties. Such meeting shall be convened at such time as may be mutually agreed upon by the Parties, but in any event shall be held within [**] days after the date of such notice.

Section 3.2 Joint Development Committee.

(a) Formation and Membership. Within [**] days after the Effective Date, MERRIMACK and PEI shall establish a joint development committee (the "JDC"). The JDC shall be comprised of [**] representatives of MERRIMACK and [**] representatives of PEI, each of whom shall have appropriate experience and level of decision-making authority. Each Party may change any one or more of its representatives on the JDC at any time upon written notice to the other Party. From time to time, the JDC may, in its discretion, establish one or more project teams, to, upon mutual agreement of the Parties, implement and coordinate various aspects of the Development Plan or other elements of the collaboration hereunder, such as coordination of patent prosecution or enforcement matters as contemplated in Article X.

(b) Responsibilities. The JDC shall be responsible for:

(i) reviewing, and recommending to the JSC for JSC review and approval, as appropriate, changes, updates and amendments to the initial Development Plan attached to this Agreement as Exhibit D, in each case as prepared in accordance with Section 4.1(b);

(ii) providing strategic direction with respect to non-clinical, clinical and manufacturing activities for the Licensed Compound and the Licensed Product;

(iii) overseeing the Development of the Licensed Compound and the Licensed Product in accordance with the Development Plan;

(iv) overseeing the progress of the Development Program and monitoring the Parties' compliance with their respective obligations under the Development Plan, including the accomplishment of key objectives and reviewing, approving, providing strategic direction to and overseeing Development activities conducted by PEI pursuant to the Development Plan;

(v) reviewing protocols of Clinical Trials to be conducted by PEI in accordance with Section 4.2(b)(iii);

(vi) discussing, reviewing and approving a joint publication strategy with respect to the publication of results of Clinical Trials conducted by the Parties with respect to the Licensed Compound and the Licensed Product; and

(vii) performing such other tasks and undertaking such other responsibilities as may be set forth in this Agreement.

(c) Administrative Matters. The JDC shall appoint a chairperson from among its members, who shall be from MERRIMACK. The chairperson shall be responsible for calling meetings of the JDC and for leading the meetings. A JDC member of MERRIMACK shall serve as secretary of such meetings. The secretary shall prepare and distribute to all members of the JDC draft minutes of the meeting for review and comment, including a list of any actions or decisions approved by the JDC, with the goal of distributing final approved minutes of each JDC meeting within thirty (30) days after the meeting.

(d) Decision-Making. Each Party shall have one (1) vote on the JDC. Both Parties must vote in the affirmative to allow the JDC to take any action that requires the approval of the JDC. Decisions on any matter may be taken at a meeting, by teleconference or videoconference or by written agreement. If the JDC is unable to reach unanimous agreement on any matter within the JDC's jurisdiction, then the matter shall be referred to the JSC for resolution in accordance with Section 3.1(b)(v) (subject to Section 3.1(e) and MERRIMACK's final decision-making authority as to matters covered thereunder). Notwithstanding the foregoing, provided that a meeting is called with at least [**] days prior notice, if one Party's representatives fail to attend such meeting, the representatives of the Party attending such meeting shall have the right to decide any matters presented at such meeting.

(e) Meetings.

(i) Prior to the first dosing of the first subject in the first Phase III Clinical Study for the Licensed Compound, the JDC shall meet at least [**]. Thereafter, the JDC shall meet at least [**]. The location of JDC meetings shall be as determined by the chairperson, and may be held in person, alternating locations between the Parties, or by telephone conference call or by videoconference.

(ii) Each Party shall use reasonable efforts to cause its representatives to attend the meetings of the JDC. If a Party's representative is unable to attend a meeting, such Party may designate an alternate representative to attend such meeting in place of the absent representative. In addition, each Party may, with the prior consent of the chairperson, invite a reasonable number of additional employees, consultants or scientific advisors, to attend the meetings of the JDC or the relevant portion thereof, provided that any such consultants or scientific advisors are bound by written obligations of confidentiality that are at least as stringent as those set forth in this Agreement.

(iii) The chairperson may also call a special meeting of the JDC for the purpose of resolving material disputes in connection with, or for the purpose of reviewing or making a material decision pertaining to, the implementation of the Development Plan, the examination or resolution of which cannot reasonably be postponed until the next scheduled JDC meeting, by providing written notice to the Parties. Such meeting shall be convened at such time as may be mutually agreed upon by the Parties, but in any event shall be held within [**] days after the date of such notice.

(iv) PEI may also call a special meeting of the JDC for the purpose of resolving disputes in connection with, or for the purpose of reviewing or making a decision pertaining to, any material matter within the purview of the JDC, the examination or resolution of which cannot reasonably be postponed until the next scheduled JDC meeting, by providing written notice to the Parties. Such meeting shall be convened at such time as may be mutually agreed upon by the Parties, but in any event shall be held within [**] days after the date of such notice.

Section 3.3 Joint Manufacturing Committee.

(a) Formation and Membership. Within [**] days after the Effective Date, MERRIMACK and PEI shall establish a joint manufacturing committee (the "JMC"). The JMC shall be comprised of [**] representatives of MERRIMACK and [**] representatives of PEI, each of whom shall have appropriate experience and level of decision-making authority. Each Party may change any one or more of its representatives on the JMC at any time upon written notice to the other Party. From time to time, the JMC may, in its discretion, establish one or more project teams, to, upon mutual agreement of the Parties, implement and coordinate various aspects of the Manufacturing Technology transfer and such other matters within the JMC's purview.

(b) Responsibilities. The JMC shall be responsible for:

(i) overseeing and advising on the pre-clinical and clinical manufacture of the Licensed Compound and the Licensed Product;

(ii) overseeing the transfer of manufacturing responsibility from PEI to MERRIMACK under Section 6.1;

(iii) to the extent agreed by the Parties pursuant to Section 7.2, coordinating manufacture of the Licensed Product for Commercialization, including monitoring logistical strategies, capacity planning and inventory levels for the Licensed Product for Commercialization by PEI in the PEI Territory and by MERRIMACK outside the PEI Territory; and

(iv) providing a forum for the Parties to discuss any material quality-related issues concerning the Licensed Product.

(c) Administrative Matters. The JMC shall appoint a chairperson from among its members, who shall be a representative of MERRIMACK. The chairperson shall be responsible for calling meetings of the JMC and for leading the meetings. A JMC member of MERRIMACK shall serve as secretary of such meetings. The secretary shall prepare and distribute to all members of the JMC draft minutes of the meeting for review and comment, including a list of any actions or decisions approved by the JMC, with the goal of distributing final approved minutes of each JMC meeting within thirty (30) days after the meeting.

(d) Decision-Making. Each Party shall have one (1) vote on the JMC. Both Parties must vote in the affirmative to allow the JMC to take any action that requires the approval of the JMC. Decisions on any matter may be taken at a meeting, by teleconference or videoconference or by written agreement. If the JMC is unable to reach unanimous agreement on any matter within the JMC's jurisdiction, then the matter shall be referred to the JSC for resolution in accordance with Section 3.1(b)(v) (subject to Section 3.1(e) and MERRIMACK's final decision-making authority as to matters covered thereunder). Notwithstanding the foregoing, provided that a meeting is called with at least [**] days prior notice, if one Party's representatives fail to attend such meeting, the representatives of the Party attending such meeting shall have the right to decide any matters presented at such meeting.

(e) Meetings.

(i) The JMC shall meet at least [**] during each Calendar Quarter. The location of JMC meetings shall be determined by the chairperson, and may be held in person, alternating locations between the Parties, or by telephone conference call or by videoconference.

(ii) Each Party shall use reasonable efforts to cause its representatives to attend the meetings of the JMC. If a Party's representative is unable to attend a meeting, such Party may designate an alternate representative to attend such meeting in place of the absent representative. In addition, each Party may, at its discretion, invite a reasonable number of additional employees, and, with the consent of the other Party, consultants or scientific advisors, to attend the meetings of the JMC or the relevant portion thereof, provided that any such

consultants or scientific advisors are bound by written obligations of confidentiality that are at least as stringent as those set forth in this Agreement.

(iii) The chairperson may also call a special meeting of the JMC for the purpose of resolving material disputes in connection with, or for the purpose of reviewing or making a material decision pertaining to, the manufacture of the Licensed Compound and/or the Licensed Product, the examination or resolution of which cannot reasonably be postponed until the next scheduled JMC meeting, by providing written notice to the Parties. Such meeting shall be convened at such time as may be mutually agreed upon by the Parties, but in any event shall be held within [**] days after the date of such notice.

(iv) PEI may also call a special meeting of the JMC for the purpose of resolving disputes in connection with, or for the purpose of reviewing or making a decision pertaining to, any material matter within the purview of the JMC, the examination or resolution of which cannot reasonably be postponed until the next scheduled JMC meeting, by providing written notice to the Parties. Such meeting shall be convened at such time as may be mutually agreed upon by the Parties, but in any event shall be held within [**]) days after the date of such notice.

Article IV

Development

Section 4.1 Overview; Development Plan.

(a) From and after the Effective Date, MERRIMACK shall, except as provided in Section 4.2, be responsible for Development of the Licensed Compound and the Licensed Product, including all costs and expenses relating thereto.

(b) Subject to and in accordance with the terms and conditions of this Agreement, including Section 4.2, the Parties shall collaborate on the Development of the Licensed Compound and the Licensed Product in accordance with the Development Plan. The initial Development Plan agreed to by the Parties is attached to this Agreement as Exhibit D and updates and amendments to such initial Development Plan, shall be prepared by MERRIMACK, in consultation with PEI, shall be reviewed and approved by the JDC and JSC, shall be consistent with the terms and conditions of this Agreement and shall specify, among other things:

(i) Development objectives;

(ii) activities to be performed, including all Clinical Trials and Regulatory Approvals required for Commercializing the Licensed Product in the MERRIMACK Territory and PEI Territory;

(iii) the Party responsible for performance of an activity (provided that, except with respect to the Ongoing Clinical Studies, PEI shall only be assigned Development activities with the mutual agreement of the Parties);

(iv) associated budgets for the Development activities to be conducted by MERRIMACK and PEI;

(v) timelines for performance; and

(vi) specific deliverables.

(c) Each Party shall use Commercially Reasonable Efforts to perform its respective obligations under the Development Plan in accordance with the Development Plan and all applicable Laws.

(d) MERRIMACK shall be responsible for all costs of conducting the Development Program after the Effective Date (other than any activities conducted by PEI in accordance with Section 4.2(b)(iii)), including Manufacturing Costs, and shall pay PEI in accordance with Section 9.9 for Development Costs incurred by PEI in performing activities assigned to PEI under the Development Plan; provided the amounts involved are within the budget in the Development Plan for such activities.

Section 4.2 Certain Development Responsibilities of PEI.

(a) Ongoing Clinical Studies. The Parties acknowledge and agree that (i) PEI shall be responsible for continuing to manage, and shall use Commercially Reasonable Efforts to complete, the Ongoing Clinical Studies in accordance with the Development Plan; and (ii) MERRIMACK shall bear the Development Costs associated with the conduct of the Ongoing Clinical Studies incurred after the Effective Date in accordance with Section 4.1(d).

(b) Development Activities in the PEI Territory.

(i) If (A) the Development Plan includes any Development activity(ies) to be conducted in the PEI Territory for the Development of the Licensed Compound or the Licensed Product and (B) the JSC reasonably determines in good faith that PEI has the necessary capabilities and resources to conduct such planned activity(ies), MERRIMACK shall provide written notice to PEI of such planned activity(ies), which notice shall include a description of such planned activity(ies) and associated budget, timeline and objectives. PEI shall have the option to conduct such Development activity(ies), under the direction of the JDC, by providing written notice to MERRIMACK within [**] days after receipt of the notice from MERRIMACK regarding such activity(ies). If PEI elects to conduct such Development activity(ies), the Development Plan shall be updated to reflect PEI's responsibility for such activity(ies) and PEI shall perform such Development activity(ies) in accordance with the associated budget and shall use Commercially Reasonable Efforts to achieve the timelines and objectives for such Development activity(ies).

(ii) If (A) the Development Plan includes any Development activity(ies) in the PEI Territory for the Development of the Licensed Compound or the Licensed Product and (B) either (1) the JSC reasonably determines in good faith that PEI does not have the necessary capabilities and resources to conduct such activity(ies), or (2) PEI has declined to undertake such activity(ies) in accordance with Section 4.2(b)(i), MERRIMACK may assume responsibility for such activity(ies).

(iii) In the event that PEI identifies any Development activity(ies) that is(are) required for Regulatory Approval of the Licensed Product in the PEI Territory and such activity(ies) is(are) not otherwise included in the Development Plan, PEI shall promptly notify the JDC of such activity(ies). PEI shall have the right to conduct such activity(ies) subject to the JDC's review of protocols for Clinical Trials, at PEI's sole cost and expense.

(c) Mutually Agreed Development Activities. From time to time during the Term, the Parties may mutually agree to amend the Development Plan to include additional Development activities to be conducted by PEI, including the conduct of certain Phase I Clinical Studies, Phase II Clinical Studies or aspects or tasks associated with Phase III Clinical Studies.

(d) Information Transfer.

(i) As soon as practicable after the Effective Date, but in no case later than [**] days after the Effective Date, to the extent not previously disclosed to the other Party, each Party shall disclose to the other Party all non-clinical and clinical data (including all data from interim reviews, all source documents, and all case report forms and tabulations), internal and external reports, and all other Regulatory Documentation (the "Licensed Compound Information") Controlled by such Party or its Affiliates (including, in MERRIMACK's case, Merrimack Parent as successor to Hermes) and generated in the course of any Development activities conducted by such Party or its Affiliates (including, in MERRIMACK's case, Merrimack Parent as successor to Hermes) pursuant to the 2005 License Agreement, and all Manufacturing Technology Controlled by such Party or its Affiliates (including, in MERRIMACK's case, Merrimack Parent as successor to Hermes) and generated in the course of any manufacturing conducted by such Party or its Affiliates pursuant to the 2005 License Agreement. In addition, each Party shall disclose to the other Party Licensed Compound Information and Manufacturing Technology Controlled by such Party and generated in the course of Development and manufacturing activities conducted by such Party, as required by Section 4.4, Section 5.1, Section 6.1 and Section 6.2.

(ii) PEI hereby assigns and transfers to MERRIMACK a one-half, undivided ownership interest in and to all Licensed Compound Information and Manufacturing Technology, excluding Regulatory Documentation (which is addressed in Section 5.1), Controlled by PEI and generated by PEI prior to the Effective Date or following the Effective Date pursuant to this Agreement. Notwithstanding such co-ownership, MERRIMACK agrees that such Licensed Compound Information and Manufacturing Technology will be treated for all purposes under this Agreement as PEI Licensed Technology and MERRIMACK shall have the right to use, copy, practice, license and otherwise exploit such Licensed Compound Information and Manufacturing Technology solely (A) in connection with the Licensed Compound and the Licensed Product; and (B) to the same extent that MERRIMACK would be permitted to use, copy, practice, license and otherwise exploit such Licensed Compound Information and Manufacturing Technology under Section 8.2 if such Licensed Compound Information and Manufacturing Technology were not co-owned by MERRIMACK and were only part of the PEI Licensed Technology licensed to MERRIMACK under such Section 8.2.

(iii) In addition, whether or not Licensed Compound Information and Manufacturing Technology can be assigned and transferred to MERRIMACK as provided in clause (ii) above:

(A) PEI hereby grants to MERRIMACK a Right of Reference or Use outside the PEI Territory to any and all such Licensed Compound Information and Manufacturing Technology, and agrees to sign, and cause its Affiliates to sign, any instruments reasonably requested by MERRIMACK in order to further effect such grant;

(B) MERRIMACK hereby grants to PEI a Right of Reference or Use in the PEI Territory to any and all such Licensed Compound Information and Manufacturing Technology, and agrees to sign, and cause its Affiliates to sign, any instruments reasonably requested by PEI in order to further effect such grant; and

(C) Each Party shall permit any relevant Regulatory Authority to inspect such Licensed Compound Information and Manufacturing Technology upon reasonable notice to such Party. Each Party shall also permit the other Party, upon reasonable notice, during regular business hours, to inspect any such

Licensed Compound Information and Manufacturing Technology; provided that, the Party conducting such inspection shall use reasonable efforts to limit such inspections by such Party to a moderate frequency reasonably necessary or desirable in order to facilitate such Party's Development and Commercialization of the Licensed Compound and Licensed Product. As of the Effective Date, neither Party anticipates that such Party would require more than [**] of such inspections in a Calendar Year.

Section 4.3 Diligence Obligations.

(a) MERRIMACK Diligence Obligations.

(i) MERRIMACK, together with its Affiliates, licensees and sublicensees, shall use Commercially Reasonable Efforts to Develop (including obtaining necessary Regulatory Approvals), and, upon receipt of Regulatory Approval in the applicable territory, to Commercialize the Licensed Product in at least [**].

(ii) Without limiting the foregoing, MERRIMACK, together with its Affiliates, licensees and sublicensees, shall use Commercially Reasonable Efforts to:

(A) dose the first subject in a Phase III Clinical Study of the Licensed Compound in a Solid Tumor Indication by the later of (x) [**], or (y) [**] months after the Effective Date (the "Clinical Trial Target Date"); and

(B) dose the first subject in a Phase III Clinical Study of the Licensed Compound in a Solid Tumor Indication (other than the Solid Tumor Indication described in Section 4.3(a)(ii)(A)), which has, in MERRIMACK's good faith judgment, [**], within [**] months after the Effective Date;

provided as to each of clauses (A) and (B) above, that (1) the protocol for such Clinical Trial is approved by the relevant Regulatory Authority and Institutional Review Board; (2) there are no

delays caused by a Regulatory Authority (including by imposition of a clinical hold or otherwise); and (3) there are no other factors that cause a delay that could not have been reasonably avoided by MERRIMACK; provided that, if any of the factors listed in clauses (1) through (3) of this paragraph cause a delay, MERRIMACK's obligations under this Section 4.3(a)(ii) will be postponed only for the period of such delay.

(iii) Without limiting the generality of the foregoing, and in addition to the requirements of Section 4.3(a)(ii):

(A) if MERRIMACK, together with its Affiliates, licensees and sublicensees, does not achieve the dosing of first subjects in the Phase III Clinical Studies described in Section 4.3(a)(ii)(A) and/or Section 4.3(a)(ii)(B), the following shall, subject to Section 4.3(a)(iii)(B) below, apply:

(1) if MERRIMACK has not dosed the first subject in a Phase III Clinical Study as set forth in Section 4.3(a)(ii)(A) on or before the Clinical Trial Target Date, then (x) MERRIMACK shall pay to PEI [**] on or before the date [**] days after the Clinical Trial Target Date (and no further payments under Section 9.2(a)(i) shall be due) and (y) the JDC will promptly meet in order to review the cause of the delay and discuss proposals and implement actions to mitigate such delay;

(2) if MERRIMACK has not dosed the first subject in a Phase III Clinical Study as set forth in Section 4.3(a)(ii)(A) on or before the date [**] months after the Clinical Trial Target Date (without any adjustment of the Clinical Trial Target Date under Section 4.3(a)(iii)(B)) then MERRIMACK shall, at MERRIMACK's option, on or before the date [**] days after such date, either (x) make a payment of [**] US Dollars ($[**]) to PEI, which amount if so paid by MERRIMACK shall be fully creditable against the next milestone payment that becomes due to PEI pursuant to Section 9.2 (other than the milestone payment set forth in Section 9.2(a)(i), which shall have previously been satisfied pursuant to Section 4.3(a)(iii)(A)(1)) or (y) terminate this Agreement in accordance with Section 13.4 (in which case the limitation in Section 13.4 restricting the exercise of such termination right prior to the [**] anniversary of the Effective Date shall not apply). In the event that MERRIMACK does not terminate this Agreement as provided in clause (y), the JDC will promptly meet in order to review the cause of the delay and discuss proposals and implement actions to mitigate such delay; and

(3) if MERRIMACK has not dosed the first subject in a Phase III Clinical Study as set forth in Section 4.3(a)(ii)(B) on or before the date [**] months after the Effective Date, the JDC will promptly meet in order to review the cause of the delay and discuss proposals and implement actions to mitigate such delay.

(B) If on the Clinical Trial Target Date or the date that falls [**] months after the Clinical Trial Target Date (without any adjustment of the Clinical Trial Target Date under this Section 4.3(a)(iii)(B)), as applicable, MERRIMACK, together with its Affiliates, licensees and sublicensees cannot dose the first subject in a Phase III Clinical Study as set forth in Section 4.3(a)(ii)(A) because (1) the protocol for such Clinical Trial was rejected by the relevant Regulatory Authority or Institutional Review Board prior to the applicable date, or

(2) there are other delays caused by a Regulatory Authority (including the imposition of a clinical hold), then the applicable date will be extended for the duration of such delay and the payment obligations set forth in Sections 4.3(a)(iii)(A)(1) and 4.3(a)(iii)(A)(2) shall not apply as long as (x) MERRIMACK, together with its Affiliates, licensees and sublicensees continues to work promptly and diligently to remove the cause of such delay, and (y) MERRIMACK, its Affiliates, licensees or sublicensees doses the first subject in a Phase III Clinical Study as set forth in Section 4.3(a)(ii)(A) as soon as practicable after such delay is removed. Except as expressly provided in this Section 4.3(a)(iii)(B), MERRIMACK's obligation to pay amounts required under this Section 4.3(a)(iii) may not be delayed, including as a result of any matter covered by Section 16.6 or any matter covered by clause (3) of the last paragraph of Section 4.3(a). Nothing in this Section 4.3(a)(iii) will limit in any way PEI's remedy for failure of MERRIMACK to exercise Commercially Reasonable Efforts to fulfill any of MERRIMACK's obligations under this Section 4.3(a). All payments required under this Section 4.3(a)(iii) will be non-refundable.

(b) PEI Diligence Obligations. PEI shall use Commercially Reasonable Efforts to Develop (including to obtain necessary Regulatory Approvals), and, upon receipt of such Regulatory Approvals, to Commercialize the Licensed Product in the PEI Territory.

Section 4.4 Development Reports; Information Sharing.

(a) Development Reports. Each Party shall provide the JDC with a written report at least [**] summarizing in reasonable detail (i) the activities conducted by such Party under the Development Plan; (ii) with respect to PEI, activities conducted by PEI pursuant to Section 4.2(b)(iii); and (iii) such Party's and its Affiliates' activities and progress related to the Development pursuant to this Agreement of the Licensed Compound and Licensed Product, including information concerning the conduct of non-clinical activities and Clinical Trials, applications for and securing of Regulatory Approvals, First Commercial Sale of the Licensed Product

on a country-by-country basis and any future planned Development activities; provided that a presentation before the JDC, accompanied with written documentation such as slides, may substitute for such written report.

(b) Disclosure of Know-How.

(i) Without limiting the obligations under Section 4.2(d), beginning with the Calendar Quarter in which the Effective Date occurs and continuing thereafter [**] during the Term and more frequently as mutually agreed by the Parties, MERRIMACK (consistent with its applicable confidential disclosure obligations to Third Parties, if any) shall disclose to PEI (A) all MERRIMACK Know-How specified in the Development Plan to the extent necessary or useful for the Development or Commercialization of the Licensed Compound or the Licensed Product in the PEI Territory, and (B) any MERRIMACK Know-How not specified in the Development Plan that MERRIMACK reasonably believes to be necessary or useful for the Development or Commercialization of the Licensed Compound or the Licensed Product in the PEI Territory. In particular, MERRIMACK shall during such period disclose or make available to PEI all material data and information under MERRIMACK's Control, regarding the Licensed Compound, Licensed Product and MERRIMACK Know-How, all the foregoing as may be

necessary or useful for the Development or Commercialization of the Licensed Compound or the Licensed Product in the PEI Territory.

(ii) Without limiting the obligations under Section 4.2(d), beginning with the Calendar Quarter in which the Effective Date occurs and continuing thereafter [**] during the Term and more frequently as mutually agreed by the Parties, PEI (consistent with its applicable confidential disclosure obligations to Third Parties, if any) shall disclose to MERRIMACK (A) all PEI Know-How specified in the Development Plan to the extent necessary or useful for the Development or Commercialization of the Licensed Compound or the Licensed Product outside the PEI Territory, and (B) any PEI Know-How not specified in the Development Plan that PEI reasonably believes to be necessary or useful for the Development or Commercialization of the Licensed Compound or the Licensed Product outside the PEI Territory. In particular, PEI shall during such period disclose or make available to MERRIMACK all material data and information under PEI's Control, regarding the Licensed Compound, Licensed Product and PEI Know-How, all the foregoing as may be necessary or useful for the Development or Commercialization of the Licensed Compound or the Licensed Product outside the PEI Territory.

Section 4.5 Third Party Patent Rights and Know-How. In the event PEI or MERRIMACK receives notice or otherwise becomes aware of any facts that the making, having made, using, offering for sale, selling or importing the Licensed Product in accordance with this Agreement infringes, may infringe or is alleged by a Third Party to infringe any Third Party Patent Rights (including any patent application that would be infringed if issued as a patent), the Party becoming aware of same shall promptly notify the other. Each Party shall have the right, in its sole discretion, to negotiate with any Third Party to acquire, or for a license of, such Third Party's Patent Rights or Know-How; provided that to the extent either Party (the "Licensing Party") obtains a license to such Third Party's Patent Rights or Know-How that is reasonably necessary or useful to Develop, manufacture or Commercialize the Licensed Compound or the Licensed Product in a country or countries in which the other Party holds rights to Develop, manufacture or Commercialize the Licensed Compound or the Licensed Product, then if the Licensing Party has the right to grant a sublicense to such other Party and such other Party requests a sublicense, such Third Party Patent Rights or Know-How shall be deemed to be Controlled by the Licensing Party; except that, if such other Party requests a sublicense under such Third Party's Patent Rights or Know-How and such sublicense would require the Licensing Party to make any additional payments or pay royalties to such Third Party in connection with such sublicense grant, the Patent Rights or Know-How will only be deemed to be Controlled by the Licensing Party if the non-Licensing Party reimburses the Licensing Party for any reasonable additional payments or royalties due to the Third Party that are directly related to such sublicense. Each Party will keep the other Party informed through the JSC and the JDC of any activities undertaken by such Party under this Section 4.5, and the Parties will cooperate reasonably in such activities as appropriate.

Section 4.6 Biological Materials.

(a) Generally. For purposes of facilitating the conduct of the Development Program, each Party shall provide to the other Party animal or human tissues, cells, blood samples and other materials (but excluding, for the avoidance of doubt, any Licensed Compound

or Licensed Product provided pursuant to Article VI) ("Biological Materials") specified from time to time in the Development Plan. Each Party agrees to provide all such Biological Materials to the other Party in accordance with the Development Plan. The Parties agree that:

(i) all Biological Materials provided by one Party to the other shall remain the sole property of the supplying Party;

(ii) all Biological Materials provided by one Party to the other shall be used solely for research and Development purposes in material compliance with all applicable federal, state or local laws, regulations and guidelines;

(iii) as applicable, the Party providing such Biological Materials shall obtain (or cause its Third Party collaborators to obtain or certify that they have obtained) all appropriate and required consents from the source of such Biological Materials; and

(iv) Biological Materials provided by one Party to the other shall not be made available by the other Party to any Third Party except as explicitly contemplated in the Development Plan or upon the prior written consent of the Party providing such Biological Materials.

(b) Disclaimer. The Parties agree that THE BIOLOGICAL MATERIALS ARE PROVIDED "AS IS" AND WITHOUT ANY REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR ANY PARTICULAR PURPOSE OR ANY WARRANTY THAT THE USE OF THE MATERIALS WILL NOT INFRINGE OR VIOLATE ANY PATENT OR OTHER PROPRIETARY RIGHTS OF ANY THIRD PARTY.

Section 4.7 Subcontracting. PEI shall not engage any Affiliate or Third Party subcontractor to perform its obligations under the Development Plan without the prior written consent of MERRIMACK, which consent shall not be unreasonably withheld, conditioned or delayed; provided that PEI will not have to obtain consent for Merrimack for (a) any subcontract for services of an administrative nature not involving or implicating technology rights relevant to the Licensed Compound or the Licensed Product that involves the payment of no more than [**] US Dollars (US$[**]) or the equivalent; and (b) any subcontract related to any activities performed by PEI at its own cost under Section 4.2(b)(iii).

Article V

Transfer of Information; Regulatory Matters

Section 5.1 Transfer of Information and Regulatory Activities. As soon as practicable after the Effective Date, but in no case later than [**] days after the Effective Date, PEI shall transition all regulatory activities related to the Licensed Compound and the Licensed Product in the MERRIMACK Territory. As part of such

transition of regulatory activities to MERRIMACK, PEI hereby grants to MERRIMACK a Right of Reference or Use outside the PEI Territory to all Regulatory Documentation for the Licensed Compound or the Licensed Product in the MERRIMACK Territory that is Controlled by PEI and agrees to sign, and cause

its Affiliates to sign, any instruments reasonably requested by MERRIMACK in order to further effect such grant. PEI shall permit any relevant Regulatory Authority to inspect any such Regulatory Documentation upon reasonable notice to PEI. PEI shall also permit MERRIMACK, upon reasonable notice, during regular business hours, to inspect any such Regulatory Documentation; provided that, MERRIMACK shall use reasonable efforts to limit such inspections by MERRIMACK to a moderate frequency reasonably necessary or desirable in order to facilitate MERRIMACK's Development and Commercialization of the Licensed Compound and Licensed Product. As of the Effective Date, MERRIMACK does not anticipate that it would require more than [**] of such inspections conducted by MERRIMACK in a Calendar Year.

Section 5.2 MERRIMACK Regulatory Responsibility. Subject to Section 5.1 and Section 5.3, following the Effective Date, MERRIMACK shall own and be responsible for preparing, filing and maintaining all Regulatory Documentation and Regulatory Approvals that are required for the Development or Commercialization of the Licensed Compound or the Licensed Product outside the PEI Territory and MERRIMACK shall otherwise be responsible for and have sole authority as to all interactions with Regulatory Authorities outside the PEI Territory, provided, that:

(a) PEI shall provide MERRIMACK with assistance as may be reasonably requested by MERRIMACK, at MERRIMACK's expense (but not to exceed the amount for such expense that has been approved in writing by MERRIMACK in advance) in accordance with Section 4.1(d), with respect to Regulatory Documentation for the Licensed Compound or the Licensed Product in accordance with the Development Plan;

(b) MERRIMACK shall take such actions and otherwise cooperate with PEI as may be reasonably requested by PEI to enable PEI to perform the regulatory activities assigned to PEI under the Development Plan (for clarity, except as otherwise set forth in Section 5.3, all filings and all interactions with Regulatory Authorities shall be conducted and implemented by, and shall be in the name of, MERRIMACK); and

(c) MERRIMACK hereby grants to PEI a Right of Reference or Use to any Regulatory Documentation outside the PEI Territory Controlled by MERRIMACK for use by PEI in the PEI Territory, and agrees to sign, and cause its Affiliates to sign, from time to time, promptly upon request, any instruments reasonably requested by PEI in order to further effect such grant. MERRIMACK shall permit any relevant Regulatory Authority to inspect any such Regulatory Documentation upon reasonable notice to MERRIMACK. MERRIMACK shall also permit PEI, upon reasonable notice, during regular business hours, to inspect any such Regulatory Documentation; provided that, PEI shall use reasonable efforts to limit such inspections by PEI to a moderate frequency reasonably necessary or desirable in order to facilitate PEI's Development and Commercialization of the Licensed Compound and Licensed Product. As of the Effective Date, PEI does not anticipate that it would require more than [**] of such inspections conducted by PEI in a Calendar Year.

Section 5.3 PEI Regulatory Responsibility.

(a) Under the direction of the JDC, PEI shall own and be responsible for preparing, filing and maintaining all Regulatory Documentation and Regulatory Approvals in the PEI Territory and otherwise be responsible for and have sole authority as to all interactions with Regulatory Authorities in the PEI Territory.

(b) MERRIMACK shall, in accordance with Section 4.1(d), pay PEI for Development Costs incurred by PEI in performing regulatory activities assigned to PEI under the Development Plan, provided that all the foregoing are in accordance with the applicable budget in the Development Plan for such activities.

(c) PEI hereby grants to MERRIMACK a Right of Reference or Use to any Regulatory Documentation in the PEI Territory Controlled by PEI for use by MERRIMACK outside the PEI Territory, and agrees to sign, and cause its Affiliates to sign, from time to time, promptly upon request, any instruments reasonably requested by MERRIMACK in order to further effect such grant.

Section 5.4 Communications with Regulatory Authorities.

(a) Following the Effective Date, subject to Section 5.3, MERRIMACK shall be responsible for all submissions to, and communications and interactions with, Regulatory Authorities outside the PEI Territory with respect to the Licensed Compound and the Licensed Product, and PEI shall, under the direction of the JDC, be responsible for submissions to, and communications and interactions with, Regulatory Authorities in the PEI Territory with respect to the Licensed Compound and the Licensed Product. In connection therewith:

(i) MERRIMACK shall keep PEI reasonably informed regarding MERRIMACK's (or its Affiliate's or sublicensee's) regulatory strategy, planned regulatory submissions and material communications with Regulatory Authorities in the United States, the Major EU Countries and the Major Asian Countries with respect to the Licensed Compound and the Licensed Product, including any material changes to such strategy, submissions or communications. MERRIMACK shall, to the extent (A) relevant to Development of the Licensed Compound and the Licensed Product in the PEI Territory and (B) Controlled by MERRIMACK, provide PEI with copies of material regulatory submissions to, and material communications with, any Regulatory Authorities in the United States, the MERRIMACK Europe Territory and the MERRIMACK Asia Territory relating to the Licensed Compound and the Licensed Product.

(ii) Subject to the direction of the JDC, to the extent relevant to the Development of the Licensed Compound and Licensed Product and Commercialization of the Licensed Compound and Licensed Product outside the PEI Territory, PEI shall conduct regulatory activities in the PEI Territory in accordance with the regulatory strategy set forth in the Development Plan. PEI shall keep MERRIMACK reasonably informed regarding PEI's (or its Affiliate's or sublicensee's) planned regulatory submissions and material communications with Regulatory Authorities in the PEI Territory with respect to the Licensed Compound and the Licensed Product, including any material changes to such submissions or communications, PEI shall, to the extent (A) relevant to Development of the Licensed Compound and the Licensed Product outside the PEI Territory and (B) Controlled by PEI, provide MERRIMACK with copies

of regulatory submissions to, and material communications with, any Regulatory Authorities in the PEI Territory relating to the Licensed Compound and the Licensed Product.

(b) Without limiting the generality of any of the foregoing in this Section 5.4,

(i) To the extent relevant to the Development or Commercialization of the Licensed Compound and the Licensed Product in the PEI Territory, MERRIMACK shall also promptly provide PEI with a copy of all material correspondence that MERRIMACK (or its Affiliate or sublicensee) receives from, or submits to, any Regulatory Authorities in the United States, the Major EU Countries and the Major Asian Countries, including (to the extent relevant and requested) contact reports concerning conversations or substantive meetings, contact reports of all Regulatory Authority interactions concerning conversations or substantive meetings, all IND annual reports (including any equivalent filings outside the United States), and cover letters of all agency submissions (it being understood that PEI may request, and shall then receive, copies of all attachments to any such cover letters) relating to the Licensed Compound or the Licensed Product. To the extent relevant to the Development or Commercialization of the Licensed Compound and the Licensed Product in the PEI Territory and requested by PEI, MERRIMACK shall also provide PEI with any meeting minutes that MERRIMACK prepares that reflect material communications with any Regulatory Authorities in the United States, the Major EU Countries and the Major Asian Countries regarding the Licensed Compound or the Licensed Product. PEI shall use the information and materials provided by MERRIMACK pursuant to this Section 5.4(b)(i) solely in the Development and Commercialization of the Licensed Compound and the Licensed Product in the PEI Territory and in accordance with the provisions of Article XI.

(ii) To the extent relevant to the Development or Commercialization of the Licensed Compound and the Licensed Product outside the PEI Territory, PEI shall also promptly provide MERRIMACK with a copy of all material correspondence that PEI (or its Affiliate or sublicensee) receives from, or submits to, the DOH, including (to the extent relevant and requested) contact reports concerning conversations or substantive meetings, contact reports of all DOH interactions concerning conversations or substantive meetings, all IND annual reports (or the equivalent filing in Taiwan), and cover letters of all agency submissions (it being understood that MERRIMACK may request, and shall then receive, copies of all attachments to any such cover letters) relating to the Licensed Compound or the Licensed Product. To the extent relevant to the Development or Commercialization of the Licensed Compound and the Licensed Product outside the PEI Territory and requested by MERRIMACK, PEI shall also provide MERRIMACK with any meeting minutes that PEI prepares that reflect material communications with the DOH regarding the Licensed Compound or the Licensed Product. MERRIMACK shall use the information and materials provided by PEI pursuant to this Section 5.4(b)(ii) solely in the Development and Commercialization of the Licensed Compound and the Licensed Product outside the PEI Territory and in accordance with the provisions of Article XI.

Section 5.5 Product Withdrawals and Recalls. If any Regulatory Authority (a) threatens, initiates or advises any action to remove the Licensed Product from the market in any country of the world, or (b) requires or advises either Party or such Party's Affiliates or sublicensees to distribute a "Dear Doctor" letter or its equivalent regarding use of the Licensed Product in any country of the world, then MERRIMACK (if such action is outside the PEI

Territory) or PEI (if such action is in the PEI Territory), as applicable, shall notify the other Party of such event within [**] Business Days (or sooner if required by applicable Law) after such Party becomes aware of the action, threat, advice or requirement (as applicable). The JSC will discuss and attempt to agree upon whether to recall or withdraw the Licensed Product; provided, however, that if the Parties fail to agree within an appropriate time period or if the matter involves a safety issue that, in order to protect patient safety, does not allow for sufficient time for a discussion at the JSC level, MERRIMACK shall decide whether to recall or withdraw the Licensed Product outside the PEI Territory and shall undertake any such recall or withdrawal outside the PEI Territory at its own cost and expense, and PEI shall decide whether to recall or withdraw the Licensed Product in the PEI Territory and shall undertake any such recall or withdrawal in the PEI Territory at its own cost and expense.

Section 5.6 Pharmacovigilance; Safety Data Reporting. The collaboration between the Parties may involve exchanging safety information and adverse event information for the Licensed Product. Therefore, the Parties agree to enter into negotiations to set up a detailed safety data exchange agreement (the "SDEA") in due time (*i.e.*, prior to the start of any Clinical Trial by MERRIMACK), under which MERRIMACK shall be responsible for the worldwide safety database for the Licensed Product, to govern any future pharmacovigilance exchange between the Parties when relevant (e.g., in the case where PEI is sponsoring Clinical Trials). Each Party shall ensure, through its JDC representatives or designated personnel, that the competent pharmacovigilance groups or personnel from such Party begin to negotiate and establish the appropriate SDEA no later than [**] months before MERRIMACK commences clinical development hereunder. The SDEA shall be negotiated in good faith between the pharmacovigilance departments of each Party. The SDEA shall define the roles and responsibilities of both Parties in terms of pharmacovigilance and define the detailed safety exchange required to permit compliance by both Parties with safety reporting requirements to Regulatory Authorities and other entities in the respective licensed territories and ensure worldwide safety surveillance.

Article VI

Manufacturing

Section 6.1 Transition of Manufacture and Supply.

(a) As soon as practicable after the Effective Date, but in no case later than [**] days after the Effective Date, PEI and MERRIMACK shall meet to discuss a process for transitioning, and following such meeting shall promptly commence and complete such transition of, the manufacturing of the Licensed Compound and Licensed Product (including the current [**] per batch process) to MERRIMACK (or its designated Affiliate or Third Party manufacturer) in order to enable MERRIMACK or such Affiliate or Third Party manufacturer to establish manufacture of the Licensed Product for MERRIMACK's Phase III Clinical Studies of the Licensed Product and Commercialization activities. PEI shall provide all reasonably necessary technical assistance to MERRIMACK with respect to the use and implementation of Manufacturing Technology as may be requested by MERRIMACK.

(b) MERRIMACK shall pay PEI, in accordance with a budget to be mutually agreed by the Parties, for all FTE costs of

PEI personnel at the FTE Rate to the extent incurred in performing the transition activities contemplated under Section 6.1(a).

Section 6.2 PEI Manufacture of Licensed Compound.

(a) Without limiting each Party's rights and obligations under Section 6.1, as soon as practicable after the Effective Date, but in no case later than [**] days after the Effective Date, the Parties shall meet to discuss whether PEI has the ability and capacity to manufacture the Licensed Compound for use in MERRIMACK's planned Phase III Clinical Studies of the Licensed Compound.

(b) If the Parties mutually agree that PEI has such ability and capacity and that PEI can manufacture the Licensed Compound in a timely manner to meet the timelines for such Phase III Clinical Studies, and the JDC recommends that PEI should manufacture the Licensed Compound for MERRIMACK's Clinical Trials of the Licensed Compound, PEI shall manufacture and supply (or have manufactured or supplied) to MERRIMACK the Licensed Compound ordered by MERRIMACK for such Clinical Trials. PEI shall manufacture the Licensed Compound in accordance with this clause (b) on a delivery schedule and other customary supply terms and conditions as are mutually agreed by the Parties. Licensed Compound supplied to MERRIMACK in accordance with this clause (b) shall conform to the Specifications and any applicable current good manufacturing practices, and each delivery of Licensed Compound shall be accompanied with a certificate of analysis showing the conformity of the supplied Licensed Compound to the Specifications.

(c) MERRIMACK shall pay PEI for [**] percent ([**]%) of the Manufacturing Costs incurred by PEI (plus, if MERRIMACK is required under applicable Law to withhold any portion of such payments for payment to taxing authorities in any jurisdiction outside of the PEI Territory, MERRIMACK shall pay such additional amounts to PEI as is necessary so that PEI receives [**] percent ([**]%) of such Manufacturing Costs after such withholding by MERRIMACK) for providing clinical supply of Licensed Compound to MERRIMACK pursuant to this Section 6.2 within [**] days following delivery of such supply and PEI's invoice therefor.

(d) In the event that PEI manufactures Licensed Compound that fails to conform to the Specifications, the Parties shall [**] the costs of such non-conforming Licensed Product to the extent reasonably allocable to supply for use in activities the Development Costs of which MERRIMACK would otherwise be responsible for hereunder and PEI shall [**] bear the costs of such non-conforming Licensed Compound to the extent reasonably allocable to supply for use in activities conducted by PEI pursuant to Section 4.2(b)(iii).

(e) MERRIMACK will use (or cause its designated Affiliate or Third Party manufacturer to use) Commercially Reasonable Efforts to scale up the manufacturing process for the Licensed Compound and the Licensed Product as appropriate to support MERRIMACK's Commercialization of the Licensed Product in the MERRIMACK Territory, as reasonably determined by MERRIMACK. If requested by PEI from time to time, MERRIMACK shall transfer the then-current manufacturing process to PEI (or its designated Affiliate or Third Party manufacturer), at [**] to PEI, and each such improved process will be considered MERRIMACK Licensed Technology subject to PEI's rights under this Agreement.

Article VII
Commercialization

Section 7.1 Overview.

(a) MERRIMACK will have sole responsibility for the Commercialization of the Licensed Product outside the PEI Territory, including all costs and expenses relating thereto, and for booking sales of the Licensed Product outside the PEI Territory.

(b) PEI will have sole responsibility for the Commercialization of the Licensed Product in the PEI Territory, including all costs and expenses relating thereto, and for booking sales of the Licensed Product throughout the PEI Territory.

Section 7.2 Manufacturing. The Parties may, by mutual agreement, coordinate through the JMC the commercial supply of Licensed Product to achieve cost efficiencies.

Section 7.3 Complaints.

(a) The Parties shall develop, implement, and abide by:

(i) a customary policy for handling complaints that may be made, alleged or threatened by a Third Party with respect to the use of any promotional, advertising, patient information, communication and educational materials by a Party relating to the Licensed Product; and

(ii) a customary policy for handling and investigating complaints made, alleged or threatened by a Third Party with respect to the manufacturing, handling or storage of the Licensed Product.

(b) MERRIMACK shall be responsible for handling all complaints with respect to the Licensed Product outside the PEI Territory, and all costs and expenses associated therewith. PEI shall be responsible for handling all complaints with respect to the Licensed Product in the PEI Territory, and all costs and expenses associated therewith.

Article VIII
Grant of Licenses

Section 8.1 License Grants from MERRIMACK to PEI. Subject to the terms and conditions of this Agreement, including Section 8.2(b), MERRIMACK hereby grants to PEI:

(a) a paid-up, royalty-free, exclusive right and license under the MERRIMACK Licensed Technology and MERRIMACK's rights to the Joint Technology, to research, have researched, develop, have developed, make, have made, use, offer for sale, sell, have sold and import the Licensed Compound and the Licensed Product in the Field in the PEI Territory; provided that MERRIMACK reserves the right to (i) conduct Development activities inside the PEI Territory solely to support the Development and Commercialization of Licensed Compound

and Licensed Products outside the PEI Territory, and (ii) manufacture Licensed Compound and Licensed Products inside the PEI Territory solely for use and distribution outside the PEI Territory; and

(b) a paid-up, royalty-free, non-exclusive right and license in the Field outside the PEI Territory under the MERRIMACK Licensed Technology and MERRIMACK's rights to the Joint Technology, (i) to the extent necessary for PEI to perform its obligations under the Development Plan, and (ii) to Develop and manufacture the Licensed Compound and the Licensed Product outside the PEI Territory solely in support of Development and Commercialization of the Licensed Compound and the Licensed Product within the PEI Territory.

The licenses granted to PEI under this Section 8.1 shall be (i) sublicenseable by PEI only in accordance with Section 8.3 and (ii) transferable by PEI only in accordance with Section 16.2.

Section 8.2 License Grants from PEI to MERRIMACK. Subject to the terms and conditions of this Agreement, including Section 8.1(b), PEI hereby grants to MERRIMACK:

(a) an exclusive right and license under the PEI Licensed Technology and PEI's rights to the Joint Technology, to research, have researched, develop, have developed, make, have made, use, offer for sale, sell, have sold, import and export the Licensed Compound and the Licensed Product in the Field outside the PEI Territory; provided that PEI reserves the right to (i) conduct Development activities outside the PEI Territory solely to support the Development and Commercialization of Licensed Compound and Licensed Products inside the PEI Territory, and (ii) manufacture Licensed Compound and Licensed Products outside the PEI Territory solely for use and distribution within the PEI Territory; and

(b) a paid-up, royalty-free, non-exclusive right and license in the Field in the PEI Territory under the PEI Licensed Technology and PEI's rights to the Joint Technology, (i) to the extent necessary for MERRIMACK to perform its obligations under the Development Plan, and (ii) to Develop and manufacture the Licensed Compound and the Licensed Product in the PEI Territory solely in support of Development and Commercialization of the Licensed Compound and the Licensed Product outside the PEI Territory

The licenses granted to MERRIMACK under this Section 8.2 shall be (i) sublicenseable by MERRIMACK only in accordance with Section 8.3 and (ii) transferable by MERRIMACK only in accordance with Section 16.2. The license granted to MERRIMACK under Section 8.2(a) shall be (A) royalty-bearing (as specified in Section 9.4) in the MERRIMACK Territory and (B) paid-up and royalty-free outside the MERRIMACK Territory.

Section 8.3 Sublicense Rights.

(a) Subject to the terms of this Agreement, including the remainder of this Section 8.3, each Party shall have the right to grant sublicenses within the scope of the licenses granted to such Party under Section 8.1, Section 8.2 or Section 13.5, as applicable, to its Affiliates or Third Parties which such Party is conducting collaborative research, Development or Commercialization activities with respect to the Licensed Compound or the Licensed Product.

(b) Any sublicense granted under this Agreement shall be pursuant to a written agreement that imposes on such sublicensee obligations that are at least as restrictive as all relevant restrictions and limitations set forth in this Agreement, including the confidentiality provisions of Article XI and to the extent applicable to the sublicensed rights, diligence obligations with respect to the sublicensed territory that are sufficient to enable the sublicensing Party to satisfy its diligence obligations under Section 4.3. If either Party grants a sublicense to a Third Party as permitted by this Section 8.3, then such sublicensing Party shall provide the other Party prompt written notice thereof. The sublicensing Party shall provide the non-sublicensing Party with an executed copy of any such sublicense (redacted as the sublicensing Party may reasonably determine to protect confidential or commercially sensitive information; provided that the sublicensing Party may not redact any information that is necessary for the non-sublicensing Party to determine whether such sublicense meets the requirements of this Agreement). Except as otherwise agreed by the Parties in writing, each Party shall be jointly and severally responsible with its sublicensees to the other Party for failure by its sublicensees to comply with this Agreement. For purposes of clarity, PEI shall not be considered a sublicensee of MERRIMACK for the purposes of this Section 8.3.

Section 8.4 Restrictions on Sale or License.

(a) Restrictions on PEI. Except as may otherwise be permitted herein, during the Term, PEI shall not, and shall cause its Affiliates and sublicensees not to, directly or indirectly, including through the use of one or more agents or Persons with whom PEI or its Affiliates or sublicensees are in direct or indirect privity of contract:

(i) sell, distribute or otherwise dispose of, or grant any license or other right to any entity other than MERRIMACK and its Affiliates and sublicensees to sell, distribute or otherwise dispose of the Licensed Product to any Person outside the PEI Territory, or knowingly to any Person for importation into countries outside the PEI Territory; or

(ii) from the Effective Date until the earlier of (A) [**] or (B) [**] months following [**], commence any Clinical Trials or other clinical research, or grant any license or other right to any Person or entity to commence any Clinical Trials or other clinical research, anywhere in the world, relating to any product that consists of [**].

(b) Restrictions on MERRIMACK. Except as may otherwise be permitted herein, during the Term, MERRIMACK shall not, and shall cause its Affiliates and sublicensees (other than PEI) not to, directly or indirectly, including through the use of one or more agents or Persons with whom MERRIMACK or its Affiliates or sublicensees (other than PEI) are in direct or indirect privity of contract:

(i) sell, distribute or otherwise dispose of, or grant any license or other right to any entity other than PEI and its sublicensees to sell, distribute or otherwise dispose of the Licensed Product to any Person in the PEI Territory, or knowingly to any Person for importation into the PEI Territory; or

(ii) from the Effective Date until the earlier of (A) [**] or (B) [**] months following [**], commence any Clinical Trials or other clinical research, or grant any license or

other right to any Person or entity to commence any Clinical Trials or other clinical research, anywhere in the world, relating to any product that consists of [**].

Section 8.5 No Implied Licenses. Except as explicitly set forth in this Agreement, neither Party grants to the other Party any license, express or implied, under its intellectual property rights.

Section 8.6 Section 365(n) of the Bankruptcy Code. All rights and licenses granted under or pursuant to any section of this Agreement are, and shall otherwise be deemed to be, for purposes of Section 365(n) of the Bankruptcy Code licenses of rights to "intellectual property" as defined under Section 101(35A) of the Bankruptcy Code (or any other provisions of equivalent Law outside the United States). Each Party agrees that the other Party, as licensee of such rights under this Agreement, will retain and may fully exercise all of its rights and elections under the Bankruptcy Code or any other provisions of applicable Law outside the United States that provide similar protection for licenses of rights to "intellectual property".

Article IX
Financial Provisions

Section 9.1 Upfront Payment. MERRIMACK shall pay PEI a one-time, non-refundable, non-creditable fee of Ten Million Dollars (US$10,000,000) within five (5) Business Days after the Effective Date.

Section 9.2 Development and Regulatory Milestones.

(a) Subject to Section 4.3(a)(iii), MERRIMACK shall pay PEI the amounts set forth below for achievement of the corresponding event milestones by MERRIMACK or its Affiliates or sublicensees (other than PEI) with respect to the Licensed Compound or the Licensed Product:

Development and Regulatory Milestone Events for the Licensed Compound or the Licensed Product	**Dollars [**]**

(i)	First dosing of first subject in first Phase III Clinical Study of the Licensed Compound	$	5.0
(ii)	[**]	$	[**]
(iii)	[**]	$	[**]
(iv)	[**]	$	[**]
(v)	[**]	$	[**]
(vi)	[**]	$	[**]
	For clarity: TOTAL	**$**	**80.0**

(b) Each milestone payment set forth in this Section 9.2 shall be payable by MERRIMACK upon the achievement of the related milestone event by MERRIMACK or any of its Affiliates or sublicensees (other than PEI), and MERRIMACK shall provide notice to PEI within [**] days after such achievement. Upon receipt of MERRIMACK's notice that a milestone event has been achieved, PEI shall prepare and provide MERRIMACK with the corresponding invoice and MERRIMACK shall pay PEI each such milestone payment within [**] days after receipt of such invoice.

(c) None of the payments listed in this Section 9.2 shall be payable more than once, and each shall be payable at the first achievement of the applicable milestone event for the Licensed Compound or the Licensed Product.

Section 9.3 Sales Milestones.

(a) MERRIMACK shall pay the amounts set forth below upon the first achievement of the corresponding sales milestone by the Licensed Product in the MERRIMACK Territory:

Sales Milestone Event for Licensed Product in the MERRIMACK Territory		**Dollars [**]**
(i)	Annual Net Sales in the MERRIMACK Territory for the Licensed Product exceed $[**]	$ [**]
(ii)	Annual Net Sales in the MERRIMACK Territory for the Licensed Product exceed $[**]	$ [**]
(iv)	Annual Net Sales in the MERRIMACK Territory for the Licensed Product exceed $[**]	$ [**]
	For clarity: TOTAL	**$ 130.0**

(b) Each milestone payment set forth in Section 9.3(a) shall be payable by MERRIMACK in accordance with Section 9.6.

(c) None of the payments listed in this Section 9.3 shall be payable more than once, and each shall be payable at the first achievement of the applicable milestone event for the Licensed Product.

Section 9.4 Royalties.

(a) Royalty Rate for MERRIMACK Territory. As to sales of the Licensed Product in the MERRIMACK Territory by MERRIMACK, its Affiliates or sublicensees (other than PEI), subject to adjustment under Section 9.4(c) and Section 9.4(d) and to the remainder of this Section 9.4, MERRIMACK shall pay PEI royalties on Annual Net Sales of the Licensed Product in the MERRIMACK Territory, at the incremental royalty rates set forth below:

Annual Net Sales (in US Dollars) of the Licensed Product in the MERRIMACK Territory	**Incremental Royalty Rates as a Percentage (%) of Net Sales**
Portion of Annual Net Sales up to and including $[**]	[**]%
Portion of Annual Net Sales that is equal to or exceeds $[**], up to and including $[**]	[**]%
Portion of Annual Net Sales is equal to or exceeds $[**], up to and including $[**]	[**]%
Portion of Annual Net Sales is equal to or exceeds $[**]	[**]%

For example, if Annual Net Sales of a given Licensed Product in the MERRIMACK Territory for a given Calendar Year were US$[**], then the royalty payable to PEI on such Net Sales of the Licensed Product in the MERRIMACK Territory under this Section 9.4(a) for that year would be US$[**], which is calculated as follows: [**].

(b) Royalty Term. The applicable royalties payable to PEI under Section 9.4(a) above (as such royalty rates may be adjusted in accordance with Section 9.4(c) and Section 9.4(d)) shall be paid by MERRIMACK on Net Sales of the Licensed Product during the applicable Royalty Term.

(c) Reduction for Generic Competition.

(i) If one or more Generic Products exists with respect to the Licensed Product and such Generic Product(s) is(are) marketed and sold in a given country by one or more Third Parties during any Calendar Quarter during the Royalty Term, then the royalty rate applicable to Net Sales of the Licensed Product in such country shall be reduced as follows:

(A) If the market share of the Licensed Product in such country during such Calendar Quarter exceeds [**] percent ([**]%), on a unit basis, of the combined units of the Licensed Product and such Generic Product(s) sold in such country during such Calendar Quarter, the royalty rate applicable to Net Sales of the Licensed Product in such country shall [**];

(B) If the market share of the Licensed Product in such country during such Calendar Quarter exceeds [**] percent ([**]%), but is less than or equal to [**] percent ([**]%), on a unit basis, of the combined units of the Licensed Product and such Generic Product(s) sold in such country during such Calendar Quarter, the royalty rate applicable to Net Sales of the Licensed Product in such country shall be reduced by [**] percent ([**]%); and

(C) If the market share of the Licensed Product in such country during such Calendar Quarter is less than or equal to [**] percent ([**]%), on a unit basis, of the

combined units of the Licensed Product and such Generic Product(s) sold in such country during such Calendar Quarter, the royalty rate applicable to Net Sales of the Licensed Product in such country shall be reduced by [**] percent ([**]%).

(ii) For purposes of clarity, the market shares and corresponding royalty rate reductions referred to in Section 9.4(c)(i) above shall be determined and applied on a Calendar Quarter-by-Calendar Quarter basis. Such market share determinations shall be based on data provided by IMS International or, if such data are not available from IMS International, from such other data source as shall be agreed by the Parties (such agreement not to be unreasonably withheld, conditioned or delayed).

(d) Third Party Royalty Obligations. Subject to Section 4.5, if MERRIMACK (i) reasonably determines in good faith that, in order to avoid infringement of any patent not licensed hereunder, it is reasonably necessary to obtain a license from a Third Party in order to Develop or Commercialize the Licensed Product in a country in the MERRIMACK Territory, and to pay a royalty or other consideration under such license (including in connection with the settlement of a patent infringement claim), or (ii) shall be subject to a final court or other binding order or ruling requiring any payments, including the payment of a royalty, to a Third Party patent holder in respect of future sales of the Licensed Product in a country in the MERRIMACK Territory, then the amount of MERRIMACK's royalty payments under Section 9.4(a) with respect to Net Sales of the Licensed Product in such country shall be reduced by [**] percent ([**]%) of the amount paid by MERRIMACK to such Third Party that is reasonably and appropriately allocable to the Licensed Product in the MERRIMACK Territory.

(e) Limit on Deductions.

(i) Notwithstanding anything in this Agreement to the contrary, except as otherwise set forth in clause (ii) below, in no event shall the amount of any royalties payable by MERRIMACK pursuant to Section 9.4(a) with respect to the Licensed Product in any country, on a country-by-country basis, for a given Calendar Quarter, be reduced to less than [**] percent ([**]%) of the amounts specified in Section 9.4(a) for the applicable Calendar Quarter, as a result of reductions made under Section 9.4(c) or Section 9.4(d); provided that MERRIMACK shall be entitled to carry over to future Calendar Quarters any excess adjustments or credits.

(ii) If the reduction set forth in Section 9.4(c)(i)(C) applies in a particular country in a particular Calendar Quarter, the royalties with respect to the Licensed Product in such country for such Calendar Quarter may be reduced to [**] percent ([**]%) of the royalties that would otherwise be due pursuant to Section 9.4(a).

(f) Royalties Payable Only Once. The obligation to pay royalties is imposed only once with respect to the same unit of the Licensed Product.

Section 9.5 Sublicense Revenue. MERRIMACK shall pay to PEI a portion of all Sublicense Revenue as follows:

Sublicense Timeframe	Portion of Sublicense Revenue to be paid to PEI
Sublicense agreement executed prior to [**].	[**]%
Sublicense agreement executed on or after [**].	[**]%
Sublicense agreement executed on or after [**].	[**]%

Section 9.6 Reports and Payments. Within [**] days after the end of each Calendar Quarter during which there are Net Sales or Sublicense Revenue giving rise to a payment obligation under Section 9.3, Section 9.4 or Section 9.5, MERRIMACK shall deliver to PEI reasonably detailed written accountings of Net Sales of the Licensed Product in the MERRIMACK Territory, and royalties, sales milestone payments and Sublicense Revenue, if any, due to PEI, for such Calendar Quarter. Such quarterly reports shall indicate gross sales on a country-by-country basis, the deductions from gross sales used in calculating Net Sales and the resulting calculation of royalties and sales milestone payments. When MERRIMACK delivers such accountings to PEI, MERRIMACK shall also deliver all royalty payments, and sales milestone payments and Sublicense Revenue payments due hereunder to PEI for the Calendar Quarter.

Section 9.7 Recordkeeping; Audit Rights.

(a) Audits by PEI. MERRIMACK shall keep, and shall require its Affiliates and sublicensees (other than PEI) to keep, complete and accurate records of the latest [**] years of Net Sales in the MERRIMACK Territory of the Licensed Product to which royalties or sales milestones attach hereunder. For the sole purpose of verifying amounts payable to PEI hereunder, PEI shall have the right once each Calendar Year, at PEI's expense, to retain an independent certified public accountant selected by PEI and reasonably acceptable to MERRIMACK, to review such records in the location(s) where such records are maintained by MERRIMACK, its Affiliates or its sublicensees (other than PEI) upon reasonable notice and during regular business hours and under obligations of confidence. Results of such review shall be made available to both PEI and MERRIMACK. If either Party disputes the results of such review, such Party may submit the matter for resolution in accordance with Article XIV. If the review reflects an underpayment of any amounts payable to PEI, such underpayment shall be remitted to PEI, within [**] days after the notification of the results by PEI to MERRIMACK, together with interest calculated in the manner provided in Section 9.10. If the underpayment is equal to or greater than five percent (5%) of the amount that was otherwise due, MERRIMACK shall pay all of the reasonable out-of-pocket expenses of such review.

(b) Audits by MERRIMACK. PEI shall keep, and shall require its Affiliates and sublicensees to keep, complete and accurate records of the latest [**] years of any Development Costs incurred by PEI in the conduct of Development activities under the Development Plan and Manufacturing Costs incurred by PEI in accordance with Section 6.2. For the sole purpose of verifying amounts payable by MERRIMACK hereunder, MERRIMACK shall have the right once each Calendar Year, at MERRIMACK's expense, to retain an independent certified public accountant selected by MERRIMACK and reasonably acceptable to PEI, to review such records

in the location(s) where such records are maintained by PEI, its Affiliates or its sublicensees upon reasonable notice and during regular business hours and under obligations of confidence. Results of such review shall be made available to both PEI and MERRIMACK. If either Party disputes the results of such review, such Party may submit the matter for resolution in accordance with Article XIV. If the review reflects an overpayment of amounts payable by MERRIMACK, such overpayment shall be reimbursed to MERRIMACK, within [**] days after notification of the results by MERRIMACK to PEI, together with interest calculated in the manner provided in Section 9.10. If the overpayment is equal to or greater than five percent (5%) of the amount that was otherwise due, PEI shall pay all of the reasonable out-of-pocket expenses of such review.

Section 9.8 Method of Payment. All amounts payable by a Party hereunder shall be paid by or on behalf of such paying Party in US Dollars. With respect to sales of the Licensed Product invoiced in US Dollars, the Net Sales upon which royalties and sales milestone payments are payable shall be expressed in US Dollars. With respect to sales of the Licensed Product invoiced in a currency other than US Dollars, the royalties and sales milestone payments are payable shall be expressed in their US Dollar equivalent, calculated using the applicable conversion rates for buying US Dollars published by The Wall Street Journal (Eastern Edition) on the last Business Day of the Calendar Quarter to which the royalty report relates. All payments due to a Party hereunder shall be made by wire transfer directly to an account designated by such Party.

Section 9.9 Invoices. Unless otherwise expressly stated in this Agreement, PEI shall invoice MERRIMACK, on a Calendar Quarter basis with respect to all costs to be reimbursed by MERRIMACK under this Agreement, including Development Costs incurred by PEI in the conduct of PEI's activities under the Development Plan and FTE costs of PEI in connection with the transfer of Manufacturing Technology in accordance with Section 6.1(a) that become due and payable to PEI hereunder, and MERRIMACK shall pay PEI such invoiced amount within thirty (30) days following receipt thereof.

Section 9.10 Late Payments. Any payment under this Agreement that is not paid on or before the date such payment is due shall bear interest at the lesser of (a) [**] percentage points above the prime rate of interest of Citibank, N.A. as announced on the date such payment is due, or (b) the highest rate permitted by applicable Laws, calculated on the number of days such payments are overdue and compounded monthly.

Section 9.11 Tax Withholding.

(a) As of the Effective Date, the Parties anticipate that no foreign withholding tax will apply to payments from MERRIMACK to PEI under this Agreement based on current Laws. If, as a result of the assignment of this Agreement by MERRIMACK to an Affiliate or a Third Party outside of Bermuda, foreign withholding tax in excess of the foreign withholding tax amount that would have been payable in the absence of such assignment becomes payable with respect to any amount due to PEI under this Agreement, such amount due to PEI will be increased so that the amount actually paid to PEI (after withholding of the excess withholding tax) equals the amount that would have been payable to PEI in the absence of such excess withholding. For purposes of clarity, except as specifically provided in the foregoing sentence,

MERRIMACK shall have no obligation to increase the amounts due to PEI under this Agreement to account for any withholding tax that may apply to such amounts. MERRIMACK will provide PEI evidence of its payment of any withholding tax that reduces a payment to PEI hereunder.

(b) The Parties shall reasonably cooperate in completing and filing documents required under the provisions of any applicable tax Laws or under any other applicable Law in connection with the making of any required tax payment or withholding payment, or in connection with any claim to a refund of or credit for any such payment.

(c) Prior to any payment by MERRIMACK to PEI in a Calendar Year, PEI will provide MERRIMACK with any relevant form required by the relevant tax authorities in order for PEI to attest its fiscal residence and accordingly obtain the application of the reduced withholding tax rate or the exemption from withholding tax, according to the relevant bilateral convention for the prevention of double taxation. In the event PEI fails to return to MERRIMACK such forms duly completed and signed before a payment date, MERRIMACK will declare and pay withholding tax at the local common law rate applicable to the payments, and such tax will be deducted from the corresponding payment by MERRIMACK to PEI. MERRIMACK will remit the withholding tax to the proper tax authority and proof of payment of such tax shall be secured and sent to PEI as evidence of such payment.

Section 9.12 Blocked Payments. In the event that, by reason of applicable Laws in any country, it becomes impossible or illegal for MERRIMACK or its Affiliates or sublicensees, to transfer, or have transferred on its behalf, royalties or other payments to PEI, such royalties or other payments shall be deposited in local currency in the relevant country to the credit of PEI in a recognized banking institution designated by PEI or, if none is designated by PEI within a period of [**] days, in a recognized banking institution selected by MERRIMACK or its Affiliates or sublicensees, as the case may be, and identified in a notice in writing given to PEI. The foregoing shall apply reciprocally to any payment that would be due by PEI to MERRIMACK hereunder.

Article X
Intellectual Property Ownership, Protection and Related Matters

Section 10.1 Ownership of Inventions.

(a) Solely-Owned Inventions. Each Party shall exclusively own all right, title and interest in and to all inventions made or conceived solely by the employees, agents, consultants or contractors of such Party or its Affiliates in the course of performing its activities under this Agreement.

(b) Joint Know-How and Joint Patent Rights. All Joint Know-How and Joint Patent Rights shall be owned jointly on the basis of each Party having an undivided interest in the whole. Each Party covenants that it will not subject any such Joint Know-How or Joint Patent Rights to any lien, encumbrance, security interest or other imposition that would affect the other Party's title or right to use the Joint Know-How or Joint Patent Rights or to sell or otherwise assign its rights thereunder without consent of the other Party, except as otherwise

provided by the terms of this Agreement. Subject to the licenses granted herein and each Party's payment obligations hereunder, each Party shall have the right to exploit such Joint Know-How and Joint Patent Rights without any duty to account to the other Party.

(c) Inventorship. For purposes of determining the Parties' rights under this Agreement, the determination of inventorship shall be made in accordance with United States patent laws. In the event of any dispute regarding inventorship, if the Parties are unable to resolve the dispute, the Parties shall jointly engage mutually

acceptable independent US patent counsel not regularly employed by either Party (or, if the Parties are unable to mutually agree on such patent counsel, the LCIA shall appoint such patent counsel) to resolve such dispute. The decision of such independent patent counsel shall be binding on the Parties with respect to the issue of inventorship.

Section 10.2 Prosecution and Maintenance of Patent Rights.

(a) MERRIMACK Patent Rights outside the PEI Territory. MERRIMACK shall have the sole right and option (but not the obligation), at its sole cost and expense, to Prosecute and Maintain any MERRIMACK Patent Rights outside the PEI Territory.

(b) MERRIMACK Patent Rights in the PEI Territory and PEI Patent Rights and Joint Patent Rights Worldwide. MERRIMACK, shall have the first right and option (but not the obligation), at its sole cost and expense, to Prosecute and Maintain the MERRIMACK Patent Rights in the PEI Territory and the PEI Patent Rights and Joint Patent Rights worldwide (collectively, the "Step-In Patent Rights"). In the event that MERRIMACK elects not to file, prosecute, or maintain, or elects to abandon any Step-In Patent Right, or declines to control any related interference, opposition or similar proceedings, MERRIMACK shall give PEI reasonable written notice to this effect, sufficiently in advance to permit PEI, in its sole discretion and cost and expense, to undertake such Prosecution and Maintenance, without a loss of rights, and thereafter PEI may, upon written notice to MERRIMACK, Prosecute and Maintain such Step-In Patent Right.

(c) Costs and Expenses. As from the Effective Date, the Parties shall bear the costs of Prosecuting and Maintaining the Licensed Patent Rights in accordance with Section 10.2(a) and Section 10.2(b).

(d) Cooperation. Each Party agrees to cooperate with the other with respect to the Prosecution and Maintenance of the Licensed Patent Rights pursuant to this Section 10.2. Each Party agrees, as applicable, to:

(i) execute all such documents and instruments and perform such acts as may be reasonably necessary in order to permit the other Party to continue any Prosecution and Maintenance that such Party has elected not to pursue, as provided for in Section 10.2(b);

(ii) make its employees, agents and consultants reasonably available to the other Party (or to the other Party's authorized attorneys, agents or representatives), to the extent reasonably necessary to enable the prosecuting Party to undertake Prosecution and Maintenance;

(iii) with respect to the Step-In Patent Rights, provide (itself or through patent counsel) the other Party a copy of each proposed material correspondence pertaining to substantive Prosecution and Maintenance on the merits, reasonably in advance of any applicable filing or response deadline to allow the other Party to review and comment on the content of such proposed correspondence and advise the prosecuting Party as to the conduct of such Prosecution and Maintenance, which comments and advice the prosecuting Party will not unreasonably decline to follow, provided that doing so is consistent with the goal of obtaining optimal patent coverage for the Licensed Product;

(iv) with respect to the Step-In Patent Rights, provide (itself or through patent counsel) the other Party with copies of all material correspondence pertaining to substantive Prosecution and Maintenance after its submission or receipt, as the case may be; and

(v) seek patent term extensions, adjustments, and the like wherever available for the Step-In Patent Rights.

Section 10.3 Third Party Infringement.

(a) Notice. Each Party shall promptly report in writing to the other Party during the Term any (i) known or suspected infringement of any issued claims within the Licensed Patent Rights, or (ii) misappropriation of any of the Licensed Know-How of which such Party becomes aware. In the event such known or suspected infringement or misappropriation involves the Development, manufacture, use or Commercialization of a product or product candidate that is or may be competitive with the Licensed Compound or the Licensed Product being Developed or Commercialized hereunder ("Competitive Infringement"), the reporting Party shall provide the other Party with all available evidence supporting such infringement, suspected infringement, misappropriation or suspected misappropriation. Promptly after receipt of a notice of a Competitive Infringement, the Parties shall discuss in good faith the infringement and appropriate actions that could be taken to cause such infringement of Licensed Patent Rights or use of misappropriated Licensed Technology to cease.

(b) Enforcement.

(i) PEI shall have the first right, but not the obligation, to initiate a suit or take other appropriate action that it believes is reasonably required to protect (*i.e.*, prevent or abate actual or threatened misappropriation or infringement of, or otherwise enforce, in the best commercial interests of the Licensed Product) the Licensed Technology against any Competitive Infringement in the PEI Territory, at PEI's sole control and expense. If PEI fails to initiate a suit or take other appropriate action that it has the initial right to initiate or take to protect the Licensed Technology against any Competitive Infringement in the PEI Territory within [**] days after becoming aware of the basis for such suit or action, then MERRIMACK may, in its discretion, initiate a suit or take other appropriate action that it believes is reasonably required to protect the Licensed Technology at issue.

(ii) MERRIMACK shall have the first right, but not the obligation, to initiate a suit or take other appropriate action that it believes is reasonably required to protect (*i.e.*, prevent or abate actual or threatened misappropriation or infringement of, or otherwise

enforce, in the best commercial interests of the Licensed Product) the Licensed Technology against any Competitive Infringement outside the PEI Territory, at MERRIMACK's sole control and expense. If MERRIMACK fails to initiate a suit or take other appropriate action that it has the initial right to initiate or take to protect the Licensed Technology against any Competitive Infringement in the MERRIMACK Territory within [**] days after becoming aware of the basis for such suit or action, then PEI may, in its discretion, initiate a suit or take other appropriate action that it believes is reasonably required to protect the Licensed Technology at issue.

(c) Infringement Actions other than Competitive Infringements.

(i) In the event of a Third Party infringement of the MERRIMACK Patent Rights that is not a Competitive Infringement, MERRIMACK, at its own expense, will have the sole right, but not any obligation, to bring and control any legal action in any territory in connection with such infringement.

(ii) In the event of a Third Party infringement of the PEI Patent Rights that is not a Competitive Infringement, PEI, at its own expense, will have the sole right, but not any obligation, to bring and control any legal action in any territory in connection with such infringement.

(d) Conduct of Actions. The Party initiating suit or action shall have the sole and exclusive right to select counsel for any suit initiated by it referred to in Section 10.3(b). If required under applicable Law in order for the initiating Party to initiate or maintain such suit or action, the other Party shall join as a party to the suit or action. Such other Party shall offer reasonable assistance to the initiating Party in connection therewith at no charge to the initiating Party except for payment of reasonable FTE costs at the FTE Rate and reimbursement of reasonable Out-of-Pocket Costs incurred in rendering such assistance. The Party filing any such suit or taking any such action shall provide the other Party with an opportunity to make suggestions and comments regarding such suit or action. Thereafter, the Party filing any such suit or taking any such action shall, to the extent permitted by applicable Law, keep the other Party promptly informed, and shall from time to time consult with such other Party regarding the status of any such suit or action and shall provide such other Party with copies of all material documents (*i.e*., complaints, answers, counterclaims, material motions, orders of the court, memoranda of law and legal briefs, interrogatory responses, depositions, material pre-trial filings, expert reports, affidavits filed in court, transcripts of hearings and trial testimony, trial exhibits and notices of appeal) filed in, or otherwise relating to, such suit or action. The Party not initiating such suit or action shall cooperate with the Party initiating such suit or action to the extent reasonably requested in accordance with this Section 10.3(d), and shall have the right to participate and be represented in any such suit by its own counsel at its own expense. MERRIMACK shall not conduct any such suit or action in a manner that materially places at risk the scope or validity of any PEI Patent Right or Joint Patent Right without the prior written approval of PEI, and MERRIMACK shall not settle or compromise any claim or proceeding relating to the PEI Patent Rights or Joint Patent Rights without obtaining the prior written consent of PEI, such consent not to be unreasonably withheld, conditioned or delayed. PEI shall not conduct any such suit or action in a manner that materially places at risk the scope or validity of any MERRIMACK Patent Right or Joint Patent Right without the prior written approval of MERRIMACK, and PEI shall not settle or compromise any claim or proceeding relating to the

MERRIMACK Patent Rights or Joint Patent Rights without obtaining the prior written consent of MERRIMACK, such consent not to be unreasonably withheld, conditioned or delayed.

(e) Recoveries. With respect to any suit or action to protect a Step-In Patent Right in the MERRIMACK Territory or PEI Territory referred to in Section 10.3(b), any recovery obtained as a result of any such proceeding, by settlement or otherwise, shall be applied in the following order of priority:

(i) first, the Party initiating the suit or action with respect to Licensed Technology shall be reimbursed for all costs and expenses in connection with such proceeding paid by such Party and not otherwise recovered; and

(ii) second, any remainder shall be paid [**] percent ([**]%) to the Party initiating such suit or action and [**] percent ([**]%) to the other Party.

Section 10.4 Claimed Infringement. In the event that a Party becomes aware of any claim or threat of claim that the Development, manufacture or Commercialization of the Licensed Compound or the Licensed Product by PEI or MERRIMACK hereunder infringes or misappropriates the intellectual property rights of any Third Party, such Party shall promptly notify the other Party. Each Party shall provide to the other Party copies of any notices it receives from Third Parties regarding any patent nullity actions, any declaratory judgment actions, any alleged infringement of Third Party Patent Rights or any alleged misappropriation of Third Party Know-How. Such notices shall be provided promptly, but in no event after more than fifteen (15) days following receipt thereof. In any such instance, the Parties shall cooperate, subject to Section 4.5, in undertaking an appropriate course of action.

Section 10.5 Patent Invalidity Claim.

(a) If a Third Party at any time asserts a claim that any MERRIMACK Patent Right or Joint Patent Right is invalid or otherwise unenforceable ("MERRIMACK Invalidity Claim"), whether as a defense in an infringement action brought by MERRIMACK or PEI pursuant to Section 10.3 or in an action brought against MERRIMACK or PEI under Section 10.4, including any declaratory judgment action, the Parties shall cooperate with each other in preparing and formulating a response to such Invalidity Claim. PEI shall not settle or compromise any MERRIMACK Invalidity Claim without the consent of MERRIMACK, which consent shall not be unreasonably withheld, conditioned or delayed.

(b) If a Third Party at any time asserts a claim that any PEI Patent Right is invalid or otherwise unenforceable ("PEI Invalidity Claim"), whether as a defense in an infringement action brought by MERRIMACK or PEI pursuant to Section 10.3 or in an action brought against MERRIMACK or PEI under Section 10.4, including any declaratory judgment action, the Parties shall cooperate with each other in preparing and formulating a response to such Invalidity Claim. MERRIMACK shall not settle or compromise any PEI Invalidity Claim without the consent of PEI, which consent shall not be unreasonably withheld, conditioned or delayed.

Section 10.6 Patent Marking. Each Party agrees to comply with the patent marking statutes in each country in which the Licensed Product is sold by such Party, its Affiliates or sublicensees.

Article XI
Confidentiality

Section 11.1 Confidential Information. All Confidential Information disclosed by a Party or any of its Affiliates (the "disclosing Party") to the other Party or any of its Affiliates (the "receiving Party") during the Term shall not be used by the receiving Party or any of its Affiliates except in connection with the activities contemplated by this Agreement, shall be maintained in confidence by the receiving Party and its Affiliates (except as set forth in the remainder of this Article XI), and shall not otherwise be disclosed by the receiving Party or its Affiliates to any Person that is not a Party or one of its Affiliates (except as set forth in the remainder of this Article XI), without the prior written consent of the disclosing Party, except to the extent that the receiving Party can show that:

(a) the Confidential Information was known to the receiving Party or any of its Affiliates prior to its date of disclosure to the receiving Party;

(b) the Confidential Information, either before or after the date of the disclosure to the receiving Party hereunder, is lawfully disclosed to the receiving Party or any of its Affiliates by sources other than the disclosing Party rightfully in possession of the Confidential Information;

(c) the Confidential Information, either before or after the date of the disclosure to the receiving Party hereunder, becomes published or generally known to the public through no fault or omission on the part of the receiving Party;

(d) the Confidential Information is independently developed by or for the receiving Party or any of its Affiliates without reference to or reliance upon the disclosing Party's Confidential Information;

(e) such disclosure is reasonably necessary to Prosecute and Maintain the Licensed Patent Rights;

(f) such disclosure is reasonably necessary to be filed with a Regulatory Authority in connection with the Licensed Compound or the Licensed Product; or

(g) such disclosure is reasonably necessary to enforce the provisions of this Agreement.

If the receiving Party is required by a governmental authority or by order of a court of competent jurisdiction to disclose any of the disclosing Party's Confidential Information, the receiving Party will give the disclosing Party prompt written notice thereof and the receiving Party will take reasonable and lawful actions to avoid or minimize the degree of such disclosure. The receiving Party will cooperate reasonably with the disclosing Party in any efforts to seek a

protective order. Notwithstanding the foregoing, (i) the status, prospects and objectives of the Development activities (other than such status, prospects and objectives arising from the Ongoing Clinical Studies described in Section 1.56(a) or Section 1.56(b)) conducted pursuant to the Development Plan for the Licensed Compound and the Licensed Product outside of the PEI Territory and (ii) all Know-How developed in the Development Program (other than such Know-How arising from the Ongoing Clinical Studies described in Section 1.56(a) or Section 1.56(b)), shall be deemed the Confidential Information of MERRIMACK, with MERRIMACK deemed to be the disclosing Party and PEI deemed to be the receiving Party with respect thereto. Nothing in this paragraph will affect the ownership of any Know-How or information.

Section 11.2 Employee, Director, Consultant and Advisor Obligations. MERRIMACK and PEI each agrees that it and its Affiliates shall provide Confidential Information received from the other Party only to the receiving Party's respective employees, directors, consultants, agents and advisors, and to the employees, directors, consultants, agents and advisors of the receiving Party's Affiliates, who have a need to know such Confidential Information to assist the receiving Party in fulfilling its obligations under this Agreement and who are bound by obligations of confidentiality and non-use that are at least as restrictive as those set forth in this Agreement. Each Party shall remain responsible for any failure by any of such Party's Affiliates, employees, directors, consultants, agents and advisors to treat such Confidential Information as required under Section 11.1.

Section 11.3 Protection of Certain Confidential Information of PEI. Subject to applicable Laws and any ethical obligations binding PEI that would require such disclosure, PEI agrees to use reasonable efforts not to disclose to Third Parties, other than under appropriate confidentiality obligations, its own Confidential Information existing as of the Effective Date, and any Confidential Information of PEI arising prior to or after the Effective Date from the Ongoing Clinical Studies described in Section 1.56(a) or Section 1.56(b), that materially relates to the Licensed Compound and the Licensed Product in any manner that would adversely affect MERRIMACK's Development or Commercialization of the Licensed Compound or the Licensed Product, without first consulting with MERRIMACK.

Section 11.4 Publicity.

(a) Initial Press Release. Upon execution of this Agreement, the Parties shall each separately issue a press release announcing the execution of this Agreement, substantially in the form of Exhibit F-1 or Exhibit F-2 attached hereto, as applicable, and PEI may also issue a translation in the Chinese language of the form of press release attached as Exhibit F-2.

(b) Subsequent Disclosures by PEI. After such initial press release, except as provided in clause (c) below, PEI shall not issue a press release or public announcement relating to the Licensed Compound, Licensed Product or this Agreement without the prior written approval of MERRIMACK, which approval shall not be unreasonably withheld, conditioned or delayed, except that PEI may:

(i) issue such press release or public announcement if the contents of such press release or public announcement have previously been made public other than through a

breach of this Agreement by PEI and such press release or public announcement does not contain MERRIMACK's name;

(ii) issue such a press release or public announcement if required by applicable Law, including by the rules or regulations of the SEC or similar regulatory agency in a country other than the United States or of any stock exchange or NASDAQ; and

(iii) issue such a press release or public announcement regarding:

(A) the commencement, completion or "top-line" results of preclinical and clinical studies of the Licensed Compound or the Licensed Product conducted by PEI in accordance with Section 4.2(b)(iii);

(B) the completion of subject enrollments for clinical studies of the Licensed Compound or the Licensed Product conducted by PEI in accordance with Section 4.2(b)(iii);

(C) the filing by PEI for or receipt of Marketing Authorization with respect to the Licensed Compound or the Licensed Product in the PEI Territory; and

(D) PEI's Commercialization activities in the PEI Territory with respect to the Licensed Compound or the Licensed Product hereunder, including the development of sales, marketing and medical infrastructure and management changes to support Development and Commercialization activities in the PEI Territory.

in each case under clause (i), (ii) or (iii) after first notifying MERRIMACK of such planned press release or public announcement at least [**] Business Days in advance of issuing such press release or making such public announcement (or, with respect to press releases and public announcements made pursuant to the foregoing clause (ii), with as much advance notice as possible under the circumstances if it is not possible to provide notice at least [**] Business Days in advance) for the sole purpose of allowing MERRIMACK to review the proposed press release or public announcement. PEI shall modify any such press release or public announcement as reasonably requested by MERRIMACK to remove any Confidential Information of MERRIMACK and shall include in such press release or public announcement made pursuant to the foregoing clause (ii) only such information relating to the Licensed Compound, Licensed Product or this Agreement as is required by such applicable Law.

(c) Publications.

(i) Research or Development Conducted Prior to Effective Date or Under Section 4.2(b)(iii). PEI shall have the right to publish the results of any research or Development relating to the Licensed Compound or the Licensed Product conducted by PEI prior to the Effective Date or pursuant to Section 4.2(b)(iii), after providing a copy of the material intended for publication or presentation to MERRIMACK for review and comment at least [**] days prior to the date of publication,

if such material is an article or manuscript, or [**] days before publication or presentation, if such material is a presentation or an abstract. PEI will reasonably consider MERRIMACK's comments on such publications and presentations and,

subject to applicable Laws or ethical obligations to which PEI is subject and PEI's obligations to Third Parties, PEI will ensure that such publications and presentations are consistent with any publications strategy established by the JDC under Section 3.2(b)(vi). Any such publication or presentation shall appropriately acknowledge the support of MERRIMACK, if applicable.

(ii) Research or Development Conducted Jointly Under the Development Plan. At least [**] days prior to the date of publication, if such material is an article or manuscript, or [**] days before publication or presentation, if such material is a presentation or an abstract, MERRIMACK will provide to PEI for PEI's review and comment a copy of any publication or presentation that includes the results of any research or Development relating to the Licensed Compound or the Licensed Product conducted jointly by the Parties. MERRIMACK will reasonably consider PEI's comments on such publications and presentations and, subject to applicable Laws or ethical obligations to which MERRIMACK is subject and MERRIMACK's obligations to Third Parties, MERRIMACK will ensure that such publications and presentations are consistent with any publications strategy established by the JDC under Section 3.2(b)(vi). Any such publication or presentation shall appropriately acknowledge the efforts and support of PEI.

(iii) Other Publications. Except as provided in this Section 11.4(c) or as otherwise agreed by the Parties or required by any publications strategy established by the JDC under Section 3.2(b)(vi), MERRIMACK will have no obligation to provide to PEI any press releases, publications, presentations or other public disclosures arising from the activities contemplated under this Agreement prior to their publication or disclosure. MERRIMACK will ensure that all public disclosures it makes relating to the activities contemplated under this Agreement or MERRIMACK's exercise or the rights granted it under this Agreement will be consistent with any publications strategy established by the JDC under Section 3.2(b)(vi), and MERRIMACK will provide to PEI a copy of each press release, scientific publication, scientific presentation and other written or electronic scientific public disclosure promptly after such disclosure is made. Any such scientific publication or presentation shall appropriately acknowledge the efforts and support of PEI, as applicable.

Section 11.5 Other Disclosures. Notwithstanding anything in this Agreement to the contrary, each Party shall have the right to disclose Confidential Information or the terms of this Agreement (as applicable):

(i) to investors, potential investors, lenders, potential lenders, acquirers, potential acquirers, investment bankers and other Third Parties in connection with financing, partnering and acquisition activities, solely under obligations of confidentiality and non-use that are at least as restrictive as those set forth in this Article XI;

(ii) to sublicensees, potential sublicensees, collaborators, potential collaborators, and Third Party contractors for purposes of engaging in the Development, manufacture or Commercialization of the Licensed Compound or the Licensed Product as contemplated hereunder, solely under obligations of confidentiality and non-use that are at least as restrictive as those set forth in this Article XI;

(iii) as required by applicable Laws, including rules of the SEC or similar regulatory agency in a country other than the United States or of any stock exchange or other securities trading institution. In the event that this Agreement shall be included in any report, statement or other document filed by either Party or an Affiliate of either Party with the SEC or similar regulatory agency in a country other than the United States or any stock exchange or other securities trading institution, such Party shall use, or shall cause such Party's Affiliate, as the case may be, to use, reasonable efforts to obtain confidential treatment from the SEC, similar regulatory agency, stock exchange or other securities trading institution of any financial information or other information of a competitive or confidential nature, and shall include in such confidentiality request such provisions of this Agreement as may be reasonably requested by the other Party.

Section 11.6 Clinical Trial Registry and Results Databank. Each of MERRIMACK and PEI shall have the obligation to the extent required by applicable Laws or regulations to publish registration information and summaries of data and results from any human clinical trials conducted by such Party under this Agreement on its clinical trials registry or on a government-sponsored database such as www.clinicaltrials.gov or other publicly available websites such as www.clinicalstudyresults.org, without requiring the consent of the other Party. The content of such publication shall be submitted to the JDC for prior approval.

Section 11.7 Term. All obligations of confidentiality imposed under this Article XI shall expire five (5) years following termination of this Agreement.

Article XII
Representations and Warranties

Section 12.1 Representations and Warranties of Both Parties. Each Party hereby represents and warrants to the other Party, as of the Effective Date, that:

(a) such Party is duly organized, validly existing and in good standing under the Laws of the jurisdiction of its incorporation and has full corporate power and authority to enter into this Agreement and to carry out the provisions hereof;

(b) such Party has taken all necessary action on its part to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder;

(c) this Agreement has been duly executed and delivered on behalf of such Party, and constitutes a legal, valid, binding obligation, enforceable against it in accordance with the terms hereof, subject to bankruptcy, insolvency, reorganization, arrangement, winding-up, moratorium, and similar laws of general application affecting the enforcement of creditors' rights generally, and subject to general equitable principles, including the fact that the availability of equitable remedies, such as injunctive relief or specific performance, is in the discretion of the court;

(d) the execution, delivery and performance of this Agreement by such Party does not conflict with any agreement or any provision thereof, or any instrument or binding understanding, oral or written, to which it is a party or by which it is bound, nor to the best of its

knowledge violate any law or regulation of any court, governmental body or administrative or other agency having jurisdiction over such Party; and

(e) no government authorization, consent, approval, license, exemption of or filing or registration with any court or governmental department, commission, board, bureau, agency or instrumentality, domestic or foreign, under any applicable Laws currently in effect, is or will be necessary for, or in connection with,

the transaction contemplated by this Agreement or any other agreement or instrument executed in connection herewith, or for the performance by it of its obligations under this Agreement and such other agreements, to conduct Clinical Trials or to seek or obtain Marketing Authorizations.

Section 12.2 Representations and Warranties of PEI. PEI hereby represents and warrants to MERRIMACK, as of the Effective Date, that, except as PEI has disclosed to MERRIMACK as of the Effective Date:

(a) PEI exclusively owns or otherwise Controls all of the rights, title and interest in and to the PEI Licensed Technology necessary to grant, and has the right to grant, all rights and licenses it purports to grant to MERRIMACK with respect to the PEI Licensed Technology under this Agreement;

(b) PEI has not granted any right or license, to any Third Party relating to any of the PEI Licensed Technology, that would conflict with, or limit the scope of, any of the rights or licenses granted to MERRIMACK hereunder;

(c) PEI has not granted any liens or security interests on the PEI Licensed Technology;

(d) To PEI's knowledge, after reasonable inquiry with respect to employees of PEI, it has not (i) employed or used any contractor or consultant that employs any individual or entity debarred or disqualified by the FDA (or subject to a similar sanction by any Regulatory Authority outside the United States) or, (ii) employed any individual or entity that is the subject of an FDA debarment or disqualification investigation or proceeding (or similar proceeding by any Regulatory Authority outside the United States), in each of clauses (i) and (ii) in the conduct of Development activities directed to the Licensed Compound or the Licensed Product;

(e) Except as previously disclosed to MERRIMACK with respect to the Clinical Trial known as [**] (which has been terminated) and the Phase I Clinical Study known as [**], none of the Clinical Trials conducted by PEI with respect to the Licensed Compound has been subject to a [**] by a Regulatory Authority;

(f) PEI has not received any written allegation from a Third Party that any of the PEI Patent Rights is invalid or unenforceable and PEI has not received any written notice that any PEI Patent Right is subject to interference, reexamination, reissue, revocation, opposition, appeal or other administrative proceedings;

(g) PEI has not received, with respect to the PEI Patent Rights or the PEI Know-How, any written notice of infringement or misappropriation or any other written communication

relating to a possible infringement or misappropriation of any Patent Rights or any Know-How Controlled by a Third Party with respect to the Licensed Compound or the Licensed Product or uses thereof;

(h) PEI has taken reasonable measures to protect the confidentiality of the PEI Know-How, and, to PEI's knowledge, no event has occurred which has resulted in the unauthorized use or disclosure of the PEI Know-How by PEI or its personnel of any material part of the PEI Know-How or which otherwise resulted in any material part of the PEI Know-How entering the public domain;

(i) To the actual knowledge of PEI's Chief Executive Officer, Senior Manager of Intellectual Property and Contract, Associate Director of Clinical Research and Senior Manager of CMC, after reasonable inquiry, PEI has disclosed or made available to MERRIMACK, on or before the Effective Date, all material information and data in its possession regarding the Licensed Compound, the Licensed Product, the PEI Patent Rights and the PEI Know-How (other than any such information and data that PEI received from MERRIMACK or its Affiliates under the 2005 License Agreement or otherwise); and

(j) The list of Regulatory Documentation set forth in Exhibit E is a true, correct and complete list of all Regulatory Documentation for the Licensed Compound or the Licensed Product outside the PEI Territory that is Controlled by PEI.

Section 12.3 Representations and Warranties of MERRIMACK. MERRIMACK hereby represents and warrants to PEI, as of the Effective Date, that, except as MERRIMACK has disclosed to PEI as of the Effective Date:

(a) MERRIMACK exclusively owns or otherwise Controls all of the rights, title and interest in and to the MERRIMACK Licensed Technology necessary to grant, and has the right to grant, all rights and licenses it purports to grant to PEI with respect to the MERRIMACK Licensed Technology under this Agreement;

(b) Neither MERRIMACK nor any of its Affiliates has granted any right or license, to any Third Party relating to any of the MERRIMACK Licensed Technology, that would conflict with, or limit the scope of, any of the rights or licenses granted to PEI hereunder;

(c) Neither MERRIMACK nor any of its Affiliates has granted any liens or security interests on the MERRIMACK Licensed Technology;

(d) To MERRIMACK's and its Affiliates' knowledge, after reasonable inquiry with respect to employees of MERRIMACK and its Affiliates, neither MERRIMACK nor any of its Affiliates has (i) employed or used any contractor or consultant that employs any individual or entity debarred or disqualified by the FDA (or subject to a similar sanction by any Regulatory Authority outside the United States) or, (ii) employed any individual or entity that is the subject of an FDA debarment or disqualification investigation or proceeding (or similar proceeding by any Regulatory Authority outside the United States), in each of clauses (i) and (ii) in the conduct of Development activities directed to the Licensed Compound or the Licensed Product;

(e) (i) neither MERRIMACK nor any of its Affiliates has received any written allegation from a Third Party that any of the MERRIMACK Patent Rights is invalid or unenforceable and (ii) neither MERRIMACK nor any of its Affiliates has received any written notice that any MERRIMACK Patent Right is subject to interference, reexamination, reissue, revocation, opposition, appeal or other administrative proceedings;

(f) Neither MERRIMACK nor any of its Affiliates has received, with respect to the MERRIMACK Patent Rights or the MERRIMACK Know-How, any written notice of infringement or misappropriation or any other written communication relating to a possible infringement or misappropriation of any Patent Rights or any Know-How Controlled by a Third Party with respect to the Licensed Compound or the Licensed Product;

(g) MERRIMACK and its Affiliates have taken reasonable measures to protect the confidentiality of the MERRIMACK Know-How, and, to MERRIMACK's and its Affiliates' knowledge, no event has occurred which has resulted in the unauthorized use or disclosure of the MERRIMACK Know-How by MERRIMACK, its Affiliates or any of their personnel of any material part of the MERRIMACK Know-How or which otherwise resulted in any material part of the MERRIMACK Know-How entering the public domain; and

(h) To MERRIMACK's and its Affiliates' knowledge, MERRIMACK and its Affiliates have disclosed or made available to PEI, on or before the Effective Date, all material information and data in its possession and not obtained from PEI regarding the Licensed Compound, the Licensed Product, the MERRIMACK Patent Rights in the MERRIMACK Territory and the MERRIMACK Know-How.

Section 12.4 Mutual Covenants. Each Party hereby covenants to the other Party that:

(a) All employees of such Party or its Affiliates working under this Agreement will be under confidentiality obligations consistent with Article XI and the obligation to assign all right, title and interest in and to their inventions and discoveries arising in the performance of such work, whether or not patentable, to such Party as the sole owner thereof;

(b) To its knowledge, such Party will not (i) employ or use any contractor or consultant that employs any individual or entity debarred or disqualified by the FDA (or subject to a similar sanction by any Regulatory Authority outside the United States) or, (ii) employ any individual who or entity that is the subject of an FDA debarment or disqualification investigation or proceeding (or similar proceeding by any Regulatory Authority outside the United States), in each of clauses (i) and (ii) in the conduct of its activities under this Agreement;

(c) Such Party shall perform its activities pursuant to this Agreement in compliance in all material respects with applicable Laws;

(d) Each Party will, in performing its obligations under this Agreement, comply in all material respects with all applicable FDA and other current international regulatory requirements and standards, including FDA's current Good Manufacturing Practices, Good Laboratory Practices, and Good Clinical Practices, and comparable foreign regulatory standards, and other applicable rules, regulations and requirements;

(e) Neither Party shall, during the Term, grant any right or license to any Third Party or take any other action, or permit any action to be taken, relating to any of the intellectual property rights it owns or Controls as of the Effective Date or thereafter which would conflict with, or limit the scope of, any of the rights or licenses granted or to be granted to the other Party hereunder; and

(f) Neither Party shall permit any agreement (including, with respect to MERRIMACK, the 2005 License Agreement) or arrangement under which such Party owns or otherwise Controls (other than pursuant to this Agreement) Licensed Technology to be modified or terminated (in whole or in part) in a manner that adversely affects the other Party's rights under this Agreement without the other Party's prior written consent.

Section 12.5 DISCLAIMER. EXCEPT AS OTHERWISE EXPRESSLY SET FORTH IN THIS AGREEMENT, NEITHER PARTY MAKES ANY REPRESENTATION OR EXTENDS ANY WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY THAT ANY PATENTS ARE VALID OR ENFORCEABLE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, EACH PARTY DISCLAIMS ANY WARRANTIES WITH REGARDS TO: (A) THE SUCCESS OF ANY STUDY OR TEST COMMENCED UNDER THIS AGREEMENT; (B) THE SAFETY OR USEFULNESS FOR ANY PURPOSE OF THE TECHNOLOGY OR MATERIALS, INCLUDING ANY COMPOUNDS, IT PROVIDES OR DISCOVERS UNDER THIS AGREEMENT; OR (C) THE VALIDITY, ENFORCEABILITY OR NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHTS OR TECHNOLOGY IT PROVIDES OR LICENSES TO THE OTHER PARTY UNDER THIS AGREEMENT.

Article XIII
Term and Termination

Section 13.1 Term. This Agreement shall become effective as of the Effective Date and will remain in effect unless all rights granted to both Parties are terminated as set forth in this Article XIII, (the "Term").

Section 13.2 Survival of Licenses upon Expiration of Royalty Term in a Country. Notwithstanding anything herein, on a country-by-country basis:

(a) upon the expiration of all royalty payment obligations of MERRIMACK hereunder for the Licensed Product in a country in the MERRIMACK Territory at the end of the applicable Royalty Term (but not upon a termination of MERRIMACK's rights and licenses hereunder in such country prior to the end of the applicable Royalty Term), the licenses granted to MERRIMACK in Section 8.2(a) shall be deemed to be perpetual, fully paid-up and irrevocable with respect to the Licensed Product in such country;

(b) upon the earliest of (i) expiration of all royalty payment obligations of MERRIMACK hereunder for the Licensed Product in all Major Asian Countries and Major EU Countries if MERRIMACK's rights and licenses hereunder in such countries have not been

terminated prior to such expiration, (ii) expiration of all royalty payment obligations of both MERRIMACK and PEI hereunder for the Licensed Product in all Major Asian Countries and Major EU Countries if MERRIMACK's rights and licenses hereunder in one or more of such countries have been terminated prior to the expiration of MERRIMACK's royalty payment obligations hereunder in one or more of such countries or (iii) the termination of PEI's rights and licenses hereunder in the PEI Territory (but, as to each of the foregoing clauses (i), (ii) and (iii), not following a termination of MERRIMACK's rights and licenses hereunder in the MERRIMACK ROW Territory prior thereto), the licenses granted to MERRIMACK in Section 8.2(a) shall be deemed to be perpetual, fully paid-up and irrevocable with respect to the Licensed Product in the MERRIMACK ROW Territory;

(c) upon the expiration or earlier termination of all royalty payment obligations of MERRIMACK hereunder for the Licensed Product in all Major Asian Countries and Major EU Countries (but not following a termination of PEI's rights and licenses hereunder in the PEI Territory prior to the end of such Royalty Terms pursuant to Section 13.3(a)(iii)), the licenses granted to PEI in Section 8.1(a) shall be deemed to be perpetual and irrevocable with respect to the Licensed Product in the PEI Territory; and

(d) in the event PEI receives licenses in what was formerly the MERRIMACK Territory under Section 13.5(b)(i)(D) or Section 13.5(b)(i)(E) then, upon the expiration of all royalty payment obligations of PEI hereunder for the Licensed Product in a country at the end of the applicable Terminated Territory Royalty Term (but not upon a termination of PEI's rights and licenses hereunder in such country prior to the end of the applicable Terminated Territory Royalty Term), the licenses granted to PEI under Section 13.5(b)(i)(D) or Section 13.5(b)(i)(E) shall be deemed to be perpetual, fully paid-up and irrevocable with respect to the Licensed Product in such country.

Section 13.3 Termination for Material Breach.

(a) Upon any material breach of this Agreement by a Party (in such capacity, the "Breaching Party"), the other Party (in such capacity, the "Non-Breaching Party") may deliver notice of such breach to the Breaching Party. If the Breaching Party fails to cure such breach within the [**] day period after delivery of such notice, then, upon written notice from the Non-Breaching Party to the Breaching Party, and subject to Section 13.3(b), (i) if MERRIMACK is the Breaching Party and such material breach relates to activity in, or otherwise materially affects, the MERRIMACK Asia Territory and/or the MERRIMACK Europe Territory, this Agreement will, subject to Section 13.2(a), terminate in accordance with Section 13.5(b) with respect to, as applicable, the MERRIMACK Asia Territory and/or the MERRIMACK Europe Territory to the extent the activity relating to the material breach took place in or otherwise materially affected the MERRIMACK Asia Territory and/or the MERRIMACK Europe Territory; (ii) if MERRIMACK is the Breaching Party and such material breach is a MERRIMACK ROW Territory Breach that relates to activity in, or otherwise materially affects, the MERRIMACK ROW Territory, this Agreement will, subject to Section 13.2(b), terminate with respect to the MERRIMACK ROW Territory in accordance with Section 13.5(b); or (iii) if PEI is the Breaching Party, this Agreement will, subject to Section 13.2(c) and 13.2(d), terminate in accordance with Section 13.5(a).

(b) If a Party gives notice of termination under this Section 13.3, and the other Party disputes whether such termination is proper, then the issue of whether or not such termination is proper may be submitted by either Party for resolution in accordance with Article XIV (provided that the Parties will not be required to repeat any steps in the process set forth in Article XIV that the Parties have already completed in the course of discussions regarding the alleged material breach that is the basis for the notice of termination), and this Agreement shall remain in full force and effect until such dispute is resolved.

(i) In the event such dispute is submitted for arbitration, the arbitrators will be instructed that, if the arbitrators find that the Breaching Party disputed such termination in good faith, and the arbitrators render an award finding the Breaching Party is in material breach of this Agreement, the arbitrators shall include in such award (A) an explanation of what specific steps the Breaching Party is required to follow in order to cure such material breach and (B) a time period that is as short as practicable during which the Breaching Party may cure such material breach in order to avoid termination. If the Breaching Party promptly and diligently complies with such arbitration award after the arbitration award upholding such basis for termination is issued, then this Agreement shall remain in full force and effect. If the Breaching Party does not promptly and diligently comply with such arbitration award, then this Agreement (either with respect to one or more Terminated Territories or in its entirety, as applicable) shall terminate based on such material breach as provided in Section 13.3(a) and the Breaching Party shall have no further right to cure such material breach. The arbitration award shall also provide that, if there is a dispute whether the Breaching Party has promptly and diligently complied with such arbitration award, then either Party may submit such dispute to the arbitrators who made the award for an expedited determination of whether the Breaching Party has promptly and diligently complied with such arbitration award.

(ii) If as a result of the dispute resolution process it is determined that the Breaching Party is in material breach of this Agreement and did not dispute termination in good faith, this Agreement (either with respect to one or more Terminated Territories or in its entirety, as applicable) shall terminate as provided in Section 13.3(a).

(iii) If as a result of the dispute resolution process it is determined that the notice of termination was improper, then no termination shall have occurred and this Agreement shall remain in full force and effect.

Section 13.4 Termination for Convenience. MERRIMACK shall have the right to terminate this Agreement with respect to the MERRIMACK Europe Territory, the MERRIMACK Asia Territory, the MERRIMACK ROW Territory, or some or all of them, effective at any time following the second anniversary of the Effective Date, for any or no reason. MERRIMACK shall give PEI ninety (90) days prior written notice of any such termination.

Section 13.5 Effect of Termination.

(a) If this Agreement is terminated by MERRIMACK for PEI's material breach under Section 13.3, then, subject to Section 13.2, the following provisions shall apply, effective as of the effective date of termination:

(i) The rights and licenses granted by MERRIMACK to PEI under Section 8.1 will automatically terminate, and PEI will immediately cease all activities that involve the use of any MERRIMACK Licensed Technology or anything based on any MERRIMACK Licensed Technology, except any such activities that are necessary to protect the health, safety and welfare of subjects in any Clinical Trial that is ongoing as of the date of termination;

(ii) the MERRIMACK Territory shall be expanded to include the PEI Territory, but MERRIMACK will have no diligence obligations with respect to the Development and Commercialization of the Licensed Compound and the Licensed Product in or for the PEI Territory and, notwithstanding anything to the contrary in Section 8.2, Article IX, Section 13.5(a)(iii) or Section 13.5(a)(vi), MERRIMACK will have [**] with respect to the Licensed Compound or the Licensed Product in the PEI Territory;

(iii) PEI hereby grants to MERRIMACK, exercisable from and after the effective date of the termination of this Agreement, an exclusive, perpetual, irrevocable, royalty-free, fully paid-up license, with the right to grant sublicenses, under the PEI Licensed Technology and PEI's interest in the Joint Technology, to research, have researched, develop, have developed, make, have made, use, offer for sale, sell, have sold, import and export the Licensed Compound and the Licensed Product in the Field in the PEI Territory;

(iv) the royalty obligations of MERRIMACK under Article IX shall be reduced to [**] percent ([**]%) of the royalty amounts otherwise payable by MERRIMACK under Article IX, but, for the avoidance of doubt, such reduction shall not apply to [**], and MERRIMACK will have no further diligence obligations with respect to the Development and Commercialization of the Licensed Compound and the Licensed Product in or for the MERRIMACK Territory;

(v) PEI shall promptly transfer and assign possession, ownership and control to MERRIMACK of all Regulatory Approvals and Regulatory Documentation and other technical and other information and materials in PEI's Control that are necessary or useful for the Development, manufacture or Commercialization of the Licensed Compound or the Licensed Product and shall cooperate with MERRIMACK in the notification of all applicable Regulatory Authorities in connection with such transfer; and

(vi) subject to Section 13.6, and except as otherwise provided above in this Section 13.5(a), the Parties will have no further rights or obligations under this Agreement, except that the following provisions will survive such termination in accordance with their terms: Article I, Article II, Section 4.2(d)(ii), Section 4.2(d)(iii)(A), Section 4.2(d)(iii)(C), Section 4.6(b), Section 8.2(a), Section 8.2(b)(ii), Section 8.3, Section 8.4(a)(ii) and Section 8.4(b)(ii) (in accordance with their terms; provided that the obligations under Section 8.4(a)(ii) and Section 8.4(b)(ii), to the extent not expiring sooner in accordance with their terms, shall terminate on the [**] anniversary of the effective date of such termination), Section 8.5, Section 8.6, Article IX (as modified above in this Section 13.5(a)), Section 10.1, Section 10.2 and Section 10.3 (except with regard to PEI's right to Prosecute and Maintain and enforce the MERRIMACK Patent Rights in the PEI Territory or to share in any recoveries related to such enforcement under

Section 10.3(e)), Article XI, Section 12.5, Section 13.2, Section 13.5, Section 13.6, Article XIV, Article XV and Article XVI.

(b) If this Agreement is terminated by PEI in its entirety or with respect to some but not all of the MERRIMACK Asia Territory, the MERRIMACK Europe Territory or the MERRIMACK ROW Territory for MERRIMACK'S material breach under Section 13.3, or by MERRIMACK under Section 13.4 in its entirety or with respect to some but not all of the MERRIMACK Asia Territory, the MERRIMACK Europe Territory or the MERRIMACK ROW Territory, then, subject to Section 13.2, the following provisions shall apply, effective as of the effective date of termination:

(i) If the Terminated Territory includes some or all of the MERRIMACK Territory then, with regard only to those portions of the MERRIMACK Territory that are part of the Terminated Territory (and not with respect to the MERRIMACK ROW Territory):

(A) such portions of the Terminated Territory will no longer be part of the MERRIMACK Territory, the rights and licenses granted by PEI to MERRIMACK under Section 8.2 with respect to such Terminated Territory will automatically terminate, and MERRIMACK will immediately cease all activities that involve the use of any PEI Licensed Technology or anything based on any PEI Licensed Technology in or for such Terminated Territory, except any such activities that are necessary to protect the health, safety and welfare of subjects in any Clinical Trial that is ongoing as of the date of termination;

(B) the PEI Territory will be expanded to include such Terminated Territory, but PEI will have no diligence obligations with respect to the Development and Commercialization of the Licensed Compound and the Licensed Product in or for such Terminated Territory and, notwithstanding anything to the contrary in Section 8.1, PEI will have the royalty obligations set forth below in Sections 13.5(b)(i)(D) and 13.5(b)(i)(E), as applicable;

(C) MERRIMACK shall grant to PEI, exercisable from and after the effective date of the termination of this Agreement with respect to such Terminated Territory, an exclusive, perpetual, irrevocable, royalty-bearing (as provided in Section 13.5(b)(i)(D) and Section 13.5(b)(i)(E)) license, with the right to grant sublicenses, under the MERRIMACK Licensed Technology and MERRIMACK's interest in the Joint Technology, in such Terminated Territory to research, have researched, develop, have developed, make, have made, use, offer for sale, sell, have sold import and export the Licensed Compound and the Licensed Product in the Field in such Terminated Territory;

(D) if such Terminated Territory includes the MERRIMACK Asia Territory, PEI shall pay MERRIMACK a royalty of [**] percent ([**]%) of Net Sales (for such purposes, with PEI substituted for MERRIMACK in the definition of Net Sales) of the Licensed Product in the MERRIMACK Asia Territory in accordance with the terms and conditions of Article IX (for such purposes, with PEI substituted for MERRIMACK and MERRIMACK substituted for PEI and the Terminated Territory Royalty Term substituted for

the Royalty Term) provided that, for clarity, PEI will have [**] to pay any milestones to MERRIMACK;

(E) if such Terminated Territory includes the MERRIMACK Europe Territory, PEI shall pay MERRIMACK a royalty of [**] percent ([**]%) of Net Sales (for such purposes, with PEI substituted for MERRIMACK in the definition of Net Sales) of the Licensed Product in the MERRIMACK Europe Territory in accordance with the terms and conditions of Article IX (for such purposes, with PEI substituted for MERRIMACK and MERRIMACK substituted for PEI and the Terminated Territory Royalty Term substituted for the Royalty Term); provided that, for clarity, PEI will have [**] to pay any milestones to MERRIMACK; and

(F) subject to MERRIMACK's retained license rights outside of such Terminated Territory, MERRIMACK shall promptly transfer and assign possession, ownership and control to PEI of all Regulatory Approvals for the Licensed Product in such Terminated Territory and any Regulatory Documentation and other technical and other information and materials in MERRIMACK's Control that are necessary or useful for the Development, manufacture or Commercialization of the Licensed Compound or the Licensed Product solely in such Terminated Territory, and shall cooperate with PEI in the notification of all applicable Regulatory Authorities in connection with such transfer.

(ii) If the Terminated Territory includes the MERRIMACK ROW Territory then, with regard only to the MERRIMACK ROW Territory, the rights and licenses granted by PEI to MERRIMACK under Section 8.2 with respect to the MERRIMACK ROW Territory will automatically terminate, and MERRIMACK will immediately cease all activities that involve the use of any PEI Licensed Technology or anything based on PEI Licensed Technology in or for the MERRIMACK ROW Territory, except any such activities that are necessary to protect the health, safety and welfare of subjects in any Clinical Trial that is ongoing as of the date of termination.

(iii) In addition, if the Terminated Territory includes the entire MERRIMACK Territory and the MERRIMACK ROW Territory, MERRIMACK will assign back to PEI, without any additional compensation to MERRIMACK, its one-half undivided interest in the Licensed Compound Information and Manufacturing Information assigned by PEI to MERRIMACK pursuant to Section 4.2(d)(ii).

(iv) With regard to the entire Terminated Territory, subject to Section 13.6, and except as otherwise provided above in this Section 13.5(b), the Parties will have no further rights or obligations under this Agreement with regard to such Terminated Territory, except that the following provisions will survive such termination in accordance with their terms: Article I, Article II, Section 4.2(d)(iii)(B), Section 4.2(d)(iii)(C), Section 4.6(b), Section 8.1(a), Section 8.1(b)(ii), Section 8.3, Section 8.4(a)(i) (but only to the extent MERRIMACK retains rights to the PEI Licensed Technology in one or more countries outside the PEI Territory as expanded pursuant to Section 13.5(b)(i)(B)), Section 8.4(b)(i), Section 8.4(a)(ii) and Section 8.4(b)(ii) (in accordance with their terms; provided that the obligations under Section 8.4(a)(ii) and Section 8.4(b)(ii), to the extent not expiring sooner in accordance with their terms, shall terminate on the [**] anniversary of the effective date of such termination), Section 8.5, Section

8.6, Article IX (with regard to accrued but unpaid amounts due to PEI from MERRIMACK relating to portions of the Terminated Territory that were formerly part of the MERRIMACK Territory, and any royalty obligations of PEI under Section 13.5(b)(i)(D) and Section 13.5(b)(i)(E)), Section 10.1, Section 10.2 and Section 10.3 (except with regard to MERRIMACK's right to Prosecute, Maintain and enforce the PEI Patents Rights in the Terminated Territory or to share in any recoveries related to such enforcement under Section 10.3(e)), Article XI, Section 12.5, Section 13.2, Section 13.5, Section 13.6, Article XIV, Article XV and Article XVI.

Section 13.6 Accrued Rights. The termination of this Agreement shall not relieve the Parties of any obligation accruing prior to such termination. Any termination of this Agreement shall be without prejudice to the rights of either Party against the other accrued or accruing under this Agreement prior to termination,

including the obligation to pay royalties for the Licensed Product sold prior to such termination. Termination of this Agreement shall be in addition to, and shall not prejudice, the Parties' remedies at law or in equity, including the Parties' ability to receive legal damages or equitable relief with respect to any breach of this Agreement, regardless of whether or not such breach was the reason for the termination.

Article XIV
Dispute Resolution

Section 14.1 Disputes; Executive Officers.

(a) In the event any dispute arises out of or in relation to or in connection with this Agreement, including failure to perform under or breach of, this Agreement or any issue relating to the interpretation or application of this Agreement, the Parties shall use good faith efforts to resolve such dispute within thirty (30) days after a Party notifies the other Party of such dispute, whether through the JDC, JMC or JSC, as applicable, if the dispute is within the responsibilities of such a committee, or otherwise. If the Parties are unable to resolve such dispute, at the JDC, JMC or JSC level or otherwise, within such thirty (30) day period, either Party may, by written notice to the other Party refer such dispute to the Executive Officers for resolution, and such Executive Officers shall attempt in good faith to resolve such dispute within thirty (30) days after such notice, except for any dispute concerning inventorship arising under Section 10.1(c), which shall not be subject to resolution by the Executive Officers under this Section 14.1 or by binding arbitration under Section 14.2, but shall instead be resolved by independent patent counsel as set forth in Section 10.1(c).

(b) In addition, any dispute with respect to which MERRIMACK has final decision-making authority pursuant to Section 3.1(e) (each, a "Non-Arbitrable Dispute"), shall not be subject to resolution by binding arbitration under Section 14.2. Any dispute with respect to which MERRIMACK has final decision-making authority pursuant to Section 3.1(e) if unresolved at the JSC level or by the Executive Officers after escalation to the Executive Officers, shall instead be resolved by MERRIMACK (subject to any limitations on such authority set forth in Section 3.1(e)).

(c) For purposes of clarity, all disputes arising under or relating to this Agreement (other than disputes concerning inventorship which shall be resolved in accordance with Section 10.1(c)), or the interpretation thereof, shall be referred to the Executive Officers for resolution

within the thirty (30) day period set forth in this Section 14.1 above and, if the Executive Officers are unable to resolve such dispute within such thirty (30) day period, such matter shall be resolved by binding arbitration pursuant to Section 14.2 unless such dispute is a Non-Arbitrable Dispute (which shall be resolved in accordance with clause (b) above).

Section 14.2 Arbitration. If the Executive Officers are unable to resolve a given dispute referred to such Executive Officers pursuant to Section 14.1 within thirty (30) days following such referral of such dispute to such Executive Officers, except for any Non-Arbitrable Disputes, either Party may have the given dispute settled by binding arbitration in the manner described below:

(a) Arbitration Request. If a Party intends to begin an arbitration to resolve a dispute arising under this Agreement, such Party shall provide written notice (the "Arbitration Request") to the other Party of such intention and the issues for resolution.

(b) Additional Issues. Within ten (10) days after the receipt of the Arbitration Request, the other Party may, by written notice, add additional issues for resolution.

(c) Arbitration Location; Rules. Except as expressly provided herein, the sole mechanism for resolution of any claim, dispute or controversy arising out of or in connection with or relating to this Agreement or the breach or alleged breach thereof shall be arbitration by the London Court of International Arbitration ("LCIA") in London, England, or in such other venue as the Parties agree, under the Arbitration Rules of the LCIA then in effect except as provided herein.

(d) English Language. All proceedings shall be held in English and a transcribed record prepared in English. Documents submitted in the arbitration (the originals of which are not in English) shall be submitted together with a reasonably complete and accurate English translation.

(e) Selection of Arbitrators. The Parties shall each choose one arbitrator within thirty (30) days after receipt of notice of the intent to arbitrate and the said two arbitrators shall select by mutual agreement a third arbitrator within thirty (30) days after they have been selected as arbitrators. If no arbitrator is appointed within the times herein provided or any extension of time that is mutually agreed on, the LCIA shall make such appointment (i.e. shall appoint three arbitrators) within thirty (30) days after such failure. Additionally, if the two arbitrators selected by the Parties fail to appoint a third arbitrator within the time provided, the LCIA shall appoint the third arbitrator.

(f) Experience. If the issues in dispute involve scientific or technical matters, any arbitrators chosen hereunder shall have educational training or experience sufficient to demonstrate a reasonable level of knowledge in the pharmaceutical and biotechnology fields.

(g) Time Schedule. Within thirty (30) days after initiation of arbitration, the Parties shall reach agreement upon and thereafter follow procedures directed at assuring that the arbitration will be concluded and the final award rendered within no more than six (6) months

from selection of the three arbitrators. Failing such agreement, the LCIA will design and the Parties will follow procedures directed at meeting such a time schedule.

(h) Powers of Arbitrators. The arbitrators shall be limited in the scope of their authority to resolving only the specific matter which the Parties have referred to arbitration for resolution and shall not have authority to render any decision or award on any other issues; provided that, if the arbitrator renders an award finding either Party in material breach of this Agreement and the dispute was in good faith, the arbitrator shall include in such award an explanation of what specific steps such Party is required to follow in order to cure such material breach after such arbitration award is rendered as provided in Section 13.3(b). Without limiting the foregoing, the arbitrators:

(i) shall not have any power or authority to add to, alter, amend or modify the terms of this Agreement but shall specify rules sufficient to allow reasonable discovery by the Parties;

(ii) shall establish and enforce appropriate rules to ensure that the proceedings, including the decision, be kept confidential and that all Confidential Information of the Parties be kept confidential and be used for no purpose other than the arbitration;

(iii) shall have the power to enforce specifically this Agreement and the terms and conditions hereof in addition to any other remedies at law or in equity; and

(iv) shall issue all preliminary awards and the final award writing.

(i) Injunctive Relief. Nothing in this Agreement shall be deemed as preventing either Party from seeking injunctive relief (or any other provisional remedy such as temporary restraining order, preliminary injunction or other interim equitable relief) from the arbitrators or from any court having jurisdiction over the Parties (and prior to or during any arbitration if necessary to protect the interests of such Party in avoiding irreparable harm or to preserve the status quo pending the arbitration proceeding) and the subject matter of the dispute as necessary to protect either Party's name, proprietary information, trade secrets, know-how or any other proprietary right or otherwise to avoid irreparable harm.

(j) Costs; Exclusion from Award. The award rendered by the arbitrators shall not include costs of arbitration, attorneys' fees or costs for expert and other witnesses, which shall be the responsibility of each Party (i.e. each Party shall bear its own costs and expenses), except that the Parties shall share equally the fees of the arbitrators.

(k) Judgment. Judgment on the award rendered by the arbitrators may be entered in any court having jurisdiction thereof pursuant to the United Nations Convention on the Recognition and Enforcement of Foreign Arbitral Awards.

(l) Survivability. Any duty to arbitrate under this Agreement shall remain in effect and be enforceable after termination of this Agreement.

Article XV
Indemnification

Section 15.1 Indemnification by MERRIMACK. MERRIMACK shall indemnify, defend and hold harmless PEI and its Affiliates, and its and their respective directors, officers, employees and agents, from and against any and all liabilities, damages, losses, costs and expenses, including the reasonable fees of attorneys and other professional Third Parties (collectively, "Losses"), arising out of or resulting from any and all Third Party suits, claims, actions, proceedings or demands ("Claims") based upon:

(a) the negligence, recklessness or wrongful intentional acts or omissions of MERRIMACK or its Affiliates and its or their respective directors, officers, employees and agents, in connection with MERRIMACK's performance of its obligations or exercise of its rights under this Agreement;

(b) any breach of any representation, warranty or covenant made by MERRIMACK under this Agreement; or

(c) the Development activities that are actually conducted by or on behalf of MERRIMACK, the handling and storage by or on behalf of MERRIMACK of any chemical agents or other compounds for the purpose of conducting Development by or on behalf of MERRIMACK, and the manufacture or Commercialization by MERRIMACK, its Affiliates or sublicensees (other than PEI) of the Licensed Compound or the Licensed Product, including any product liability, personal injury, property damage or other damage, in each case resulting from any of the foregoing activities described in this Section 15.1.

Section 15.2 Indemnification by PEI. PEI shall indemnify, defend and hold harmless MERRIMACK and its Affiliates, and its or their respective directors, officers, employees and agents, from and against any and all Losses, arising out of or resulting from any and all Third Party Claims based upon:

(a) the negligence, recklessness or wrongful intentional acts or omissions of PEI or its Affiliates or its or their respective directors, officers, employees and agents, in connection with PEI's performance of its obligations or exercise of its rights under this Agreement;

(b) any breach of any representation, warranty or covenant made by PEI under this Agreement; or

(c) the Development activities that are actually conducted by or on behalf of PEI, the handling and storage by or on behalf of PEI of any chemical agents or other compounds for the purpose of conducting Development by or on behalf of PEI, the manufacture or Commercialization by PEI, its Affiliates or sublicensees of the Licensed Compound or the Licensed Product, including any product liability, personal injury, property damage or other damage, in each case resulting from any of the foregoing activities described in this Section 15.2.

Section 15.3 Procedure.

(a) A Person entitled to indemnification under this Article XV (an "Indemnified Party") shall give prompt written notification to the Person from whom indemnification is sought (the "Indemnifying Party") of the commencement of any action, suit or proceeding relating to a Third Party Claim for which indemnification may be sought or, if earlier, upon the assertion of any such Claim by a Third Party (it being understood and agreed, however, that the failure by an Indemnified Party to give notice of a Third-Party Claim as provided in this Section 15.3 shall not relieve the Indemnifying Party of its indemnification obligation under this Agreement except and only to the extent that such Indemnifying Party is actually damaged as a result of such failure to give notice).

(b) Within twenty (20) days after delivery of such notification, the Indemnifying Party may, upon written notice thereof to the Indemnified Party, assume control of the defense of such action, suit, proceeding or claim with counsel reasonably satisfactory to the Indemnified Party.

(c) If the Indemnifying Party does not assume control of such defense, the Indemnified Party shall control such defense and, without limiting the Indemnifying Party's indemnification obligations, the Indemnifying Party shall reimburse the Indemnified Party for all costs and expenses, including reasonable attorney's fees, incurred by the Indemnified Party in defending itself within thirty (30) days after receipt of any invoice therefor from the Indemnified Party.

(d) The Party not controlling such defense may participate therein at its own expense; provided that, if the Indemnifying Party assumes control of such defense and the Indemnified Party in good faith concludes, based on advice from counsel, that the Indemnifying Party and the Indemnified Party have conflicting interests with respect to such action, suit, proceeding or claim, the Indemnifying Party shall be responsible for the reasonable fees and expenses of counsel to the Indemnified Party in connection with its participation in the defense action.

(e) The Party controlling such defense shall keep the other Party advised of the status of such action, suit, proceeding or claim and the defense thereof and shall consider recommendations made by the other Party with respect thereto.

(f) The Indemnified Party shall not agree to any settlement of such action, suit, proceeding or claim without the prior written consent of the Indemnifying Party, which shall not be unreasonably withheld, delayed or conditioned. The Indemnifying Party shall not agree to any settlement of such action, suit, proceeding or claim or consent to any judgment in respect thereof that does not include a complete and unconditional release of the Indemnified Party from all liability

with respect thereto, that imposes any liability or obligation on the Indemnified Party or that acknowledges fault by the Indemnified Party without the prior written consent of the Indemnified Party.

Section 15.4 Insurance. Each Party shall procure and maintain, and cause its Affiliates, licensees and sublicensees conducting activities under the rights granted under this Agreement to procure and maintain, insurance, including product liability insurance that includes clinical trial insurance, adequate to cover its obligations and liabilities hereunder and which are in amounts

and coverages that are at least consistent with normal business practices of comparable companies with respect to similar obligations and liabilities, at all times during which the Licensed Compound or the Licensed Product are clinically tested or commercially distributed or sold by or on behalf of such Party or its Affiliates. The costs of such insurance will be borne by the Party obtaining such insurance, except to the extent that such costs qualify as Development Costs. It is understood that such insurance shall not be construed to create any limit of either Party's obligations or liabilities with respect to its indemnification obligations hereunder. Each Party shall provide the other, upon request, with evidence of such insurance.

Section 15.5 Exclusion of Consequential Damages. NEITHER PARTY WILL BE LIABLE UNDER ANY LEGAL THEORY (WHETHER TORT, CONTRACT OR OTHERWISE) FOR SPECIAL, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES ARISING OUT OF OR RELATED TO THIS AGREEMENT OR THE EXERCISE OF ITS RIGHTS HEREUNDER, INCLUDING LOST PROFITS ARISING FROM OR RELATING TO ANY BREACH OF THIS AGREEMENT, REGARDLESS OF ANY NOTICE OF SUCH DAMAGES, EXCEPT AS A RESULT OF A MATERIAL BREACH OF THE CONFIDENTIALITY AND NON-USE OBLIGATIONS IN ARTICLE XI. NOTHING IN THIS SECTION 15.5 IS INTENDED TO LIMIT OR RESTRICT THE INDEMNIFICATION RIGHTS OR OBLIGATIONS OF EITHER PARTY UNDER THIS ARTICLE XV.

Article XVI
Miscellaneous Provisions

Section 16.1 Governing Law. Except for matters of intellectual property law, which shall be determined in accordance with the national intellectual property laws relevant to the intellectual property in question, this Agreement, and any disputes between the Parties relating to the subject matter of this Agreement, shall be construed and the respective rights of the Parties hereto determined according to the substantive laws of the State of New York, excluding (a) any conflicts of laws principles that would lead to the application of the laws of another jurisdiction; (b) the United Nations Conventions on Contracts for the International Sale of Goods; (c) the 1974 Convention on the Limitation Period in the International Sale of Goods (the "1974 Convention"); and (d) the Protocol amending the 1974 Convention, done at Vienna April 11, 1980.

Section 16.2 Assignment. Neither PEI nor MERRIMACK may assign this Agreement in whole or in part without the prior written consent of the other, except:

(a) Either Party may assign this Agreement or any of its rights or obligations pursuant to this Agreement to an Affiliate of such Party without obtaining the prior written consent of, but with written notice to, the other Party; and

(b) Either Party may assign this Agreement without the prior written consent of, but with written notice to, the other Party if in connection with the merger, sale or transfer of all or substantially all of the stock, assets or business of such assigning Party to which the subject matter of this Agreement pertains.

The assigning Party shall remain primarily liable for the performance of this Agreement notwithstanding any such assignment of this Agreement. Any assignment made other than in accordance with the immediately preceding sentence shall be wholly void and invalid, and the assignee in any such assignment shall acquire no rights whatsoever, and the non-assigning Party shall not recognize, nor shall it be required to recognize, such assignment. This Section 16.2 limits both the right and the power to assign this Agreement and/or rights under this Agreement. This Agreement shall be binding upon, and shall inure to the benefit of, all permitted successors and assigns.

Section 16.3 Entire Agreement; Amendments; Amendment of Letter Agreement.

(a) This Agreement constitutes the entire agreement between the Parties with respect to the subject matter hereof and, except as provided in Section 16.3(b), supersedes all previous arrangements with respect to the subject matter hereof, whether written or oral, including the term sheet between Merrimack Parent and PEI dated February 18, 2011. Any amendment or modification to this Agreement must be made in writing signed by both Parties.

(b) The Parties agree that the Letter Agreement dated March 24, 2011 between PEI and Merrimack Parent survives but is hereby amended by (i) deleting Paragraph 4 of such Letter Agreement, and (ii) deleting Paragraph 6 of such Letter Agreement and replacing it with the following: "Any dispute arising out of or in connection with this Letter Agreement, including any dispute regarding its validity or termination, shall be resolved by the parties in accordance with Article XIV of the Assignment, Sublicense and Collaboration Agreement dated May 5, 2011 between PharmaEngine and Merrimack's wholly-owned subsidiary, Merrimack Pharmaceuticals (Bermuda) Ltd., and Merrimack agrees that it will have the rights and be bound by the obligations of Merrimack Pharmaceuticals (Bermuda) Ltd. under such provisions." In addition, MERRIMACK acknowledges and agrees that exercise by Merrimack Parent of its right to conduct a Phase II clinical trial instead of a Phase III clinical trial under the last sentence of Paragraph 1 of such Letter Agreement will not fulfill MERRIMACK's obligations under Section 4.3(a)(ii) of this Agreement.

Section 16.4 Notices. Any notice required or provided for by the terms of this Agreement shall be in writing and shall be sufficient if (a) delivered personally or (b) sent by registered or certified mail, return receipt requested, or reputable international business courier, in each case properly addressed to a Party as set forth below. The effective date of notice shall be the actual date of receipt by the Party receiving the same.

Notices to MERRIMACK shall be addressed to:

Merrimack Pharmaceuticals (Bermuda) Ltd.
Attention: Secretary
c/o Appleby Services (Bermuda) Ltd.
Canon's Court
22 Victoria Street
Hamilton, HM EX
Bermuda

with copies to:

Merrimack Pharmaceuticals, Inc.
One Kendall Square
Suite B7201
Cambridge, MA 02139-1670
USA
Attention: Chief Executive Officer

and

Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, Massachusetts 02109
USA
Attention: David E. Redlick, Esq. and
Steven D. Barrett, Esq.
Fax : +1 (617) 526-5000

Notices to PEI shall be addressed to:

PharmaEngine, Inc.
16F, 237, Sung-Chiang Road
Taipei, Taiwan 104
Republic of China
Attention: Selena Kuo
Senior Manager of Contracts and IP
Fax : 886-2-2515-7558

with copies to:

PharmaEngine, Inc.
16F, 237, Sung-Chiang Road
Taipei, Taiwan 104
Republic of China
Attention: C. Grace Yeh, Ph.D.
President and Chief Executive Officer
Fax : 886-2-2515-7558

and

Faber Daeufer & Rosenberg PC
Attn: James McGarrah, Esq.
950 Winter Street, Suite 4500
Waltham, MA 02451
USA

Any Party may change its notification address by giving notice to the other Party in the manner herein provided. For clarity, the additional copy will be addressed for convenience only and the notification shall be deemed to have been validly delivered when addressed to the main addressee.

Section 16.5 Exports. The Parties acknowledge that the export of technical data, materials or products is subject to the exporting Party receiving any necessary export licenses and that the Parties cannot be responsible for any delays attributable to export controls that are beyond the reasonable control of either Party. MERRIMACK and PEI agree not to export or re-export, directly or indirectly, the Licensed Compound or the Licensed Product (or any associated products, information, items, articles, computer software, media, technical data, the direct product of such data, samples or equipment received or generated under this Agreement) in violation of any US export laws or other Laws or regulations that may be applicable. MERRIMACK and PEI agree to obtain similar covenants from their Affiliates, sublicensees and contractors with respect to the subject matter of this Section 16.5.

Section 16.6 Force Majeure. Either Party shall be excused from the performance of its obligations under this Agreement, and no failure or omission by a Party in the performance of any obligation of this Agreement shall be deemed a breach of this Agreement or create any liability if the same shall arise from any cause or causes beyond the control of such Party, (including the following: acts of God; acts or omissions of any government; any rules, regulations or orders issued by any governmental authority or by any officer, department, agency or instrumentality thereof; labor disputes, epidemic, failure or default of public utilities or common carriers, fire; storm; flood; earthquake; accident; war; rebellion; terrorism; insurrection; riot; and invasion) and such excuse shall be continued so long as the condition constituting force majeure continues; provided that such failure or omission resulting from one of the above causes is cured as soon as is practicable after the end of the occurrence of one or more of the above-mentioned causes. The Party claiming such force majeure shall notify the other Party with notice of the force majeure event as soon as practicable, but in no event longer than five (5) Business Days after its occurrence, which notice shall reasonably identify the affected obligations under this Agreement and the extent to which performance thereof will be affected. In such event, the Parties shall meet or discuss promptly to determine an equitable solution to minimize and if reasonably feasible, overcome, the effects of any such event.

Section 16.7 Performance by Affiliates and Sublicensees. Either Party may use or permit one or more of its Affiliates or permitted sublicensees to exercise such Party's rights or perform such Party's obligations and duties hereunder and may provide such Affiliates or permitted sublicensees with information of the other Party (including Confidential Information of the other Party subject to compliance by such Affiliate or permitted sublicensee with Article XI) for such purposes; provided that the Parties shall remain primarily liable hereunder for the prompt payment and performance of all their respective obligations hereunder. For purposes of clarity, PEI shall not be considered a sublicensee of MERRIMACK for the purposes of this Section 16.7.

Section 16.8 Independent Contractors. It is understood and agreed that the relationship between the Parties hereunder is that of independent contractors and that nothing in this

Agreement shall be construed as authorization for either PEI or MERRIMACK to act for, bind or commit the other in any way.

Section 16.9 Construction. Each Party agrees that this Agreement shall be interpreted without regard to any presumption or rule requiring construction against the Party causing this Agreement to be drafted.

Section 16.10 Interpretation. Any reference in this Agreement to an Article, Section, subsection, paragraph, clause, Schedule or Exhibit shall be deemed to be a reference to any Article, Section, subsection, paragraph, clause, Schedule or Exhibit, of or to, as the case may be, this Agreement. Except where the context clearly otherwise requires, (a) wherever used, the use of any gender will be applicable to all genders, (b) any definition of or reference to any agreement, instrument or other document refers to such agreement, instrument other document as from time to time amended, supplemented or otherwise modified (subject to any restrictions on such amendments, supplements or modifications set forth herein or therein), (c) any reference to any laws refers to such laws as from time to time enacted, repealed or amended, (d) the words “herein”, “hereof” and hereunder”, and words of similar import, refer to this Agreement in its entirety and not to any particular provision hereof, (e) the words “include”, “includes” and “including” shall be deemed to be followed by the phrase “but not limited to”, “without limitation” or words of similar import, (f) the word “day” means a calendar day, the word “month” means a calendar month and the word “year” means a Calendar Year, (g) each accounting term used herein that is not specifically defined herein shall have the meaning given to it under applicable Accounting Standards, to the extent consistent with its usage and the other definitions in this Agreement, (h) except where the context otherwise requires, the word “or” is used in the inclusive sense, and (i) all references to “dollars” or “$” herein shall mean US Dollars.

Section 16.11 Headings. The captions or headings of the Sections or other subdivisions hereof are inserted only as a matter of convenience or for reference and shall have no effect on the meaning of the provisions hereof.

Section 16.12 English Language. This Agreement was prepared and is established in the English language, any translation thereof shall be deemed for convenience only and shall never prevail against the original English version. All reports, notices and communications to be exchanged under this Agreement shall be in the English language, provided however that, notwithstanding anything herein to the contrary, neither Party shall be under any obligation to translate into English any document originally established and existing in another language, for the sole purpose of communicating such document to the other Party, it being agreed that such documents will be provided on an as is basis.

Section 16.13 No Implied Waivers; Rights Cumulative. No failure on the part of PEI or MERRIMACK to exercise, and no delay in exercising, any right, power, remedy or privilege under this Agreement, or provided by statute or at law or in equity or otherwise, shall impair, prejudice or constitute a waiver of any such right, power, remedy or privilege or be construed as a waiver of any breach of this Agreement or as an acquiescence therein, nor shall any single or partial exercise of any such right, power, remedy or privilege preclude any other or further exercise thereof or the exercise of any other right, power, remedy or privilege.

Section 16.14 Severability. If, under applicable Law, any provision of this Agreement is held to be invalid or unenforceable, or otherwise directly or indirectly affects the validity of any other material provision(s) of this Agreement (such invalid or unenforceable provision, a “Severed Clause”), this Agreement shall endure except for the Severed Clause. The Parties shall consult one another and use reasonable efforts to agree upon a valid and enforceable provision that is a reasonable substitute for the Severed Clause in view of the objectives contemplated by the Parties when entering into this Agreement and the general balance of the respective interests of the Parties as initially intended under this Agreement.

Section 16.15 Execution in Counterparts. This Agreement may be executed in counterparts, each of which counterparts, when so executed and delivered, shall be deemed to be an original, and all of which counterparts, taken together, shall constitute one and the same instrument.

[*Remainder of This Page Intentionally Left Blank*]

IN WITNESS WHEREOF, the Parties have executed this Assignment, Sublicense and Collaboration Agreement as of the Effective Date.

PHARMAENGINE, INC.		**MERRIMACK PHARMACEUTICALS (BERMUDA) LTD.**	
By:	/s/ C. Grace Yeh	By:	/s/ Edward J. Stewart
Name:	C. Grace Yeh, Ph.D.	Name:	Edward J. Stewart
Title:	President & CEO	Title:	Vice President

EXHIBIT A
LICENSED COMPOUND

License Compound means (a) the nanoliposomal formulation of CPT-11 known as PEP02 or MM-398, and (b) any modification to such nanoliposomal formulation of CPT-11. CPT-11 means irinotecan [**]. The structure formula of irinotecan is:

[**]

EXHIBIT B-1
[**] CLINICAL TRIAL

Sponsor: [**]

Title:

[**]

Principal investigator:

[**]

Study site:

· [**]

Design:

· [**]

Population:

[**].

Endpoints:

· [**]

Patient number:

· [**]

Status:

[**]

EXHIBIT B-2
[**] CLINICAL TRIAL

Sponsor: [**]

Title:

[**]

Principal investigator:

[**]

Study site:

[**]

Design:

· [**]

Population:

[**].

Endpoints:

· [**]

Patient number:

· [**].

Status:

· [**].

EXHIBIT B-3
[**] CLINICAL TRIAL

Sponsor: [**]

Title:

[**]

Principal investigator:

[**]

Design:

· [**]

Population:

[**].

Endpoints:

· [**]

Patient number:

· [**]

Status:

· [**].

EXHIBIT C
SPECIFICATIONS

Specifications for PEP02 Injection [**]

Test Items	Specifications
Appearance	[**]
Identity	[**]
Assay	[**]
Impurities	[**]
Each Individual	[**]
Total	[**]
Drug encapsulation ratio	[**]
pH	[**]
Drug (free base) / phospholipids ratio	[**]
Osmolarity	[**]
Particle size	[**]
Sterility Test	[**]
Bacterial Endotoxin (LAL)	[**]
Volume in container	[**]

EXHIBIT D
INITIAL DEVELOPMENT PLAN

Confidential Materials omitted and filed separately with the Securities and Exchange Commission pursuant to an application for confidential treatment. A total of two pages were omitted.

EXHIBIT E
PEI REGULATORY DOCUMENTATION
OUTSIDE OF PEI TERRITORY

	US	Europe	Korea	China
IND Holder	[**]	[**]	[**]	[**]
IND reference No.	[**]	[**]	[**]	[**]
IND Regulations	[**]	[**]	[**]	[**]
Indications	[**]	- [**]	[**]	- [**]
IND transfer procedure	[**]	[**]	[**]	[**]

EXHIBIT F-1
MERRIMACK PRESS RELEASE

FOR IMMEDIATE RELEASE

Merrimack Pharmaceuticals Acquires European and Asian Rights to

MM-398, nanoliposomal irinotecan

Reuniting the worldwide rights allows for a broad, global development program for MM-398

CAMBRIDGE, Mass., May XX, 2011 — Merrimack Pharmaceuticals, Inc. and PharmaEngine, Inc. (Taipei, Taiwan) today announced the signing of an agreement under which Merrimack has acquired the rights to develop and commercialize MM-398 (aka PEP02) in Europe and Asia.

MM-398, originally developed by Hermes BioSciences which was acquired by Merrimack in 2009, is a highly stable nanoliposomal formulation of irinotecan. Previously, the development and commercialization rights to MM-398 in Europe and Asia had been licensed to PharmaEngine. Merrimack held the rights to the product in North America and all other territories around the world. Through this agreement, the worldwide rights to MM-398 have been reunited, with Merrimack now having the right to develop and commercialize MM-398 in all territories of the world with the exception of Taiwan, where PharmaEngine will retain its rights to develop and commercialize MM-398. Under the terms of the agreement, Merrimack and PharmaEngine will collaborate on the development of MM-398. PharmaEngine will receive a $10 million upfront payment and is eligible to receive up to an additional $210 million upon achievement of certain development, regulatory and sales milestones as well as tiered royalties on sales of MM-398 in Europe and Asia.

“We believe that unifying the development strategy of MM-398 is critical as we plan to move the program forward into late stage clinical trials in indications like gemcitabine-refractory pancreatic cancer where patients have very limited options,” said Robert Mulroy, President and Chief Executive Officer of Merrimack. “The PharmaEngine team has laid a great foundation for phase 3 development and commercialization by conducting clinical trials across multiple indications and we look forward to working aggressively with them to bring this product to market.”

To date, PharmaEngine has tested MM-398 (under the designation of PEP02) in several human clinical studies including Phase 1 safety studies and a randomized Phase 2 trial in gastric cancer patients. A Phase 2 study in pancreatic cancer patients and a Phase 1 study in colorectal cancer patients are currently ongoing. Final data from the Phase 2 gastric cancer trial and interim data on the Phase 2 pancreatic cancer trial were presented at the 2011 Gastrointestinal Cancers Symposium in January. MM-398 is also being evaluated in a Phase 1 glioma trial under an investigator-sponsored IND at the University of California, San Francisco.

About Merrimack

Merrimack Pharmaceuticals, Inc. is a biopharmaceutical company dedicated to the discovery and development of novel medicines for the treatment of cancer. Merrimack is advancing a pipeline of engineered therapeutics paired with molecular diagnostics. In addition to several pre-clinical and research stage programs, Merrimack has five oncology candidates in clinical development or

expected to enter clinical development this year: MM-398 in Phase 2 testing in partnership with PharmaEngine, Inc., MM-121 in Phase 2 testing in partnership with sanofi-aventis, MM-111 in Phase 1/2 testing and MM-302 and MM-151 which are both expected to enter Phase 1 clinical development this year. MM-398, MM-121, MM-111, MM-302 and MM-151 are investigational drugs and have not been approved by the U.S. Food and Drug Administration or any international regulatory agency. Merrimack uses its proprietary Network Biology discovery platform, developed with the help of leading scientists from MIT and Harvard, to integrate the fields of engineering, biology and computing to enable mechanism-based model driven discovery and development of both therapeutics and diagnostics. Merrimack is a privately-held company based in Cambridge, Massachusetts. For additional information, please visit http://www.merrimackpharma.com.

Contact: Kathleen Petrozzelli, Corporate Communications, 617-441-1043, kpetrozzelli@merrimackpharma.com, http://www.merrimackpharma.com
Betsy Stevenson, RaymondStevenson Healthcare, 860-984-1424, betsy@raymondstevenson.com

About PharmaEngine, Inc.

PharmaEngine, Inc. is a biopharmaceutical company established in Taipei, Taiwan in 2003. The company focuses on the development of new drugs to treat cancer and Asian prevalent diseases. For further information on PharmaEngine, Inc., please visit the Company's website at http://www.pharmaengine.com.

# # #

EXHIBIT F-2
PEI PRESS RELEASE

PharmaEngine, Inc. and Merrimack Pharmaceuticals, Inc. Enter into a Licensing and Collaboration Agreement on PEP02 (MM-398), Nanoliposomal Irinotecan

PharmaEngine eligible for US$220 million in upfront and milestone payments plus royalties

Taipei, Taiwan, May XX, 2011 — (PR Newswire) — PharmaEngine, Inc. and Merrimack Pharmaceuticals, Inc. announced today the execution of an agreement under which PharmaEngine grants back to Merrimack the rights to develop, manufacture, and commercialize PEP02 (known under the designation of MM-398 by Merrimack) in Asia and Europe, with the exception of Taiwan.

Under the agreement, PharmaEngine will receive an upfront payment of US$10 million, and is eligible to receive up to an additional US$210 million of milestone payments, as well as tiered royalties on net sales in Asia and Europe. Merrimack is responsible for all product development costs in the licensed territories, while PharmaEngine retains the exclusive development and commercialization rights in Taiwan, and plays a role in clinical and regulatory activities pursuant to an integrated global development plan.

"We are thrilled to collaborate with Merrimack to advance the development of PEP02 (MM-398). Drug development is like a relay race; PharmaEngine has developed this drug candidate from preclinical to phase II stages, and we believe that Merrimack is well-positioned to take the baton and accelerate development of this product through global commercialization," said C. Grace Yeh, Ph.D., President and Chief Executive Officer of PharmaEngine. "Today's announcement signifies the commitment of both companies to develop an innovative nanoparticle therapy that addresses significant unmet medical needs for cancer patients who are refractory to available treatments."

About PEP02 (MM-398)

PEP02 is a novel and highly stable nanoliposomal formulation of irinotecan. PharmaEngine has tested PEP02 in several human clinical studies to date, including four phase I studies and two phase II studies in gastric and pancreatic cancers. Both phase II studies met their primary endpoints of response rate and 3-month survival. Data from both studies were recently presented at the 2011 Gastrointestinal Cancers Symposium of the American Society of Clinical Oncology (ASCO) in San Francisco, CA, USA.

PEP02 was originally invented by Hermes BioSciences, Inc. In 2003, PharmaEngine licensed the exclusive rights to develop and commercialize PEP02 in Asia from Hermes, and subsequently expanded the territory to Europe in 2005. Hermes retained the rights in North America and all other territories. Hermes BioSciences, Inc. was acquired by Merrimack in 2009.

About PharmaEngine

PharmaEngine, Inc. is a biopharmaceutical company established in Taipei, Taiwan in 2003. PharmaEngine adopts the business model of "no research, development only" and focuses on the development of new drugs for the treatment of cancer and Asian prevalent diseases. For further information, please visit the Company's website at http://www.pharmaengine.com.

Contact: Peter Wu, Senior Manager, Business Development, peter.wu@pharmaengine.com, Tel. No. (+886)-2-2515-8228.

About Merrimack

Merrimack Pharmaceuticals, Inc. is a biopharmaceutical company dedicated to the discovery and development of novel medicines for the treatment of cancer. Merrimack has five oncology candidates in

clinical development or expected to enter clinical development this year. Merrimack is a privately-held company based in Cambridge, MA, USA. For additional information, please visit Merrimack's website at http://www.merrimackpharma.com.

# # #

Exhibit 10.18

CONFIDENTIAL

EXECUTION COPY

Confidential Materials omitted and filed separately with the
Securities and Exchange Commission. Asterisks denote omissions.

LICENSE AND COLLABORATION AGREEMENT

By and Between

SANOFI-AVENTIS

and

MERRIMACK PHARMACEUTICALS, INC.

TABLE OF CONTENTS

LICENSE AND COLLABORATION AGREEMENT

This License and Collaboration Agreement (this "Agreement"), dated the 30th day of September, 2009 (the "Execution Date"), is by and between SANOFI-AVENTIS, a French corporation with its principal offices at 174 avenue de France, 75013 Paris, France ("SANOFI-AVENTIS"), and MERRIMACK PHARMACEUTICALS, INC., a Massachusetts corporation with its principal offices at One Kendall Square, Suite B7201, Cambridge, MA 02139-1670, U.S.A. ("MERRIMACK").

INTRODUCTION

1. MERRIMACK has rights to a monoclonal antibody, known as MM-121, with binding affinity to the ErbB3 protein, as more specifically described below.

2. SANOFI-AVENTIS is engaged in the research, development, manufacture and commercialization of products for human and animal diseases and disorders.

3. SANOFI-AVENTIS and MERRIMACK are interested in collaborating in the development and commercialization of products comprised of MM-121 and potentially other monoclonal antibodies targeting ErbB3 on the terms and conditions set forth herein.

NOW, THEREFORE, in consideration of the mutual covenants contained herein and other good and valuable consideration, the receipt of which is hereby acknowledged, SANOFI-AVENTIS and MERRIMACK agree as follows:

Article I
Definitions

For purposes of clarity, when used in this Agreement, each of the following terms shall have the meanings set forth in this Article I:

Section 1.1 "Affiliate". Affiliate means, with respect to a Party, any Person that controls, is controlled by, or is under common control with such Party. For purposes of this Section 1.1, "control" shall refer to (a) in the case of a Person that is a corporate entity, direct or indirect ownership of fifty percent (50%) or more of the stock or shares having the right to vote for the election of directors of such Person, or (b) in the case of a Person that is not a corporate entity, the possession, directly or indirectly, of the power to direct, or cause the direction of, the management or policies of such Person, whether through the ownership of voting securities, by contract or otherwise.

Section 1.2 "Bankruptcy Code". Bankruptcy Code means 11 U.S.C. §§ 101-1330 of the U.S. Bankruptcy Code, as amended, and similar laws governing bankruptcy and insolvency in countries outside the United States.

Section 1.3 "Business Day". Business Day means a day on which banking institutions in Boston, Massachusetts, United States, and in France are open for business, excluding any Saturday or Sunday.

Section 1.4 "CAT Sublicense Agreement". CAT Sublicense Agreement means the Sublicense Agreement, dated as of June 30, 2008, by and between Dyax and MERRIMACK.

Section 1.5 "Collaboration Compound". Collaboration Compound means (a) MM-121, (b) [**], and (c) any Back-Up Compound designated in accordance with Section 3.3.

Section 1.6 "Commercialization Plan". Commercialization Plan means the sales and marketing plan for Co-Promoted Products in the USA, as prepared, updated and amended from time to time in accordance with Section 2.1(b), Section 2.3(e) and Section 5.4(a). As long as MERRIMACK does not opt out of or terminate the Co-Promotion of a given Co-Promoted Product hereunder, the Commercialization Plan shall include an allocation of Co-Promotion activities of each Party with respect to such Co-Promoted Product(s), budgets and timelines for marketing and promotion activities in the USA, product positioning, marketing strategy, product labeling strategy, general pricing and readjustment strategy.

Section 1.7 "Commercially Reasonable Efforts". Commercially Reasonable Efforts means, with respect to the performing Party, the carrying out of obligations of such Party in a diligent, expeditious and sustained manner, including the allocation of commercially reasonable personnel and financial resources, but in no event less than such level of resources that (in the case of SANOFI-AVENTIS) pharmaceutical and major biotechnology companies or (in the case of MERRIMACK) comparable biotechnology companies typically devote to their own internally discovered products, to which they solely own all rights without financial obligations to any licensor, of similar market potential at a similar stage in its development or product life, taking into account scientific and commercial factors, including issues of safety and efficacy, product profile, difficulty in developing or manufacturing the Collaboration Compound or Licensed Product, competitiveness of alternative Third Party products in the marketplace, the patent or other proprietary position of the Collaboration Compound or Licensed Product, the regulatory requirements involved and the potential profitability for the performing Party of the Collaboration Compound or Licensed Product marketed or to be marketed.

Section 1.8 "Completion of PoC". Completion of PoC means, as to a particular Collaboration Compound or Licensed Product for a given indication, completion of the first PoC Phase II Study that generates favorable data as to efficacy of such Collaboration Compound or Licensed Product for such indication.

Section 1.9 "Confidential Information". Confidential Information means all Know-How or other confidential or proprietary information of a Party that is disclosed (whether in written, graphic, oral, electronic or other form) by or on behalf of such Party to the other Party pursuant to this Agreement, including information regarding a Party's or its licensor's technology, products, business, business plans, financial status, biological substances, chemical substances, formulations, techniques, methodology, equipment, sources of supply and patent positioning. The status, prospects or objectives regarding the Development Program, Collaboration Compounds or Licensed Products shall be deemed "Confidential Information" of both Parties. All information disclosed prior to the Effective Date by or on behalf of either Party under, and subject to, the confidentiality agreement between MERRIMACK and SANOFI-AVENTIS dated June 12, 2009 (the "Confidentiality Agreement") shall be deemed "Confidential Information" of the disclosing Party hereunder.

Section 1.10 "Control" or "Controlled". Control or Controlled means with respect to any Know-How, Patent Right or other intellectual property right, the possession (whether by license (other than pursuant to this Agreement) or ownership, or control over an Affiliate with such a license or ownership) by a Party of the ability to grant to the other Party access or a license as provided herein without violating the terms of any agreement or arrangement with any Third Party existing before or after the Effective Date.

Section 1.11 "Co-Promote". Co-Promote, Co-Promoting or Co-Promotion means the joint marketing and promotion (including detailing but excluding invoicing) of Co-Promoted Products in the USA as further described in Article V.

Section 1.12 "Cover", "Covering" or "Covered". Cover, Covering or Covered means, with respect to a Patent Right, that, but for a license granted to a Party under a Valid Claim included in such Patent Right, the practice by such Party of any invention claimed in such Patent Right would infringe such Valid Claim.

Section 1.13 "Development Program". Development Program means the pre-clinical, clinical and other research, development, regulatory and pre-commercial manufacturing activities of the Parties directed to Collaboration Compounds and Licensed Products and undertaken in accordance with the Global Development Plan.

Section 1.14 "Development Term". Development Term means the term commencing on the Effective Date and ending upon the earlier of (a) [**], or (b) the [**] anniversary of the Effective Date; provided that, as long as the Development Program remains active as to one or more Collaboration Compounds or Licensed Products, the Parties may elect, by mutual agreement, to extend the Development Term for consecutive one-year periods, until the completion or earlier termination of the Development Program.

Section 1.15 "Diagnostic Patent Rights". Diagnostic Patent Rights means (a) the patent applications that are listed in Exhibit A-1, (b) any divisionals, continuations, continuations-in-part, provisionals, or substitute applications with respect to any patent applications listed in Exhibit A-1, (c) any patent issued with respect to any of the foregoing, including utility patents, utility models, design patents and certificates of invention, (d) any reissue, reexamination, renewal, extension (including any supplemental patent certificate) or addition with respect to any of the foregoing, and (e) any Patent Rights other than those included in sub-paragraphs (a) through (d) that are Controlled by Merrimack, itself or jointly with SANOFI-AVENTIS, at any time after the Effective Date during the Term and that Cover Diagnostic Technology or the manufacture, use, offer for sale, sale or importation of a Diagnostic Product.

Section 1.16 "Diagnostic Product". Diagnostic Product means a diagnostic test that is designed to use Diagnostic Technology to stratify patient response as to, or predict suitability of patients for treatment with, a Therapeutic Product.

Section 1.17 "Diagnostic Technology". Diagnostic Technology means any Know-How that is Controlled (disregarding any grant of rights to SANOFI-AVENTIS pursuant to this Agreement) by Merrimack, itself or jointly with SANOFI-AVENTIS, as of the Effective Date

and thereafter during the Term, that is used in, or necessary or useful for, the research, development, manufacture or commercialization of any Diagnostic Product.

Section 1.18 "Dyax". Dyax means Dyax Corp., a Delaware corporation.

Section 1.19 "Dyax Collaboration Agreement". Dyax Collaboration Agreement means the Amended and Restated Collaboration Agreement, dated as of January 24, 2007 and amended as of July 31, 2008, by and between Dyax and MERRIMACK.

Section 1.20 "Effective Date". Effective Date means the HSR Clearance Date.

Section 1.21 "EMEA". EMEA means the European Medicines Agency or any successor agency thereof.

Section 1.22 "EU". EU means the European Union, as it may be constituted from time to time.

Section 1.23 "Exclusivity Period". Exclusivity Period means the period commencing on the Effective Date and ending upon the [**].

Section 1.24 "Executive Officers". Executive Officers mean the Senior Vice President, head of Research and Development of SANOFI-AVENTIS (or a senior executive officer of SANOFI-AVENTIS designated by such Senior Vice President) and a senior vice president designated by MERRIMACK or a senior executive officer designated by MERRIMACK having seniority comparable or higher than that of a senior vice president.

Section 1.25 "Existing Third Party Licenses". Existing Third Party Licenses means the [**] Sublicense Agreement, the Dyax Collaboration Agreement, the PHS Agreement and the Selexis License Agreement.

Section 1.26 "FDA". FDA means the United States Food and Drug Administration or any successor agency thereto.

Section 1.27 "Field". Field means all human and veterinary fields of use, including therapeutic, prophylactic and diagnostic uses in all possible indications.

Section 1.28 "First Commercial Sale". First Commercial Sale means, with respect to a given Licensed Product in a given country, the date on which such Licensed Product is first sold following Marketing Authorization of such Licensed Product in such country (or, in a country in which no Marketing Authorization is required, the date on which the Licensed Product is first sold) by, on behalf of or under the authority of SANOFI-AVENTIS or any of SANOFI-AVENTIS' Affiliates or sublicensees in arm's-length transactions to Third Parties (but not including sales relating to transactions among SANOFI-AVENTIS and SANOFI-AVENTIS' Affiliates and sublicensees and agents unless such Person is the end user thereof).

Section 1.29 "FTE". FTE means a full time equivalent person year (consisting of a total of [**] hours per year) of scientific or technical work or scientific or technical managerial work on or directly related to activities undertaken by a Party hereunder.

Section 1.30 "FTE Rate". FTE Rate means $[**] per FTE, increased or decreased annually on January 1 of each year, commencing with January 1, 2011, by the percentage increase or decrease in the Consumer Price Index ("CPI") as of the then-most-recent December 31 over the CPI as of December 31, 2009. As used in this Section 1.30, Consumer Price Index or CPI means the Consumer Price Index — Urban Wage Earners and Clerical Workers, US City Average, All Items, 1982-84 = 100, published by the United States Department of Labor, Bureau of Labor Statistics (or its successor equivalent index).

Section 1.31 "Generic Product". Generic Product means, with respect to a Therapeutic Product, on a country-by-country basis, a product (a) that contains an antibody substantially the same as, and therapeutically substitutable for, such Therapeutic Product; and (b) that has received Marketing Authorization in the Field in such country through a regulatory approval process by which the sponsor or the regulatory agency relies, in whole or in part, upon the data supporting such Therapeutic Product and such product is considered a "generic", "biosimilar" or "follow-on biologic" version of the Therapeutic Product (including pursuant to Directive 2001/83/EC as amended, in the EU). "Generic Product" shall not include any products sold or authorized for sale by SANOFI-AVENTIS or its Affiliates or sublicensees.

Section 1.32 "Global Development Plan". Global Development Plan means the global development plan for Collaboration Compounds and Licensed Products, as prepared, updated and amended from time to time in accordance with Section 2.1(b), Section 2.2(e), Section 3.1(a) and Section 3.2(f).

Section 1.33 "IND". IND means an application submitted to a Regulatory Authority to initiate human clinical trials, including (a) an Investigational New Drug application or any successor application or procedure filed with the FDA, (b) any non-US equivalent of a United States IND, and (c) all supplements and amendments that may be filed with respect to the foregoing.

Section 1.34 "Joint Technology". Joint Technology means Know-How that is developed by one or more employees, agents or consultants of Merrimack on the one hand, and one or more employees, agents or consultants of SANOFI-AVENTIS, on the other hand, in the performance of this Agreement.

Section 1.35 "Joint Patent Rights". Joint Patent Rights means all Patent Rights that Cover any Joint Technology.

Section 1.36 "Know-How". Know-How means any technical, scientific and business information, data and materials, including all biological, chemical, pharmacological, toxicological, preclinical, clinical, and assay information, data and materials, analyses, ideas, discoveries, inventions, methods, techniques, improvements, concepts, designs, processes, procedures, compositions, plans, formulae, specifications and trade secrets, whether or not patentable, including documents and other media (including paper, notebooks, books, files, ledgers, records, tapes, discs, diskettes, CD-ROM, trays and containers and any other media developed following the Effective Date) containing or storing any of the foregoing.

Section 1.37 "Laws". Laws means all laws, statutes, rules, regulations, orders, judgments, or ordinances having the effect of law of any federal, national, multinational, state, provincial, county, city or other political subdivision.

Section 1.38 "Licensed Intellectual Property". Licensed Intellectual Property means Therapeutic Technology, Therapeutic Patent Rights, Diagnostic Technology and Diagnostic Patent Rights.

Section 1.39 "Licensed Patent Rights". Licensed Patent Rights means the Diagnostic Patent Rights and the Therapeutic Patent Rights.

Section 1.40 "Licensed Product". Licensed Product means any Diagnostic Product or any Therapeutic Product.

Section 1.41 "Licensed Technology". Licensed Technology means the Diagnostic Technology and the Therapeutic Technology. The Licensed Technology existing as of the Execution Date is generally summarized in Exhibit A-3.

Section 1.42 "Listed Third Party Patents". Listed Third Party Patents shall refer to the Patent Rights set forth on Exhibit B.

Section 1.43 "Major EU Country". Major EU Country means any of France, Germany, Italy, Spain or the United Kingdom.

Section 1.44 "Major Territory". Major Territory means any of the USA, the EU, or Japan.

Section 1.45 "Manufacturing Costs". Manufacturing Costs means, as to a Party, such Party's direct and identifiable internal and external costs of manufacturing and packaging Collaboration Compounds and Licensed Products, consisting of the following:

(a) with regard to a Party's internal costs and charges, Manufacturing Costs shall consist of all internal costs of such Party's personnel engaged in manufacturing, packaging and shipment of Collaboration Compounds and Licensed Products, at the FTE Rate; and

(b) with regard to a Party's external costs and charges, Manufacturing Costs shall consist of the invoiced costs and charges of suppliers of goods, including raw materials, and services, including contract manufacturing organizations (CMO), directly related to the manufacture, packaging and shipment of Collaboration Compounds and Licensed Products.

Section 1.46 "Marketing Authorization". Marketing Authorization means the authorization issued by the relevant Regulatory Authority (including, where required, any governmental price and/or reimbursement approvals or inclusion on the official list of reimbursable drugs, as applicable) necessary to place on the market a Therapeutic Product or Diagnostic Product in any country or regulatory jurisdiction (such as, for example, the approval of a Biologics License Application in the USA under Section 351 of the Public Health Service Act or the approval of a Marketing Authorization Application in EU under Regulation (EC) n° 726/2004 or Directive 2001/83/EC). For purposes of determining whether applicable price or

reimbursement approvals or inclusion on the official list of reimbursable drugs, as applicable, have been obtained for sale of a product in the EU, if required price and reimbursement approvals or inclusion on the official list of reimbursable drugs, as applicable, have been obtained for sale of the product in at least one (1) Major EU Country, all such price and reimbursement approvals or inclusion on the official list of reimbursable drugs, as applicable, shall be deemed have been obtained for sale of such product in all countries of the EU.

Section 1.47 "MHLW". MHLW means the Japanese Ministry of Health, Labor and Welfare, and any successor agency thereto.

Section 1.48 "[**] means the MERRIMACK [**]. Specifically, [**].

Section 1.49 "MM-121". MM-121 means the monoclonal antibody targeting ErbB3 as more specifically described on Exhibit C.

Section 1.50 "NDA". NDA means an application submitted to a Regulatory Authority for marketing approval of a product, including (a) a New Drug Application, Product License Application or Biologics License Application filed with the FDA, or any successor applications or procedures, (b) any non-US equivalent of a United States NDA, Product License Application or Biologics License Application, and (c) all supplements and amendments that may be filed with respect to the foregoing.

Section 1.51 "Net Sales". Net Sales means, with respect to a Therapeutic Product, the gross amount invoiced by SANOFI-AVENTIS, its Affiliates or its sublicensees on sales or other dispositions of Therapeutic Products to Third Party customers, less the following deductions:

(a) Trade, cash or quantity discounts actually allowed and taken directly with respect to such sales, as reflected in the amount invoiced;

(b) Tariffs, duties, excises, sales taxes or other taxes imposed upon and paid directly with respect to the production, sale, delivery or use of the Therapeutic Product (excluding taxes based on the income or profits of the selling party), as reflected in the amount invoiced;

(c) Amounts repaid or credited by reason of rejections, defects, recalls or returns or because of chargebacks, refunds, rebates or retroactive price reductions;

(d) Price concessions either mandated or negotiated with both commercial or governmental payers; and

(e) Freight, insurance and other transportation charges incurred in shipping a Therapeutic Product to Third Parties, as reflected in the amount invoiced.

Such amounts shall be determined from the books and records of SANOFI-AVENTIS, its Affiliates or its sublicensees, as applicable, maintained in accordance with generally accepted accounting principles, consistently applied.

In the case of any sale of Therapeutic Products for consideration other than cash, such as barter or countertrade, Net Sales shall be calculated on average sales price for the applicable Therapeutic Product(s) in the applicable country in the entire applicable year.

Sales of Therapeutic Products between SANOFI-AVENTIS and its Affiliates or its sublicensees, or among such Affiliates and sublicensees, shall be disregarded for purposes of calculating Net Sales hereunder, except for sales to Affiliates or sublicensees that are the intended end user.

In the event a Therapeutic Product is sold as part of a Combination Product (as defined below), the Net Sales from the Combination Product, for the purposes of determining royalty payments, shall be determined by multiplying the Net Sales of the Combination Product during the applicable royalty reporting period, by the fraction, A/A+B, where A is the average sale price of the Therapeutic Product when sold separately in finished form, and B is the average sale price of the other product(s) included in the Combination Product when sold separately in finished form, in each case during the applicable royalty reporting period or, if sales of both the Therapeutic Product and the other product(s) did not occur in such period, then in the most recent royalty reporting period in which sales of both occurred.

In the event that such average sale price cannot be determined for both the Therapeutic Product and all other products(s) included in the Combination Product, Net Sales for the purposes of determining royalty payments shall be calculated by multiplying the Net Sales of the Combination Product by the fraction of C/C+D where C is the fair market value of the Therapeutic Product and D is the fair market value of all other pharmaceutical product(s) included in the Combination Product. In such event, SANOFI-AVENTIS shall in good faith make a determination of the respective fair market values of the Therapeutic Product and all other pharmaceutical products included in the Combination Product, and shall notify MERRIMACK of such determination and provide MERRIMACK with data to support such determination. MERRIMACK shall have the right to review such determination and supporting data, and to notify SANOFI-AVENTIS if it disagrees with such determination. If MERRIMACK does not agree with such determination and if the Parties are unable to agree in good faith as to such respective fair market values, then such matter shall be referred to the Executive Officers for resolution pursuant to Section 13.1 and, if the Executive Officers are unable to resolve such matter in accordance with Section 13.1, such matter shall be referred to binding arbitration for resolution pursuant to Section 13.2.

As used above, the term "Combination Product" means any pharmaceutical product that consists of a Collaboration Compound and other active compounds or active ingredients.

Section 1.52 "Party". Party means SANOFI-AVENTIS or MERRIMACK; "Parties" means SANOFI-AVENTIS and MERRIMACK.

Section 1.53 "Patent Right". Patent Right means any United States or foreign patent applications, all patents that issue from such applications, including utility patents, utility models, design patents and certificates of invention, and all divisionals, continuations, continuations-in-part, substitutions, provisionals, reissues, reexaminations, renewals, extensions (including any supplemental patent certificate) or additions to any such patent applications and patents.

Section 1.54 "Person". Person means any natural person or any corporation, company, partnership, limited liability company, joint venture, firm, agency or other entity, including a Party.

Section 1.55 "Phase III Clinical Study". Phase III Clinical Study means, as to a particular Collaboration Compound or Licensed Product, a human clinical trial in any country that would satisfy the requirements of 21 C.F.R. §312.21(c), or a human clinical trial that would satisfy comparable requirements in a country other than the US, which is designed to ascertain efficacy and safety of a Collaboration Compound or Licensed Product for the purpose of preparing and submitting an NDA to the applicable Regulatory Authority(ies) in the applicable country(ies).

Section 1.56 "PHS". PHS means The National Institutes of Health or the Food and Drug Administration.

Section 1.57 "PHS Agreement". PHS Agreement means the Public Health Service Non-Exclusive Patent License Agreement, dated as of February 20, 2008, by and between MERRIMACK and PHS.

Section 1.58 "PoC Phase II Study". PoC Phase II Study means, as to a particular Collaboration Compound or Licensed Product for a given indication, a human clinical trial that (a) would satisfy the requirements of 21 C.F.R. §312.21(b), or a human clinical trial that would satisfy comparable requirements in a country other than the US, (b) is designed to generate, among other things, data as to the efficacy of a Collaboration Compound or Licensed Product for such indication, and (c) is designated as a PoC Phase II Study by the JDC.

Section 1.59 "Regulatory Approval". Regulatory Approval means any and all approvals (including, where required, any applicable governmental price and reimbursement approvals), licenses, registrations or authorizations of any Regulatory Authority necessary for the manufacture, use, storage, import, promotion, marketing and sale of a product in a country or jurisdiction, including Marketing Authorizations.

Section 1.60 "Regulatory Authority". Regulatory Authority means any federal, national, multinational, state, provincial or local regulatory agency, department, bureau or other governmental entity with authority over the testing, approval, manufacture, use, storage, import, promotion, marketing or sale of a product in a country, including the FDA, EMEA or MHLW.

Section 1.61 "ROW Territory". ROW Territory means all countries of the world, excluding the USA.

Section 1.62 "SANOFI-AVENTIS Patent Rights". SANOFI-AVENTIS Patent Rights means all Patent Rights Controlled by SANOFI-AVENTIS, itself or jointly with MERRIMACK, as of the Effective Date and thereafter during the Term and Cover any SANOFI-AVENTIS Technology or the manufacture, use, offer for sale, sale or importation of any Collaboration Compound or Licensed Product.

Section 1.63 "SANOFI-AVENTIS Technology". SANOFI-AVENTIS Technology means all Know-How Controlled by SANOFI-AVENTIS, itself or jointly with MERRIMACK, as of the Effective Date and thereafter during the Term, that is used in, or necessary or useful for,

the research, development, manufacture or commercialization of Collaboration Compounds and Licensed Products.

Section 1.64 "Selexis". Selexis means Selexis SA, a Swiss company.

Section 1.65 "Selexis License Agreement". Selexis License Agreement means the Commercial License Agreement, dated as of June 4, 2008, by and between Selexis and MERRIMACK.

Section 1.66 "Territory". Territory means all countries of the world.

Section 1.67 "Therapeutic Patent Rights". Therapeutic Patent Rights means, in each case to the extent Controlled by Merrimack: (a) the patent applications that are listed in Exhibit A-2, (b) any divisionals, continuations, continuations-in-part, provisionals, or substitute applications with respect to any patent applications listed in Exhibit A-2, (c) any patent issued with respect to any of the foregoing, including utility patents, utility models, design patents and certificates of invention, (d) any reissue, reexamination, renewal, extension (including any supplemental patent certificate) or addition with respect to any of the foregoing, and (e) any Patent Rights other than those included in sub-paragraphs (a) through (d) that are Controlled by MERRIMACK, itself or jointly with SANOFI-AVENTIS, at any time after the Effective Date during the Term and Cover any Therapeutic Technology or the manufacture, use, offer for sale, sale or importation of any Therapeutic Product.

Section 1.68 "Therapeutic Product". Therapeutic Product means any pharmaceutical product comprising a Collaboration Compound as an active ingredient. For purposes of clarity, (a) Therapeutic Product excludes any Diagnostic Product, and (b) unless the context otherwise dictates, all references to "Therapeutic Product" shall include the Collaboration Compound contained in such Therapeutic Product.

Section 1.69 "Therapeutic Technology". Therapeutic Technology means any Know-How that is Controlled (disregarding any grant of rights to SANOFI-AVENTIS pursuant to this Agreement) by MERRIMACK, itself or jointly with SANOFI-AVENTIS, as of the Effective Date and thereafter during the Term, that is used in, or necessary or useful for, the research, development, manufacture or commercialization of any Therapeutic Product.

Section 1.70 "Third Party". Third Party means any Person other than a Party or any of its Affiliates.

Section 1.71 "US" or "USA". "US" or "USA" means United States of America, its territories and possessions.

Section 1.72 "Valid Claim". Valid Claim means, as to a Therapeutic Product, on a country-by-country basis, an unexpired claim of an issued patent Controlled by MERRIMACK (whether solely or jointly with SANOFI-AVENTIS) that (a) in the absence of a license from MERRIMACK (in the case of such claims solely Controlled by MERRIMACK) or in the absence of Control by SANOFI-AVENTIS or a license from MERRIMACK (in the case of such claims jointly Controlled by MERRIMACK and SANOFI-AVENTIS), would be infringed by the manufacture, use, offer for sale, sale or importation of such Therapeutic Product in such country,

and (b) has not lapsed or been revoked, withdrawn or found to be unpatentable, invalid or unenforceable by a court or other authority of competent jurisdiction in the subject country, from which decision no further appeal can be taken, or with respect to which an appeal is not taken within the time (including any extensions) allowed for appeal, and that has not been disclaimed or admitted to be invalid or unenforceable through reissue, disclaimer or otherwise; provided, however, that (x)Valid Claim shall exclude any claims of any issued patent as to which the filing date of the earliest patent application from which such issued patent claims priority is later than the later of (i) [**], or (ii) [**] and (y) if in a particular country the only claim(s) of issued patent(s) Controlled by MERRIMACK (whether solely or jointly with SANOFI-AVENTIS) that would be infringed as set forth in clause (a) above are manufacturing process claim(s), and under applicable patent Laws in such country a sale of the applicable Therapeutic Product in such country would not (in the absence of a license from MERRIMACK thereunder and/or ownership or Control by SANOFI-AVENTIS thereof, as applicable) infringe such manufacturing process claim(s), such manufacturing process claim(s) shall not constitute Valid Claim(s) for purposes of determining SANOFI-AVENTIS' royalty obligations with respect to such sale in such country. For clarity, it is understood that Valid Claims do not include issued patents that are not Controlled by MERRIMACK, such as issued patents Controlled solely by SANOFI-AVENTIS.

Section 1.73 Additional Definitions. Each of the following definitions is set forth in the section of this Agreement indicated below:

Definitions	Section
[**]% Market Erosion	8.4(g)(i)
[**]% Market Erosion	8.4(g)(ii)
AAA	13.2(c)
Agreement	Preamble
Alliance Manager	2.1(c)
Arbitration Request	13.2(a)
Back-Up Compound	3.3
Baseline Net Sales	8.4(g)(i)
Biological Materials	3.2(g)
Breaching Party	12.4
Claims	14.1
Combination Product	1.51
Competing Product	6.2(a)
Competitive Infringement	9.3(a)
Confidentiality Agreement	1.9
Co-Promote Royalty Term	8.4(e)(ii)(A)
Co-Promote Term	8.4(e)(ii)(B)
Co-Promoted Product	5.3(a)
Co-Promotion Guidelines	5.4(a)(ii)
Co-Promotion Opt-Out Period	5.3(a)
DOJ	15.3(a)
EPO	9.2(e)(iii)
Execution Date	Preamble
Failed Product	8.2(f)

Definitions	Section
FTC	15.3(b)
HSR Act	15.3(c)
HSR Clearance	15.3(d)
HSR Clearance Date	15.3(e)
HSR Filings	15.3(f)
Indemnified Party	14.3(a)
Indemnifying Party	14.3(a)
Invalidity Claim	9.5(a)
JCC	2.3(a)
JDC	2.2(a)
Joint Invention	9.1(b)
JSC	2.1(a)
Licensing Opportunity	6.3(a)
Licensing Revenues	12.9
Losses	14.1
Manufacturing Technology	3.4(a)(i)(A)
Marketing Costs	5.4(a)(vii)
MERRIMACK	Preamble
Negotiation Period	6.3(c)(iii)
Non-Arbitrable Dispute	13.1(b)
Non-Breaching Party	12.4
Paragraph IV Certification	9.6

Parent	6.2(a)
Patent Challenge	12.6
Patent Prosecution	9.2(e)
Publishing Party	10.5(a)
Response Period	6.3(a)
Royalty Term	8.4(e)(i)
Sales Force Costs	5.4(a)(iv)
SANOFI-AVENTIS	Preamble
SDEA	4.4
SEC	10.3(b)(ii)
Standstill Period	16.3(c)
Subject Disclosure	10.3(b)
Successful Use	8.2(c)
Term	12.1
Terminated Products	12.8
Terminated Territories	12.8
Third Party License	8.4(h)(i)
Third Party License Costs	8.4(h)(i)
Trial Diligence Breach	3.2(d)
US Filing Date	2.1(b)(vii)
USPTO	9.2(e)(iii)
WIPO	9.2(e)(iii)

Article II
Governance; Decision-Making

Section 2.1 Joint Steering Committee.

(a) Formation and Membership. Within [**] days after the Effective Date, SANOFI-AVENTIS and MERRIMACK shall establish a joint steering committee (the "JSC") to review, coordinate and provide overall strategic direction to their activities pursuant to the Global Development Plan and, as long as MERRIMACK does not opt out of or terminate Co-Promotion with respect to the Co-Promoted Products, the Co-Promotion of Co-Promoted Product(s) pursuant to the Commercialization Plan. The JSC shall be comprised of [**] senior executives of SANOFI-AVENTIS and [**] senior executives of MERRIMACK with appropriate experience and level of decision-making authority. Each Party may change any one or more of its representatives on the JSC at any time upon written notice to the other Party. MERRIMACK's participation on the JSC after the end of the [**] shall be at MERRIMACK's [**]. From time to time, the JSC may, in its discretion, establish one or more subcommittees or project teams to oversee particular projects or activities, as the JSC deems necessary or advisable. The Executive Officers shall not be members of the JSC.

(b) Responsibilities. The JSC shall be responsible for:

(i) reviewing and approving the initial Global Development Plan prepared by the JDC, including all budgets relating to development activities to be conducted by MERRIMACK hereunder;

(ii) periodically reviewing the Global Development Plan and suggesting or approving such updates or amendments to the Global Development Plan as the JSC deems appropriate, including all budget amendments;

(iii) as long as MERRIMACK does not opt out of Co-Promotion, reviewing and approving the initial Commercialization Plan for the Co-Promoted Product(s) prepared by the JCC, including all budgets;

(iv) as long as MERRIMACK does not terminate Co-Promotion, periodically reviewing the Commercialization Plan for the Co-Promoted Product(s) and suggesting or approving such updates or amendments to such Commercialization Plan as the JSC deems appropriate, including all budget amendments;

(v) providing overall strategic direction with respect to research, development, regulatory and manufacturing activities conducted under the Global Development Plan, and with respect to commercialization activities conducted under the Commercialization Plan (if any);

(vi) overseeing the JDC and, if applicable, the JCC, and the Parties' progress in the conduct of activities under the Global Development Plan and the Commercialization Plan (if any) hereunder;

(vii) establishing a projected Marketing Authorization application filing date for the United States ("US Filing Date") for each Licensed Product, which planned US Filing Date may be periodically updated by the JSC based on its reasonable assessment of the clinical progress of such Licensed Product;

(viii) keeping MERRIMACK apprised, through MERRIMACK's representatives on the JSC, of the planned US Filing Date for each Licensed Product, including any updates thereto;

(ix) attempting to resolve disputes arising under this Agreement that are referred to the JSC by the JDC, JCC or either of the Parties (for clarity, the JSC shall not have the authority to resolve disputes between the Parties regarding whether a Party has fulfilled or breached any obligation under this Agreement); and

(x) performing such other tasks and undertaking such other responsibilities as may be set forth in this Agreement.

(c) Alliance Managers. Each Party shall appoint one representative to serve as an alliance manager ("Alliance Manager") with responsibility for overseeing that the Parties' activities are conducted in accordance with this Agreement, and for being the primary point of contact between the Parties with respect to all such activities. The Alliance Manager is responsible for driving the alliance progress and the resolution of issues between the Parties. The Alliance Managers will not be members, but may attend the meetings of, the JDC and, if applicable, the JCC, and be responsible for communicating with and reporting to the JSC on all relevant matters.

(d) Administrative Matters. The JSC shall appoint a chairperson from among its members, who shall be from [**]. The Alliance Manager from [**] will work with the chairperson, and work together with [**]'s Alliance Manager to develop JSC meeting agendas. The chairperson shall be responsible for calling meetings of the JSC and for leading the meetings. A JSC member of the chairing Party shall serve as secretary of such meetings. The secretary shall promptly prepare and distribute to all members of the JSC draft minutes of the meeting for review and comment, including a list of any actions or decisions approved by the JSC, with the goal of distributing final approved minutes of each JSC meeting within thirty (30) days after the meeting.

(e) Decision-Making. Each Party shall have one (1) vote on the JSC. Both Parties must vote in the affirmative to allow the JSC to take any action that requires the approval of the JSC. Decision on any matter may be taken at a meeting, by teleconference, videoconference or by written agreement. Either Party may convene a special meeting of the JSC in accordance with Section 2.1(g)(iii) for the purpose of resolving any disagreement at the JDC level or, if applicable, JCC level, or other disputes within the JSC's jurisdiction, in case any of the foregoing represents a material issue the resolution of which cannot reasonably await until the next scheduled meeting of the JSC.

(f) Dispute Resolution by Executive Officers. If the JSC is unable to resolve any dispute within the responsibilities of the JSC specified in Section 2.1(b), or to unanimously

agree on any matter set forth in subsection (iii) below, within [**] days, or the JSC no longer remains in place at the time of a dispute within the responsibilities of the JSC specified in Section 2.1(b) and the Parties are unable to resolve such dispute within [**] days, such dispute or other matter shall be referred to the Executive Officers for resolution pursuant to Section 13.1. If the Executive Officers are unable to resolve any such matter that is within the responsibilities of the JSC pursuant to Section 13.1, then SANOFI-AVENTIS shall have final decision-making authority with respect to the development and commercialization of Collaboration Compounds and Licensed Products (including, in the case where MERRIMACK has not opted out of or terminated Co-Promotion of Co-Promoted Product(s), matters concerning Co-Promotion of Co-Promoted Product(s)), provided that:

(i) SANOFI-AVENTIS may not make a decision that is not consistent with the terms and conditions of this Agreement and with the Global Development Plan or Commercialization Plan, as the case may be;

(ii) MERRIMACK shall have final decision-making authority with respect to operational decisions related to any human clinical trial conducted by MERRIMACK, provided, that such clinical trial is conducted in compliance with the terms and conditions of this Agreement and with the Global Development Plan; and

(iii) the following decisions must be decided [**] (or, if not able to be decided [**], pursuant to Article XIII), in that [**]:

(A) increase [**]'s obligations or reduce [**]'s rights under this Agreement in connection with Collaboration Compounds or Licensed Products, including any obligation to devote additional personnel or financial resources to a specific activity or project to be conducted by [**] under the Global Development Plan;

(B) amend any of the Co-Promotion Guidelines or the allocation of Sales Force Costs or Marketing Costs between the Parties in connection with any Co-Promoted Product hereunder;

(C) if [**] has agreed to perform any human clinical trial(s) under the Global Development Plan, amend the scope, protocols, criteria or endpoints of such human clinical trial(s);

(D) determine that the events required for the payment of development, regulatory or sales milestone payments have not occurred;

(E) resolve disputes regarding the Parties' rights and obligations under this Agreement;

(F) unilaterally make a decision that is expressly stated in this Agreement to require [**]'s prior approval or consent, or the mutual agreement of the Parties; or

(G) otherwise expand [**]'s rights or reduce [**]'s obligations under this Agreement in connection with Collaboration Compounds or Licensed Products.

(g) Meetings.

(i) The JSC shall meet at least twice annually. The location of JSC meetings shall be as agreed by the Parties, and may be held in person, alternating locations between the Parties, or by telephone conference call or by videoconference.

(ii) Each Party shall use reasonable efforts to cause its representatives to attend the meetings of the JSC. In addition, each Party may, at its discretion, invite a reasonable number of non-voting employees or officers, and, with the consent of the other Party, consultants or scientific advisors, to attend meetings of the JSC or the relevant portion thereof; provided that any such consultants or scientific advisors are bound by written obligations of confidentiality that are at least as stringent as those set forth in this Agreement.

(iii) Either Party may also request that a special meeting of the JSC be convened for the purpose of resolving disputes in connection with, or for the purpose of reviewing or making a decision pertaining to, any material matter within the purview of the JSC, the examination or resolution of which cannot reasonably be postponed until the next scheduled JSC meeting, by providing written notice to the other Party. Such meeting shall be convened at such time as may be mutually agreed upon by the Parties, but in any event shall be held within [**] days after the date of such notice.

Section 2.2 Joint Development Committee.

(a) Formation and Membership. Within [**] days after the Effective Date, SANOFI-AVENTIS and MERRIMACK shall establish a joint development committee (the "JDC") comprised of an equal number of representatives of SANOFI-AVENTIS and MERRIMACK, which number is recommended to be between [**] and [**] representatives of each Party, and each of whom shall have experience and seniority sufficient to enable him or her to make day-to-day operational decisions on behalf of the Party he represents. Each Party may change any one or more of its representatives on the JDC at any time upon written notice to the other Party. MERRIMACK's participation on the JDC after the end of the Development Term shall be at MERRIMACK's election. From time to time, the JDC may, in its

discretion, establish one or more project teams, to, upon mutual agreement of the Parties, implement and coordinate various aspects of the Global Development Plan or other elements of the collaboration hereunder, such as Manufacturing Technology transfer, coordination of patent prosecution matters as contemplated in Article IX, or coordination of publication matters as contemplated in Section 10.5.

(b) Administrative Matters. The JDC shall appoint a chairperson from among its members, who shall rotate annually during the Development Term between the representatives from MERRIMACK and the representatives from SANOFI-AVENTIS, with the first chairperson to be a representative of [**]. The chairperson shall be responsible for calling meetings of the JDC and for leading the meetings. A JDC member of the chairing Party shall serve as secretary of such meetings. The secretary shall promptly prepare and distribute to all

members of the JDC draft minutes of the meeting for review and comment, including a list of any actions or decisions approved by the JDC, with the goal of distributing final approved minutes of each JDC meeting within thirty (30) days after the meeting.

(c) Decision-Making. Each Party shall have one (1) vote on the JDC. Both Parties must vote in the affirmative to allow the JDC to take any action that requires the approval of the JDC. Action on any matter may be taken at a meeting, by teleconference or videoconference or by written agreement. If the JDC is unable to reach unanimous agreement on any matter within the JDC's jurisdiction, then the matter shall be referred to the JSC for resolution under Section 2.1(b)(ix) or, if the JSC no longer remains in place, the Executive Officers for resolution under Section 13.1 (subject to Section 2.1(f) and a Party's final decision-making authority as to matters covered thereunder).

(d) Meetings.

(i) The JDC shall meet at least once during each calendar quarter during the Development Term. The location of JDC meetings shall be as agreed by the Parties, and may be held in person, alternating locations between the Parties, or by telephone conference call or by videoconference.

(ii) Each Party shall use reasonable efforts to cause its representatives to attend the meetings of the JDC. If a Party's representative is unable to attend a meeting, such Party may designate an alternate representative to attend such meeting in place of the absent representative. In addition, each Party may, at its discretion, invite a reasonable number of additional employees, and, with the consent of the other Party, consultants or scientific advisors, to attend the meetings of the JDC or the relevant portion thereof, provided that any such consultants or scientific advisors are bound by written obligations of confidentiality that are at least as stringent as those set forth in this Agreement.

(iii) Either Party may also request that a special meeting of the JDC be convened for the purpose of resolving material disputes in connection with, or for the purpose of reviewing or making a material decision pertaining to, the implementation of the Global Development Plan, the examination or resolution of which cannot reasonably be postponed until the next scheduled JDC meeting, by providing written notice to the other Party. Such meeting shall be convened at such time as may be mutually agreed upon by the Parties, but in any event shall be held within [**] days after the date of such notice.

(e) Responsibilities. The JDC shall be responsible for:

(i) reviewing, and recommending to the JSC for JSC review and approval, the initial Global Development Plan and updates and amendments thereto as appropriate;

(ii) participating in the initial assessment of any Back-Up Compound(s) and providing strategic direction with respect to non-clinical and clinical activities for Collaboration Compounds and Licensed Products;

(iii) overseeing the research and development of Collaboration Compounds;

(iv) overseeing and advising on the pre-clinical and clinical manufacture of Collaboration Compounds and Licensed Products;

(v) overseeing the transfer of manufacturing responsibility from MERRIMACK to SANOFI-AVENTIS under Section 3.4;

(vi) overseeing the progress of the Development Program and monitoring the Parties' compliance with their respective obligations under the Global Development Plan, including the accomplishment of key objectives;

(vii) reviewing and approving the protocols of studies to be conducted by MERRIMACK as set forth in Section 3.2(c); and

(viii) performing such other tasks and undertaking such other responsibilities as may be set forth in this Agreement.

Section 2.3 Joint Commercialization Committee.

(a) Formation and Membership. At a time to be mutually agreed by the Parties (but in no event later than [**] days after [**], if MERRIMACK has not opted out of Co-Promoting Co-Promoted Product(s) within the Co-Promotion Opt-Out Period), SANOFI-AVENTIS and MERRIMACK shall establish a joint commercialization committee (the "JCC") comprised of an equal number of representatives of SANOFI-AVENTIS and MERRIMACK with appropriate experience and level of decision-making authority. Each Party may change any one or more of its representatives on the JCC at any time upon written notice to the other Party. Following the formation of the JCC as set forth in the first sentence of this Section 2.3(a), the JCC shall remain in effect for as long as there is at least one (1) Co-Promoted Product being Co-Promoted by MERRIMACK in the USA. The JCC shall be dissolved upon the expiration or earlier termination of the Co-Promote Term for all Co-Promoted Products. From time to time, the JCC may, in its discretion, establish one or more project teams to, upon mutual agreement of the Parties, implement and coordinate various aspects of the Commercialization Plan.

(b) Administrative Matters. The JCC shall appoint a chairperson from among its members, who shall be a representative of [**]. The chairperson shall be responsible for calling meetings of the JCC and for leading the meetings. A JCC member of the chairing Party shall serve as secretary of such meetings. The secretary shall promptly prepare and distribute to all members of the JCC draft minutes of the meeting for review and comment, including a list of any actions or decisions approved by the JCC, with the goal of distributing final approved minutes of each JCC meeting within thirty (30) days after the meeting.

(c) Decision-Making. Each Party shall have one (1) vote on the JCC. Both Parties must vote in the affirmative to allow the JCC to take any action that requires the approval of the JCC. Action on any matter may be taken at a meeting, by teleconference or videoconference or by written agreement. If the JCC is unable to reach unanimous agreement on

any matter within the JCC's jurisdiction, then the matter shall be referred to the JSC for resolution under Section 2.1(b)(ix) or, if the JSC no longer remains in place, the Executive Officers for resolution under Section 13.1 (subject to Section 2.1(f) and a Party's final decision-making authority as to matters covered thereunder).

(d) Meetings.

(i) The JCC shall meet at least once during each calendar quarter during the Co-Promote Term. The location of JCC meetings shall be as agreed by the Parties, and may be held in person, alternating locations between the Parties, or by telephone conference call or by videoconference.

(ii) Each Party shall use reasonable efforts to cause its representatives to attend the meetings of the JCC. If a Party's representative is unable to attend a meeting, such Party may designate an alternate representative to attend such meeting in place of the absent representative. In addition, each Party may, at its discretion, invite a reasonable number of additional employees, and, with the consent of the other Party, consultants or scientific advisors, to attend the meetings of the JCC or the relevant portion thereof, provided that any such consultants or scientific advisors are bound by written obligations of confidentiality that are at least as stringent as those set forth in this Agreement.

(iii) Either Party may also request that a special meeting of the JCC be convened for the purpose of resolving material disputes in connection with, or for the purpose of reviewing or making a material decision pertaining to, the implementation of the Commercialization Plan, the examination or resolution of which cannot reasonably be postponed until the next scheduled JCC meeting, by providing written notice to the other Party. Such meeting shall be convened at such time as may be mutually agreed upon by the Parties, but in any event shall be held within [**] days after the date of such notice.

(e) Responsibilities. With respect to the Co-Promoted Product(s), as long as MERRIMACK does not opt out of or terminate Co-Promotion of Co-Promoted Product(s) hereunder, the JCC shall be responsible for:

(i) developing, and recommending to the JSC for JSC review and approval, the initial Commercialization Plan for such Co-Promoted Product(s) in the USA and annual updates and periodic amendments thereto;

(ii) overseeing and coordinating the implementation of the Commercialization Plan by the Parties in the USA;

(iii) developing a policy for handling complaints related to such Co-Promoted Product(s), as set forth in Section 5.5; and

(iv) serving generally as a forum for communication between the Parties regarding other aspects of commercialization matters relating to such Co-Promoted Product(s) in the Territory.

Notwithstanding anything in the foregoing to the contrary, the Parties acknowledge and agree that, upon the earlier to occur of (A) dissolution of the JCC in its entirety, or (B) MERRIMACK's exercise of its right to opt-out of or terminate Co-Promotion of the Co-Promoted Product(s) hereunder, SANOFI-AVENTIS shall assume all responsibility for commercialization in the USA of the Co-Promoted Product(s) if and when MERRIMACK has opted out of or terminated Co-Promotion, and the JCC has been dissolved in its entirety, in accordance with the terms and conditions of this Agreement.

Article III
Development; Manufacture and Supply

Section 3.1 Overview; Development Plan.

(a) Subject to and in accordance with the terms and conditions of this Agreement, including Section 3.2, the Parties shall collaborate on the research and development of Collaboration Compound(s) and Licensed Product(s) in accordance with the Global Development Plan. The initial Global Development Plan, and each successive Global Development Plan, shall be prepared by SANOFI-AVENTIS in consultation with MERRIMACK, shall be reviewed and approved by the JDC and JSC, shall be consistent with the terms and conditions of the Agreement and shall specify, with a breakdown by Major Territory and the rest of the Territory, if relevant, among other things:

(i) research and development objectives,

(ii) activities to be performed, including all clinical trials and Regulatory Approvals required for manufacturing, marketing and selling Licensed Products,

(iii) the Party responsible for performance of an activity,

(iv) associated budgets for the next [**] years, regarding development activities to be conducted by MERRIMACK hereunder,

(v) timelines for performance, and

(vi) specific deliverables.

(b) Each Party shall use Commercially Reasonable Efforts to perform its respective obligations under the Global Development Plan in accordance with the Global Development Plan and all applicable Laws.

(c) SANOFI-AVENTIS shall be responsible for all costs of conducting the Development Program, including Manufacturing Costs, and shall pay MERRIMACK, within [**] days following MERRIMACK's invoice, for (i) all internal costs of MERRIMACK personnel at the FTE Rate, plus (ii) all out-of-pocket costs and expenses incurred by MERRIMACK, including costs and expenses of any Third Party contract research and manufacturing organizations, with respect to each of clause (i) and (ii) to the extent incurred in performing activities assigned to MERRIMACK under the Global Development Plan and provided (x) the applicable activities relating to conducting the Development Program have been

previously approved by the JSC prior to their start and (y) the amounts involved are within the approved budget, (it being understood that the approved budget shall include an allowance of [**] percent ([**]%) for cost overruns), provided such overruns, upon their occurrence, are appropriately documented and justified. It is further understood that MERRIMACK's obligations to perform any given Development Program activities shall be subject to prior approval by the JSC of a budget therefor. For purposes of this Agreement, an overrun shall be justified if it is incurred by Merrimack in activities that are pursuant to the Global Development Plan approved by the JSC and the objectives thereof. All budgets established by the JSC relating to the conduct of activities by MERRIMACK pursuant to Section 3.2(c), Section 3.4(a), Section 4.1(a) and Section 4.1(b) shall be consistent with, but in any case not superior than, a budget of SANOFI-AVENTIS covering the conduct of comparable activities by and/or on behalf of SANOFI-AVENTIS.

Section 3.2 Certain Development Responsibilities of Each Party.

(a) Except as otherwise set forth in clauses (c) and (d) below, as to each Collaboration Compound and Licensed Product in each indication, SANOFI-AVENTIS shall be responsible for conducting all clinical trials that are required to obtain Regulatory Approval to manufacture, market and sell such Collaboration Compound and Licensed Product in the Territory, including the clinical development of each Collaboration Compound and Licensed Product for each indication from and after Completion of PoC of such Collaboration Compound or Licensed Product for such indication.

(b) As further set forth in Article IV, (i) SANOFI-AVENTIS shall be responsible for preparing, filing, obtaining and maintaining all Regulatory Approvals necessary to develop, manufacture, market and sell Collaboration Compounds and Licensed Products in the Territory, and (ii) MERRIMACK shall be responsible for the regulatory activities assigned to MERRIMACK under the Global Development Plan.

(c) MERRIMACK shall have the right (but not the obligation) to conduct, in accordance with the Global Development Plan and under the oversight of the JSC, all (or part if MERRIMACK lacks the necessary capabilities or SANOFI-AVENTIS performs some trials, both as provided below in this Section 3.2(c)) of the human clinical trials that are contemplated under the Global Development Plan for each Collaboration Compound or Licensed Product for each indication through Completion of PoC (for clarity, through Completion of PoC with respect to each Therapeutic Product for each indication), of such Collaboration Compound or Licensed Product for such indication, on a Collaboration Compound-by-Collaboration Compound, Licensed Product-by-Licensed Product and indication-by-indication basis; provided, that MERRIMACK [**] (or SANOFI-AVENTIS pursuant to Section 2.1(f)) [**] that MERRIMACK lacks the necessary capabilities and resources to conduct such human trials. SANOFI-AVENTIS shall notify MERRIMACK sufficiently in advance of the expected commencement of any such human clinical trial to allow MERRIMACK (i) [**], and (ii) [**] if MERRIMACK were to [**]. SANOFI-AVENTIS shall include in such notice to MERRIMACK reasonably detailed information with respect to the expected scope, protocols, criteria and endpoints of such human clinical trial and shall promptly provide to MERRIMACK other information concerning such proposed human clinical trial as may be reasonably requested by MERRIMACK. For purposes of clarity, once MERRIMACK determines to undertake the conduct of a human clinical trial for a particular Collaboration Compound or Licensed Product

for a given indication hereunder, MERRIMACK shall have the right to [**] of PoC for such Collaboration Compound or Licensed Product for such indication. MERRIMACK [**] SANOFI-AVENTIS, and shall give due consideration to SANOFI-AVENTIS' comments and requirements, with respect to the [**] by MERRIMACK hereunder, and such [**] JDC and JSC, be included in the Global Development Plan. In any case, it is understood and agreed that, without limiting MERRIMACK's right to [**] as contemplated under this Section 3.2(c), SANOFI-AVENTIS shall always be entitled to [**] by SANOFI-AVENTIS could be redundant or repetitive with trials conducted by MERRIMACK pursuant to MERRIMACK's right to conduct trials as provided in this Section 3.2(c)).

(i) If MERRIMACK elects to conduct any such human clinical trial (and the JSC or SANOFI-AVENTIS [**] that MERRIMACK lacks the necessary capabilities and resources to conduct such human clinical trial), MERRIMACK shall use Commercially Reasonable Efforts to do so in accordance with the Global Development Plan and shall provide SANOFI-AVENTIS, through the JDC, with quarterly written reports summarizing in reasonable detail MERRIMACK's clinical development activities pursuant to the Global Development Plan.

(ii) If MERRIMACK elects not to conduct any such human clinical trial, or does not have the capabilities and resources necessary to conduct such human clinical trial, the JDC will determine how to conduct such human clinical trial; provided, that, MERRIMACK shall not be obligated to conduct such human clinical trial without its prior written consent.

(d) If pursuant to Section 3.2(c) MERRIMACK has elected to conduct a clinical trial (and the JSC or SANOFI-AVENTIS has not reasonably [**] that MERRIMACK lacks the necessary capabilities and resources to conduct such human clinical trial), then if Merrimack (x) materially fails to exercise Commercially Reasonable Efforts to perform and/or complete such study or (y) materially deviates from the protocols set forth in the applicable Global Development Plan in a manner that is not consistent with the exercise of Commercially Reasonable Efforts, or (z) otherwise materially fails to exercise Commercially Reasonable Efforts in conducting such study (any of (x), (y) or (z), a "Trial Diligence Breach"), the following shall apply:

(i) SANOFI-AVENTIS shall notify MERRIMACK in writing promptly upon forming the belief that a Trial Diligence Breach has occurred and include in such notice the specific facts upon which SANOFI-AVENTIS bases such belief and the actions that SANOFI-AVENTIS believes are necessary to remedy such Trial Diligence Breach; and

(ii) If (A) MERRIMACK does not remedy such Trial Diligence Breach in all material respects within [**] days after receiving notice of such Trial Diligence Breach from SANOFI-AVENTIS and (B) such Trial Diligence Breach materially adversely affects the value of such study, then SANOFI-AVENTIS shall be entitled to offset against any amounts otherwise payable to MERRIMACK under this Agreement the direct costs and expenses incurred by SANOFI-AVENTIS in re-performing clinical development work or any other work directly related thereto as a result of such Trial Diligence Breach.

(e) If pursuant to Section 3.2(c) MERRIMACK has elected to conduct a clinical trial (and the JSC or SANOFI-AVENTIS has not [**] that MERRIMACK lacks the necessary capabilities and resources to conduct such human clinical trial) and the JDC and/or the JSC have [**] such [**],

MERRIMACK shall nevertheless be entitled to subsequently decide that it does not have the necessary capabilities and resources to conduct such study, provided MERRIMACK gives SANOFI-AVENTIS [**] months' (or such shorter periods as the Parties may agree) notice during which MERRIMACK shall either continue to use Commercially Reasonable Efforts to perform all its obligations in the frame of such study so that MERRIMACK's decision does not generate any delay in the conduct of the concerned study, and appropriately transition the conduct of such study to SANOFI-AVENTIS or, at SANOFI-AVENTIS' election and request, promptly transition such study to SANOFI-AVENTIS, it being agreed that in any case all costs and expenses linked to such transition and to the transfer of the responsibility of such study to SANOFI-AVENTIS shall be borne by [**].

(f) Following Completion of PoC of a Collaboration Compound or Licensed Product for a given indication, on a Collaboration Compound-by-Collaboration Compound, Licensed Product-by-Licensed Product and indication-by-indication basis, the JDC shall update the Global Development Plan to reflect a

mutually-agreed allocation of further research and development activities between the Parties with respect to such Collaboration Compound or Licensed Product for the given indication in a manner intended to take advantage of each Party's capabilities and competencies consistent with a principle of meaningful involvement by MERRIMACK. By way of example, as to each indication with respect to each Collaboration Compound or Licensed Product, MERRIMACK may be responsible, subject to MERRIMACK's agreement and the JSC approval, for conducting a number of Phase III Clinical Studies or for providing diagnostic research support activities (e.g., model, algorithm, threshold refinements and related *in vitro* and *in vivo* research).

(g) For purposes of facilitating the conduct of the Development Program, each Party shall provide to the other Party animal or human tissues, cells, blood samples and other materials ("Biological Materials") specified from time to time in the Global Development Plan. Each Party agrees to provide all such Biological Materials to the other Party in accordance with the Global Development Plan. The Parties agree that:

(i) all Biological Materials provided by one Party to the other shall be used solely for research and development purposes in material compliance with all applicable federal, state or local laws, regulations and guidelines;

(ii) all such Biological Materials are provided without any warranties, express or implied;

(iii) the Party providing such Biological Materials shall obtain (or cause its Third Party collaborators to obtain or certify that they have obtained) all appropriate and required consents from the source of such Biological Materials; and

(iv) Biological Materials provided by one Party to the other shall not be made available by the other Party to any Third Party except as contemplated in the Global Development Plan or upon the prior written consent of the Party providing such Biological Materials.

Section 3.3 Designation of Back-Up Compounds. During the Exclusivity Period, SANOFI-AVENTIS may designate, subject to agreement of the Parties (such agreement not to

be unreasonably withheld, conditioned or delayed), up to a total of [**] monoclonal antibodies targeting ErbB3 that are determined as being suitable for development as a substitute for MM-121 under the Development Program (each, a "Back-Up Compound") and are Covered by the Licensed Intellectual Property. Subject to agreement by the Parties as to the designation of such Back-Up Compound(s) and with respect to any necessary amendments to the Global Development Plan to reflect the inclusion of such Back-Up Compound(s), such Back-Up Compounds shall be deemed Collaboration Compounds hereunder. Notwithstanding anything in this Agreement to the contrary, the Parties acknowledge and agree that MERRIMACK does not Control or otherwise possess, as of the Execution Date, any Back-Up Compound, and shall have no obligation to generate any Back-Up Compound during the Term unless otherwise agreed by MERRIMACK. For purposes of clarity, after the end of the Exclusivity Period, the Parties may not designate any Back-Up Compounds for inclusion as Collaboration Compounds under this Agreement.

Section 3.4 Manufacture and Supply.

(a) As soon as practicable after the Effective Date, MERRIMACK shall use Commercially Reasonable Efforts to transition the manufacturing of MM-121 (and, as relevant, of Diagnostic Product(s), Therapeutic Product(s) and/or other Collaboration Compound(s)) to SANOFI-AVENTIS (or its designated Affiliate or Third Party manufacturer).

(i) As part of such transition of manufacturing to SANOFI-AVENTIS, MERRIMACK shall:

(A) subject to SANOFI-AVENTIS' prior approval of a budget as contemplated by Section 3.4(a)(ii) and cooperation in accordance with Section 3.4(a)(iii), use Commercially Reasonable Efforts to transfer to SANOFI-AVENTIS, as promptly as practicable, but in any case within [**] days from the Effective Date, copies of all regulatory filings and other Licensed Technology that are necessary or useful for SANOFI-AVENTIS (or the Affiliate or Third Party manufacturer identified by SANOFI-AVENTIS) to manufacture MM-121, including manufacturing processes, analytical methods, specifications, protocols, assays, batch records, quality control data, transportation and storage requirements, and other manufacturing documentation or files (collectively, "Manufacturing Technology"). For clarity, if, as of the Effective Date, MERRIMACK Controls any Manufacturing Technology related to the manufacture of other Collaboration Compounds or of Therapeutic Product(s) or of Diagnostic Product(s), Section 3.4(a)(i)(A) and Section 3.4(a)(i)(B) shall apply to such Manufacturing Technology; and **[**]**(B) provide all reasonably necessary technical assistance to SANOFI-AVENTIS with respect to the use and implementation of such Manufacturing Technology as may be mutually agreed by the Parties.

(ii) SANOFI-AVENTIS shall pay MERRIMACK, within [**] days following MERRIMACK's invoice, for (A) all internal costs of MERRIMACK personnel at the FTE Rate, plus (B) all out-of-pocket costs and expenses incurred by MERRIMACK, with respect to Section 3.4(a)(i) to the extent incurred in performing the transition activities contemplated hereunder, and provided that all aforesaid costs and expenses do not exceed the amounts set forth in the corresponding budget previously approved by the JSC, it being understood that such approved budget may include an allowance of [**] percent ([**]%) for cost overruns, provided

such overruns, upon their occurrence, are appropriately documented and justified (as provided in Section 3.1(c)), and that MERRIMACK's obligations to perform activities pursuant to Section 3.4(a)(i) shall be subject to prior approval by the JSC of a budget therefor (as provided in Section 3.1(c)).

(iii) SANOFI-AVENTIS shall cooperate with MERRIMACK in undertaking all such transition activities, including with respect to the scheduling and planning of associated meetings.

(b) Without limiting the generality of each Party's rights and obligations under clause (a) above, MERRIMACK shall manufacture and supply (or have manufactured or supplied) to SANOFI-AVENTIS, at MERRIMACK's Manufacturing Cost and on a delivery schedule and other customary supply terms and conditions as are mutually agreed by the Parties, MM-121 conforming to the applicable specifications, in quantities required for human clinical trials as set forth in the Global Development Plan, until such time as manufacturing responsibility is transferred to SANOFI-AVENTIS hereunder; provided, however, that,

(i) without the prior written agreement of MERRIMACK, MERRIMACK shall not be obligated to supply more than [**] kilograms of clinical supply of MM-121; and

(ii) MERRIMACK may continue to provide additional quantities of clinical supply of MM-121, at [**] percent ([**]%) of MERRIMACK's Manufacturing Costs, if requested by SANOFI-AVENTIS and subject to MERRIMACK's agreement on quantity and timing, taking into account MERRIMACK's available resources, capacity and planning constraints, solely to the extent necessary to continue to support the Global Development Plan until such time as manufacturing responsibility is transferred to SANOFI-AVENTIS hereunder.

(iii) Each delivery of MM-121 shall be accompanied with a certificate of analysis showing the conformity of the supplied MM-121 to the applicable specifications. SANOFI-AVENTIS shall have the right to analyze the conformity of the supplied MM-121 to such applicable specifications (using the methods of control provided by MERRIMACK) and if there is any non-conformity of the supplied MM-121 to the specifications, no Manufacturing Costs related to the non-conforming quantities shall be borne by SANOFI-AVENTIS. SANOFI-AVENTIS shall notify MERRIMACK of any non-conformity within [**] days of receipt of the applicable delivery. In the absence of such notification by SANOFI-AVENTIS within the aforesaid time period, the quantities of MM-121 delivered to SANOFI-AVENTIS shall be deemed to be conforming to the applicable specifications. If MERRIMACK disagrees on such non-conformity, it shall notify SANOFI-AVENTIS thereof within [**] days from SANOFI-AVENTIS' notification. Any dispute between the Parties with respect to the conformity of MM-121 with the applicable specifications will be resolved by an independent analytical laboratory jointly selected by SANOFI-AVENTIS and MERRIMACK. The costs of such laboratory shall be borne by SANOFI-AVENTIS if the applicable quantities of MM-121 are declared by the laboratory to be conforming to the applicable specifications and shall be borne by MERRIMACK if such quantities are declared by the laboratory to be non-conforming.

(c) SANOFI-AVENTIS shall pay MERRIMACK for all Manufacturing Costs incurred by MERRIMACK, even if incurred prior to the Effective Date, for providing clinical supply of MM-121 to SANOFI-AVENTIS hereunder within [**] days following delivery of such supply and MERRIMACK's invoice therefor. It is understood that such costs (if previously paid by SANOFI-AVENTIS) shall be reimbursed by MERRIMACK in case of non-conformity of MM-121 to the applicable specifications, pursuant to Section 3.4(b)(iii) above.

(d) SANOFI-AVENTIS (or its designated Affiliate or Third Party manufacturer) shall assume manufacturing responsibility for clinical and commercial supply, including all costs of such supply and the costs of building and maintaining inventory, of Collaboration Compounds and Licensed Products throughout the Territory as soon as practicable after the Effective Date, but in no event later than the start of Phase III Clinical Studies for the first Collaboration Compound, Therapeutic Product and/or Diagnostic Product, as relevant. If requested by MERRIMACK, SANOFI-AVENTIS shall purchase from MERRIMACK, at MERRIMACK's Manufacturing Cost, any useable remaining inventory of MM-121 which MERRIMACK has manufactured in accordance with the Global Development Plan prior to SANOFI-AVENTIS's assumption of manufacturing responsibility hereunder, to the extent that SANOFI-AVENTIS has not previously purchased such inventory of MM-121 from MERRIMACK.

Section 3.5 Development Reports. SANOFI-AVENTIS shall provide written reports to MERRIMACK within [**] days after the end of each [**] month period during each calendar year during the Term, setting forth in reasonable detail SANOFI-AVENTIS's and its Affiliates' and sublicensees' (a) activities and progress during such preceding [**] month period related to the pre-commercial research, development and manufacture of Collaboration Compounds and Licensed Products, including information concerning clinical studies, achievement of development and regulatory event milestones, filing of applications for and securing of Regulatory Approvals, sublicensing efforts, and the territories (by each Major Territory, if relevant, and the rest of the world) in which the foregoing activities are conducted, such information to be provided separately for each Therapeutic Product and Diagnostic Product, and (b) any such planned research, development and manufacturing activities in the next [**] month period, including expected timelines. MERRIMACK shall provide similar semi-annual reports for any development activities that MERRIMACK may conduct hereunder with respect to Collaboration Compounds or Licensed Products.

Article IV
Regulatory Matters

Section 4.1 Overview; Regulatory Filings.

(a) Promptly following the Effective Date, MERRIMACK shall:

(i) transfer to SANOFI-AVENTIS all Regulatory Approvals and regulatory filings submitted to any Regulatory Authority for Collaboration Compounds and Licensed Products that are in MERRIMACK's name and Controlled by MERRIMACK; or

(ii) to the extent that such transfer is not permitted under applicable Laws, provide to SANOFI-AVENTIS a right of reference or use to such Regulatory Approvals and regulatory filings.

(b) Subject to Section 4.1(a) above, following the Effective Date, SANOFI-AVENTIS shall own and be responsible for preparing, filing and maintaining all regulatory filings and Regulatory Approvals that are required for the research, development, manufacture, use, marketing or sale of Collaboration Compounds and Licensed Products in the Territory, provided, that:

(i) MERRIMACK shall provide SANOFI-AVENTIS with assistance as may be reasonably requested by SANOFI-AVENTIS with respect to regulatory filings in accordance with the Global Development Plan;

(ii) MERRIMACK shall have a right of reference or use to such regulatory filings and Regulatory Approvals to the extent necessary for the conduct of MERRIMACK's activities under this Agreement;

(iii) SANOFI-AVENTIS shall provide MERRIMACK with copies of all regulatory submissions to, and material communications with, Regulatory Authorities in the Major Territories and MERRIMACK shall have the right to review and comment on such submissions and communications as to the USA, in each case as set forth in Section 4.2(a) below; and

(iv) SANOFI-AVENTIS shall take such actions and otherwise cooperate with MERRIMACK as may be reasonably requested by MERRIMACK to enable MERRIMACK to conduct the clinical trials and perform other development, regulatory and manufacturing activities assigned to MERRIMACK under the Global Development Plan (for clarity, all filings and all interactions with Regulatory Authorities shall be conducted and implemented by and shall be in the name of SANOFI-AVENTIS).

(c) SANOFI-AVENTIS shall pay MERRIMACK, within [**] days following MERRIMACK's monthly invoice, for (i) all internal costs of MERRIMACK personnel at the FTE Rate, plus (ii) all out-of-pocket costs and expenses incurred by MERRIMACK, with respect to each of clause (i) and (ii) to the extent incurred in transferring to SANOFI-AVENTIS Regulatory Approvals and regulatory filings (or providing SANOFI-AVENTIS with a right of reference thereto), providing regulatory assistance to SANOFI-AVENTIS, and performing other regulatory activities assigned to MERRIMACK under the Global Development Plan, provided that (i) all the foregoing is in accordance with the costs and expenses forecasted in the applicable budget as approved by the JSC or is additionally requested by SANOFI-AVENTIS, it being understood that such approved budget shall include an allowance of [**] percent ([**]%) for cost overruns (except for any budget, or portion thereof, covering the costs of MERRIMACK transferring to SANOFI-AVENTIS Regulatory Approvals or regulatory filings hereunder (or providing SANOFI-AVENTIS with a right of reference thereto), which budget, or portion thereof, shall not include such an allowance for overruns), provided such overruns, upon their occurrence, are

appropriately documented and justified (as provided in Section 3.1(c)), and that MERRIMACK's obligations to perform activities pursuant to Sections 4.1(a) and 4.1(b)(i) shall

be subject to prior approval by the JSC of a budget therefor (as provided in Section 3.1(c)), and (ii) SANOFI-AVENTIS shall not be required to pay MERRIMACK any costs incurred by MERRIMACK in conducting activities with respect to regulatory matters which have been undertaken at MERRIMACK's sole election and not requested by SANOFI-AVENTIS or assigned to MERRIMACK under the Global Development Plan.

Section 4.2 Communications with Regulatory Authorities.

(a) Following the Effective Date, SANOFI-AVENTIS shall be responsible for all submissions to, and communications and interactions with, Regulatory Authorities in the Territory with respect to Collaboration Compounds and Licensed Products, provided, that:

(i) SANOFI-AVENTIS shall keep MERRIMACK promptly informed regarding SANOFI-AVENTIS's (or its Affiliate's or sublicensee's) regulatory strategy, planned regulatory submissions and material communications with Regulatory Authorities in the Major Territories with respect to all Collaboration Compounds and Licensed Products, including any changes to such strategy, submissions or communications;

(ii) SANOFI-AVENTIS shall provide MERRIMACK with copies, for information, of regulatory submissions to, and material communications with, any Regulatory Authorities in the Major Territories relating to Collaboration Compounds and Licensed Products and MERRIMACK shall have an opportunity to review and comment on all planned regulatory submissions to, and material communications with, Regulatory Authorities relating to clinical trials referenced in clause (iii) below; and

(iii) As to any human clinical trial for a particular Collaboration Compound or Licensed Product for a given indication conducted or to be conducted by MERRIMACK under the Global Development Plan, SANOFI-AVENTIS shall give due consideration in good faith to incorporating any and all comments provided by MERRIMACK on any planned regulatory submissions to, or material communications with, any Regulatory Authorities in the Major Territories with respect to such clinical trial (or the results thereof) or the Collaboration Compound or Licensed Product used in such clinical trial, unless such comments are unreasonable.

(b) In addition to each Party's rights and obligations under clause (a):

(i) SANOFI-AVENTIS shall provide MERRIMACK, if feasible, with reasonable advance notice of any material meeting or substantive telephone conference with the FDA, MHLW or EMEA relating to Collaboration Compounds or Licensed Products; and

(ii) As to any human clinical trial for a particular Collaboration Compound or Licensed Product for a given indication conducted or to be conducted by MERRIMACK under the Global Development Plan, MERRIMACK shall have the right to attend and participate in any such material meeting or material conference call with such Regulatory Authorities relating to such clinical trial (or the results thereof) or the Collaboration Compound or Licensed Product used in such clinical trial.

(c) Without limiting the generality of any of the foregoing in this Section 4.2, SANOFI-AVENTIS shall also promptly provide MERRIMACK with a copy of all material correspondence that SANOFI-AVENTIS (or its Affiliate or sublicensee) receives from, or submits to, any Regulatory Authorities in the Major Territories, including contact reports concerning conversations or substantive meetings, contact reports of all Regulatory Authority interactions concerning conversations or substantive meetings, all IND annual reports (including any equivalent filings outside the US), and cover letters of all agency submissions (it being understood that MERRIMACK may request, and shall then receive, copies of all attachments to any such cover letters) relating to any Collaboration Compound or Licensed Product. SANOFI-AVENTIS shall also provide MERRIMACK with any meeting minutes that SANOFI-AVENTIS prepares that reflect material communications with any Regulatory Authorities in the Major Territories regarding any Collaboration Compound or Licensed Product.

Section 4.3 Product Withdrawals and Recalls. If any Regulatory Authority (a) threatens, initiates or advises any action to remove any Licensed Product from the market in the Territory, or (b) requires or advises either Party or such Party's Affiliates or sublicensees to distribute a "Dear Doctor" letter or its equivalent regarding use of such Licensed Product in the Territory, then MERRIMACK or SANOFI-AVENTIS, as applicable, shall notify the other Party of such event within [**] Business Days (or sooner if required by applicable Law) after such Party becomes aware of the action, threat, advice or requirement (as applicable). The JSC will discuss and attempt to agree upon whether to recall or withdraw a Licensed Product in the Territory; provided, however, that if the Parties fail to agree within an appropriate time period or if the matter involves a safety issue that, in order to protect patient safety, does not allow for sufficient time for a discussion at the JSC level (in which event SANOFI-AVENTIS as the holder of the NDA for the Licensed Product at issue shall nonetheless provide advance notice and consultation with MERRIMACK to the maximum practical extent prior to making a decision), SANOFI-AVENTIS shall decide whether to recall or withdraw such Licensed Product in the Territory and shall undertake any such recall or withdrawal at its own cost and expense. If requested by SANOFI-AVENTIS, MERRIMACK shall reasonably cooperate with SANOFI-AVENTIS in such efforts to recall or withdraw such Licensed Product in the Territory.

Section 4.4 Pharmacovigilance; Safety Data Reporting. The collaboration between the Parties may involve exchanging safety information and adverse events for the Licensed Product(s). Therefore, the Parties agree to enter into negotiations to set up, if required, a detailed safety data exchange agreement (the "SDEA") in due time (i.e., prior to the start of clinical development by SANOFI-AVENTIS) to arrange the pharmacovigilance database transfer to SANOFI-AVENTIS (if applicable) and any future pharmacovigilance exchange between the Parties when relevant (e.g., in the case where Merrimack is sponsoring clinical studies or co-developing Licensed Product(s)). Each Party shall ensure, through its JDC representatives or designated personnel, that the competent pharmacovigilance groups or personnel from such Party begin to negotiate and establish the appropriate SDEA no later than [**] months before SANOFI-AVENTIS commences clinical development hereunder. The SDEA shall be negotiated in good faith between the pharmacovigilance departments of each Party. The SDEA shall define the roles and responsibilities of both Parties in terms of pharmacovigilance and define the detailed safety exchange required to permit compliance by both Parties with safety reporting

requirements to Regulatory Authorities and other entities in the respective Territories and ensure worldwide safety surveillance.

Section 4.5 Regulatory Compliance. Each Party agrees that in performing its obligations under this Agreement, (a) it shall comply in all material respects with all applicable FDA and other current international regulatory requirements and standards, including FDA's current Good Manufacturing Practices and Good Clinical Practices, and comparable foreign regulatory standards, and other applicable rules, regulations and requirements, and (b) it will not employ or use the services of any person that has been debarred under Section 306(a) or 306(b) of the Federal Food, Drug, and Cosmetic Act.

Article V
Commercialization; Co-Promotion

Section 5.1 Overview. Subject to MERRIMACK's Co-Promotion of Co-Promoted Products and the other terms and conditions of this Agreement, SANOFI-AVENTIS will have sole responsibility for the commercialization of Licensed Products in the Field in the Territory, including all costs and expenses relating thereto, and for booking sales of Licensed Products throughout the Territory.

Section 5.2 Commercialization Reports. With respect to each Licensed Product developed pursuant to this Agreement, commencing with the calendar year in which an application for Marketing Authorization is first filed with respect to such Licensed Product in any Major Territory, and for each subsequent calendar year thereafter, SANOFI-AVENTIS shall provide to MERRIMACK (through the JCC, if the JCC is in place) for MERRIMACK's review and comment, within [**] days following the end of each [**] month period during each calendar year during the Term, a written report setting forth in reasonable detail SANOFI-AVENTIS' and its Affiliates' and sublicensees' (a) activities and progress during such preceding [**] month period related to the commercialization of Collaboration Compounds and Licensed Products, including information concerning First Commercial Sale, achievement of sales level event milestones, and the territories (by each Major Territory and the rest of the world) in which the foregoing activities are conducted, such information to be provided separately for each Therapeutic Product and Diagnostic Product, and (b) any planned commercialization activities in the next [**] month period, including expected timelines. For purposes of clarity, this Section 5.2 shall remain in effect regardless of any opt-out, waiver or termination of Co-Promotion rights with respect to Co-Promoted Product(s) by MERRIMACK hereunder.

Section 5.3 Co-Promotion Right; MERRIMACK Election to Opt-Out.

(a) MERRIMACK shall have the right to participate in the Co-Promotion of any Therapeutic Product in the USA until such Therapeutic Product is permanently discontinued or no longer sold in the USA, which Co-Promotion right shall automatically include the right to Co-Promote any companion Diagnostic Product for such Therapeutic Product (such Therapeutic Product, together with any companion Diagnostic Product, the "Co-Promoted Product"); provided, that MERRIMACK may elect to opt out of Co-Promoting a particular Co-Promoted Product by providing written notice to SANOFI-AVENTIS at least [**] months prior to the planned US Filing Date for such Co-Promoted Product established by the JSC (the "Co-

Promotion Opt-Out Period"), based on the most recent planned US Filing Date made available to MERRIMACK for such Co-Promoted Product.

(b) If MERRIMACK elects to opt out of Co-Promoting any Co-Promoted Product within the Co-Promotion Opt-Out Period, then MERRIMACK shall have no further right to participate in the Co-Promotion of any Co-Promoted Product in the USA (for clarity, and notwithstanding anything herein to the contrary, MERRIMACK shall no longer have the right to Co-Promote any and all subsequent Co-Promoted Products in the USA, and any existing Co-Promoted Products, even those with respect to which MERRIMACK has not exercised its opt-out right or terminated Co-Promotion hereunder).

(c) If MERRIMACK does not exercise its right to opt out of Co-Promoting any Co-Promoted Product in the USA within the Co-Promotion Opt-Out Period, then:

(i) MERRIMACK shall be deemed to have waived its right to opt out of Co-Promoting such Co-Promoted Product in the USA (but without limiting MERRIMACK's right to terminate Co-Promotion of such Co-Promoted Product pursuant to Section 5.6); and

(ii) MERRIMACK shall use Commercially Reasonable Efforts to perform the Co-Promotion of such Co-Promoted Product(s), subject to and in accordance with the terms and conditions of this Agreement and the Commercialization Plan, including MERRIMACK's right to terminate Co-Promotion of such Co-Promoted Product pursuant to Section 5.6.

(d) From and after (i) any termination of MERRIMACK's right to Co-Promote Licensed Products hereunder, (ii) the expiration of the Co-Promote Term, or (iii) MERRIMACK's opt-out of Co-Promotion under this Section 5.3, MERRIMACK shall have no further obligation to pay any Marketing Costs (except for those Marketing Costs incurred before the date of such termination, expiration or opt-out) or to perform any Co-Promotion activities.

Section 5.4 Commercialization Plan; Performance of Co-Promotion Responsibilities.

(a) With respect to each Co-Promoted Product, unless and until MERRIMACK opts out of Co-Promotion of any Co-Promoted Product pursuant to Section 5.3 (in which case MERRIMACK shall no longer have the right to Co-Promote any Co-Promoted Product), or terminates Co-Promotion of such Co-Promoted Product pursuant to Section 5.6 (in which case MERRIMACK shall be deemed to have terminated Co-Promotion with respect to all Co-Promoted Products):

(i) The JCC shall prepare a Commercialization Plan to provide for the Co-Promotion of such Co Promoted Product(s) in the USA based on the best commercial interests of such Co-Promoted Product(s).

(ii) The Commercialization Plan shall address and provide for the following matters, among others, with respect to such Co-Promoted Product(s), based on the principles set forth on Exhibit D (such principles, subject to amendment from time to time by mutual agreement of the Parties, the "Co-Promotion Guidelines"):

(A) the annual budgeted total detailing effort for the USA;

(B) the methods of allocation of the total detailing effort between the Parties (for clarity the total detailing effort being borne for [**] percent ([**]%) by MERRIMACK and for [**] percent ([**]%) by SANOFI-AVENTIS); and

(C) the number and position of details and categories of professionals or institutions to be targeted, and the allocation of such professionals or institutions between the Parties.

(iii) The sales management teams from each Party shall cooperate in good faith to coordinate detailing activities in order to maximize product sales by, for example, maximizing geographic coverage in the USA, eliminating unnecessary duplication, and enhancing market penetration. Each Party shall use Commercially Reasonable Efforts to perform those tasks and responsibilities assigned to it in the Commercialization Plan with respect to each Co-Promoted Product, and in accordance with applicable Laws.

(iv) Each Party shall be responsible for staffing, supervising and compensating (including incentives) its own sales personnel, and for all costs associated with such activities, including internal costs and out-of-pocket expenses related to training (collectively, "Sales Force Costs").

(v) In an effort to provide consistency in the promotion of the Co-Promoted Product(s), (A) the respective sales personnel of both Parties shall undergo a common training, under the leadership and supervision of SANOFI-AVENTIS (for clarity the direct costs thereof being borne [**]% by MERRIMACK and [**]% by SANOFI-AVENTIS) and (B) the Parties will, to the extent permitted by applicable Laws, seek to harmonize the compensation (including incentives) granted to their respective sales personnel engaged in Co-Promotion of Co-Promoted Products.

(vi) SANOFI-AVENTIS shall be responsible for development of product-specific training materials, with input from MERRIMACK, and each Party shall use the same training materials for its respective sales personnel.

(vii) During the Co-Promote Term, SANOFI-AVENTIS shall be responsible for [**] percent ([**]%) and, subject to Section 8.4(e)(ii)(B), MERRIMACK shall be responsible for [**] percent ([**]%) of the total direct and identifiable medical affairs, marketing and promotion costs for each Co-Promoted Product in the USA, including (A) costs of developing product-specific training materials for the USA, and (B) costs incurred in the USA for phase IV clinical trials, but excluding all internal overhead and administrative costs and expenses (such marketing and promotion costs, collectively, "Marketing Costs"). For clarity, as to any Co-Promoted Product, phase IV clinical trial means a clinical trial of such Co-Promoted Product initiated after receipt of Marketing Authorization from the FDA for the Co-Promoted Product, but excluding any clinical trial conducted as a condition to the granting of Marketing Authorization by the FDA or any other Regulatory Authority.

(b) Neither Party shall, directly or indirectly, hire or attempt to hire any individual who is a member of the other Party's sales force and engaged in Co-Promotion activities pursuant to this Agreement while the Parties are Co-Promoting any Co-Promoted Product; provided, however, that nothing in this Section 5.4(b) shall prevent a Party from engaging in soliciting activities of a general nature (not directed at any particular individual), such as advertisements in a newspaper or posting of job opportunities.

(c) The Parties acknowledge that MERRIMACK's right to Co-Promote Licensed Products in the USA is of a personal nature, and consequently the Parties agree that (i) except as permitted in Section 16.2 (but subject to clause (iii) of this Section 5.4(c)), MERRIMACK may not assign to any Third Party its right to Co-Promote any Licensed Product hereunder, (ii) MERRIMACK shall not subcontract any of its Co-Promotion obligations (and in particular shall not utilize the services of a contract marketing organization or otherwise utilize sales force personnel provided by a Third Party), without SANOFI-AVENTIS's prior written consent and (iii) in case of a change of control of MERRIMACK in which MERRIMACK becomes an Affiliate of a competitor (as defined below) of SANOFI-AVENTIS or an assignment of this Agreement by MERRIMACK (as permitted in accordance with Section 16.2) to a competitor (as defined below) of SANOFI-AVENTIS, MERRIMACK's right to Co-Promote Licensed Product(s) hereunder shall immediately terminate (i.e., if at the date of such change of control or permitted assignment MERRIMACK is not yet conducting any Co-Promotion of Licensed Product(s), MERRIMACK shall have no right to do so thereafter and if at the time of such change of control or permitted assignment MERRIMACK is conducting Co-Promotion of Licensed Product(s), then upon SANOFI-AVENTIS' request, MERRIMACK shall cease to conduct such Co-Promotion). For the purpose of this clause, "competitor" means any person or entity that, as of the time of the change of control of MERRIMACK (or of the permitted assignment), either (y) is one of the [**] largest worldwide oncology companies as of December 31 of the most recently completed calendar year as measured by oncology product sales (or is controlling, controlled by or under common control with a person or entity that meets the criteria described in this clause (y)), or (z) is engaged in clinical development or commercial sale of a Competing Product (or is controlling, controlled by or under common control with a person or entity that meets the criteria described in this clause (z)).

(d) For purposes of clarity, from and after MERRIMACK's exercise of its right to opt out of Co-Promotion of any Co-Promoted Product pursuant to Section 5.3, or MERRIMACK's termination of Co-Promotion of any Co-Promoted Product pursuant to Section 5.6, (i) MERRIMACK shall have no further obligations with respect to the Co-Promotion of any and all Licensed Products, and (ii) SANOFI-AVENTIS shall be solely responsible for all sales, marketing and other commercialization activities with respect to any and all Licensed Products throughout the Territory, and all costs and expenses associated therewith.

Section 5.5 Complaints.

(a) With respect to each Co-Promoted Product, unless and until MERRIMACK exercises its right to opt out of Co-Promotion of any Co-Promoted Product pursuant to Section 5.3, or terminates Co-Promotion of any Co-Promoted Product pursuant to Section 5.6, the JCC will develop and implement, and the Parties shall abide by:

(i) a customary policy for handling complaints that may be made, alleged or threatened by a Third Party with respect to the use of any promotional, advertising, patient information, communication and educational materials by a Party relating to such Co-Promoted Product in the USA; and

(ii) a customary policy for handling and investigating complaints made, alleged or threatened by a Third Party with respect to the manufacturing, handling or storage of such Co-Promoted Product.

(b) SANOFI-AVENTIS shall be responsible for handling all complaints with respect to all Co-Promoted Products, and all costs and expenses associated therewith.

Section 5.6 Termination of Co-Promotion Rights. Unless and until MERRIMACK opts out of Co-Promoting any Co-Promoted Product pursuant to Section 5.3, MERRIMACK shall be obligated to perform its Co-Promotion obligations with respect to all Licensed Products until at least the [**] anniversary of the First Commercial Sale of the first Co-Promoted Product in the USA; provided, however, that (in the case where MERRIMACK has not elected to opt out of Co-Promoting any Co-Promoted Product) MERRIMACK shall have the right to terminate its Co-Promotion obligations with respect to all Co-Promoted Products effective any time on or after the [**] anniversary of the First Commercial Sale of the first Co-Promoted Product in the USA by providing to SANOFI-AVENTIS at least [**] days prior written notice to SANOFI-AVENTIS (for clarity, such termination shall apply to all Licensed Products marketed in the USA).

Section 5.7 Product Labeling. To the extent permitted under applicable Laws:

(a) all Licensed Products shall carry the SANOFI-AVENTIS name and logo on the product label and shall state that the Licensed Product is licensed from MERRIMACK; and

(b) all written promotional materials associated with each Licensed Product shall indicate that the Licensed Product was licensed from MERRIMACK.

Article VI
Diligence; Exclusivity; [**]

Section 6.1 Diligence Obligations. SANOFI-AVENTIS shall use Commercially Reasonable Efforts to research, develop and obtain all necessary Regulatory Approvals for, and, upon receipt of such Regulatory Approvals, to commercialize at least one (1) Therapeutic Product and at least one (1) companion Diagnostic Product for such Therapeutic Product in each of the Major Territories. SANOFI-AVENTIS shall be deemed to have used Commercially Reasonable Efforts hereunder with respect to its development and commercialization activities with respect to a Licensed Product in the EU if SANOFI-AVENTIS uses Commercially Reasonable Efforts to develop and commercialize such Licensed Product in any [**] or more of the Major EU Countries.

Section 6.2 Exclusivity.

(a) During the Exclusivity Period, neither Party nor any of its Affiliates shall, by itself or through, with or on behalf of any Third Party, undertake the clinical development, manufacture of commercial quantities, or commercialization anywhere in the Territory of any monoclonal antibody or standalone single antibody fragment, the primary molecular target of which is ErbB3, for use in the Field (a "Competing Product"), other than pursuant to this Agreement; provided, however, that this Section 6.2(a) shall not in any way limit an Affiliate of a Party that controls such Party (a "Parent") from conducting any of the foregoing activities (either directly or through Affiliates other than the Party) as to a Competing Product that was the subject of a research, development or commercialization program initiated by the Parent prior to the date that the Parent became an Affiliate of such Party, provided that, if requested by SANOFI-AVENTIS, the Parent will provide SANOFI-AVENTIS, subject to confidentiality and non-use obligations of SANOFI-AVENTIS, with reasonable evidence substantiating the pre-existing nature of such program.

(b) In the event that either Party, or any of its Affiliates, commits a breach of the exclusivity provision set forth in clause (a) above at any time during the Exclusivity Period, without limiting any other rights or remedies that the other Party may have, in contract, law or in equity, the breaching Party and its Affiliates shall be prohibited from pursuing the clinical development, commercial manufacture or commercialization of any Competing Product which was the subject of the activity(ies) constituting such breach, after the end of the Exclusivity Period for the remainder of the Term.

Section 6.3 [**]. MERRIMACK hereby [**] to SANOFI-AVENTIS [**] on the terms and conditions set forth in this Section 6.3.

(a) If MERRIMACK [**] with a [**] (other than [**] and other [**] to which MERRIMACK does not [**] to such [**] to [**] and [**] in [**] and [**] (the [**], MERRIMACK shall [**] of [**] to SANOFI-AVENTIS and SANOFI-AVENTIS shall [**] MERRIMACK [**] within [**] days [**] as to whether SANOFI-AVENTIS [**] in [**]. Such [**] from MERRIMACK shall include a [**] of the [**] in MERRIMACK's possession with respect to the [**], to allow SANOFI-AVENTIS to [**]

(b) If, before the [**] of the [**], SANOFI-AVENTIS indicates that it is [**] the [**], the Parties shall [**] to [**] whether [**] as to the [**] on [**]

(c) If:

(i) SANOFI-AVENTIS does not [**] of the [**] that it is [**] in [**];

(ii) SANOFI-AVENTIS [**] before the [**] of the [**] that it has [**] in the [**]; or

(iii) SANOFI-AVENTIS [**] such [**] before the [**] of the [**] but the Parties are [**] with respect to the [**] within [**] days following [**] from SANOFI-AVENTIS in accordance with Section 6.3(a) that it is [**] in [**];

then, except as otherwise set forth in clause (d) below, SANOFI-AVENTIS's [**] to [**] of, or [**] with respect to, the [**] with MERRIMACK under this Section 6.3 [**] and have [**], and MERRIMACK shall be [**] and [**] relating to the [**] with any [**].

(d) In the event that the Parties are [**] with respect to the [**] within the [**] after [**] during the [**] pursuant to clause (c)(iii) above, and MERRIMACK, within the

[**] month period [**] with respect to the [**] that are [**], to [**] than the [**] last [**] during the [**] with respect to the [**], then MERRIMACK shall [**] to SANOFI-AVENTIS and SANOFI-AVENTIS shall [**] with MERRIMACK with respect to the [**]. If SANOFI-AVENTIS [**] with MERRIMACK with respect to the [**] on [**] to MERRIMACK within [**] days following MERRIMACK's [**] to SANOFI-AVENTIS of [**], SANOFI-AVENTIS's [**] of, or [**] with respect to, the [**] with MERRIMACK under this Section 6.3 shall [**] and [**], and MERRIMACK shall be [**] and [**] with any [**].

(e) If the [**] consists of [**] that include [**], then SANOFI-AVENTIS's [**] to [**] to [**] under this Section 6.3 shall apply only with respect to the [**], and [**] by MERRIMACK to a [**] to [**]. However if the [**] does [**] in [**], then SANOFI-AVENTIS' [**] to [**] to [**] under this Section 6.3 shall [**] MERRIMACK [**] in [**] in [**] as to which MERRIMACK has [**] SANOFI-AVENTIS of a [**].

For clarity, if the [**] consists of an [**] that [**] in a [**], then SANOFI-AVENTIS' [**] to [**] under this Section 6.3 shall apply thereafter [**] MERRIMACK [**] including [**] in [**] that [**] in other [**] as to which MERRIMACK [**] SANOFI-AVENTIS of a [**].

Article VII
Grant of Licenses

Section 7.1 MERRIMACK License Grants.

(a) Grant. Subject to the terms and conditions of this Agreement, MERRIMACK hereby grants to SANOFI-AVENTIS an exclusive, royalty-bearing right and license, with the right to grant sublicenses subject to Section 7.1(b), under Licensed Technology and Licensed Patent Rights, including MERRIMACK's rights to Joint Technology and Joint Patent Rights, to research, have researched, develop, have developed, make, have made, use, offer for sale, sell, have sold, import and export Collaboration Compounds and Licensed Products in the Field in the Territory.

(b) Sublicense Rights.

(i) Except as otherwise set forth in clause (ii) below and subject to the remainder of this Section 7.1(b), SANOFI-AVENTIS shall have the right to enter into sublicenses relating to the license granted in Section 7.1(a) to Third Parties or Affiliates with which SANOFI-AVENTIS has agreed to research, develop, manufacture or commercialize Collaboration Compounds and Licensed Products in the Territory, either jointly, in collaboration with or on behalf of SANOFI-AVENTIS.

(ii) Notwithstanding the foregoing, unless and until MERRIMACK opts out of Co-Promotion pursuant to Section 5.3, or terminates Co-Promotion pursuant to Section 5.6, with respect to any Co-Promoted Product in the USA, SANOFI-AVENTIS shall not have the right to enter into any sublicenses relating to any Co-Promoted Product in the USA without the prior written consent of MERRIMACK, not to be unreasonably withheld. In addition, during the Co-Promote Term for any Co-Promoted Product, SANOFI-AVENTIS shall not grant any rights to any Third Party or Affiliate in a manner that would undermine, conflict

with or restrict MERRIMACK's Co-Promotion rights with respect to such Co-Promoted Product in the USA, without the prior written consent of MERRIMACK.

(iii) Each sublicense granted by SANOFI-AVENTIS under this Section 7.1(b) shall be subject and subordinate to, and consistent with, the terms and conditions of this Agreement, and shall provide that any such sublicensee shall not further sublicense except on terms consistent with this Section 7.1(b). SANOFI-AVENTIS shall provide MERRIMACK with a copy of any sublicense granted pursuant to this Section 7.1(b) within thirty (30) days after the execution thereof. Such copy may be redacted to exclude confidential scientific information and other commercially-sensitive information required by a sublicensee to be kept confidential.

(iv) SANOFI-AVENTIS shall be responsible for the performance of its sublicensees, and shall ensure that any such sublicensees comply with all applicable provisions of this Agreement. In the event of a material default by any sublicensee under a sublicense agreement, SANOFI-AVENTIS will inform MERRIMACK and take such action, after consultation with MERRIMACK, which in SANOFI-AVENTIS's reasonable business judgment will address such default.

Section 7.2 SANOFI-AVENTIS License Grants. Subject to the terms and conditions of this Agreement, SANOFI-AVENTIS hereby grants to MERRIMACK and its Affiliates a non-exclusive, non-royalty bearing license in the Territory, without the right to grant sublicenses except as contemplated by the Global Development Plan or as otherwise authorized in writing by SANOFI-AVENTIS, under the SANOFI-AVENTIS Technology and SANOFI-AVENTIS Patent Rights, including SANOFI-AVENTIS's rights to Joint Technology and Joint Patent Rights, for the sole purpose of performing MERRIMACK's obligations under this Agreement, including conducting the activities assigned to MERRIMACK under the Global Development Plan and, unless and until MERRIMACK opts out of Co-Promotion pursuant to Section 5.3, or terminates Co-Promotion pursuant to Section 5.6, with respect to any Co-Promoted Product, for purposes of Co-Promoting such Co-Promoted Product(s) hereunder.

Section 7.3 Disclosure of MERRIMACK Technology. Commencing on the Effective Date and continuing during the Development Term, MERRIMACK (consistent with its applicable confidential disclosure obligations to Third Parties, if any) shall use reasonable best efforts to disclose to SANOFI-AVENTIS (a) all Licensed Technology specified in the Global Development Plan, and (b) any Licensed Technology not specified in the Global Development Plan that MERRIMACK reasonably believes to be necessary or useful for the research, development, manufacture or commercialization of Collaboration Compounds or Licensed Products hereunder. In particular, MERRIMACK shall use reasonable best efforts during such period to disclose or make available to SANOFI-AVENTIS all material data and information in its possession or otherwise under its Control, regarding Licensed Products, Licensed Patent Rights and Licensed Technology, all the foregoing as may be necessary or useful for the research, development, manufacture or commercialization of Collaboration Compounds or Licensed Products hereunder.

Section 7.4 Compliance with Third Party Agreements.

(a) The grants by MERRIMACK under Licensed Intellectual Property set forth in Section 7.1 include the sublicense of certain Licensed Intellectual Property that is not owned by MERRIMACK. SANOFI-AVENTIS' rights and licenses under, or with respect to, Licensed Intellectual Property, including any prosecution or enforcement undertaken by the Parties pursuant to Article IX, are limited to the rights granted by Third Party licensors to MERRIMACK under the Existing Third Party Licenses and are subject to all applicable restrictions, limitations and obligations imposed on MERRIMACK or its sublicensees in such Existing Third Party Licenses. SANOFI-AVENTIS shall comply, and cause its Affiliates and sublicensees to comply, with all such restrictions, limitations and obligations (including Paragraphs 4.2, 4.3, 5.1, 5.2, 8.1, 9.1-9.5, 10.1-10.5, 12.5, 13.7-13.9 and 14.10 of the PHS Agreement, a copy of which provisions is attached hereto as Exhibit E).

(b) During the Term, MERRIMACK shall use Commercially Reasonable Efforts to maintain the Existing Third Party Licenses in effect (and in particular shall use Commercially Reasonable Efforts not to commit any breach that would entitle the Third Party licensor to terminate an Existing Third Party License) and shall not terminate any Existing Third Party License without SANOFI-AVENTIS' prior written consent. In addition, during the Term, MERRIMACK shall promptly notify SANOFI-AVENTIS of any written notice of breach or termination received by MERRIMACK with respect to any Existing Third Party License and SANOFI-AVENTIS shall have the right to cure any such breach on MERRIMACK's behalf.

(c) Any sublicensee obligations required by any Existing Third Party License to be included in a sublicense thereunder, including without limitation any required provision making the applicable Third Party licensor a third party beneficiary of any sublicense thereunder, shall be deemed to be included in this Agreement, provided a copy of the relevant agreement has been provided to SANOFI-AVENTIS prior to the Execution Date.

(d) The license granted by MERRIMACK in Section 7.1 with respect to the Patent Rights licensed under the PHS Agreement are subject to rights reserved by the United States government as set forth in the PHS Agreement.

Section 7.5 Grant back of Licensed Intellectual Property. SANOFI-AVENTIS hereby grants to MERRIMACK a non-exclusive license, under Licensed Technology and Licensed Patent Rights, to the rights granted to SANOFI-AVENTIS under Section 7.1.(a), solely to the extent necessary for MERRIMACK to perform (i) the development obligations that may be assigned to it under the Global Development Plan and (ii) until and unless MERRIMACK opts out or terminates Co-Promotion with respect to any Co-Promotion Product, Co-Promotion activities pursuant to this Agreement.

Section 7.6 Trademark License. So long as MERRIMACK conducts Co-Promotion of Licensed Product(s), SANOFI-AVENTIS grants MERRIMACK a non-exclusive license to the trademark(s) utilized in marketing the Licensed Product(s) in the USA, to the extent necessary for MERRIMACK to conduct such Co-Promotion activities, such license to become effective on the date when MERRIMACK starts conducting Co-Promotion of Licensed Products and terminates automatically upon the date when MERRIMACK ceases, for whatever reason, to conduct Co-Promotion activities with respect to Licensed Products in the USA.

Section 7.7 No Implied Licenses. Except as explicitly set forth in this Agreement, neither Party grants to the other Party any license, express or implied, under its intellectual property rights.

Section 7.8 Section 365(n) of the Bankruptcy Code. All rights and licenses granted under or pursuant to any section of this Agreement are, and shall otherwise be deemed to be, for purposes of Section 365(n) of the Bankruptcy Code licenses of rights to "intellectual property" as defined under Section 101(35A) of the Bankruptcy Code. The Parties shall retain and may fully exercise all of their respective rights and elections under the Bankruptcy Code.

Article VIII
Financial Provisions

Section 8.1 Upfront Payment. SANOFI-AVENTIS shall pay MERRIMACK a one-time, non-refundable, non-creditable fee of Sixty Million Dollars (US$60,000,000) within seven (7) Business Days after the Effective Date, [**] Dollars (US$[**]) of which constitutes reimbursement for research and development costs previously incurred by MERRIMACK with respect to Collaboration Compounds and Licensed Products.

Section 8.2 Development and Regulatory Milestones.

(a) For each of the first and second distinct [**] indications, SANOFI-AVENTIS shall pay MERRIMACK up to a total of [**] Dollars (US$[**]) for achievement by Collaboration Compounds or Therapeutic Products of the following event milestones, resulting in a maximum potential payment of [**] Dollars (US$[**]) under this Section 8.2(a) if all of the following event milestones are achieved for the first two distinct [**] indications:

	Development and Regulatory Milestone Event for each of the First and Second Distinct [**] Indications	**Dollars [**]**
(i)	[**]	$ [**]
(ii)	[**]	$ [**]
(iii)	[**]	$ [**]
(iv)	[**]	$ [**]
(v)	[**]	$ [**]
(vi)	[**]	$ [**]
	For clarity: [**]	**$ [**]**
	For clarity: [**]	**$ [**]**

(b) For each of the third and fourth distinct [**] indications, SANOFI-AVENTIS shall pay MERRIMACK up to a total of [**] Dollars (US$[**]) for achievement by

Collaboration Compounds or Therapeutic Products of the following event milestones, resulting in a maximum potential payment of [**] Dollars (US$[**]) under this Section 8.2(b) if all of the following event milestones are achieved for both of the third and fourth distinct [**] indications:

	Development and Regulatory Milestone Event for each of the Third and Fourth Distinct [**] Indications	**Dollars [**]**
(i)	[**]	$ [**]
(ii)	[**]	$ [**]
(iii)	[**]	$ [**]
(iv)	[**]	$ [**]
(v)	[**]	$ [**]
(vi)	[**]	$ [**]
	For clarity: [**]	**$ [**]**
	For clarity: [**]	**$ [**]**

For clarity, "[**]" shall mean [**]. For example, [**] will be [**] of the [**] will be [**] of the [**] will be [**] within the [**], and so on. For clarity, (i) if a [**] in a [**] indication then [**] for such [**] indication [**] a new [**] indication for such [**] and (ii) a [**] in the same [**] indication (e.g. without limitation, [**] indication.

(c) As to each of the first, second, third and fourth [**] indications of Collaboration Compounds or Therapeutic Products, SANOFI-AVENTIS shall pay MERRIMACK [**] Dollars (US$[**]) upon the Successful Use (as defined below) of a Diagnostic Product in connection therewith, resulting in a maximum potential payment of [**] Dollars (US$[**]) under this Section 8.2(c) if Successful Use of a Diagnostic Product is achieved in all four indications. "Successful Use" of a Diagnostic Product means the use of a Diagnostic Product in a human clinical study in which the primary endpoint is achieved in a patient population that is stratified by the use of the Diagnostic Product, as determined in the protocol of the relevant study set forth in the Global Development Plan.

(d) Each milestone payment set forth in this Section 8.2 shall be payable by SANOFI-AVENTIS upon the achievement of the related milestone event by SANOFI-AVENTIS or any of its Affiliates or sublicensees, and SANOFI-AVENTIS shall provide notice to MERRIMACK promptly upon achievement of such milestone event and no later than within [**] days from such achievement. If any of the milestone events set forth in this Section 8.2 with respect to a PoC Phase II Study or Phase III Clinical Study is achieved by MERRIMACK or any of its Affiliates pursuant to the terms of this Agreement, the corresponding milestone payment(s) set forth in this Section 8.2 shall be payable by SANOFI-AVENTIS upon achievement of such milestone event by MERRIMACK or its Affiliates, and MERRIMACK shall provide notice to SANOFI-AVENTIS promptly upon achievement of such milestone event. Upon receipt of

SANOFI-AVENTIS' notice that a milestone event has been achieved, MERRIMACK shall prepare and provide SANOFI-AVENTIS with the corresponding invoice and SANOFI-AVENTIS shall pay MERRIMACK each such milestone payment within [**] days after receipt of such invoice.

(e) If any development event set forth in clause (i) or (ii) of either of the tables set forth in Section 8.2(a) or 8.2(b) above is not achieved due to SANOFI-AVENTIS or any of its Affiliates or sublicensees taking a development path that does not require the achievement of such development event (e.g., a PoC Phase II Study is not required for a given [**] indication), any milestone payment associated with such development event shall become payable when development has progressed beyond the point in development represented by such development event, it being understood that such progress shall be deemed to have been completed and the milestone set forth in clause (i) or (ii), as applicable, shall be deemed to have been achieved at the latest when development has reached the milestone set forth in clause (ii) or (iii), as applicable.

(f) If any event milestone payment set forth in either of the tables set forth in Section 8.2(a) or 8.2(b) above is paid by SANOFI-AVENTIS for a Therapeutic Product for a given [**] indication, and such Therapeutic Product is subsequently withdrawn from development for any reason, then such event milestone payment shall be creditable against the analogous event milestone payment that would be due upon the subsequent achievement of the same milestone event for the same [**] indication with another Therapeutic Product. For example, if (i) a PoC Phase II Study is initiated for a given Therapeutic Product for the first [**] indication, (ii) the $[**] event milestone payment is paid for such first [**] indication, (iii) the given Therapeutic Product for such [**] indication is withdrawn from development ("Failed Product"), and (iv) a PoC Phase II Study is subsequently initiated for another Therapeutic Product for the same [**] indication as the Failed Product, then no event milestone payment shall be due upon dosing of the first patient in such subsequent PoC Phase II Study for such other Therapeutic Product for the same [**] indication as the Failed Product. For clarity, if a payment set forth in Section 8.2(c) has been made by SANOFI-AVENTIS with respect to the Successful Use of a Diagnostic Product in connection with a particular [**] indication for a particular Collaboration Compound or Therapeutic Product and such Collaboration Compound or Therapeutic Product becomes a Failed Product, no payment will be due under Section 8.2(c) upon the Successful Use of the Diagnostic Product with another Collaboration Compound or Therapeutic Product for the same [**] indication.

(g) With respect to the regulatory events set forth in clauses (iv) and (vi) of the tables set forth in Sections 8.2(a) and 8.2(b) above, the Parties acknowledge that they anticipate that SANOFI-AVENTIS will be required to file an application for Marketing Authorization for Therapeutic Product(s) centrally with the EMEA. Notwithstanding the foregoing, in the event that SANOFI-AVENTIS files an application for Marketing Authorization for Therapeutic Product(s) with Regulatory Authorities of individual countries in the EU, or applicable Laws require such individual EU country filings, each of the regulatory events set forth in clauses (iv) and (vi) of the tables set forth in Sections 8.2(a) and 8.2(b) above shall be deemed to have been achieved upon the first filing for, or receipt of, Marketing Authorization, as applicable, in the first Major EU Country.

(h) For the avoidance of doubt, no event milestone payment shall be due with respect to any [**] indication beyond the fourth [**] indication to achieve any of the milestone events set forth in Sections 8.2(a), 8.2(b) and 8.2(c) above.

Section 8.3 Sales Milestones.

(a) As to each Therapeutic Product, SANOFI-AVENTIS shall pay MERRIMACK up to a total of Sixty Million Dollars (US$60,000,000) upon the first achievement of the following Net Sales milestones, on a Therapeutic Product-by-Therapeutic Product basis:

	Sales Milestone Event for Therapeutic Product	**Dollars [**]**
(i)	Total Worldwide Net Sales for such Therapeutic Product exceed $[**] in any four (4) consecutive calendar quarters	$ [**]
(ii)	Total Worldwide Net Sales for such Therapeutic Product exceed $[**] in any four (4) consecutive calendar quarters	$ [**]
(iii)	Total Worldwide Net Sales for Therapeutic Product exceed $[**] in any four (4) consecutive calendar quarters	$ [**]
	For clarity: TOTAL	**$ 60.0M**

(b) Each milestone payment set forth in Section 8.4(a) shall be payable by SANOFI-AVENTIS upon the achievement of the related milestone event by SANOFI-AVENTIS and its Affiliates or sublicensees, and SANOFI-AVENTIS shall provide notice to MERRIMACK promptly upon achievement of such milestone event. SANOFI-AVENTIS shall pay MERRIMACK each such milestone payment within [**] days of such achievement of the related milestone event.

(c) For purposes of clarity, more than one of the Net Sales milestones set forth above may be earned in the same four (4) consecutive calendar quarter period with respect to a Therapeutic Product. For example, if total worldwide Net Sales with respect to a given Therapeutic Product have not achieved any of the lower sales milestone thresholds set forth in clause (i) or (ii) of Section 8.3(a) above in any previous four (4) consecutive calendar quarter period, but total worldwide Net Sales with respect to such Therapeutic Product exceed $[**] in a subsequent four (4) consecutive calendar quarter period, then all three milestone payments, totaling $60 Million, payable upon achievement of the sales milestone thresholds set forth in clause (i), (ii) and (iii) of Section 8.3(a) above shall become payable to MERRIMACK hereunder.

Section 8.4 Royalties.

(a) Royalty Rate for ROW Territory. As to each Therapeutic Product sold in the ROW Territory, subject to adjustment under Section 8.4(d) and to the remainder of this Section 8.4, SANOFI-AVENTIS shall pay MERRIMACK royalties on aggregate annual (calendar year) Net Sales of such Therapeutic Product in the ROW Territory, at the incremental royalty rates set forth below, on a Therapeutic Product-by-Therapeutic Product basis:

Aggregate Annual Net Sales (in US Dollars) for such Therapeutic Product in the ROW Territory	**Incremental Royalty Rates as a Percentage (%) of Net Sales**
Portion of Calendar Year Net Sales up to and including $[**]	[**]%
Portion of Calendar Year Net Sales that exceeds $[**], up to and including $[**]	[**]%
Portion of Calendar Year Net Sales that exceeds $[**], up to and including $[**]	[**]%

Portion of Calendar Year Net Sales that exceeds $[**]	[**]%

For example, if aggregate annual Net Sales of a given Therapeutic Product in the ROW Territory for a given calendar year are US$[**], then the royalty payable to MERRIMACK on such Net Sales of such Therapeutic Product in the ROW Territory under this Section 8.4(a) for that year would be US$[**], which is calculated as follows: [**].

(b) Royalty Rate for USA unless MERRIMACK Opts Out or Terminates Co-Promotion. As to each Therapeutic Product that is a Co-Promoted Product sold in the USA, subject to adjustment under Section 8.4(d) and to the remainder of this Section 8.4, SANOFI-AVENTIS shall pay MERRIMACK royalties on aggregate annual (calendar year) Net Sales of such Co-Promoted Product in the USA, at the incremental royalty rates set forth below, on a Therapeutic Product-by-Therapeutic Product basis, unless and until MERRIMACK opts out of Co-Promotion pursuant to Section 5.3, or terminates Co-Promotion pursuant to Section 5.6, with respect to any Co-Promoted Product in the USA (in which event Section 8.4(c) and the royalty rates set forth therein shall apply):

Aggregate Annual Net Sales (in US Dollars) for Co-Promoted Product(s) in the USA if MERRIMACK has not Opted Out or Terminated Co-Promotion	**Incremental Royalty Rate as a Percentage (%) of Net Sales**
Portion of Calendar Year Net Sales up to and including $[**]	[**]%

Aggregate Annual Net Sales (in US Dollars) for Co-Promoted Product(s) in the USA if MERRIMACK has not Opted Out or Terminated Co-Promotion	**Incremental Royalty Rate as a Percentage (%) of Net Sales**
Portion of Calendar Year Net Sales that exceeds $[**], up to and including $[**]	[**]%
Portion of Calendar Year Net Sales that exceeds $[**], up to and including $[**]	[**]%
Portion of Calendar Year Net Sales that exceeds $[**]	[**]%

(c) Royalty Rate for USA if MERRIMACK Opts Out or Terminates Co-Promotion. As to each Therapeutic Product sold in the USA, subject to adjustment under Section 8.4(d) and to the remainder of this Section 8.4, SANOFI-AVENTIS shall pay MERRIMACK royalties on aggregate annual (calendar year) Net Sales of a Therapeutic Product in the USA, at the incremental royalty rates set forth below, on a Therapeutic Product-by-Therapeutic Product basis, from and after MERRIMACK's opt-out of Co-Promotion with respect to any Therapeutic Product pursuant to Section 5.3, or MERRIMACK's termination of Co-Promotion with respect to any Therapeutic Product pursuant to Section 5.6:

Aggregate Annual Net Sales (in US Dollars) for each Therapeutic Product in the USA if MERRIMACK Opts Out or Terminates Co-Promotion	**Incremental Royalty Rate as a Percentage (%) of Net Sales**
Portion of Calendar Year Net Sales up to and including $[**]	[**]%
Portion of Calendar Year Net Sales that exceeds $[**], up to and including $[**]	[**]%
Portion of Calendar Year Net Sales that exceeds $[**], up to and including $[**]	[**]%
Portion of Calendar Year Net Sales that exceeds $[**]	[**]%

(d) Adjustment of Royalty Rate for Diagnostic Products.

(i) If, at any time during the Royalty Term for a Therapeutic Product, on a Therapeutic Product-by-Therapeutic Product and country-by-country basis, a Diagnostic Product is actually utilized in connection with the treatment of solid tumor indications with a particular Therapeutic Product (for clarity "actually utilized" means, for this purpose, that the number of

uses of the Diagnostic Product in such country during the applicable royalty period is greater than or equal to [**] percent ([**]%) of the number of patients first prescribed that particular Therapeutic Product during such royalty period), the applicable royalty rates for such Therapeutic Product set forth under Section 8.4(a), 8.4(b) or 8.4(c) above will be increased by [**]% of Net Sales of such Therapeutic Product during the applicable royalty period (i.e. if during any royalty period the Diagnostic Product is not actually utilized, the [**]% increase of the royalty rate shall not apply to Net Sales of the Therapeutic Product during that period).

(ii) SANOFI-AVENTIS shall be responsible for collecting and providing to MERRIMACK, with each quarterly royalty report, such information and data as are reasonably necessary to determine whether actual utilization (as described in Section 8.4(d)(i) above) has occurred, and for including in any licenses of rights to, and distribution agreements for, Diagnostic Products such requirements as are necessary to ensure that such information and data can be collected by SANOFI-AVENTIS from sublicensees and distributors.

(iii) For example, if aggregate annual Net Sales of a Therapeutic Product that is a Co-Promoted Product in the USA is $[**] for calendar year 2014, and a Diagnostic Product is actually utilized (as described in Section 8.4(d)(i)) with respect to such Therapeutic Product during a calendar quarter in such calendar year, then the royalty rate applicable to Net Sales of the Co-Promoted Product achieved during such calendar quarter shall be [**].

(iv) If both the adjustment under this Section 8.4(d) and any reduction pursuant to the remainder of Section 8.4 apply, then the adjustment set forth in this Section 8.4(d) shall be applied before any reduction set forth in the remainder of Section 8.4 is applied.

(e) Royalty Term; Co-Promote Term.

(i) The applicable royalties payable to MERRIMACK under Sections 8.4(a), 8.4(b) and 8.4(c) (as the royalty rates applicable under each of the foregoing may be adjusted by Section 8.4(d) and/or reduced by Sections 8.4(f) and 8.4(g)) above shall be paid by SANOFI-AVENTIS on each Therapeutic Product,

on a Therapeutic Product-by-Therapeutic Product and a country-by-country basis, until the latest of (A) the time at which no Valid Claim exists as to such Therapeutic Product in such country, (B) the expiration of all data and regulatory exclusivity applicable to such Therapeutic Product pursuant to statute or regulation in such country, or (C) ten (10) years after the First Commercial Sale of such Therapeutic Product in such country (the "Royalty Term").

(ii) Notwithstanding the preceding Section 8.4(e)(i), if, upon expiration of the Royalty Term for a Co-Promoted Product in the USA, (x) MERRIMACK is Co-Promoting Co-Promoted Product(s), and (y) [**]% Market Erosion (as defined in Section 8.4(g)(i)) attributable to Generic Products in the USA has not occurred, then:

(A) The applicable royalties payable to MERRIMACK under Section 8.4(b) (as the royalty rates applicable thereunder may be adjusted by Section 8.4(d) and as reduced by Section 8.4(f) (for clarity, it being acknowledged by the Parties that the [**]%

reduction provided for in Section 8.4(f) will apply)) above shall continue to be paid by SANOFI-AVENTIS on such Co-Promoted Product in the USA thereafter from such expiration of the Royalty Term for such Co-Promoted Product, on a Co-Promoted Product-by-Co-Promoted Product basis, until such time as (x) such Co-Promoted Product is permanently discontinued or no longer sold in the USA, (y) MERRIMACK terminates Co-Promotion pursuant to Section 5.6, or (z) [**]% Market Erosion attributable to Generic Products in the USA has occurred with respect to such Co-Promoted Product (collectively with the Royalty Term, as to Therapeutic Products in the USA, the "Co-Promote Royalty Term") (for clarity, it being acknowledged by the Parties that upon the expiration of the Co-Promote Royalty Term for such Co-Promoted Product no further royalties shall be payable in respect of Net Sales of such Co-Promoted Product in the USA, although clause (B) below shall be applicable in the circumstances specified therein); and

(B) If the Co-Promote Royalty Term expires with respect to a Co-Promoted Product as a result of the occurrence of a [**]% Market Erosion attributable to Generic Product(s) in the USA, but (x) MERRIMACK is Co-Promoting Co-Promoted Product(s) at such time and (y) MERRIMACK has not terminated Co-Promotion pursuant to Section 5.6, then [**] percent ([**]%) of MERRIMACK's [**]% share of Marketing Costs and [**] percent ([**]%) of MERRIMACK's Sales Force Costs (all the foregoing costs to the extent they are solely incurred with respect to the Co-Promoted Product as to which [**]% Market Erosion occurs, it being understood that if at such time MERRIMACK is Co-Promoting other Co-Promoted Products which do not experience [**]% Market Erosion, this Section 8.4(e)(ii)(B) shall not apply to such other Co-Promoted Products) shall be reimbursed by SANOFI-AVENTIS after such expiration of the Co-Promote Royalty Term until such Co-Promoted Product is permanently discontinued or no longer sold in the USA or MERRIMACK terminates Co-Promoting pursuant to Section 5.6 (collectively with the Co-Promote Royalty Term, the "Co-Promote Term"); provided that, such costs are incurred in accordance with the applicable Commercialization Plan for the USA that has been approved by the JCC (including the budget included therein). For clarity, Section 8.6(b) shall apply to such costs.

(iii) If MERRIMACK terminates Co-Promotion of any Therapeutic Product pursuant to Section 5.6 resulting in the termination of Co-Promotion in the USA, but the Royalty Term (as set forth in Section 8.4(e)(i)) for such Therapeutic Product remains in effect at the time of such termination, then applicable royalties shall be payable to MERRIMACK under Section 8.4(c) (as the royalty rates applicable thereunder may be adjusted by Section 8.4(d) and/or reduced by Sections 8.4(f) and 8.4(g)) for such Therapeutic Product, on a Therapeutic Product-by-Therapeutic Product basis, for the remainder of such Royalty Term.

(f) Reduction for Lack of Patent Coverage and Regulatory Exclusivity. Notwithstanding anything in Section 8.4(a), 8.4(b) or 8.4(c) to the contrary, if no Valid Claim exists as to a Therapeutic Product in a country and no data or regulatory exclusivity is applicable to such Therapeutic Product pursuant to statute or regulation in such country, the royalty rate for such Therapeutic Product in such country shall be reduced to [**] percent ([**]%) of the applicable royalty rate set forth in Section 8.4(a), 8.4(b) or 8.4(c).

(g) Reduction for Generic Competition.

(i) If one or more Generic Products exist with respect to a Therapeutic Product and such Generic Product(s) is(are) marketed and sold in a given country by one or more Third Parties during any calendar quarter during the Royalty Term or the Co-Promote Royalty Term, as applicable, and Net Sales of such Therapeutic Product during such calendar quarter have decreased by [**] percent ([**]%) or more, but less than [**] percent ([**]%) ("[**]% Market Erosion"), relative to Net Sales of such Therapeutic Product in such country during the calendar quarter immediately prior to the calendar quarter during which such Generic Product(s) is(are) first marketed and sold in such country (as such, the "Baseline Net Sales"), then the royalty rate for such Therapeutic Product in such country, on a Therapeutic Product-by-Therapeutic Product and country-by-country basis, shall be reduced to [**] percent ([**]%) of the applicable royalty rate set forth in Section 8.4(a), 8.4(b) 8.4(c) or 8.4(f).

(ii) If one or more Generic Products exists with respect to a Therapeutic Product and such Generic Product(s) is(are) marketed and sold in a given country by one or more Third Parties during any calendar quarter during the Royalty Term or Co-Promote Royalty Term, as applicable, and Net Sales of such Therapeutic Product during such calendar quarter have decreased by fifty percent ([**]%) or more ("[**]% Market Erosion") relative to the Baseline Net Sales of such Therapeutic Product, then the royalty rate for such Therapeutic Product in such country, on a Therapeutic Product-by-Therapeutic Product and country-by-country basis, shall be reduced to [**] percent ([**]%).

(iii) For purposes of clarity, if Generic Product(s) with respect to a Therapeutic Product are no longer marketed and sold in a given country, or Net Sales of the Therapeutic Product in a given country for any calendar quarter reaches a level that is greater than [**] percent ([**]%) of the Baseline Net Sales, then any reduction in royalty rate under this Section 8.4(g) shall no longer apply as long as Net Sales of that Therapeutic Product reach a level greater than [**] percent ([**]%) of the Baseline Net Sales.

(h) Third Party Licenses.

(i) Subject to Sections 8.4(h)(ii) and 8.4(h)(iii), (x) SANOFI-AVENTIS shall reimburse MERRIMACK for the [**], that become payable after the Effective Date, of all Existing Third Party Licenses and (y) SANOFI-AVENTIS shall be responsible for the [**], of all Third Party licenses (for clarity excluding licenses for Listed Third Party Patents) entered into by SANOFI-AVENTIS with Third Parties after the Effective Date that are necessary so as not to infringe any Third Party Patent Rights in the manufacture, use, offer for sale, sale or importation of Collaboration Compounds or Licensed Products hereunder (each such arrangement, other than with respect to any Listed Third Party Patent, a "Third Party License", and the [**], of all such Third Party Licenses as set forth in clauses (x) and (y), excluding costs related to licenses for Listed Third Party Patents, "Third Party License Costs"). The Parties agree that SANOFI-AVENTIS shall take the lead in negotiating and entering into any Third Party Licenses after the Effective Date, provided that [**] percent ([**]%) of the Third Party License Costs directly paid by SANOFI-AVENTIS to the applicable licensors shall be subject to deduction by SANOFI-AVENTIS pursuant to Section 8.4(h)(iii).

(ii) Notwithstanding the foregoing, as between the Parties, MERRIMACK shall take the lead in negotiating and entering into appropriate licensing

arrangements for the Listed Third Party Patents, and shall be solely responsible for [**]. MERRIMACK shall keep SANOFI-AVENTIS reasonably informed of the status of such negotiations. If MERRIMACK determines that, despite MERRIMACK's good faith efforts, MERRIMACK is or will likely be unable to successfully negotiate and enter into appropriate licensing arrangements for any Listed Third Party Patent(s), or MERRIMACK otherwise determines to terminate efforts to negotiate licensing arrangements for any Listed Third Party Patent(s), MERRIMACK shall notify SANOFI-AVENTIS thereof and SANOFI-AVENTIS shall have the right to assume responsibility for negotiating and entering into appropriate licensing arrangements for such Listed Third Party Patent(s), in which event SANOFI-AVENTIS shall use comparable Commercially Reasonable Efforts to negotiate and enter into such licensing arrangements on the most favorable financial terms possible [**] resulting from such licensing arrangements, provided however that [**] (so that all such costs are ultimately borne by [**] as if [**] has entered itself into such licensing arrangements for such Listed Third Party Patent(s)).

(iii) SANOFI-AVENTIS may deduct from any royalties that are subsequently due to MERRIMACK under this Agreement, on a Therapeutic Product-by-Therapeutic Product and country-by-country basis, up to [**] percent ([**]%) of any Third Party License Costs actually paid by SANOFI-AVENTIS pursuant to Section 8.4(h)(i) above, either as a reimbursement to MERRIMACK with respect to Existing Third Party Licenses or directly to SANOFI-AVENTIS's Third Party licensor(s), as the case may be.

(i) Limitation on Aggregate Deduction.

(i) Notwithstanding anything in this Agreement to the contrary, except as otherwise set forth in clause (ii) below, and subject to clause (iii) below, in no event shall the amount of any royalties payable to MERRIMACK pursuant to Section 8.4(a), 8.4(b), 8.4(c) or 8.4(f) (as the royalty rates applicable under each of the foregoing sections may be adjusted by Section 8.4(d)), as applicable, with respect to any Therapeutic Product in any country, on a Therapeutic Product-by-Therapeutic Product and country-by-country basis, for a given calendar quarter, be reduced to less than [**] percent ([**]%) of the amounts specified in Section 8.4(a), 8.4(b) , 8.4(c) or 8.4(f) (as the royalty rates applicable under each of the foregoing sections may be adjusted by Section 8.4(d)), as applicable, for the applicable calendar quarter, as a result of all reductions made under this Section 8.4 (it being understood that, as set forth in Section 8.4(i)(iii) below, no such limitation on aggregate reductions shall apply with respect to costs related to licensing arrangements for Listed Third Party Patents, which will be [**] directly to the applicable licensor if [**] has entered into a license with respect to the applicable Listed Third Party Patents (and definitively borne by [**]), or entirely invoiced by [**] to [**] has entered into a license with respect to the applicable Listed Third Party Patents).

(ii) If the reduction set forth in Section 8.4(g)(ii) as a result of a [**]% Market Erosion is one of the reductions that applies under this Section 8.4, the royalties with respect to any Therapeutic Product in any country, on a Therapeutic Product-by-Therapeutic Product and country-by-country basis, for a given calendar quarter, may be reduced to [**] percent ([**]%).

(iii) For clarity, costs related to licensing arrangements with respect to Listed Third Party Patents shall not be taken into consideration in calculating the limitation on aggregate deduction set forth in Section 8.4(i) and shall be borne as set forth in Section 8.4(h)(ii).

(j) Royalties Payable Only Once. The obligation to pay royalties is imposed only once with respect to the same unit of a Licensed Product.

(k) Royalty Reports and Payments. SANOFI-AVENTIS shall deliver to MERRIMACK, within [**] days after the end of each calendar quarter, reasonably detailed written accountings of sales of Diagnostic Products, Net Sales of Therapeutic Products, information and data with respect to actual utilization of Diagnostic Products which SANOFI-AVENTIS is obligated to provide MERRIMACK under Section 8.4(d)(ii), and royalties and sales milestone payments, if any, due to MERRIMACK, for such calendar quarter. Such quarterly reports shall indicate gross sales on a country-by-country and product-by-product basis, the deductions from gross sales used in calculating Net Sales and the resulting calculation of royalties and sales milestone payments. When SANOFI-AVENTIS delivers such accountings to MERRIMACK, SANOFI-AVENTIS shall also deliver all royalty payments due hereunder to MERRIMACK for the calendar quarter.

Section 8.5 Reconciliation of Marketing Costs. So long as MERRIMACK is Co-Promoting any Co-Promoted Product hereunder, within [**] days after the end of each calendar quarter during the applicable Co-Promote Term, each Party shall submit to the other Party a report setting forth the Marketing Costs (and in addition, as to MERRIMACK, MERRIMACK's Sales Force Costs if applicable pursuant to Section 8.4(e)(ii)(B)) it incurred in such calendar quarter with respect to Co-Promoted Product(s). Each report shall specify in reasonable detail all internal personnel costs at the FTE Rate, out-of-pocket costs and expenses, and other components relevant to the calculation of Marketing Costs. Within [**] days after receipt of such reports, the Parties shall confer and agree on whether a reconciliation payment is due from one Party to the other, and if so, the amount of such reconciliation payment, so that the Parties share Marketing Costs in accordance with Section 5.4(a)(vii). The Party required to pay such reconciliation payment shall submit such payment to the other Party within [**] days after the end of such [**] day period.

Section 8.6 Recordkeeping; Audit Rights.

(a) Audits by MERRIMACK. SANOFI-AVENTIS shall keep, and shall require its Affiliates and sublicensees to keep, complete and accurate records of the latest [**] years of sales of Diagnostic Products, information and data with respect to actual utilization of Diagnostic Products which SANOFI-AVENTIS is obligated to provide MERRIMACK under Section 8.4(d)(ii), Net Sales of Therapeutic Products to which royalties or sales milestones attach hereunder, and, unless and until MERRIMACK opts out of or terminates Co-Promotion with respect to any Co-Promoted Product hereunder, its Marketing Costs for Co-Promoted Product(s). For the sole purpose of verifying amounts payable to or by MERRIMACK hereunder, MERRIMACK shall have the right [**] at MERRIMACK's expense to retain an independent certified public accountant selected by MERRIMACK and reasonably acceptable to SANOFI-AVENTIS, to review such records in the location(s) where such records are maintained by SANOFI-AVENTIS, its Affiliates or its sublicensees upon reasonable notice and during regular

business hours and under obligations of confidence. Results of such review shall be made available to both MERRIMACK and SANOFI-AVENTIS. If the review reflects an underpayment of any amounts payable to MERRIMACK, such underpayment shall be remitted to MERRIMACK, within [**] days after the notification of the results by MERRIMACK to SANOFI-AVENTIS, together with interest calculated in the manner provided in Section 8.9. If the underpayment is equal to or greater than [**] percent ([**]%) of the amount that was otherwise due, SANOFI-AVENTIS shall pay all of the reasonable out of pocket expenses of such review. If the review reflects an overpayment of any amounts to MERRIMACK, the amount of such overpayment shall be refunded to SANOFI-AVENTIS within [**] days of such review.

(b) Audits by SANOFI-AVENTIS. MERRIMACK shall keep, and shall require its Affiliates and sublicensees to keep, complete and accurate records of the latest [**] years of any Manufacturing Costs incurred in the conduct of manufacturing activities hereunder, internal costs of MERRIMACK personnel at the FTE Rate and out-of-pocket costs and expenses incurred by MERRIMACK in the conduct of research, development and regulatory activities under the Global Development Plan, and, unless and until MERRIMACK opts out of or terminates Co-Promotion with respect to any Co-Promoted Product hereunder, its Marketing Costs for Co-Promoted Product(s). For the sole purpose of verifying amounts payable to or by SANOFI-AVENTIS hereunder, SANOFI-AVENTIS shall have the right [**] at

SANOFI-AVENTIS's expense to retain an independent certified public accountant selected by SANOFI-AVENTIS and reasonably acceptable to MERRIMACK, to review such records in the location(s) where such records are maintained by MERRIMACK, its Affiliates or its sublicensees upon reasonable notice and during regular business hours and under obligations of confidence. Results of such review shall be made available to both MERRIMACK and SANOFI-AVENTIS. If the review reflects an underpayment of any amounts payable to SANOFI-AVENTIS, such underpayment shall be remitted to SANOFI-AVENTIS, within [**] days after notification of the results by SANOFI-AVENTIS to MERRIMACK, together with interest calculated in the manner provided in Section 8.9. If the underpayment is equal to or greater than [**] percent ([**]%) of the amount that was otherwise due, MERRIMACK shall pay all of the reasonable out of pocket expenses of such review. If the review reflects an overpayment of any amounts to SANOFI-AVENTIS, the amount of such overpayment shall be refunded to MERRIMACK within [**] days after such review.

Section 8.7 Method of Payment. All amounts payable by a Party hereunder shall be paid by or on behalf of such paying Party in U.S. Dollars. With respect to sales of Therapeutic Products invoiced in United States Dollars, the royalties payable to MERRIMACK shall be expressed in United States Dollars. With respect to sales of Therapeutic Products invoiced in a currency other than United States Dollars, the royalties payable shall be expressed in their United States Dollar equivalent, calculated using the applicable conversion rates for buying United States dollars published by The Wall Street Journal (Eastern Edition) on the last Business Day of the calendar quarter to which the royalty report relates. All payments due to a Party hereunder shall be made by wire transfer directly to an account designated by such Party.

Section 8.8 Invoices. Unless otherwise expressly stated in this Agreement, MERRIMACK shall invoice SANOFI-AVENTIS, on a [**] basis with respect to clinical

development costs and expenses and on a [**] basis with respect to other costs and expenses, for costs or expenses that become due and payable to MERRIMACK hereunder, including Manufacturing Costs, internal costs of MERRIMACK personnel at the FTE Rate and out-of-pocket costs and expenses incurred by MERRIMACK in the conduct of MERRIMACK's activities under this Agreement, Third Party License Costs and patent prosecution costs, and SANOFI-AVENTIS shall pay MERRIMACK such invoiced amount within [**] days following receipt thereof. The foregoing shall apply reciprocally with respect to any costs invoiced by SANOFI-AVENTIS to MERRIMACK.

Section 8.9 Late Payments. Any payment under this Agreement that is not paid on or before the date such payment is due shall bear interest at the lesser of (a) [**] percentage points above the prime rate of interest of Citibank, N.A. as announced on the date such payment is due, or (b) the highest rate permitted by applicable Laws, calculated on the number of days such payments are overdue and compounded monthly. In addition, the Party responsible for paying shall reimburse the payee Party for all costs and expenses, including without limitation attorneys' fees and legal expenses, incurred in the collection of late payments, provided, that the foregoing shall not apply with respect to payments disputed in good faith by the paying Party unless the payee Party is successful in such dispute or the paying Party ceases to dispute such payments.

Section 8.10 Tax Withholding.

(a) All payments required under this Agreement shall be without any deduction or withholding for, or on account of, any tax or similar governmental charge imposed by any jurisdiction, unless such deduction or withholding is required by applicable laws or regulations. If the Party making a payment (for purposes of this Section 8.10, the "Paying Party") is so required to deduct or withhold, such Party will (i) promptly notify the other Party of such requirement, (ii) pay to the relevant authorities the full amount required to be deducted or withheld and (iii) promptly forward to the other Party an official report (or certified copy thereof) or other documentation reasonably acceptable to the other Party evidencing such payment to such authorities.

(b) The Parties shall reasonably cooperate in completing and filing documents required under the provisions of any applicable tax laws or under any other applicable law in connection with the making of any required tax payment or withholding payment, or in connection with any claim to a refund of or credit for any such payment.

(c) Prior to any payment by one Party to the other in a calendar year, the Party receiving the payment (for purposes of this Section 8.10, the "Receiving Party") shall provide the Paying Party with any relevant form required by the relevant tax authorities in order for the Receiving Party to attest its fiscal residence and accordingly obtain the application of the reduced withholding tax rate or the exemption from withholding tax, according to the relevant bilateral convention for the prevention of double taxation. At the request of the Receiving Party, the Paying Party will forward to the Receiving Party the applicable forms for completion. In the event the Receiving Party fails to return to the Paying Party such forms duly completed and signed before a payment date, the Paying Party will declare and pay withholding tax at the local common law rate applicable to the payments, and such tax will be deducted from the corresponding payment by the Paying Party to the Receiving Party. The Paying Party will remit

the withholding tax to the proper tax authority and proof of payment of such tax shall be secured and sent to the Receiving Party as evidence of such payment.

Section 8.11 Blocked Payments. In the event that, by reason of applicable Laws in any country, it becomes impossible or illegal for SANOFI-AVENTIS or its Affiliates or sublicensees, to transfer, or have transferred on its behalf, royalties or other payments to MERRIMACK, such royalties or other payments shall be deposited in local currency in the relevant country to the credit of MERRIMACK in a recognized banking institution designated by MERRIMACK or, if none is designated by MERRIMACK within a period of thirty (30) days, in a recognized banking institution selected by SANOFI-AVENTIS or its Affiliates or sublicensees, as the case may be, and identified in a notice in writing given to MERRIMACK. The foregoing shall apply reciprocally to any payment that would be due by MERRIMACK to SANOFI-AVENTIS hereunder.

Article IX
Intellectual Property Ownership, Protection and Related Matters

Section 9.1 Ownership of Inventions.

(a) Solely-Owned Inventions. Each Party shall exclusively own all right, title and interest in and to all inventions made or conceived solely by the employees, agents, consultants or contractors of such Party or its Affiliates in the course of performing its activities under this Agreement and without relying on any Confidential Information received from the other Party.

(b) Joint Inventions. All inventions made or conceived jointly by employees, agents and consultants of MERRIMACK or its Affiliates, and employees, agents, consultants or contractors of SANOFI-AVENTIS or its Affiliates, shall be owned jointly on the basis of each Party having an undivided interest in the whole ("Joint Inventions"). Each Party covenants that it will not subject any such Joint Technology or Joint Patent Rights to any lien, encumbrance, security interest and/or other imposition that would affect the other Party's title or right to use the Joint Technology or Joint Patent Rights or to sell or otherwise assign its rights thereunder without consent of the other Party, except as otherwise provided by the terms of this Agreement. Subject to the licenses granted herein and each Party's payment

obligations hereunder, each Party shall have the right to exploit such Joint Inventions without any duty to account to the other Party, provided that during the Term of this Agreement (i) MERRIMACK shall not be entitled to use (except as provided under this Agreement) or grant any rights to any Third Party for Joint Inventions in the Field in relation to Collaboration Compounds and Licensed Products for as long as they are subject, on a country-by-country basis, to the license granted by MERRIMACK to SANOFI-AVENTIS in Section 7.1 hereof, and (ii) neither Party shall use or grant rights to any Third Party for Joint Inventions in the Field in relation to any Competing Product.

(c) Inventorship. For purposes of determining the Parties' rights under this Agreement, the determination of inventorship shall be made in accordance with United States patent laws. In the event of any dispute regarding inventorship, if the Parties are unable to resolve the dispute, the Parties shall jointly engage mutually acceptable independent U.S. patent

counsel not regularly employed by either Party (or, if the Parties are unable to mutually agree on such patent counsel, the Washington, D.C. office of the AAA shall appoint such patent counsel) to resolve such dispute. The decision of such independent patent counsel shall be binding on the Parties with respect to the issue of inventorship.

Section 9.2 Prosecution and Maintenance of Patent Rights.

(a) Licensed Patent Rights Solely Controlled by Merrimack. Subject to any rights of and obligations to MERRIMACK's Third Party licensors with respect to Licensed Patent Rights not owned by MERRIMACK, (i) MERRIMACK shall use Commercially Reasonable Efforts to prepare, file and prosecute any patent applications and to maintain any patents within the Licensed Patent Rights (other than any Joint Patent Right), in MERRIMACK's name, and to control any interference, opposition and similar proceedings relating thereto, in the patent jurisdictions listed in Exhibit G, at MERRIMACK's expense (in particular MERRIMACK shall use best efforts not to miss any official nonextendable deadlines with respect to prosecution, and shall pay all applicable fees on or before the due date for payment to avoid that Licensed Patent Rights (other than Joint Patent Rights) lapse for absence of or delay in payment) and (ii) if requested by SANOFI-AVENTIS, MERRIMACK shall use Commercially Reasonable Efforts to prepare, file and prosecute any patent applications and to maintain any patents within the Licensed Patent Rights (other than Joint Patent Rights), in MERRIMACK's name, and to control any interference, opposition and similar proceedings relating thereto, in additional patent jurisdictions requested by SANOFI-AVENTIS that are not listed in Exhibit G, at SANOFI-AVENTIS' expense (it being agreed that MERRIMACK shall use best efforts not to miss any official nonextendable deadlines with respect to prosecution, and shall pay all applicable fees on or before the due date for payment to avoid that Licensed Patent Rights (other than Joint Patent Rights) lapse for absence of or delay in payment). Subject to any rights of and obligations to MERRIMACK's Third Party licensors with respect to Licensed Patent Rights not owned by MERRIMACK, MERRIMACK shall (x) inform and consult with SANOFI-AVENTIS regarding the preparation, filing, prosecution, defense and maintenance of all such patents, and shall give due consideration to any SANOFI-AVENTIS suggestions or recommendations and (y) to the extent permitted by applicable Laws, apply for any patent term extension or supplementary protection certificate for a Therapeutic Product or Diagnostic Product requested by SANOFI-AVENTIS.

(b) SANOFI-AVENTIS Patent Rights Solely Controlled by SANOFI-AVENTIS. SANOFI-AVENTIS shall have the exclusive right and option (but not the obligation), at its sole cost and expense, to prepare, file and prosecute any patent applications and to maintain any patents within SANOFI-AVENTIS Patent Rights (other than Joint Patent Rights) in SANOFI-AVENTIS's name, and to control any interference, opposition and similar proceedings relating thereto.

(c) Joint Patent Rights. SANOFI-AVENTIS, shall have the first right and option (but not the obligation) to file and prosecute any patent applications and to maintain any patents within the Joint Patent Rights in both Parties' names, and to control any interference, opposition and similar proceedings relating thereto. In the event that SANOFI-AVENTIS elects not to file, prosecute, or maintain, or elects to abandon any Joint Patent Right, or declines to control any related interference, opposition or similar proceedings, SANOFI-AVENTIS shall

give MERRIMACK reasonable written notice to this effect, sufficiently in advance to permit MERRIMACK, in its sole discretion and expense, to undertake such filing, prosecution and maintenance, or to control such interference, opposition or similar proceedings, without a loss of rights, and thereafter MERRIMACK may, upon written notice to SANOFI-AVENTIS and jointly in both Parties' names, file, prosecute and maintain such Joint Patent Rights and control such interference, opposition or similar proceedings. If required under applicable Law in order for the prosecuting Party to control any interference, opposition and similar proceedings relating to the Patent Prosecution of any Joint Patent Rights, the other Party shall join as a party to such interference, opposition or similar proceeding.

(d) Costs and Expenses. As from the Effective Date (and except for costs that SANOFI-AVENTIS has expressly and specifically agreed, in a separate document, to bear or reimburse), the Parties shall bear the costs of preparing, filing, prosecuting, and maintaining Patent Rights other than Joint Patent Rights in accordance with Sections 9.2(a) and 9.2(b) and each Party shall bear its own costs and expenses in preparing, filing, prosecuting, and maintaining Joint Patent Rights in accordance with Section 9.2(c).

(e) Cooperation. Each Party agrees to cooperate with the other with respect to the preparation, filing, prosecution and maintenance of patents and patent applications pursuant to this Section 9.2 ("Patent Prosecution"), subject to any rights of, and obligations to, MERRIMACK's Third Party licensors:

(i) the execution of all such documents and instruments and the performance of such acts as may be reasonably necessary in order to permit the other Party to continue any Patent Prosecution that such Party has elected not to pursue, as provided for in Section 9.2(c);

(ii) making its employees, agents and consultants reasonably available to the other Party (or to the other Party's authorized attorneys, agents or representatives), to the extent reasonably necessary to enable the prosecuting Party to undertake Patent Prosecution;

(iii) to provide (itself or through patent counsel) the other Party a copy of each proposed material correspondence pertaining to substantive Patent Prosecution on the merits with the United States Patent and Trademark Office ("USPTO"), the World Intellectual Property Office ("WIPO") or the European Patent Office ("EPO"), as well as providing draft copies of patent applications to be submitted to the USPTO or to the WIPO under the Patent Cooperation Treaty, or submitted to any patent office in the Territory in a form substantially different from that previously submitted to the USPTO or to the WIPO, reasonably in advance of any applicable filing or response deadline to allow the other Party to review and comment on the content of such proposed correspondence and advise the prosecuting Party as to the conduct of such Patent Prosecution, which comments and advice the prosecuting Party will not unreasonably decline to follow, provided that doing so is consistent with the goal of obtaining optimal patent coverage for Licensed Products;

(iv) to provide (itself or through patent counsel) the other Party with copies of all material correspondence pertaining to substantive Patent Prosecution on the merits with the USPTO, the WIPO or the EPO after its submission or receipt, as the case may be; and

(v) to seek patent term extensions, adjustments, and the like wherever available for the Licensed Patent Rights.

Section 9.3 Third Party Infringement.

(a) Notice. Each Party shall promptly report in writing to the other Party during the Term any (i) known or suspected infringement of any issued claims within the Licensed Patent Rights, or (ii) misappropriation of any of the Licensed Technology of which such Party becomes aware. In the event such known or suspected infringement or misappropriation involves the manufacture, use or commercialization of a product or product candidate that is or may be competitive with a Collaboration Compound or Licensed Product being developed or commercialized by SANOFI-AVENTIS hereunder ("Competitive Infringement"), the reporting Party shall provide the other Party with all available evidence supporting such infringement, suspected infringement, misappropriation or suspected misappropriation. Promptly after receipt of a notice of a Competitive Infringement, the Parties shall discuss in good faith the infringement and appropriate actions that could be taken to cause such infringement of Licensed Patent Rights or use of misappropriated Licensed Technology to cease.

(b) Enforcement. Subject to any rights of and obligations to MERRIMACK's Third Party licensors, SANOFI-AVENTIS shall have the first right to initiate a suit or take other appropriate action that it believes is reasonably required to protect (*i.e.*, prevent or abate actual or threatened misappropriation or infringement of, or otherwise enforce, in the best commercial interests of Licensed Products) the Licensed Intellectual Property (including Joint Patent Rights and Joint Technology) against any Competitive Infringement, at SANOFI-AVENTIS' sole control and expense. If SANOFI-AVENTIS fails to initiate a suit or take other appropriate action that it has the initial right to initiate or take to protect the Licensed Intellectual Property against any Competitive Infringement within [**] days (or such shorter period specified below in this Section 9.3(b) or in Section 9.6, if applicable) after becoming aware of the basis for such suit or action, then MERRIMACK may, in its discretion, initiate a suit or take other appropriate action that it believes is reasonably required to protect the Licensed Intellectual Property at issue. The [**] day period in the immediately preceding sentence shall be shortened as reasonably necessary to enable MERRIMACK to initiate a suit or take other appropriate action if, in the absence of such shortening, a loss of rights with respect to such suit or other action would occur (e.g., if a generic pharmaceutical maker files an abbreviated new drug application or analogous application for which the reference listed drug is a Licensed Product and, in order to obtain an automatic stay from the FDA with respect to the approval of such application, a patent infringement suit must be brought within a shorter period of time). The Party filing any such suit or taking any such action shall be responsible for all costs in connection therewith and, therefore, shall control all decision-making related to any such suit or action, subject to Section 9.3(c) below.

(c) Conduct of Actions. The Party initiating suit or action shall have the sole and exclusive right to select counsel for any suit initiated by it referred to in Section 9.3(b) above. If required under applicable Law in order for the initiating Party to initiate or maintain such suit or action, the other Party shall join as a party to the suit or action. Such other Party shall offer reasonable assistance to the initiating Party in connection therewith at no charge to the

initiating Party except for reimbursement of reasonable out-of-pocket expenses incurred in rendering such assistance. The Party filing any such suit or taking any such action shall provide the other Party with an opportunity to make suggestions and comments regarding such suit or action. Thereafter, the Party filing any such suit or taking any such action shall, to the extent permitted by applicable Law, keep the other Party promptly informed, and shall from time to time consult with such other Party regarding the status of any such suit or action and shall provide such other Party with copies of all material documents (i.e., complaints, answers, counterclaims, material motions, orders of the court, memoranda of law and legal briefs, interrogatory responses, depositions, material pre-trial filings, expert reports, affidavits filed in court, transcripts of hearings and trial testimony, trial exhibits and notices of appeal) filed in, or otherwise relating to, such suit or action. The Party not initiating such suit or action shall cooperate with the Party initiating such suit or action to the extent reasonably requested, and shall have the right to participate and be represented in any such suit by its own counsel at its own expense. Neither Party shall conduct any such suit or action in a manner that materially places at risk the scope or validity of any Licensed Patent Right without the prior written approval of the other Party, and neither Party shall settle or compromise any claim or proceeding relating to Licensed Intellectual Property without obtaining the prior written consent of the other Party, such consent not to be unreasonably withheld.

(d) Recoveries. With respect to any suit or action to protect Licensed Intellectual Property referred to in Section 9.3(b) above, any recovery obtained as a result of any such proceeding, by settlement or otherwise, shall be applied in the following order of priority:

(i) first, the Party initiating the suit or action with respect to Licensed Intellectual Property shall be reimbursed for all costs and expenses in connection with such proceeding paid by such Party and not otherwise recovered; and

(ii) second, any remainder shall be paid [**] percent ([**]%) to the Party initiating such suit or action and [**] percent ([**]%) to the other Party.

Section 9.4 Claimed Infringement. In the event that a Party becomes aware of any claim or threat of claim that the research, development, manufacture or commercialization of any Collaboration Compound or Licensed Product by MERRIMACK or SANOFI-AVENTIS hereunder infringes or misappropriates the intellectual property rights of any Third Party, such Party shall promptly notify the other Party. Each Party shall provide to the other Party copies of any notices it receives from Third Parties regarding any patent nullity actions, any declaratory judgment actions, any alleged infringement of Third Party Patent Rights or any alleged misappropriation of Third Party Know-How. Such notices shall be provided promptly, but in no event after more than [**] days following receipt thereof. In any such instance, the Parties shall cooperate in undertaking an appropriate course of action.

Section 9.5 Patent Invalidity Claim.

(a) If a Third Party at any time asserts a claim that any Licensed Patent Right is invalid or otherwise unenforceable ("Invalidity Claim"), whether as a defense in an infringement action brought by SANOFI-AVENTIS or MERRIMACK pursuant to Section 9.3 or in an action brought against SANOFI-AVENTIS or MERRIMACK under Section 9.4, including

any declaratory judgment action, the Parties shall cooperate with each other in preparing and formulating a response to such Invalidity Claim. Neither Party shall settle or compromise any Invalidity Claim without the consent of the other Party, which consent shall not be unreasonably withheld.

(b) If any Invalidity Claim is brought against SANOFI-AVENTIS or MERRIMACK in any new action (and not as a defense in any action brought by SANOFI-AVENTIS or MERRIMACK) asserting that any Therapeutic Patent Right is invalid or otherwise unenforceable, the Parties shall bear the costs of defending such Invalidity Claim in the same manner as they bear costs of Patent Prosecution pursuant to Section 9.2(d).

Section 9.6 Certification Under Drug Price Competition and Patent Restoration Act. If a Party becomes aware of any certification filed pursuant to (a) 21 U.S.C. §355(b)(2)(A)(iv) or 355(j)(2)(A)(vii)(IV), or any notice under any current or future provisions of United States Law relating to regulation or approval of biologics, or (b) any comparable Law under any other jurisdiction, including any amendment or successor statute to any of the foregoing clause (a) or (b), and such certification claims that any Licensed Patent Right or Joint Patent Right, in each case Covering a Collaboration Compound or Licensed Product in the Field, is invalid or otherwise

unenforceable, or that infringement will not arise from the manufacture, use, import or sale or offer of sale of a product by a Third Party (a "Paragraph IV Certification"), such Party shall promptly notify the other Party in writing within [**] Business Days after its receipt thereof.

Section 9.7 Patent Marking. SANOFI-AVENTIS agrees to comply with the patent marking statutes in each country in which Licensed Products are sold by SANOFI-AVENTIS, its Affiliates or sublicensees.

Article X
Confidentiality

Section 10.1 Confidential Information. All Confidential Information disclosed by a Party or any of its Affiliates to the other Party or any of its Affiliates during the Term shall not be used by the receiving Party or any of its Affiliates except in connection with the activities contemplated by this Agreement, shall be maintained in confidence by the receiving Party and its Affiliates (except to the extent disclosure is reasonably necessary for research, development, manufacture or commercialization of a Collaboration Compound or Licensed Product as contemplated hereunder, for the filing, prosecution and/or maintenance of Patent Rights for which such receiving Party is responsible, or to enforce the provisions of this Agreement), and shall not otherwise be disclosed by the receiving Party or its Affiliates to any Person that is not a Party or one of its Affiliates (except as set forth in the remainder of this Article X), without the prior written consent of the disclosing Party, except to the extent that the Confidential Information:

(a) was known or used by the receiving Party or any of its Affiliates prior to its date of disclosure to the receiving Party; or

(b) either before or after the date of the disclosure to the receiving Party hereunder is lawfully disclosed to the receiving Party or any of its Affiliates by sources other than the disclosing Party rightfully in possession of the Confidential Information; or

(c) either before or after the date of the disclosure to the receiving Party hereunder becomes published or generally known to the public through no fault or omission on the part of the receiving Party; or

(d) is independently developed by or for the receiving Party or any of its Affiliates without reference to or reliance upon the Confidential Information; or

(e) is required to be disclosed by the receiving Party to comply with applicable Laws, including the rules of the SEC or any stock exchange, or to defend or prosecute litigation or to comply with legal process, provided that the receiving Party provides prior written notice of such disclosure to the disclosing Party (to the extent feasible) and only discloses Confidential Information of the other Party to the extent necessary for such legal compliance or litigation purpose.

Section 10.2 Employee, Director, Consultant and Advisor Obligations. SANOFI-AVENTIS and MERRIMACK each agrees that it and its Affiliates shall provide Confidential Information received from the other Party only to the receiving Party's respective employees, directors, consultants, agents and advisors, and to the employees, directors, consultants, agents and advisors of the receiving Party's Affiliates, who have a need to know such Confidential Information to assist the receiving Party in fulfilling its obligations under this Agreement and who are bound by obligations of confidentiality and non-use that are at least as restrictive as those set forth in this Agreement. Each Party shall remain responsible for any failure by any of such Party's Affiliates, employees, directors, consultants, agents and advisors to treat such Confidential Information as required under Section 10.1.

Section 10.3 Publicity.

(a) Upon execution of this Agreement, the Parties shall each separately issue a press release announcing the execution of this Agreement, substantially in the form of Exhibit F-1 or Exhibit F-2 attached hereto, as applicable. Thereafter, SANOFI-AVENTIS may issue press releases consistent with its own internal policies, provided that, unless not feasible under the circumstances because of the need to comply with applicable Laws or stock exchange rules, SANOFI-AVENTIS shall provide MERRIMACK with a copy of any draft press release related to the activities contemplated by this Agreement at least [**] Business Days prior to its intended publication for MERRIMACK's review. MERRIMACK may provide SANOFI-AVENTIS with suggested modifications to the draft press release. SANOFI-AVENTIS shall consider in good faith MERRIMACK's suggestions in issuing such press release.

(b) MERRIMACK shall only issue press releases or make other public disclosures related to this Agreement or the Parties' activities contemplated by this Agreement (each such press release or public disclosure, a "Subject Disclosure"):

(i) that have been approved by SANOFI-AVENTIS (such approval not to be unreasonably withheld, conditioned or delayed);

(ii) if advised by counsel to issue such Subject Disclosure in order to comply with applicable Laws, including the disclosure rules of the U.S. Securities and Exchange Commission ("SEC") or a similar regulatory agency in a country other than the United States or of any stock exchange of other securities trading institution (for clarity such issuance is also subject to Section 10.3(c));

(iii) if the contents of such Subject Disclosure have previously been made public other than through a breach of this Agreement by MERRIMACK; or

(iv) to the extent that such Subject Disclosure describes one or more of the following (and subject to SANOFI-AVENTIS' prior written authorization, which shall not be unreasonably withheld, delayed or conditioned):

(A) the commencement, completion or "top-line" results of clinical studies of any Collaboration Compound or Licensed Product;

(B) the completion of patient enrollments for clinical studies;

(C) the achievement of any clinical, regulatory, development or sales level event milestone hereunder;

(D) the filing for or receipt of Marketing Authorization with respect to any Collaboration Compound or Licensed Product;

(E) the presence and participation at scientific or financial forums; and

(F) MERRIMACK's own development and commercialization activities with respect to Collaboration Compounds or Licensed Products hereunder, including the development of sales, marketing and medical infrastructure and management changes to support such development and commercialization activities.

(c) Unless not feasible under the circumstances because of the need to comply with applicable Laws or stock exchange rules, MERRIMACK shall provide SANOFI-AVENTIS with a draft Subject Disclosure at least [**] Business Days prior to its intended publication for SANOFI-AVENTIS's review. SANOFI-AVENTIS may provide MERRIMACK with suggested modifications to the draft Subject Disclosure. MERRIMACK shall consider in good faith SANOFI-AVENTIS's suggestions in issuing such Subject Disclosure.

Section 10.4 Other Disclosures. Notwithstanding anything in this Agreement to the contrary, each Party shall have the right to disclose Confidential Information and/or the terms of this Agreement (as applicable):

(i) to investors, potential investors, lenders, potential lenders, acquirers, potential acquirers, investment bankers and other Third Parties in connection with

financing, partnering and acquisition activities, solely under obligations of confidentiality and non-use that are at least as restrictive as those set forth in this Article X;

(ii) to sublicensees, potential sublicensees, collaborators, potential collaborators, and Third Party contractors for purposes of engaging in the research, development, manufacture or commercialization of Collaboration Compounds or Licensed Products as contemplated hereunder, solely under obligations of confidentiality and non-use that are at least as restrictive as those set forth in this Article X;

(iii) as required by applicable Laws, including rules of the SEC or similar regulatory agency in a country other than the United States or of any stock exchange or other securities trading institution. In the event that this Agreement shall be included in any report, statement or other document filed by either Party or an Affiliate of either Party with the SEC or similar regulatory agency in a country other than the United States or any stock exchange or other securities trading institution, such Party shall use, or shall cause such Party's Affiliate, as the case may be, to use, reasonable efforts to obtain confidential treatment from the SEC, similar regulatory agency, stock exchange or other securities trading institution of any financial information or other information of a competitive or confidential nature, and shall include in such confidentiality request such provisions of this Agreement as may be reasonably requested by the other Party.

Section 10.5 Publications.

(a) A Party seeking to publish or present scientific or technical data, results or other information with respect to any Collaboration Compound or Licensed Product (the "Publishing Party") shall provide the other Party and (if the JDC remains in place) the JDC with a copy of any proposed publication or presentation at least [**] days (or at least [**] days in the case of abstracts or oral presentations) prior to submission for publication by the Publishing Party or its Affiliates so as to provide such other Party with an opportunity to recommend any changes it reasonably believes are necessary to continue to maintain the Confidential Information disclosed by the other Party to the Publishing Party in accordance with the requirements of this Agreement or to not jeopardize the patentability of any results or data.

(b) If the non-Publishing Party notifies the Publishing Party that such publication or presentation, in the non-Publishing Party's reasonable judgment, (i) contains an invention for which such Party desires to obtain patent protection, or (ii) contains any Confidential Information of such Party, or could be expected to have an adverse effect on the commercial value of any Confidential Information disclosed by such Party to the Publishing Party, the Publishing Party shall delete such Confidential Information from the proposed publication or presentation and shall further delay such publication or presentation for a period reasonably sufficient to permit the timely preparation and filing of a patent application(s) on any invention disclosed in such publication or presentation (but no less than [**] days from the date of the non-Publishing Party's notice thereof).

(c) For as long as the JDC remains in place, the JDC shall be responsible for overseeing and facilitating the Parties' communications and activities with respect to publications and presentations under this Section 10.5, and for serving as the initial forum for

resolving any disputes (in accordance with Section 2.2(c)) between the Parties arising under this Section 10.5, with any unresolved disputes being escalated to the JSC and, if unresolved by the JSC, to the Executive Officers for resolution pursuant to Section 13.1. If the JDC is dissolved, the JSC shall be responsible for overseeing and facilitating such communications and activities between the Parties, and for serving as the initial forum for resolving any disputes that may arise between the Parties under this Section 10.5.

Section 10.6 Clinical Trial Registry. Each of SANOFI-AVENTIS and MERRIMACK shall have the obligation to the extent required by applicable Laws or regulations to publish summaries of data and results from any human clinical trials conducted by such Party under this Agreement on its clinical trials registry or on a government-sponsored database such as www.clinicaltrials.gov or other publicly available websites such as www.clinicalstudyresults.org, without requiring the consent of the other Party. The content of such publication shall be submitted to the JDC for prior approval.

Section 10.7 Term. All obligations of confidentiality imposed under this Article X shall expire five (5) years following termination or expiration of this Agreement.

Article XI
Representations and Warranties

Section 11.1 Representations and Warranties of Both Parties. Each Party hereby represents and warrants to the other Party, as of the Execution Date, that:

(a) such Party is duly organized, validly existing and in good standing under the Laws of the jurisdiction of its incorporation and has full corporate power and authority to enter into this Agreement and to carry out the provisions hereof;

(b) such Party has taken all necessary action on its part to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder;

(c) this Agreement has been duly executed and delivered on behalf of such Party, and constitutes a legal, valid, binding obligation, enforceable against it in accordance with the terms hereof;

(d) the execution, delivery and performance of this Agreement by such Party does not conflict with any agreement or any provision thereof, or any instrument or binding understanding, oral or written, to which it is a party or by which it is bound, nor to the best of its knowledge violate any law or regulation of any court, governmental body or administrative or other agency having jurisdiction over such Party; and

(e) no government authorization, consent, approval, license, exemption of or filing or registration with any court or governmental department, commission, board, bureau, agency or instrumentality, domestic or foreign, under any applicable Laws currently in effect, is or will be necessary for, or in connection with, the transaction contemplated by this Agreement or any other agreement or instrument executed in connection herewith, or for the performance by

it of its obligations under this Agreement and such other agreements except as may be required to obtain HSR Clearance, to conduct clinical trials or to seek or obtain Marketing Authorizations.

Section 11.2 Representations and Warranties of MERRIMACK. MERRIMACK hereby represents and warrants to SANOFI-AVENTIS, as of the Execution Date, that, except as MERRIMACK has disclosed to SANOFI-AVENTIS as of the Execution Date:

(a) MERRIMACK is the owner of, or has Control of, the Licensed Patent Rights listed on Exhibit A-1 and Exhibit A-2;

(b) Exhibit A-1 and Exhibit A-2 is a complete and correct list of all Licensed Patent Rights that claim or are directed to MM-121 and are Controlled by MERRIMACK as of the Execution Date;

(c) MERRIMACK has the right to grant all rights and licenses it purports to grant to SANOFI-AVENTIS with respect to the Licensed Intellectual Property under this Agreement;

(d) MERRIMACK has not granted, as of the Execution Date, any right or license, to any Third Party relating to any of the Licensed Intellectual Property, that would conflict with, or limit the scope of, any of the rights or licenses granted to SANOFI-AVENTIS hereunder;

(e) MERRIMACK has not granted any liens or security interests on the Licensed Intellectual Property;

(f) To MERRIMACK's knowledge, after reasonable inquiry with respect to employees of MERRIMACK, it has not (i) employed or used any contractor or consultant that employs any individual or entity debarred by the FDA (or subject to a similar sanction of EMEA) or, (ii) employed any individual or entity that is the subject of an FDA debarment investigation or proceeding (or similar proceeding of EMEA), in each of clauses (i) and (ii) in the conduct of research and development activities directed to any Collaboration Compound or Licensed Product;

(g) As of the Execution Date, (i) MERRIMACK has not received any written allegation from a Third Party that any of the Licensed Patent Rights is invalid or unenforceable and (ii) MERRIMACK has not received any written notice that any Patent Right within the Licensed Patent Rights is subject to interference, reexamination, reissue, revocation, opposition, appeal or other administrative proceedings;

(h) To the knowledge of MERRIMACK, after reasonable inquiry, and excluding those patents and patent applications listed in Exhibit B, (i) the research, development, manufacture, use and/or sale as of the Execution Date of MM-121 as a therapeutic for [**] indications can be carried out in the manner contemplated by this Agreement without infringing any published patent applications (evaluating such patent applications as though they were issued with the claims as published as of the Execution Date) or issued patents Controlled by a Third Party, and (ii) the research, development, manufacture, and use prior to the Execution Date of

MM-121 by or on behalf of MERRIMACK has been carried out without infringing any published patent applications (evaluating such patent applications as though they were issued with the claims as published as of the Execution Date) or issued patents Controlled by a Third Party;

(i) MERRIMACK has not received, with respect to the Licensed Patent Rights or the Licensed Technology, any written notice of infringement or misappropriation or any other written communication relating to a possible infringement or misappropriation of any patent rights or any know-how Controlled by a Third Party;

(j) The Patent Rights listed in Exhibit A-1 and Exhibit A-2 represent all Patent Rights within MERRIMACK's Control necessary or useful for the development, manufacture and commercialization of a Therapeutic Product or Diagnostic Product, and the Licensed Technology generally summarized in Exhibit A-3 represents all material Know-How within MERRIMACK's Control necessary or useful for the development, manufacture and commercialization of MM-121;

(k) The Patent Rights listed on Exhibit A-1 and Exhibit A-2 (solely as to the knowledge of MERRIMACK as to Patent Rights not owned by MERRIMACK) have been filed in good faith, have been prosecuted in accordance with any applicable duty of candor, and have been maintained in a manner consistent with MERRIMACK's or its licensor's standard practice, in each applicable jurisdiction in which such Patent Rights have been filed, no official final deadlines with respect to prosecution thereof have been missed and all applicable fees have been paid on or before the due date for payment;

(l) All inventors of inventions claimed in the Patent Rights listed on Exhibit A-1 and Exhibit A-2 (solely as to the knowledge of MERRIMACK as to Patent Rights not owned by MERRIMACK) have assigned their entire right, title and interest in and to such inventions to MERRIMACK and the inventors listed are correct and there are no claims or assertions in writing received by MERRIMACK regarding the inventorship of such Patent Rights alleging that additional or alternative inventors ought to be listed;

(m) MERRIMACK has taken reasonable measures to protect the confidentiality of the Licensed Technology, and, to MERRIMACK's best knowledge, no event has occurred which has resulted in the unauthorized use or disclosure of the Licensed Technology by MERRIMACK or its personnel of any material part of the licensed Technology or which otherwise resulted in any material part of the Licensed Technology entering the public domain;

(n) MERRIMACK has provided SANOFI-AVENTIS with a complete and correct copy of each of the Existing Third Party Licenses;

(o) MERRIMACK is not in breach of any of the Existing Third Party Licenses and each of the Existing Third Party Licenses is in full force and effect; and

(p) To MERRIMACK's knowledge, after due and diligent inquiry, MERRIMACK has disclosed or made available to SANOFI-AVENTIS, on or before the

Execution Date, all material information and data in its possession regarding the Licensed Patent Rights, the Licensed Technology, and in particular material preclinical and clinical data and study reports and information on the manufacturing process with respect to MM-121.

(q) MERRIMACK hereby confirms that the full amino acid sequence of MM-121, as described in Exhibit C of this Agreement, is correct in every respect, and the VH and VL variable region amino acid sequences of MM-121, and their respective CDRs, are accurately described in the patent application [**].

Section 11.3 Mutual Covenants. Each Party hereby covenants to the other Party that:

(a) All employees of such Party or its Affiliates working under this Agreement will be under the obligation to assign all right, title and interest in and to their inventions and discoveries arising in the performance of such work, whether or not patentable, to such Party as the sole owner thereof;

(b) To its knowledge, such Party will not (i) employ or use any contractor or consultant that employs any individual or entity debarred by the FDA (or subject to a similar sanction of EMEA) or, (ii) employ any individual who or entity that is the subject of an FDA debarment investigation or proceeding (or similar proceeding of EMEA), in each of clauses (i) and (ii) in the conduct of its activities under this Agreement;

(c) Such Party shall perform its activities pursuant to this Agreement in compliance in all material respects with applicable Laws; and

(d) Neither Party shall, during the Term, grant any right or license to any Third Party relating to any of the intellectual property rights it owns or Controls which would conflict with, or limit the scope of, any of the rights or licenses granted or to be granted to the other Party hereunder.

Section 11.4 Additional Covenants of MERRIMACK. For the avoidance of doubt, as set forth in Section 7.3 and Section 7.4(b), MERRIMACK covenants to SANOFI-AVENTIS that:

(a) MERRIMACK shall use reasonable best efforts during the Development Term to disclose or make available to SANOFI-AVENTIS all material data and information in its possession or otherwise under its Control, regarding Licensed Products, Licensed Patent Rights and Licensed Technology, all the foregoing as may be necessary or useful for the research, development, manufacture or commercialization of Collaboration Compounds or Licensed Products hereunder; and

(b) During the Term, MERRIMACK shall use Commercially Reasonable Efforts to maintain the Existing Third Party Licenses in effect (and in particular shall use Commercially Reasonable Efforts not to commit any breach that would entitle the Third Party licensor to terminate an Existing Third Party License) and shall not terminate any Existing Third Party License without SANOFI-AVENTIS' prior written consent. In addition, during the Term, MERRIMACK shall promptly notify SANOFI-AVENTIS of any written notice of breach or

termination received by MERRIMACK with respect to any Existing Third Party License and SANOFI-AVENTIS shall have the right to cure any such breach on MERRIMACK's behalf.

Section 11.5 DISCLAIMER. EXCEPT AS OTHERWISE EXPRESSLY SET FORTH IN THIS AGREEMENT, NEITHER PARTY MAKES ANY REPRESENTATION OR EXTENDS ANY WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY THAT ANY PATENTS ARE VALID OR ENFORCEABLE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, EACH PARTY DISCLAIMS ANY WARRANTIES WITH REGARDS TO: (A) THE SUCCESS OF ANY STUDY OR TEST COMMENCED UNDER THIS AGREEMENT, (B) THE SAFETY OR USEFULNESS FOR ANY PURPOSE OF THE TECHNOLOGY OR MATERIALS, INCLUDING ANY COMPOUNDS, IT PROVIDES OR DISCOVERS UNDER THIS AGREEMENT; OR (C) THE VALIDITY, ENFORCEABILITY, OR NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHTS OR TECHNOLOGY IT PROVIDES OR LICENSES TO THE OTHER PARTY UNDER THIS AGREEMENT.

Article XII
Term and Termination

Section 12.1 Term. This Agreement shall become effective as of the Effective Date, may be terminated as set forth in this Article XII, and otherwise remains in effect until the expiration of all payment obligations of SANOFI-AVENTIS under this Agreement (the "Term").

Section 12.2 Survival of Licenses. Notwithstanding anything herein, on a Licensed Product-by-Licensed Product and country-by-country basis, upon the expiration (but not the earlier termination) of all royalty payment obligations for a Licensed Product in a country, the licenses granted to SANOFI-AVENTIS in Section 7.1 shall be deemed to be perpetual and fully paid-up with respect to such Licensed Product in such country.

Section 12.3 No Effectiveness Upon HSR Denial. The Agreement shall not become effective (and accordingly shall immediately terminate) in the event that (a) the FTC or the DOJ shall seek a preliminary injunction under the HSR Act against MERRIMACK and SANOFI-AVENTIS to enjoin the transaction contemplated by this Agreement; or (b) the HSR Clearance Date shall not have occurred on or prior to the date sixty (60) days after the HSR Filings have been made pursuant to Section 15.1.

Section 12.4 Termination For Material Breach. Upon any material breach of this Agreement by either Party (in such capacity, the "Breaching Party"), the other Party (in such capacity, the "Non-Breaching Party") may terminate this Agreement by providing [**] days' prior written notice ([**] days' prior written notice with respect to any payment breach) to the Breaching Party, specifying the material breach. The termination shall become effective at the end of the [**] day (or, with respect to any payment breach, [**] day) period unless (a) the Breaching Party cures such breach during such [**] day (or, with respect to any payment breach, [**] day) period (unless the Party owing payment believes in good faith that such payment is not due and has notified the other Party thereof (including the basis of its good faith belief in

reasonable detail) and paid any undisputed amount to the other Party, in which case the dispute shall be settled in accordance with Article XIII, and the Agreement shall not be terminated as long as the dispute is pending), or (b) solely with respect to a breach that is not a payment breach, if such breach is not susceptible to cure within [**] days of the receipt of written notice of the breach, the Breaching Party is diligently pursuing a cure (unless such breach, by its nature, is incurable, in which case the Agreement may be terminated immediately) and effects such cure within an additional [**] days after the end of such [**] day period.

Section 12.5 Termination by SANOFI-AVENTIS for Convenience. SANOFI-AVENTIS shall have the right to terminate this Agreement, with respect to one or more Licensed Products and/or with respect to (a) one or more Major Territories (but not solely for one or more country or countries within a major Territory) or (b) any country or countries which is(are) not part of a Major Territory, or in its entirety, at any time for any reason upon one-hundred eighty (180) days prior written notice, provided, that after receiving such notice MERRIMACK shall have the right to elect, in MERRIMACK's sole option and discretion and by written notice to SANOFI-AVENTIS, to accelerate such termination period to a date specified by MERRIMACK. For clarity, other than SANOFI-AVENTIS' obligations explicitly set forth in Sections 12.7 (or 12.8 as applicable) and 12.10, no compensation whatsoever shall be due by SANOFI-AVENTIS by reason of termination under this Section 12.5. Notwithstanding the foregoing, if SANOFI-AVENTIS terminates this Agreement pursuant to this Section 12.5 in all three of the Major Territories, this Agreement shall be deemed terminated in its entirety.

Section 12.6 Termination by MERRIMACK for SANOFI-AVENTIS Patent Challenge. If SANOFI-AVENTIS or any of its Affiliates or sublicensees challenges the validity, enforceability, patentability or scope of any claim(s) included in any Licensed Patent Rights, or supports, directly or indirectly, any such challenge (any of the foregoing, a "Patent Challenge"), MERRIMACK shall have the right to terminate this Agreement upon thirty (30) days' written notice to SANOFI-AVENTIS with respect to the Licensed Patent Right(s) so challenged by SANOFI-AVENTIS or any of its Affiliates or sublicensees.

Section 12.7 Effects of Termination by MERRIMACK for SANOFI-AVENTIS Uncured Breach or SANOFI-AVENTIS Patent Challenge, or Termination by SANOFI-AVENTIS of Entire Agreement for Convenience. Upon termination of this Agreement in its entirety by MERRIMACK pursuant to Section 12.4 (Termination for Material Breach) or pursuant to Section 12.6 (Termination for SANOFI-AVENTIS Patent Challenge), or termination of this Agreement in its entirety by SANOFI-AVENTIS pursuant to Section 12.5 (Termination by SANOFI-AVENTIS for Convenience):

(a) All rights and licenses granted by MERRIMACK to SANOFI-AVENTIS shall terminate and revert to MERRIMACK;

(b) SANOFI-AVENTIS shall transfer to MERRIMACK ownership of all Regulatory Approvals and regulatory filings, data and dossier in SANOFI-AVENTIS's or its Affiliates' possession or control relating to all Collaboration Compounds and Licensed Products; (for clarity the foregoing obligation shall not apply in case of termination by SANOFI-AVENTIS for MERRIMACK uncured material breach);

(c) SANOFI-AVENTIS shall assign to MERRIMACK its entire right, title, and interest in and to all preclinical and clinical data, safety data and all other supporting data, including pharmacology and biology data, in SANOFI-AVENTIS's or its Affiliates' possession or control relating to, and to the extent necessary for MERRIMACK to continue the research, development or commercialization of, Collaboration Compounds and Licensed Products;

(d) At MERRIMACK's option and upon MERRIMACK's request as to any or all of the following, SANOFI-AVENTIS (or its relevant Affiliate) shall:

(i) transfer to MERRIMACK (or its designee) the manufacturing process, documents, materials and other Know-How, to the extent the foregoing is Controlled by SANOFI-AVENTIS, it being understood that in the case of any manufacturing process or other Know-How, SANOFI-AVENTIS shall only be committed to transfer to MERRIMACK what it is legally or contractually, as applicable, permitted to transfer, and shall use Commercially Reasonable Efforts to have transferred to MERRIMACK any process or other Know-How which is not under the Control of SANOFI-AVENTIS (in all cases provided that SANOFI-AVENTIS shall not be committed to incur any costs pursuant to the use of such process or other Know-How by or on behalf of MERRIMACK) which are used (at the time of the termination) by or on behalf of SANOFI-AVENTIS, its Affiliates or sublicensees in the manufacture of such Collaboration Compounds and Licensed Products, and provide reasonable technical assistance relating to the manufacture, testing and supply of such Collaboration Compounds and Licensed Product as necessary for MERRIMACK to be qualified or to qualify a Third Party for the manufacturing of such Collaboration Compounds or Licensed Products, such assistance being limited to assistance that a manufacturer familiar with, and having experience with equipment for, manufacturing of antibodies and products containing antibodies, would require, and in any case not to exceed a total of [**] hours of working time by SANOFI-AVENTIS' personnel over a period not to exceed [**] months;

(ii) sell to MERRIMACK (or its designee) SANOFI-AVENTIS's then-existing inventory of such Collaboration Compounds and Licensed Products, at SANOFI-AVENTIS's Manufacturing Cost plus [**] percent ([**]%);

(iii) to the extent SANOFI-AVENTIS (or an Affiliate of SANOFI-AVENTIS) is manufacturing (on its own or through any Third Party contract manufacturer) any Collaboration Compound or Licensed Product, continue to manufacture and supply such Collaboration Compounds and Licensed Product to MERRIMACK, for a period up to [**] years, until manufacturing has been transitioned to MERRIMACK hereunder. SANOFI-AVENTIS shall be obligated to supply quantities of such Collaboration Compounds and Licensed Products sufficient to satisfy MERRIMACK's requirements under a manufacturing transfer and transition plan to be negotiated by the Parties in good faith so that MERRIMACK can assume all development and commercialization activities with regard to such Collaboration Compounds and Licensed Products. SANOFI-AVENTIS will supply such quantities of Collaboration Compounds and Licensed Product at SANOFI-AVENTIS's Manufacturing Cost plus [**] percent ([**]%);

(iv) assign or cause the assignment to MERRIMACK of any and all applicable Third Party manufacturing and supply agreements for such Collaboration Compounds

or Licensed Products, to the extent assignable, and, at MERRIMACK's direction, facilitate discussions with the applicable Third Party manufacture with respect to such agreements;

(v) Promptly transfer to MERRIMACK or its designee on-going clinical trials being conducted by or under authority of SANOFI-AVENTIS as of the date of the termination notice, continue to conduct such clinical trials up to such transfer or, if requested by MERRIMACK, terminate such clinical trials in a manner conforming to applicable Laws and regulations. It is understood that SANOFI-AVENTIS shall in no case be obligated to incur costs beyond those budgeted for the termination period in the Global Development Plan applying to such period, costs related to any change of any kind decided by MERRIMACK to the Global Development Plan, costs related to any translation or reformatting of documents or databases (it being understood that any data or data bases shall be transferred on an as is basis) or costs related to converting or adapting any database or software; and

(vi) Transfer to MERRIMACK any Marketing Authorization obtained on or before the date of termination and, if commercial launch of Licensed Product(s) has occurred on or before the date of termination, SANOFI-AVENTIS shall, at the request of MERRIMACK, continue to market, promote, distribute and commercialize the Licensed Product(s), and continue to pay amounts due to MERRIMACK pursuant to Article VIII, until the date when, on a country-by-country basis, the Marketing Authorization has been transferred to MERRIMACK or MERRIMACK's designee;

(e) SANOFI-AVENTIS shall grant to MERRIMACK, effective upon termination of the Agreement by MERRIMACK under Section 12.4 (Termination for Material Breach) or 12.6 (Termination for SANOFI-AVENTIS Patent Challenge) or by SANOFI-AVENTIS under Section 12.5 (Termination for

Convenience), a non-exclusive, worldwide, royalty-free, irrevocable, perpetual license, with the right to grant sublicenses to any Third Party, under the SANOFI-AVENTIS Patent Rights and SANOFI-AVENTIS Technology, including SANOFI-AVENTIS's interest in any Joint Patent Rights or Joint Technology, in each case to the extent used by SANOFI-AVENTIS, its Affiliates or sublicensees in the research, development, manufacture or commercialization of Collaboration Compounds or Licensed Products in the Field and for the sole purpose of conducting research, development, manufacturing and/or commercialization of Collaboration Compounds or Licensed Products in the Field (for clarity SANOFI-AVENTIS shall retain the right to all other uses and practice of the SANOFI-AVENTIS Patent Rights and SANOFI-AVENTIS Technology, including SANOFI-AVENTIS' interest in any Joint Patent Rights or Joint Technology); and

(f) SANOFI-AVENTIS shall assign to MERRIMACK SANOFI-AVENTIS's and its Affiliates' entire right, title and interest in, to and under any trademark used by SANOFI-AVENTIS, its Affiliates or sublicensees exclusively in connection with the marketing and sale of a Licensed Product, it being understood that such assignment shall not include the SANOFI-AVENTIS name or trademark for the SANOFI-AVENTIS company itself.

Section 12.8 Effects of Termination with Respect to One or More, but Not All, Licensed Products, Major Territories or Countries by SANOFI-AVENTIS for Convenience. If this Agreement is terminated pursuant to Section 12.5 with respect to one or more Licensed

Products ("Terminated Products") or with respect to one or more Major Territories or to countries outside a Major Territory (collectively, the "Terminated Territories"), then:

(a) the effects of termination set forth in Sections 12.7(a), 12.7(d)(v), 12.7(d)(vi), 12.7(e) and 12.7(f) above shall apply solely as to such Terminated Territories (in case the Agreement is terminated with respect to one or more Terminated Territories) and the effects of termination set forth in Sections 12.7(a), 12.7(d), 12.7(e) and 12.7(f) above shall apply solely as to such Terminated Products (in case the Agreement is terminated with respect to one or more Terminated Products);

(b) in lieu of the effects of termination set forth in Section 12.7(b) with respect to regulatory filings and Regulatory Approvals, SANOFI-AVENTIS shall:

(i) transfer to MERRIMACK ownership of all such regulatory filings filed in, and Regulatory Approvals received with respect to, any Terminated Products and/or Terminated Territory (or any country therein), which filings or Regulatory Approvals are in SANOFI-AVENTIS's or its Affiliates' possession or control and relate to Collaboration Compounds and Licensed Products; and

(ii) to the extent necessary for MERRIMACK to resume development or manufacturing or commercialization of a Collaboration Compound or a Licensed Product in any Terminated Territory,

(A) grant MERRIMACK or its designee a right of reference or use to any and all such regulatory filings filed in, and Regulatory Approvals received with respect to, any country or territory other than a Terminated Territory (or any country therein), which filings or Regulatory Approvals are in SANOFI-AVENTIS's or its Affiliates' possession or control and relate to Collaboration Compounds and Licensed Products, (for clarity SANOFI-AVENTIS shall transfer to MERRIMACK ownership of all such regulatory filings and Regulatory Approvals in the event of a termination of this Agreement in its entirety (except for a termination by SANOFI-AVENTIS for MERRIMACK uncured material breach)); and

(B) sign, and cause its Affiliates to sign, any instruments reasonably requested by MERRIMACK in order to effect the grants contemplated above in this Section 12.8(b);

(c) SANOFI-AVENTIS shall transfer to MERRIMACK, and grant MERRIMACK a right to use (consistent with the license granted to MERRIMACK under Section 12.7(e)), all preclinical and clinical data, safety data and all other supporting data, including pharmacology and biology data, in SANOFI-AVENTIS's or its Affiliates' possession or control relating to, and to the extent necessary for MERRIMACK to continue, the research, development or commercialization of Terminated Products, or of Collaboration Compounds or Licensed Products in any Terminated Territory(ies), as applicable; and

(d) in lieu of the effects of termination set forth in Sections 12.7(d)(i), 12.7(d)(ii), 12.7(d)(iii) and 12.7(d)(iv), if the Agreement is only terminated with respect to one or more Major Territories or any country(ies) outside a Major Territory (but not if the Agreement

is terminated with respect to a Licensed Product for the entire Territory), SANOFI-AVENTIS shall elect, at its option and upon written notice to MERRIMACK (such notice to be provided by SANOFI-AVENTIS at the time it delivers the notice of termination to MERRIMACK under Section 12.5), to either (i) continue to supply MERRIMACK with Collaboration Compounds or Licensed Products, at SANOFI-AVENTIS' Manufacturing Costs plus [**] percent ([**]%) or (ii) comply with the provisions of Sections 12.7(d)(i), 12.7(d)(iii) and 12.7(d)(iv).

Section 12.9 Licensing/Sublicensing Revenues. If, subsequent to a partial or an entire termination of the Agreement by SANOFI-AVENTIS under Section 12.5 or a termination by MERRIMACK under Section 12.4 or 12.6 that occurs after a Licensed Product has received Marketing Authorization in either the USA or the EU, MERRIMACK enters into one or more licensing or other arrangements in which a Third Party is granted commercialization rights with respect to any Collaboration Compound(s) or Licensed Product(s) whereby (a) any data or license rights assigned or licensed by SANOFI-AVENTIS to MERRIMACK pursuant to Section 12.7 are granted to such Third Party and (b) MERRIMACK receives any revenues or any other consideration for the grant of such licenses or other arrangements (including but not limited to upfront payments, license fees, regulatory or sales milestone payments, royalties and/or profit sharing revenues), but excluding (i) funding for research and development and other activities to be undertaken by MERRIMACK and (ii) the purchase price of any MERRIMACK debt or equity securities issued to the licensee in such transactions (any of the foregoing, excluding the items in the foregoing clauses (i) and (ii), "Licensing Revenues"), then MERRIMACK shall promptly inform SANOFI-AVENTIS thereof and MERRIMACK shall pay to SANOFI-AVENTIS a non-refundable royalty of [**] percent ([**]%) of the excess (if any) of (x) such Licensing Revenues over (y) any amounts payable by MERRIMACK to Third Party licensors and amounts incurred by MERRIMACK as unreimbursed development and/or commercialization costs in order to be entitled to the Licensing Revenues. Payment of the aforesaid amounts shall be due and payable by MERRIMACK to SANOFI-AVENTIS quarterly within thirty (30) days after the end of each calendar quarter in which such Licensing Revenues are received by MERRIMACK.

Section 12.10 Survival.

(a) Upon expiration or termination of this Agreement for any reason, all rights and obligations of each Party shall terminate hereunder, except as expressly set forth in Section 12.2, 12.7, 12.8, 12.9 or this Section 12.10; provided, however, that nothing in this Agreement shall be construed to release either Party from any obligations or liabilities that matured prior to the effective date of expiration or termination, or which are attributable to a period prior to such expiration or termination. In addition, and notwithstanding the terms of Section 12.7(d)(v) and Section 12.8(a), SANOFI-AVENTIS shall remain responsible for payment to MERRIMACK of all such costs that are committed by MERRIMACK in connection with any human clinical trials conducted by MERRIMACK hereunder for a period of

three months beyond the effective date of termination by SANOFI-AVENTIS under Section 12.5, to the extent that the clinical trials giving rise to such costs were non-terminable as of the date of termination of this Agreement, for ethical or regulatory reasons.

(b) Notwithstanding anything in this Agreement to the contrary, the following provisions shall expressly survive any expiration or termination of this Agreement in accordance with their terms: Article VIII (in each case, to the extent any amounts are due but unpaid as of

the effective date of expiration or termination); Section 8.6; Section 9.1; Article X; Sections 12.2, 12.7-12.10; Article XIII; Article XIV; and Article XVI.

Article XIII
Dispute Resolution

Section 13.1 Disputes; Executive Officers.

(a) In the event any dispute arises out of or in relation to or in connection with this Agreement, including failure to perform under or breach of, the Agreement or any issue relating to the interpretation or application of the Agreement, the Parties shall use good faith efforts to resolve such dispute within thirty (30) days, through the JDC, JCC or JSC, as applicable, if the dispute is within the responsibilities of such a committee. If the Parties are unable to resolve such dispute, at the JDC, JCC or JSC level or otherwise, within such thirty (30) day period, or a dispute is within the responsibilities of the JSC but the JSC no longer remains in place at the time of such dispute and the Parties are unable to resolve such dispute within thirty (30) days (as set forth in Section 2.1(f)), the Parties shall refer such dispute to their respective Executive Officers, and such Executive Officers shall attempt in good faith to resolve such dispute within thirty (30) days, except for (i) any dispute concerning inventorship arising under Section 9.1(c), which shall not be subject to resolution by the Executive Officers under this Section 13.1 or by binding arbitration under Section 13.2, but shall instead be resolved by independent patent counsel as set forth therein, or (ii) any dispute between the Parties with respect to the conformity of MM-121 with the applicable specifications, which shall not be subject to resolution by the Executive Officers under this Section 13.1 or by binding arbitration under Section 13.2, but shall instead be resolved by an independent analytical laboratory jointly selected by SANOFI-AVENTIS and MERRIMACK as set forth in Section 3.4(b)(iii).

(b) In addition, any dispute with respect to which a Party has final decision-making authority pursuant to Section 2.1(f) (each, a "Non-Arbitrable Dispute"), if unresolved at the JSC level or by the Executive Officers after escalation to the Executive Officers, shall not be subject to resolution by binding arbitration under Section 13.2, but shall instead be resolved by the Party having such final decision-making authority over such Non-Arbitrable Dispute (subject to any limitations on such authority set forth in Section 2.1(f)).

(c) For purposes of clarity, all other disputes arising under or relating to this Agreement, or the interpretation thereof (*i.e.*, disputes other than Non-Arbitrable Disputes or disputes concerning inventorship, and disputes that (y) are not within the jurisdiction of a committee or (z) are within the jurisdiction of a committee but that committee is no longer in place at the time of the dispute), shall be referred to the Executive Officers for resolution within the thirty (30) day period set forth in this Section 13.1 above and, if the Executive Officers are unable to resolve such dispute within such thirty (30) day period, to binding arbitration for resolution pursuant to Section 13.2.

Section 13.2 Arbitration. If the Executive Officers are unable to resolve a given dispute referred to such Executive Officers pursuant to Section 13.1 within thirty (30) days following such referral of such dispute to such Executive Officers, except for any Non-Arbitrable Disputes,

either Party may have the given dispute settled by binding arbitration in the manner described below:

(a) Arbitration Request. If a Party intends to begin an arbitration to resolve a dispute arising under this Agreement, such Party shall provide written notice (the "Arbitration Request") to the other Party of such intention and the issues for resolution.

(b) Additional Issues. Within ten (10) days after the receipt of the Arbitration Request, the other Party may, by written notice, add additional issues for resolution.

(c) Arbitration Location; Rules. Except as expressly provided herein, the sole mechanism for resolution of any claim, dispute or controversy arising out of or in connection with or relating to this Agreement or the breach or alleged breach thereof shall be arbitration by the American Arbitration Association ("AAA") in Washington, D.C., or in such other venue as the Parties agree, under the International Arbitration Rules then in effect for the AAA except as provided herein.

(d) English Language. All proceedings shall be held in English and a transcribed record prepared in English. Documents submitted in the arbitration (the originals of which are not in English) shall be submitted together with a reasonably complete and accurate English translation.

(e) Selection of Arbitrators. The Parties shall each choose, one arbitrator within thirty (30) days of receipt of notice of the intent to arbitrate and the said two arbitrators shall select by mutual agreement a third arbitrator within thirty (30) days after they have been selected as arbitrators. If no arbitrator is appointed within the times herein provided or any extension of time that is mutually agreed on, the AAA shall make such appointment (i.e. shall appoint three arbitrators) within thirty (30) days of such failure.

(f) Costs; Exclusion from Award. The award rendered by the arbitrators shall not include costs of arbitration, attorneys' fees or costs for expert and other witnesses, which shall be the responsibility of each Party (i.e. each Party shall bear its own costs and expenses), except that the Parties shall share equally the fees of the arbitrators.

(g) Time Schedule. Within thirty (30) days of initiation of arbitration, the Parties shall reach agreement upon and thereafter follow procedures directed at assuring that the arbitration will be concluded and the award rendered within no more than six (6) months from selection of the three arbitrators. Failing such agreement, the AAA will design and the Parties will follow procedures directed at meeting such a time schedule.

(h) Powers of Arbitrators. The arbitrators:

(i) shall not have any power or authority to add to, alter, amend or modify the terms of this Agreement but shall specify rules sufficient to allow reasonable discovery by the Parties;

(ii) shall establish and enforce appropriate rules to ensure that the proceedings, including the decision, be kept confidential and that all Confidential Information of the Parties be kept confidential and be used for no purpose other than the arbitration;

(iii) shall have the power to enforce specifically this Agreement and the terms and conditions hereof in addition to any other remedies at law or in equity; and

(iv) shall issue all decisions in writing.

(i) Injunctive Relief. Nothing in this Agreement shall be deemed as preventing either Party from seeking injunctive relief (or any other provisional remedy such as temporary restraining order, preliminary injunction or other interim equitable relief) from the arbitrators or from any court having jurisdiction over the Parties (and prior to or during any arbitration if necessary to protect the interests of such Party in avoiding irreparable harm or to preserve the status quo pending the arbitration proceeding) and the subject matter of the dispute as necessary to protect either Party's name, proprietary information, trade secrets, know-how or any other proprietary right or otherwise to avoid irreparable harm.

(j) Experience. If the issues in dispute involve scientific or technical matters, any arbitrators chosen hereunder shall have educational training and/or experience sufficient to demonstrate a reasonable level of knowledge in the pharmaceutical and biotechnology fields.

(k) Judgment. Judgment on the award rendered by the arbitrators may be entered in any court having jurisdiction thereof.

(l) Survivability. Any duty to arbitrate under the Agreement shall remain in effect and be enforceable after termination of the Agreement.

Article XIV
Indemnification

Section 14.1 Indemnification by SANOFI-AVENTIS. SANOFI-AVENTIS shall indemnify, defend and hold harmless MERRIMACK and its Affiliates, and its and their respective directors, officers, employees and agents, from and against any and all liabilities, damages, losses, costs and expenses, including the reasonable fees of attorneys and other professional Third Parties (collectively, "Losses"), arising out of or resulting from any and all Third Party suits, claims, actions, proceedings or demands ("Claims") based upon:

(a) the negligence, recklessness or wrongful intentional acts or omissions of SANOFI-AVENTIS or its Affiliates and its or their respective directors, officers, employees and agents, in connection with SANOFI-AVENTIS's performance of its obligations or exercise of its rights under this Agreement;

(b) any breach of any representation, warranty or covenant made by SANOFI-AVENTIS under this Agreement;

(c) any act or omission by SANOFI-AVENTIS that results in a breach of any of MERRIMACK's agreements with MERRIMACK Third Party licensors; or

(d) the research or development activities that are actually conducted by or on behalf of SANOFI-AVENTIS, the handling and storage by or on behalf of SANOFI-AVENTIS of any chemical agents or other compounds for the purpose of conducting research and development by or on behalf of SANOFI-AVENTIS, and the manufacture or commercialization (including marketing and sale) by SANOFI-AVENTIS, its Affiliates or sublicensees of any Collaboration Compound or Licensed Product, including (i) any product liability, personal injury, property damage or other damage, and (ii) infringement of any patent or other intellectual property right of any Third Party (subject to the rights of SANOFI-AVENTIS under Section 8.4(h) and excluding any such infringement Losses arising from a breach by MERRIMACK of its representations and warranties set forth in Section 11.2), in each case resulting from any of the foregoing activities described in this Section 14.1.

Section 14.2 Indemnification by MERRIMACK. MERRIMACK shall indemnify, defend and hold harmless SANOFI-AVENTIS and its Affiliates, and its or their respective directors, officers, employees and agents, from and against any and all Losses, arising out of or resulting from any and all Third Party Claims based upon:

(a) the negligence, recklessness or wrongful intentional acts or omissions of MERRIMACK or its Affiliates or its or their respective directors, officers, employees and agents, in connection with MERRIMACK's performance of its obligations or exercise of its rights under this Agreement;

(b) any breach of any representation, warranty or covenant made by MERRIMACK under this Agreement;

(c) the research or development activities that are actually conducted by or on behalf of MERRIMACK, the handling and storage by or on behalf of MERRIMACK of any chemical agents or other compounds for the purpose of conducting research or development by or on behalf of MERRIMACK, the manufacture by or on behalf of MERRIMACK of any Collaboration Compound (or Licensed Product, as applicable) and the Co-Promotion by or on behalf of MERRIMACK of any Co-Promoted Product, including any product liability, personal injury, property damage or other damage, in each case resulting from any of the foregoing activities described in this Section 14.2; or

(d) infringement of any patent or other intellectual property right of any Third Party arising from a breach by MERRIMACK of its representations and warranties set forth in Section 11.2.

Section 14.3 Procedure.

(a) A Person entitled to indemnification under this Article XIV (an "Indemnified Party") shall give prompt written notification to the Person from whom indemnification is sought (the "Indemnifying Party") of the commencement of any action, suit or proceeding relating to a Third Party claim for which indemnification may be sought or, if earlier, upon the assertion of any such claim by a Third Party (it being understood and agreed, however, that the failure by an Indemnified Party to give notice of a Third-Party claim as provided in this Section 14.3 shall not relieve the Indemnifying Party of its indemnification obligation under this

Agreement except and only to the extent that such Indemnifying Party is actually damaged as a result of such failure to give notice).

(b) Within twenty (20) days after delivery of such notification, the Indemnifying Party may, upon written notice thereof to the Indemnified Party, assume control of the defense of such action, suit, proceeding or claim with counsel reasonably satisfactory to the Indemnified Party.

(c) If the Indemnifying Party does not assume control of such defense, the Indemnified Party shall control such defense and, without limiting the Indemnifying Party's indemnification obligations, the Indemnifying Party shall reimburse the Indemnified Party for all costs and expenses, including reasonable attorney's fees, incurred by the Indemnified Party in defending itself within thirty (30) days after receipt of any invoice therefor from the Indemnified Party.

(d) The Party not controlling such defense may participate therein at its own expense; provided that, if the Indemnifying Party assumes control of such defense and the Indemnified Party in good faith concludes, based on advice from counsel, that the Indemnifying Party and the Indemnified Party have conflicting interests with respect to such action, suit, proceeding or claim, the Indemnifying Party shall be responsible for the reasonable fees and expenses of counsel to the Indemnified Party in connection with its participation in the defense action.

(e) The Party controlling such defense shall keep the other Party advised of the status of such action, suit, proceeding or claim and the defense thereof and shall consider recommendations made by the other Party with respect thereto.

(f) The Indemnified Party shall not agree to any settlement of such action, suit, proceeding or claim without the prior written consent of the Indemnifying Party, which shall not be unreasonably withheld, delayed or conditioned. The Indemnifying Party shall not agree to any settlement of such action, suit, proceeding or claim or consent to any judgment in respect thereof that does not include a complete and unconditional release of the Indemnified Party from all liability with respect thereto, that imposes any liability or obligation on the Indemnified Party or that acknowledges fault by the Indemnified Party without the prior written consent of the Indemnified Party.

Section 14.4 Insurance. Each Party shall procure and maintain insurance, including product liability insurance, adequate to cover its obligations and liabilities hereunder and which are consistent with normal business practices of comparable companies with respect to similar obligations and liabilities, at all times during which Collaboration Compounds and Licensed Products are clinically tested or commercially distributed or sold by or on behalf of such Party or its Affiliates. It is understood that such insurance shall not be construed to create any limit of either Party's obligations or liabilities with respect to its indemnification obligations hereunder. Each Party shall provide the other, upon request, with evidence of such insurance.

Section 14.5 Limitation of Liability. EXCEPT TO THE EXTENT SUCH PARTY MAY BE REQUIRED TO INDEMNIFY THE OTHER PARTY UNDER THIS ARTICLE XIV

WITH RESPECT TO THIRD PARTY CLAIMS, NEITHER PARTY NOR ITS RESPECTIVE AFFILIATES OR SUBLICENSEES SHALL BE LIABLE FOR ANY (AND HEREBY DISCLAIM ALL) SPECIAL, EXEMPLARY, CONSEQUENTIAL, PUNITIVE OR OTHER INDIRECT DAMAGES, WHETHER BASED UPON WARRANTY, CONTRACT, TORT, STRICT LIABILITY OR OTHER LEGAL THEORY.

Article XV
HSR Matters

Section 15.1 HSR Filings. Each of MERRIMACK and SANOFI-AVENTIS shall as promptly as possible, and not later than October 9, 2009, file with the FTC and the Antitrust Division of the DOJ, any HSR Filing required of it under the HSR Act with respect to the transactions contemplated by this Agreement. The Parties shall cooperate with one another to the extent necessary in the preparation of any HSR Filing required to be filed under the HSR Act. Each Party shall be responsible for its own costs, expenses, and filing fees associated with any HSR Filing.

Section 15.2 HSR Cooperation; Further Assurances. MERRIMACK and SANOFI-AVENTIS agree, and shall cause each of their respective Affiliates, to cooperate and to use their respective reasonable efforts to obtain any HSR Clearance required for the consummation of the transactions contemplated under this Agreement, to request early termination of the applicable waiting period under the HSR Act (if HSR Clearance is required) and to respond to any government requests for information under the HSR Act. The Parties will consult and cooperate with one another, and consider in good faith the views of one another, in connection with any analyses, appearances, presentations, memoranda, briefs, arguments, opinions and proposals made or submitted by or on behalf of either Party in connection with proceedings under or relating to the HSR Act.

Section 15.3 HSR-Related Defined Terms.

(a) "DOJ" means the United States Department of Justice.

(b) "FTC" means the United States Federal Trade Commission.

(c) "HSR Act" means the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended (15 U.S.C. Sec. 18a), and the rules and regulations promulgated thereunder.

(d) "HSR Clearance" means either (i) early termination of the applicable waiting period under the HSR Act with respect to the HSR Filings or (ii) expiration of the applicable waiting period under the HSR Act with respect to the HSR Filings.

(e) "HSR Clearance Date" means the earlier of (i) the date on which the FTC or DOJ shall notify MERRIMACK and SANOFI-AVENTIS of early termination of the applicable waiting period under the HSR Act or (ii) the day after the date on which the applicable waiting period under the HSR Act expires.

(f) "HSR Filings" means the filings by SANOFI-AVENTIS and MERRIMACK with the FTC and the Antitrust Division of the DOJ of a Notification and Report Form for Certain Mergers and Acquisitions (as that term is defined in the HSR Act) with respect to the matters set forth in this Agreement, together with all required documentary attachments thereto.

Article XVI
Miscellaneous Provisions

Section 16.1 Governing Law. Except for matters of intellectual property law, which shall be determined in accordance with the national intellectual property laws relevant to the intellectual property in question, this Agreement, and any disputes between the Parties relating to the subject matter of this Agreement, shall be construed and the respective rights of the Parties hereto determined according to the substantive laws of the Commonwealth of Massachusetts, excluding (a) its

conflicts of laws principles; (b) the United Nations Conventions on Contracts for the International Sale of Goods; (c) the 1974 Convention on the Limitation Period in the International Sale of Goods (the "1974 Convention"); and (d) the Protocol amending the 1974 Convention, done at Vienna April 11, 1980.

Section 16.2 Assignment. Neither MERRIMACK nor SANOFI-AVENTIS may assign this Agreement in whole or in part without the prior written consent of the other, except to an Affiliate or in connection with the merger, sale or transfer of all or substantially all of the stock, assets or business of MERRIMACK, on the one hand, or SANOFI-AVENTIS, on the other, to which the subject matter of this Agreement pertains. Notwithstanding the foregoing, either Party may assign its rights and/or its obligations pursuant to this Agreement in whole or in part to an Affiliate of such Party. The assigning Party shall remain primarily liable for the performance of this Agreement notwithstanding any such assignment of this Agreement. For clarity, if MERRIMACK's right to Co-Promote Licensed Product(s) is terminated pursuant to Section 5.4(c), nothing in this Section 16.2 shall be construed as preventing or limiting such termination in any way.

Section 16.3 Standstill.

(a) SANOFI-AVENTIS hereby agrees that, during the Standstill Period unless specifically invited in writing by MERRIMACK to do so, neither SANOFI-AVENTIS nor any of its Affiliates will, or will cause or knowingly permit any of its or their directors, officers, employees, investment bankers, attorneys, accountants or other advisors or representatives to, in any manner, directly or indirectly:

(i) effect or seek, initiate, offer or propose (whether publicly or otherwise) to effect, or cause or participate in or in any way advise or, assist any other person to effect or seek, initiate, offer or propose (whether publicly or otherwise) to effect or cause or participate in, any acquisition of any securities (or beneficial ownership thereof) or assets of MERRIMACK; any tender or exchange offer, merger, consolidation or other business combination involving MERRIMACK; any recapitalization, restructuring, liquidation, dissolution or other extraordinary transaction with respect to MERRIMACK; or any

"solicitation" of "proxies" (as such terms are used in the proxy rules of the SEC) or consents to vote any voting securities of MERRIMACK;

(ii) form, join or in any way participate in a "group" (as defined under the Securities Exchange Act of 1934, as amended) with respect to any securities of MERRIMACK;

(iii) otherwise act, alone or in concert with others, to seek to control or influence the management, Board of Directors or policies of MERRIMACK (except as contemplated by this Agreement in relation to the Parties' co-development or commercialization of Collaboration Compounds and Licensed Product(s));

(iv) take any action which could reasonably be expected to force MERRIMACK to make a public announcement regarding any of the types of matters set forth in this Section 16.3; or

(v) enter into any agreements, discussions or arrangements with any Third Party with respect to any of the foregoing.

(b) Nothing in this Section 16.3 shall prohibit SANOFI-AVENTIS or its Affiliates from owning or making open market purchases of any voting securities of MERRIMACK, or any securities convertible into or exercisable for any such voting securities, in each case for purposes of any 401(k) or similar benefit plan maintained by SANOFI-AVENTIS or its Affiliates for its or their employees, provided that such voting securities shall not, in the aggregate, exceed 5% of the voting power of MERRIMACK's outstanding securities, and provided that SANOFI-AVENTIS and its Affiliates will not in any way request or direct that the trustee or other administrator of any plan acquire any voting securities of MERRIMACK.

(c) For the purposes of this Section 16.3, the term "Standstill Period" shall mean the period commencing on the Effective Date and ending on the later to occur of (i) the [**] anniversary of the Effective Date or (ii) the [**] anniversary of the closing of the initial public offering of MERRIMACK's common stock.

(d) Notwithstanding anything to the contrary in this Section 16.3, if (i) MERRIMACK publicly engages in a process to solicit offers relating to transactions which, if consummated, would result in a merger, consolidation, sale or other business combination transaction pursuant to which the stockholders of MERRIMACK immediately prior to consummation of such merger, consolidation or other business combination would own less than [**]% of the outstanding common stock of MERRIMACK or other surviving entity immediately following consummation (but only so long as such process continues), or (ii) MERRIMACK executes a definitive agreement with a Third Party providing for an acquisition (by way of merger, tender offer, exchange offer or otherwise) of [**]% or more of MERRIMACK's outstanding capital stock or all or substantially all of MERRIMACK's assets (but only so long as such agreement is not terminated and does not expire), or (iii) a person or 13D Group (i.e. a group within the meaning of Section 13(d)(3) of the Exchange Act) not including SANOFI-AVENTIS or its Affiliates commences, or publicly announces its intent to commence and actually commences within five (5) Business Days after such public announcement, a tender or

exchange offer for voting securities representing [**]% or more of the then outstanding voting power of the voting securities of MERRIMACK (but only so long as such offer is not terminated or withdrawn or does not expire without being consummated), then the provisions of this Section 16.3 shall immediately cease to be of any effect and SANOFI-AVENTIS and its Affiliates shall immediately be released from any obligations under this Section 16.3.

Section 16.4 Entire Agreement; Amendments. This Agreement constitutes the entire agreement between the Parties with respect to the subject matter hereof, and supersedes all previous arrangements with respect to the subject matter hereof, whether written or oral, including the Confidentiality Agreement. Any amendment or modification to this Agreement shall be made in writing signed by both Parties.

Section 16.5 Notices. Any notice required or provided for by the terms of this Agreement shall be in writing and shall be sufficient if (a) delivered personally or (b) sent by registered or certified mail, return receipt requested, or reputable overnight business courier, in each case properly addressed to a Party as set forth below. The effective date of notice shall be the actual date of receipt by the Party receiving the same.

Notices to MERRIMACK shall be addressed to:

Merrimack Pharmaceuticals, Inc.
One Kendall Square
Suite B7201
Cambridge, MA 02139-1670
U.S.A.

Attention: Chief Executive Officer

with a copy to:

Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, Massachusetts 02109
U.S.A.

Attention: David E. Redlick, Esq. and
Steven D. Barrett, Esq.

Notices to SANOFI-AVENTIS shall be addressed to:

SANOFI-AVENTIS
174 avenue de France
75013 Paris
France

Attention: Legal Operations

with a copy to:

SANOFI-AVENTIS
174 avenue de France
75013 Paris
France

Attention: License Administration

Any Party may change its notification address by giving notice to the other Party in the manner herein provided. For clarity, the additional copy will be addressed for convenience only and the notification shall be deemed to have been validly delivered when addressed to the main addressee.

Section 16.6 Exports. The Parties acknowledge that the export of technical data, materials or products is subject to the exporting Party receiving any necessary export licenses and that the Parties cannot be responsible for any delays attributable to export controls that are beyond the reasonable control of either Party. SANOFI-AVENTIS and MERRIMACK agree not to export or reexport, directly or indirectly, any Collaboration Compound or Licensed Product (or any associated products, information, items, articles, computer software, media, technical data, the direct product of such data, samples or equipment received or generated under this Agreement) in violation of any US export laws or other Laws or regulations that may be applicable. SANOFI-AVENTIS and MERRIMACK agree to obtain similar covenants from their Affiliates, sublicensees and contractors with respect to the subject matter of this Section.

Section 16.7 Force Majeure. Either Party shall be excused from the performance of its obligations under the Agreement, and no failure or omission by a Party in the performance of any obligation of this Agreement shall be deemed a breach of this Agreement or create any liability if the same shall arise from any cause or causes beyond the control of such Party, (including the following: acts of God; acts or omissions of any government; any rules, regulations or orders issued by any governmental authority or by any officer, department, agency or instrumentality thereof; labor disputes, epidemic, failure or default of public utilities or common carriers, fire; storm; flood; earthquake; accident; war; rebellion; terrorism; insurrection; riot; and invasion) and such excuse shall be continued so long as the condition constituting force majeure continues; provided that such failure or omission resulting from one of the above causes is cured as soon as is practicable after the end of the occurrence of one or more of the above-mentioned causes. The Party claiming such force majeure shall notify the other Party with notice of the force majeure event as soon as practicable, but in no event longer than five (5) Business Days after its occurrence, which notice shall reasonably identify the affected obligations under this Agreement and the extent to which performance thereof will be affected. In such event, the Parties shall meet and/or discuss promptly to determine an equitable solution to minimize and if reasonably feasible, overcome, the effects of any such event.

Section 16.8 Performance by Affiliates and Sublicensees. To the extent that this Agreement imposes obligations on Affiliates or sublicensees of a Party, such Party agrees to cause such Party's Affiliates and sublicensees to perform such obligations.

Section 16.9 Independent Contractors. It is understood and agreed that the relationship between the Parties hereunder is that of independent contractors and that nothing in this Agreement shall be construed as authorization for either MERRIMACK or SANOFI-AVENTIS to act for, bind or commit the other in any way. The Alliance Managers shall remain employees of SANOFI-AVENTIS or MERRIMACK, as the case may be.

Section 16.10 Construction. Each Party agrees that this Agreement shall be interpreted without regard to any presumption or rule requiring construction against the Party causing this Agreement to be drafted.

Section 16.11 Interpretation. Any reference in this Agreement to an Article, Section, subsection, paragraph, clause, Schedule, or Exhibit shall be deemed to be a reference to any Article, Section, subsection, paragraph, clause, Schedule, or Exhibit, of or to, as the case may be, this Agreement. Except where the context clearly otherwise requires, (a) wherever used, the use of any gender will be applicable to all genders, (b) any definition of or reference to any agreement, instrument or other document refers to such agreement, instrument other document as from time to time amended, supplemented or otherwise modified (subject to any restrictions on such amendments, supplements or modifications set forth herein or therein), (c) any reference to any laws refers to such laws as from time to time enacted, repealed or amended, (d) the words "herein", "hereof" and hereunder", and words of similar import, refer to this Agreement in its entirety and not to any particular provision hereof, (e) the words "include", "includes" and "including" shall be deemed to be followed by the phrase "but not limited to", "without limitation" or words of similar import, (f) the word "day" means a calendar day, the word "month" means a calendar month and the word "year" means a calendar year, (g) the word "quarterly" refers to calendar quarters (e.g. January 1 to march 31, April 1 to June 30, July 1 to September 30 or October 1 to December 31) and (h) each accounting term used herein that is not specifically defined herein shall have the meaning given to it under applicable IFRS, to the extent consistent with its usage and the other definitions in the Agreement.

Section 16.12 Headings. The captions or headings of the Sections or other subdivisions hereof are inserted only as a matter of convenience or for reference and shall have no effect on the meaning of the provisions hereof.

Section 16.13 English Language. This Agreement was prepared and is established in the English language, any translation thereof shall be deemed for convenience only and shall never prevail against the original English version. All reports, notices and communications to be exchanged under this Agreement shall be in the English language, provided however that, notwithstanding anything herein to the contrary, neither Party shall be under any obligation to translate into English any document originally established and existing in another language, for the sole purpose of communicating such document to the other Party, it being agreed that such documents will be provided on an as is basis.

Section 16.14 No Implied Waivers; Rights Cumulative. No failure on the part of MERRIMACK or SANOFI-AVENTIS to exercise, and no delay in exercising, any right, power, remedy or privilege under this Agreement, or provided by statute or at law or in equity or otherwise, shall impair, prejudice or constitute a waiver of any such right, power, remedy or privilege or be construed as a waiver of any breach of this Agreement or as an acquiescence

therein, nor shall any single or partial exercise of any such right, power, remedy or privilege preclude any other or further exercise thereof or the exercise of any other right, power, remedy or privilege.

Section 16.15 Severability. If, under applicable Law, any provision of this Agreement is held to be invalid or unenforceable, or otherwise directly or indirectly affects the validity of any other material provision(s) of this Agreement (such invalid or unenforceable provision, a "Severed Clause"), this Agreement shall endure except for the Severed Clause. The Parties shall consult one another and use reasonable efforts to agree upon a valid and enforceable provision that is a reasonable substitute for the Severed Clause in view of the objectives contemplated by the Parties when entering into the Agreement and the general balance of the respective interests of the Parties as initially intended under the Agreement.

Section 16.16 Execution in Counterparts. This Agreement may be executed in counterparts, each of which counterparts, when so executed and delivered, shall be deemed to be an original, and all of which counterparts, taken together, shall constitute one and the same instrument.

[*Remainder of This Page Intentionally Left Blank*]

IN WITNESS WHEREOF, the Parties have executed this License and Collaboration Agreement as of the Execution Date.

SANOFI-AVENTIS

By: /s/ Laurence Debroux
Name: Laurence Debroux
Title: Senior Vice-President, Chief Strategic Officer

By: /s/ Jean-Luc Renard
Name: Jean-Luc Renard
Title: Vice President Corporate Accounting

MERRIMACK PHARMACEUTICALS, INC.

By: /s/ Robert J. Mulroy
Name: Robert J. Mulroy
Title: President & CEO

Exhibit A-1

Diagnostic Patent Rights

(Controlled by MERRIMACK)

Merrimack Ref. No.	Country	Title of Invention	Application No.	Filing Date	Status
Diagnostic					
[**]	[**]	[**]	[**]	[**]	[**]

Diagnostic Patent Rights also include the Licensed Patent Rights (as defined in the PHS Agreement), the [**] Patent Rights and the Dyax Patent Rights (each as defined in the Dyax Collaboration Agreement), in each case to the extent licensed to Merrimack under the applicable Existing Third Party Licenses.

Exhibit A-2

Therapeutic Patent Rights

(Controlled by MERRIMACK)

Merrimack Ref. No.	Country	Title of Invention	Application No.	Filing Date	Status
Therapeutic					
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]

[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]

Merrimack Ref. No.	Country	Title of Invention	Application No.	Filing Date	Status
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]	[**]

[**]

Therapeutic Patent Rights also include the Selexis Patent Rights (as defined in the Selexis License Agreement), the Licensed Patent Rights (as defined in the PHS Agreement), the [**] Patent Rights and the Dyax Patent Rights (each as defined in the Dyax Collaboration Agreement), in each case to the extent licensed to Merrimack under the applicable Existing Third Party Licenses.

Exhibit A-3

Licensed Technology

(Controlled by MERRIMACK)

The following is a general summary of Licensed Technology existing as of the Execution Date:

[**]

Exhibit B

Listed Third Party Patents

[**]

Patent/ Publication No.	Date
[**]	[**]
[**]	[**]
[**]	[**]
[**]	[**]
[**]	[**]

[**]

Patent/ Publication No.	Date
[**]	[**]
[**]	[**]

Exhibit C

Description of MM-121

MM-121 is a fully human monoclonal IgG2 antibody targeting ErbB3. MM-121 has the amino acid sequence given below:

Heavy Chain aa SEQ:
[**]

Light chain aa SEQ:
[**]

Exhibit D

Co-Promotion Guidelines

1. The total detailing effort for each Co-Promoted Product will be allocated between the Parties as follows: [**] percent ([**]%) to SANOFI-AVENTIS and [**] percent [**]%) to MERRIMACK.

2. The number and position of details and categories of professionals or institutions to be targeted, and the allocation of such professionals or institutions between the Parties, with respect to each Co-Promoted Product, shall be determined in an equitable manner that seeks to ensure that each Party is allocated a distribution of details that is equally attractive in terms of geography, prescription volumes of target prescribers and/or other commercial factors.

3. Policies and procedures relating to product sampling, once established by mutual agreement of the Parties, may not be amended other than by mutual agreement of the Parties.

Exhibit E

Certain Requirements under PHS Agreement

4.2 **Licensee** agrees that any sublicenses granted by it shall provide that the obligations to PHS of Paragraphs 8.1, 10.1, 10.2, 12.5, and 13.7-13.9 of this **Agreement** shall be binding upon the **Sublicensee** as if it were a party to this **Agreement**. **Licensee** further agrees to attach copies of these Paragraphs to all sublicense agreements.

4.3 Any sublicenses granted by **Licensee** shall provide for the termination of the sublicense, or the conversion to a license directly between the **Sublicensees** and PHS, at the option of the **Sublicensee**, upon termination of this Agreement under Article 13. This conversion is subject to PHS approval and contingent upon acceptance by the **Sublicensee** of the remaining provisions of this **Agreement**.

5.1 Prior to the **First Commercial Sale**, **Licensee** agrees to provide PHS, upon PHS request and subject to availability, with reasonable quantities of **Licensed Products** or materials made through the **Licensed Processes** for PHS *in vitro* research use.

5.2 **Licensee** agrees that products used or sold in the United States embodying **Licensed Products** or produced through use of **Licensed Processes** shall be manufactured substantially in the United States, unless a written waiver is obtained in advance from PHS.

8.1 **Licensee** agrees to keep accurate and correct records of **Licensed Products** made, used, sold, or imported and **Licensed Processes** practiced under this **Agreement** appropriate to determine the amount of royalties due PHS. These records shall be retained for at least [**] years following a given reporting period and shall be available during normal business hours for inspection, at the expense of PHS, by an independent accountant or other designated auditor selected by PHS for the sole purpose of verifying reports and royalty payments hereunder. The accountant or auditor shall only disclose to PHS information relating to the accuracy of reports and royalty payments made under this **Agreement**. If an inspection shows an underreporting or underpayment in excess of five percent (5%) for any [**] month period, then **Licensee** shall reimburse PHS for the cost of the inspection at the time **Licensee** pays the unreported royalties, including any additional royalties as required by Paragraph 9.8. All royalty payments required under this Paragraph shall be due within [**] days of the date PHS provides **Licensee** notice of the payment due.

9.1 Prior to signing this **Agreement**, **Licensee** has provided PHS with the **Commercial Development Plan** referred to in more detail in Appendix E, and under which **Licensee** intends to bring the subject matter of the **Licensed Patent Rights** to the point of **Practical Application**. This **Commercial Development Plan** is hereby incorporated by reference in this **Agreement**. Based on this plan, performance **Benchmarks** are determined as specified in Appendix D.

9.2 **Licensee** shall provide written reports on its product development progress or efforts to commercialize under the **Commercial Development Plan** for each of the **Licensed**

Fields of Use. These written reports are due within [**] days after December 31 of each calendar year beginning on December 31, [**]. The first written report will detail the progress made from the Effective Date of this **Agreement** through December 31, [**]. These progress reports shall include, but not be limited to: progress on research and development, status of applications for regulatory approvals, manufacturing, marketing, importing, and sales during the preceding calendar year, as well as, plans for the present calendar year. PHS also encourages these reports to **Patent Rights**. If reported progress differs from that projected in the **Commercial Development Plan** and **Benchmarks**, **Licensee** shall explain the reasons for such differences. In any annual report, **Licensee** may amend the **Benchmarks** at any time upon written approval by PHS. PHS shall not unreasonably withhold approval of any request of **Licensee** to extend the time periods of this schedule if the request is supported by a reasonable showing by **Licensee** of diligence in its performance under the **Commercial Development Plan** and toward bringing the **Licensed Products** to the point of **Practical Application**.

9.3 **Licensee** shall report to PHS the dates for achieving **Benchmarks** specified in Appendix D and the **First Commercial Sale** in each country in the **Licensed Territory** within [**] days of such occurrences.

9.4 Commencing with **First Commercial Sale**, **Licensee** shall submit to PHS, within [**] days after each calendar half-year ending June 30 and December 31, a royalty report, as described in the example in Appendix F, setting forth for the preceding half-year period the amount of the **Licensed Products** sold or **Licensed Processes** practiced by or on behalf of **Licensee** in each country within the **Licensed Territory**, the **Net Sales**, and the amount of royalty accordingly due. With each royalty report, **Licensee** shall submit payment of earned royalties due. If no earned royalties are due to PHS for any reporting period, the written report shall so state. The royalty report shall be certified as correct by an authorized officer of **Licensee** and shall include a detailed listing of all deductions made under Paragraph 2.10 to determine **Net Sales** made under Article 6 to determine royalties due.

9.5 **Licensee** agrees to forward to PHS, on a semi-annually basis, a copy of reports received by **Licensee** from its sublicensees during the preceding half-year period as shall be pertinent to a royalty accounting to PHS by **Licensee** for activities under the sublicense.

10.1 **Licensee** shall use its reasonable commercial efforts to bring the **Licensed Products** and **Licensed Processes** to **Practical Application**. "Reasonable commercial efforts" for the purposes of this provision shall include adherence to the **Commercial Development Plan** in Appendix E and performance of the **Benchmarks** in Appendix D as may be amended from time to time in accordance with the provisions of Paragraphs 9.2 and 14.4. The efforts of the **Sublicensee** will be considered the efforts of the **Licensee**.

10.2 Upon the **First Commercial Sale**, until the expiration or termination of this **Agreement, Licensee** shall use its reasonable commercial efforts to make **Licensed Products** and **Licensed Processes** reasonably accessible to the United States public.

10.3 **Licensee** agrees, after its **First Commercial Sale**, to make reasonable quantities of **Licensed Products** or materials produced through the use of **Licensed Processes** available on a compassionate use basis to patients, either through the patient's physician(s) or the medical center treating the patient.

10.4 **Licensee** agrees, after its **First Commercial Sale** and as part of its marketing and product promotion, to develop educational materials (e.g., brochures, website, etc.) directed to patients and physicians detailing the **Licensed Products** or medical aspects of the prophylactic and therapeutic uses of the **Licensed Products**.

10.5 **Licensee** agrees to supply, to the Mailing Address for Agreement Notices indicated on the Signature Page, the Office of Technology Transfer, NIH with inert samples of the **Licensed Products** or **Licensed Processes** or their packaging for educational and display purposes only.

12.5 **Licensee** shall indemnify and hold PHS, its employees, students, fellows, agents, and consultants harmless from and against all liability, demands, damages, expenses, and losses, including but not limited to death, personal injury, illness, or property damage in connection with or arising out of:

(a) the use by or on behalf of **Licensee**, its directors, employees, its **Sublicensees**, or third parties of any **Licensed Patent Rights**; or

(b) the design, manufacture, distribution, or use of any **Licensed Products, Licensed Processes** or materials by **Licensee** or its **Sublicensees**, or other products or processes developed in connection with or arising out of the **Licensed Patent Rights**.

13.7 PHS reserves the right according to 35 U.S.C. §209(d)(3) to terminate or modify this **Agreement** if it is determined that the action is necessary to meet the requirements for public use specified by federal regulations issued after the date of the license and these requirements are not reasonably satisfied by **Licensee**.

13.8 Within [**] days of receipt of written notice of PHS' unilateral decision to modify or terminate this **Agreement, Licensee** may, consistent with the provisions of 37 CFR §404.11, appeal the decision by written submission to the designated PHS official. The decision of the designated PHS official shall be the final agency decision. **Licensee** may thereafter exercise any and all administrative or judicial remedies that may be available.

13.9 Within [**] days of expiration or termination of this **Agreement** under this Article 13, a final report shall be submitted by **Licensee**. Any royalty payments, including those incurred but not yet paid (such as the full minimum annual royalty), and those related to patent expense, due to PHS shall become immediately due and payable upon termination or expiration. If terminated under this Article 13, **Sublicensees** may elect to convert their sublicenses to direct licenses with PHS pursuant to Paragraph 4.3. Unless otherwise specifically provided for under this **Agreement**, **Licensee** shall return all **Licensed Products** or materials included within the **Licensed Patent Rights** to PHS or provide PHS with written certification of the destruction thereof.

14.10 **Licensee** agrees to mark the **Licensed Products** or their packaging sold [**] with all applicable U.S. patent numbers and similarly to indicate "Patent Pending" status. All **Licensed Products** manufactured in, shipped to, or sold in other countries shall be marked in a manner to preserve PHS patent rights in those countries.

Exhibit F-1

MERRIMACK Press Release

EMBARGOED

Sanofi-aventis and Merrimack Pharmaceuticals enter into a Worldwide Collaboration and Licensing Agreement on MM-121, an anti-ErbB3 monoclonal antibody

Merrimack eligible to receive up to $530 million, comprised of $60 million upfront plus milestone payments, in addition to future royalties. Merrimack will lead MM-121 development through proof of concept and retains the right to co-promote in the United States

CAMBRIDGE, Mass., September 30, 2009 — Merrimack Pharmaceuticals, Inc. and sanofi-aventis announced today the signing of an exclusive worldwide licensing agreement for the development and co-commercialization of MM-121, a first-in-class, fully human monoclonal antibody designed to block signaling of the ErbB3 receptor. MM-121 is currently in Phase 1 clinical testing.

Under the terms of the agreement, sanofi-aventis will make an upfront payment of $60 million, and Merrimack is eligible for an additional $470 million in milestone payments as well as tiered double-digit royalties on sales of MM-121. Merrimack will be responsible for development of MM-121 through Phase 2 proof of concept for each indication and sanofi-aventis will be responsible for development thereafter. Merrimack retains the right to co-promote the therapy in the United States.

“Merrimack’s expertise in the ErbB pathway along with their knowledge of biologics development has allowed them to successfully identify ErbB3 as a promising target and rapidly bring MM-121 into the clinic,” stated Chris Viehbacher, Chief Executive Officer of sanofi-aventis. “We are excited to collaborate with Merrimack on the development of MM-121 which we believe addresses a significant gap in treating cancer patients.”

The ErbB3 receptor is a novel target known to be a key mediator of signaling in the ErbB pathway (also known as the EGFR or HER pathway) — a signaling network that impacts a broad array of cancers. By targeting ErbB3, MM-121 is believed to have a broad application across cancer as both a monotherapy and in combination with other therapeutics. Research data has also shown that ErbB3 may also play a central role in resistance to both targeted therapies and chemotherapy in a number of tumor types.

“We believe that MM-121 has the potential to serve as an important new treatment for multiple forms of cancer,” said Robert Mulroy, President and Chief Executive Officer of Merrimack. “We are pleased to partner with sanofi-aventis, a premier, global pharmaceutical company with broad oncology expertise. Together, we hope to work with the international research community to accelerate the development of MM-121 for the benefit of patients.”

Merrimack developed MM-121 after identifying the importance of ErbB3 through its Network Biology approach, a fully integrated drug discovery and development technique that combines biology, engineering, and computational modeling to better understand the underlying complexity of disease pathways. The information derived from Network Biology informs the strategic decisions guiding early pharmaceutical discovery as well as helping to advance candidates through pre-clinical, clinical development and towards commercialization.

The effectiveness of the license and collaboration is subject to antitrust clearance under the Hart-Scott-Rodino Antitrust Improvements Act and other customary regulatory approvals.

About Merrimack

Merrimack Pharmaceuticals, Inc. is a biotechnology company focused on the discovery and development of novel treatments for cancer and autoimmune disease. Its first two oncology pipeline candidates, MM-121 and MM-111 are currently in Phase 1 clinical development. The Company’s proprietary Network Biology discovery platform, developed with the help of leading scientists from MIT and Harvard, enables the high-throughput profiling of protein networks as a basis for improved validation, lead identification and speed in the development of innovative, effective and well tolerated therapeutics. MM-121 and MM-111 are investigational drugs and have not been approved by the U.S. Food and Drug Administration or any international regulatory agency. Merrimack is a privately-held company based in Cambridge, Massachusetts.

Contact: Kathleen Petrozzelli, Corporate Communications, 617-441-1043, kpetrozzelli@merrimackpharma.com, http://www.merrimackpharma.com
Betsy Stevenson, RaymondStevenson Healthcare, 860-984-1424, betsy@raymondstevenson.com

About sanofi-aventis

Sanofi-aventis, a leading global pharmaceutical company, discovers, develops and distributes therapeutic solutions to improve the lives of everyone. Sanofi-aventis is listed in Paris (EURONEXT: SAN) and in New York (NYSE: SNY).

Forward Looking Statements

This press release contains forward-looking statements as defined in the Private Securities Litigation Reform Act of 1995, as amended. Forward-looking statements are statements that are not historical facts. These statements include product development, product potential projections and estimates and their underlying assumptions, statements regarding plans, objectives, intentions and expectations with respect to future events, operations, products and services, and statements regarding future performance. Forward-looking statements are generally identified by the words “expects,” “anticipates,” “believes,” “intends,” “estimates,” “plans” and similar expressions. Although sanofi-aventis’ management believes that the expectations reflected in such forward-looking statements are reasonable, investors are cautioned that forward-looking information and statements are subject to various risks and uncertainties, many of which are difficult to predict and generally beyond the control of sanofi-aventis, that could cause actual results and developments to differ materially from those expressed in, or implied or projected by, the forward-looking information and statements. These risks and uncertainties include among other things, the uncertainties inherent in research and development, future clinical data and analysis, including post marketing, decisions by regulatory authorities, such as the FDA or the EMEA, regarding whether and when to approve any drug, device or biological application that may be filed for any such product candidates as well as their decisions regarding labelling and other matters that could affect the availability or commercial potential of such products candidates, the absence of guarantee that the products candidates if approved will be commercially successful, the future approval and commercial success of therapeutic alternatives as well as those discussed or identified in the public filings with the SEC and the AMF made by sanofi-aventis, including those listed under “Risk Factors” and “Cautionary Statement Regarding Forward-Looking Statements” in sanofi-aventis’ annual report on Form 20-F for the year ended December 31, 2008. Other than as required by applicable law, sanofi-aventis does not undertake any obligation to update or revise any forward-looking information or statements.

Exhibit F-2

SANOFI-AVENTIS Press Release

Sanofi-aventis and U.S. Biotechnology company Merrimack enter into an Exclusive Global Collaboration and Licensing Agreement for a monoclonal antibody in Oncology

Paris, France — September 30, 2009 — Sanofi-aventis (EURONEXT: SAN and NYSE: SNY) and Merrimack Pharmaceuticals, Inc. announced today an exclusive global collaboration and licensing agreement on MM-121, a first-in-class, fully human monoclonal antibody designed to block signaling of the ErbB3 (also known as HER3) receptor, for the management of solid malignancies. MM-121 is currently in Phase 1 clinical testing.

Under this agreement, sanofi-aventis will receive an exclusive worldwide license to develop, manufacture and commercialize MM-121. Merrimack will retain potential co-promotion rights in the United States.

"*This agreement illustrates sanofi-aventis' continuous involvement to access innovative biological compounds through high-value partnerships"* declared Marc Cluzel Senior Vice-President R&D,
sanofi-aventis. *"MM-121 is a pioneering monoclonal antibody which has the potential to prolong the life of patients suffering from cancer and which constitutes a strong addition to our biopharmaceutical portfolio. It further demonstrates sanofi-aventis' strong commitment to innovation as it strengthens our position as a key player in biotechnologies".*

Under the terms of the agreement, sanofi-aventis agreed to pay Merrimack an upfront cash payment of $60M for the research, development, manufacturing and commercialization rights. Merrimack is eligible for development and regulatory milestone payments up to $410M on MM-121, royalties on the worldwide product sales and will receive additional performance milestones of up to $60M on worldwide sales. Merrimack will participate in the development of MM-121.

The license agreement is subject to antitrust clearance under the *Hart-Scott-Rodino Antitrust Improvements Act.*

About MM-121

MM-121 is a monoclonal antibody designed to block signaling of the ErbB3 receptor, a member of the epidermal growth factor (EGF) receptor family (also known as ErbB family) which plays a crucial role in the development and evolution of cancer. MM-121 is the first selective ErbB3 antagonist to have entered human clinical development. Preclinical data demonstrating MM-121's impact on multiple cancer models (including lung, ovarian, breast, prostate and renal) were presented at the annual meeting of the American Association for Cancer Research in April 2008. The Phase 1 trial is being conducted at 3 clinical centers in the United States.

About ErbB3

ErbB3 (also known as HER3) is a transmembrane receptor belonging to the epidermal growth factor (EGF) receptor family. While ErbB3 lacks innate tyrosine kinase function, it exerts its signalling activity through heterodimerization (pairing) with the other ErbB receptors. Notably due to its recently established link to the phosphoinositide-3 kinase (PI3K) pathway, ErbB3 is emerging as a key oncology target. ErbB3 and its ligands are expressed and often upregulated in different solid tumors (breast, ovarian…) and are associated with metastasis formation and decrease in survival. Importantly, ErbB3 is also involved in the mechanism of resistance to certain treatments such as gefinitib in lung cancer, cetuximab in colon and head & neck cancer, and trastuzumab in breast cancer.

About Merrimack

Merrimack Pharmaceuticals, Inc. is a biotechnology company focused on the discovery and development of novel treatments for cancer and autoimmune disease. Its first two oncology pipeline candidates, MM-121 and MM-111 are currently in Phase 1 clinical development. The Company's proprietary Network Biology discovery platform, developed with the help of leading scientists from MIT and Harvard, enables the high-throughput profiling of protein networks as a basis for improved validation, lead identification and speed in the development of innovative, effective and well tolerated therapeutics. MM-121 and MM-111 are investigational drugs and have not been approved by the U.S. Food and Drug Administration or any international regulatory agency. Merrimack is a privately-held company based in Cambridge, Massachusetts.

About sanofi-aventis

Sanofi-aventis, a leading global pharmaceutical company, discovers, develops and distributes therapeutic solutions to improve the lives of everyone. Sanofi-aventis is listed in Paris (EURONEXT: SAN) and in New York (NYSE: SNY).

Forward Looking Statements

This press release contains forward-looking statements as defined in the Private Securities Litigation Reform Act of 1995, as amended. Forward-looking statements are statements that are not historical facts. These statements include product development, product potential projections and estimates and their underlying assumptions, statements regarding plans, objectives, intentions and expectations with respect to future events, operations, products and services, and statements regarding future performance. Forward-looking

statements are generally identified by the words "expects," "anticipates," "believes," "intends," "estimates," "plans" and similar expressions. Although sanofi-aventis' management believes that the expectations reflected in such forward-looking statements are reasonable, investors are cautioned that forward-looking information and statements are subject to various risks and uncertainties, many of which are difficult to predict and generally beyond the control of sanofi-aventis, that could cause actual results and developments to differ materially from those expressed in, or implied or projected by, the forward-looking information and statements. These risks and uncertainties include among other things, the uncertainties inherent in research and development, future clinical data and analysis, including post marketing, decisions by regulatory authorities, such as the FDA or the EMEA, regarding whether and when to approve any drug, device or biological application that may be filed for any such product candidates as well as their decisions regarding labelling and other matters that could affect the availability or commercial potential of such products candidates, the absence of guarantee that the products candidates if approved will be commercially successful, the future approval and commercial success of therapeutic alternatives as well as those discussed or identified in the public filings with the SEC and the AMF made by sanofi-aventis, including those listed under "Risk Factors" and "Cautionary Statement Regarding Forward-Looking Statements" in sanofi-aventis' annual report on Form 20-F for the year ended December 31, 2008. Other than as required by applicable law, sanofi-aventis does not undertake any obligation to update or revise any forward-looking information or statements.

Exhibit G

Required MERRIMACK Patent Filing Countries

[**]

FIRST AMENDMENT TO LICENSE AGREEMENT BETWEEN LICENSE AND COLLABORATION AGREEMENT By and Between SANOFI-AVENTIS and MERRIMACK PHARMACEUTICALS, INC.

This First Amendment ("First Amendment") to is made and effective this 18th day of February, 2011 ("Amendment Effective Date") by and between SANOFI-AVENTIS, a French corporation with its principal offices at 174 avenue de France, 75013 Paris, France ("SANOFI-AVENTIS"), and MERRIMACK PHARMACEUTICALS, INC., a Delaware corporation with its principal offices at One Kendall Square, Suite B7201, Cambridge, MA 02139-1670, U.S.A. ("MERRIMACK"). Capitalized terms used herein and not defined herein shall have the meanings ascribed to them in the Agreement (as defined below).

BACKGROUND

WHEREAS, SANOFI-AVENTIS and MERRIMACK entered into a License and Collaboration Agreement ("Agreement") effective September 30, 2009 for the collaboration in the development and commercialization of products comprised of MM-121 and potentially other monoclonal antibodies targeting ErbB3 on the terms and conditions set forth in the Agreement;

WHEREAS, in order to maintain the pace of clinical development detailed in the Global Development Plan, Merrimack has been asked to produce significantly more than the [**] of drug product specified in Section 3.4(b)(i) of the Agreement;

WHEREAS, SANOFI-AVENTIS and MERRIMACK previously discussed revised payment terms for the manufacture of MM-121, including during the meeting of the Joint Project Team held on July 1, 2010 and the meeting of the Joint Steering Committee held on October 6, 2010; and

WHEREAS, SANOFI-AVENTIS and MERRIMACK wish to amend the Agreement as provided herein in order to formally document these payment terms related the manufacture of MM-121 by MERRIMACK for purposes outlined in the Global Development Plan and to enable the continuation of these terms beyond 2010.

NOW, THEREFORE, in view of the foregoing, the Parties hereby agree as follows:

1. Section 3.4(c) of the Agreement is deleted in its entirety and replaced with the following:

(c) SANOFI-AVENTIS shall pay MERRIMACK for all Manufacturing Costs incurred by MERRIMACK, even if incurred prior to the Effective Date, for providing clinical supply of MM-121 to SANOFI-AVENTIS hereunder. Such payment will take place either (A) for all such material delivered on or before October 1, 2010, within [**] days following delivery of such supply and MERRIMACK's invoice therefor, or (B) for all such material delivered after October 1, 2010, in [**] installments, each due within [**] days following MERRIMACK's invoice therefor, as follows: [**] of MERRIMACK's estimate of [**] for the applicable [**] upon [**] of MERRIMACK's estimate of all [**] for the applicable [**] upon MERRIMACK's [**] of at least [**] percent ([**]%) of the [**] in such campaign (for clarity, the determination of [**]% of the [**] in such campaign will be based upon [**] the [**]

(calculated as the actual [**]) within [**] days of such supply. It is understood that such costs (if previously paid by SANOFI-AVENTIS) shall be reimbursed by MERRIMACK in case of non-conformity of MM-121 to the applicable specifications, pursuant to Section 3.4(b)(iii) above.

2. As amended hereby, the Agreement remains in full force and effect.

IN WITNESS WHEREOF, the Parties have executed this First Amendment by their respective and duly authorized officers, as evidenced by their signatures below.

SANOFI-AVENTIS

By: /s/ Philippe Goupit
Name: Philippe Goupit
Title: VP Business Development and Licensing

MERRIMACK PHARMACEUTICALS, INC.

By: /s/ Robert J. Mulroy
Name: Robert J. Mulroy
Title: President & CEO

Exhibit 10.20

Confidential Materials omitted and filed separately with the
Securities and Exchange Commission. Asterisk denote omissions.

EXCLUSIVE LICENSE AGREEMENT

between

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

and

HERMES BIOSCIENCES, INC.

for

[**]
(UC Case No. [**])

[**]
(UC Case No. [**])

[**]
(UC Case No. [**])

and

CO-EXCLUSIVE LICENSE AGREEMENT

between

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

and

HERMES BIOSCIENCES, INC.

for

[**]
(UC Case No. [**])

[**]
(UC Case No. [**])

TABLE OF CONTENTS

EXCLUSIVE LICENSE AGREEMENT

for

[**]
(UC Case No. [**])

[**]
(UC Case No. [**])

[**]
(UC Case No. [**])

and

CO-EXCLUSIVE LICENSE AGREEMENT

for

[**]
(UC Case No. [**])

[**]
(UC Case No. [**])

This license agreement ("Agreement") is made effective this 1st day of November, 2000 ("Effective Date"), between The Regents of the University of California, a California corporation, having its statewide administrative offices at 1111 Franklin Street, 12th Floor, Oakland, California 94607-5200 ("The Regents"), and Hermes Biosciences, Inc., a California corporation, having a principal place of business at 61 Airport Boulevard, Suite B, South San Francisco, California 94080 ("Licensee").

BACKGROUND

A. Certain inventions, generally characterized as:

(i) "[**]" made in the course of research at University of California, San Francisco by Drs. [**], (UC Case No. [**]);

(ii) "[**]" made in the course of research at University of California, San Francisco by Drs. [**] (UC Case No. [**]);

(iii) "[**]" made in the course of research at University of California, San Francisco by Drs. [**], (UC Case No. [**]);

(iv) "[**]" made in the course of research at University of California, San Francisco by Drs. [**] (UC Case No. [**]); and,

(v) "[**]" made in the course of research at University of California, San Francisco, by Drs. [**], (UC Case No. [**]) collectively the "Invention," and are covered by Regents' Patent Rights as defined below.

B. The development of UC Case Nos. [**] and [**] were sponsored in part by the National Institutes of Health ("NIH") and the development of UC Case Nos. [**] and [**] were sponsored in part by the U.S. Department of Defense and , as a consequence, this Agreement is subject to overriding obligations to the United States ("U.S.") Federal Government under 35 U.S.C. §§ 200-212 and applicable regulations including a non-exclusive, non-transferable, irrevocable, paid-up license to practice or have practiced the Invention for or on behalf of the United States Government throughout the world.

C. The development of UC Case No. [**] was sponsored in part by Bayer Corporation; however, Bayer does not retain any rights to the Invention.

D. The Regents has elected to retain title to UC Case Nos. [**]and [**].

E. Licensee has evaluated the Invention under Secrecy Agreements with The Regents covering UC Case No. [**] (UC Control No. [**]) dated [**]; UC Case No. [**] (UC Control No. [**]) dated [**]; UC Case No. [**] (UC Control No. [**]) dated [**]; UC Case No. [**] (UC Control No. [**]) dated [**]; and UC Case No. [**] (UC Control No. [**]) dated [**].

F. Licensee wishes to obtain rights from The Regents for the commercial development, use and sale of products from the Invention, and The Regents is willing to grant those rights so that the Invention may be developed to its fullest and the benefits enjoyed by the general public.

G. Licensee is a "small business firm" as defined in 15 U.S.C. § 632.

H. Both parties recognize and agree that royalties due under this Agreement on products and methods will be paid by Licensee on both pending patent applications and issued patents.

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In view of the foregoing, the parties agree:

1. DEFINITIONS

1.1 "Affiliate" means any corporation or other business entity in which Licensee owns or controls, directly or indirectly, at least fifty percent (50%) of the outstanding stock or other voting rights entitled to elect directors or in which Licensee is owned or controlled, directly or indirectly, by at least fifty percent (50%) of the outstanding stock or other voting rights entitled to elect directors; but in any country where the local law does not permit foreign equity participation of at least fifty percent (50%), then an "Affiliate" includes any company in which Licensee owns or controls, or is owned or controlled by, directly or indirectly, the maximum percentage of outstanding stock or voting rights permitted by local law.

1.2 "Combination Product" means a product that consists of the Licensed Product combined with other active components not subject to this Agreement that:

1.2.1 are not covered by Regents' Patent Rights;

1.2.2 the manufacture, sale, use or import by itself does not contribute to the infringement of Regents' Patent Rights; and

1.2.3 can be sold separately by Licensee, an Affiliate or sublicensee.

1.3 "Licensed Method" means any method that is covered by Regents' Patent Rights, or the use of which would constitute, but for the license granted to Licensee under this Agreement, an infringement of any pending or issued claim within Regents' Patent Rights.

1.4 "Licensed Product" means any material that is either covered by Regents' Patent Rights, that is identified or produced by the Licensed Method, or that the use of which would

constitute, but for the license granted to Licensee under this Agreement, an infringement of any pending or issued claim within Regents' Patent Rights.

1.5 "Net Sales" means the total of the gross invoice prices from the Final Sale of Licensed Product to an independent, unaffiliated third party or Licensed Method performed by Licensee, an Affiliate or a sublicensee, less the sum of the following actual and customary deductions where applicable: cash, trade or quantity discounts; sales, use, tariff, import/export duties or other excise taxes imposed on particular sales (excepting value added taxes or income taxes); transportation charges, including insurance; and allowances or credits to customers because of rejections or returns. Final Sale means the sale which is the last act of infringement of Regents' Patent Rights within the control of Licensee, an Affiliate or sublicensee, regardless of whether Licensee, an Affiliate or sublicensee had control over prior infringing acts. For purposes of calculating Net Sales, any distribution or transfer among Licensee, an Affiliate or sublicensee for end use by Licensee, an Affiliate or sublicensee (which event is the last act of infringement of Regents' Patent Rights) will be considered a Final Sale at the price normally charged to independent, unaffiliated third parties.

1.6 "Regents' Patent Rights-Group A" means The Regents' interest in the subject matter claimed in or covered by:

UC Case Number	U.S. Application Number	Filing Date
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]

and continuing applications thereof including divisions and substitutions but excluding continuation-in-part applications to the extent that claims are not supported in the parent; any patents issuing on said applications including reissues, reexaminations and extensions; and any corresponding foreign applications or patents.

1.7 "Regents' Patent Rights-Group B" means The Regents' interest in the subject matter claimed in or covered by:

UC Case Number	U.S. Application Number	Filing Date
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]

and continuing applications thereof including divisions and substitutions but excluding continuation-in-part applications to the extent that claims are not supported in the parent; any patents issuing on said applications including reissues, reexaminations and extensions; and any corresponding foreign applications or patents.

1.8 "Regents' Patent Rights" means Regents Patent Rights-Group A and Regents' Patent Rights-Group B.

2. LIFE OF PATENT GRANT

2.1 Subject to the limitations set forth in this Agreement, The Regents grants to Licensee a world-wide exclusive license under Regents' Patent Rights-Group A to make, have made, use, sell, offer to sell and import Licensed Product and to practice Licensed Method to the extent permitted by law.

2.2 Subject to the limitations set forth in this Agreement, The Regents grants to Licensee a world-wide co-exclusive license under Regents' Patent Rights-Group B to make, have made, use, sell, offer to sell and import Licensed Product and to practice Licensed Method to the extent permitted by law. The co-exclusive license of this Paragraph 2.2 for Regents' Patent Rights-Group B is co-exclusive in that The Regents retains the right to grant one other additional license. The additional license will first be offered to [**] or its successors. In the event the additional license is not accepted and completed by [**] or its successors and before The Regents starts negotiations with a third party for the additional license, the Licensee shall have the right to negotiate for an exclusive license to Regents' Patent Rights-Group B with a field of use. The Regents and Licensee shall enter good faith negotiations for the exclusive license with a field of use within [**] days of notice by The Regents that The Regents has terminated licensing negotiations with [**]. Negotiations with Licensee must be completed within [**] months.

2.3 The licenses granted in Paragraphs 2.1 and 2.2 are subject to all the applicable provisions of any license to the U.S. Government executed by The Regents and is subject to the overriding obligations to the U.S. Government under 35 U.S.C. §§ 200-212 and applicable governmental implementing regulations.

2.4 The Regents reserves the right to use the Invention and associated technology for noncommercial, educational and research purposes including publication of research results and sharing such research results and the Invention and associated technology with other non-profit institutions for their use of similar scope.

3. SUBLICENSES

3.1 The Regents also grants to Licensee the right to issue sublicenses to third parties to make, have made, use, sell, offer to sell and import Licensed Product and to practice Licensed Method under Regents' Patent Rights as long as Licensee has current exclusive or co-exclusive rights thereto under this Agreement. To the extent applicable, sublicenses must include all of the rights of and obligations due to The Regents and the U.S. Government contained in this Agreement.

3.2 Licensee shall promptly provide The Regents with a copy of each sublicense issued, collect and guarantee payment of all payments due The Regents from sublicensees and summarize and deliver all reports due The Regents from sublicensees.

3.3 In the event Licensee sublicenses any or all of the rights under this Agreement to any third party, it shall pay to The Regents a percentage of any non-royalty consideration received by Licensee for any such sublicense according to the following formula:

[**]% of non-royalty consideration received prior to January 1, 2002;

[**]% of non-royalty consideration received in the year 2002;

[**]% of non-royalty consideration received in the year 2003; and

[**]% of non-royalty consideration received in the year 2004 and all years

thereafter.

If the non-royalty consideration received by Licensee from a sublicensee is not cash, then this non-royalty consideration shall be valued through good faith negotiations between Licensee and The Regents. For the purposes of this Paragraph 3.3, the following shall not be considered to be non-royalty consideration:

3.3.1 the sublicensee's purchase of stock in Licensee at the same price as is (or would be) paid by an outside cash investor (but any premium price shall be included);

3.3.2 the sublicensee's purchase of products or services from Licensee at the same price as is (or would be) paid by an outside customer (but any premium price shall be included); and

3.3.3 the sublicensee's funding of Licensee's research and development expenses.

3.4 Upon termination of this Agreement for any reason, any sublicenses shall remain in effect and shall be assigned to The Regents, provided that:

3.4.1 Licensee was not in breach of this Agreement when entering into the sublicense;

3.4.2 the sublicensee is not in breach of its sublicense at the time of the termination of this Agreement;

3.4.3 the rights of The Regents in the sublicense are no less than the rights of The Regents under this Agreement;

3.4.4 the obligations of The Regents under the sublicense are no greater than the obligations of The Regents under this Agreement;

3.4.5 the obligations of the sublicensees are no less than those of Licensee hereunder with respect to the subject of the sublicense; and

3.4.6 the sublicensee is reputable and is qualified to commercially exploit Regents' Patent Rights.

4. PAYMENT TERMS

4.1 Paragraphs 1.2, 1.3, 1.4 and 1.8 define Combination Product, Licensed Method, Licensed Product and Regents' Patent Rights respectively, so that royalties are payable on products and methods covered by both pending patent applications and issued patents. Royalties will accrue in each country for the duration of Regents' Patent Rights in that country and are payable to The Regents when Combination Product and Licensed Product are invoiced or if not invoiced, when delivered to a third party.

4.2 Licensee shall pay to The Regents earned royalties quarterly on or before February 28, May 31, August 31 and November 30 of each calendar year. Each payment will be for earned royalties accrued within Licensee's most recently completed calendar quarter.

4.3 All monies due The Regents are payable in U.S. dollars. Licensee is responsible for all bank transfer charges. When Combination Product and Licensed Product are sold for monies other than U.S. dollars, Licensee shall first determine the earned royalty in the currency of the country in which Combination Product and Licensed Product were sold and then convert the amount into equivalent U.S. funds, using the exchange rate quoted in *The Wall Street Journal* on the last business day of the reporting period.

4.4 Royalties earned on sales occurring in any country outside the U.S. may not be reduced by any taxes, fees or other charges imposed by the government of such country on the payment of royalty income. Notwithstanding the foregoing, all payments made by Licensee in fulfillment of The Regents' tax liability in any particular country will be credited against earned royalties or fees due The Regents for that country.

4.5 If any patent or patent claim within Regents' Patent Rights is held invalid in a final decision by a court of competent jurisdiction and last resort and from which no appeal has or can be taken, all obligation to pay royalties based on that patent or claim or any claim patentably indistinct therefrom will cease as of the date of final decision. Licensee will not, however, be relieved from paying any royalties that accrued before the final decision or that are

based on another patent or claim not involved in the final decision or that are based on The Regents' property rights.

4.6 No royalties may be collected or paid on Combination Product and Licensed Product sold to the account of the U.S. Government, or any agency thereof, as provided for in the license to the Government.

4.7 In the event payments, rebillings or fees are not received by The Regents when due, Licensee shall pay to The Regents interest charges at a rate of [**] percent ([**]%) per annum. Interest is calculated from the date payment was due until actually received by The Regents.

4.8 For the avoidance of doubt, the parties hereby agree that, notwithstanding how many patent applications or patents under Regents' Patent Rights are utilized for a single Combination Produce, Licensed Product or Licensed Method, only one royalty will be earned on the sale of that Combination Product, Licensed Product or Licensed Method.

5. LICENSE-ISSUE FEE

Licensee shall pay to The Regents a license-issue fee of [**] dollars ($[**]) within [**] days after the Effective Date. This fee is non-refundable, non-cancelable and is not an advance against royalties.

6. LICENSE-MAINTENANCE FEE

Licensee shall also pay to The Regents a license-maintenance fee of [**] dollars ($[**]) beginning on the [**] anniversary of the Effective Date and continuing annually on the anniversary date of the Effective Date. Provided, however, the license-maintenance fee is not due on any anniversary of the Effective Date if on that date, Licensee is commercially selling Combination Product and/or Licensed Product and/or practicing the Licensed Method and paying an earned royalty to The Regents on the sales of Combination Product and/or Licensed Product and/or practicing the Licensed Method in an amount of at least [**] dollars ($[**]). License-maintenance fees are non-refundable and not an advance against earned royalties.

7. EARNED ROYALTIES AND MINIMUM ANNUAL ROYALTIES

7.1 Licensee shall also pay to The Regents an earned royalty of [**] percent ([**]%) of the Net Sales of Licensed Product or practice of Licensed Method. However, for Net Sales by a sublicensee, Licensee shall pay to The Regents an earned royalty equal to [**] percent ([**]%) of the royalty payable by the sublicensee to Licensee, but in no event shall the royalty rate payable to The Regents by Licensee be less than [**] percent ([**]%) and not more than [**] percent ([**]%) of the sublicensee's Net Sales.

7.2 Licensee shall, however, be entitled to reduce the earned royalty provided for in Paragraph 7.1 in the event that it becomes necessary for Licensee to license intellectual property rights covering ingredients, methods or devices owned by third parties to make, use or sell Combination Product or Licensed Product or

practice Licensed Method, provided that the combined royalty payable to The Regents and the third parties exceeds [**] percent ([**]%) prior to the reduction set forth in this Paragraph 7.2. The reduction shall be equal to [**] the sum of the royalty rates due to such third parties. However, in no event shall the royalty rate payable to The Regents on Net Sales as provided for in Paragraph 7.1 be less than [**] percent ([**]%).

7.3 Notwithstanding anything contained herein, if a Licensed Product is a component of a Combination Product the Net Sales used to calculate earned royalties shall be determined as follows:

7.3.1 If the Licensed Product is sold independently from the Combination Product, then the gross invoice price for such Licensed Product to be used in the calculation of Net Sales in any given quarter will be the [**] of the Licensed Product when sold independently measured over such quarter.

7.3.2 If the Licensed Product is not sold independently from the Combination Product, then the Net Sales in any given quarter will be the percentage that the cost of the Licensed Product contributes to the Combination Product cost times the Net Sales of the Combination Product. However, in no event will the percentage that the cost of the Licensed Product contributes to the Combination Product be less than [**] percent ([**]%).

7.4 Licensee shall also pay to The Regents a minimum royalty for the life of Regents' Patent Rights, beginning with:

7.4.1 the first year of commercial sale of any Licensed Product or Combination Product; or

7.4.2 the first full calendar year after the [**] anniversary of the Effective Date, whichever is earlier, equal to the fees set forth below:

7.4.2.1 [**] thousand dollars ($[**]) due the first year;

7.4.2.2 [**] dollars ($[**]) due the second year;

7.4.2.3 [**] dollars ($[**]) due the third year; and each subsequent year for the life of The Regents' Patent Rights.

7.5 For the first year of commercial sales, Licensee's obligation to pay the minimum annual royalty will be pro-rated for the number of months remaining in that calendar year when commercial sales commence and will be due the following [**], to allow for crediting of the pro-rated year's earned royalties. For subsequent years, the minimum annual royalty will be paid to The Regents by [**] of each year and will be credited against the earned royalty due for the calendar year in which the minimum payment was made.

8. DUE DILIGENCE

8.1 Licensee, upon execution of this Agreement, shall diligently proceed with the development, manufacture and sale of Combination Product or Licensed Product and shall earnestly and diligently endeavor to market the same within a reasonable time after execution of this Agreement and in quantities sufficient to meet market demands.

8.2 Licensee shall endeavor to obtain all necessary governmental approvals for the manufacture, use and sale of Combination Product or Licensed Product.

8.3 Licensee and/or its Affiliates and/or its sublicensees shall:

8.3.1 [**] within [**] from the Effective Date;

8.3.2 [**] within [**] from Effective Date;

8.3.3 [**] within [**] of [**]; and

8.3.4 [**] during the period of this Agreement.

8.4 If Licensee does not perform, or have performed, any of the above provisions, then, if Licensee does not exercise its right pursuant to Paragraph 8.7 herein, The Regents has the right and option to either terminate this Agreement or reduce Licensee's exclusive license to a non-exclusive license.

8.5 This right, if exercised by The Regents, supersedes the rights granted in Article 2 (Life of Patent Grant).

8.6 In addition to the obligations set forth above, Licensee and/or its sublicensees shall spend an aggregate of not less than [**] dollars ($[**]) per calendar year for the development of Combination Product or Licensed Product commencing with the year 2001.

8.7 It is understood that the foregoing commercialization obligations and milestones are based upon the parties' current reasonable expectations with regard to commercial development of Licensed Product, Combination Product and Licensed Method. If Licensee is unable to meet the foregoing commercialization obligations and milestones, then Licensee shall be entitled to an extension of each of the dates (which have not been met) by [**] months upon payment of [**] dollars ($[**]) to The Regents, provided that such payment is received by The Regents within [**] days of receipt of written notice by The Regents that the Licensee has not met a due diligence date. The Regents shall not exercise its rights to terminate this Agreement unless an extended date is not met. If Licensee itself, an Affiliate or sublicensee is unable to meet an extended date, Licensee shall be entitled to a second extension of each of the dates (which have not been met) by [**] months upon payment of [**] dollars ($[**]) to The Regents, provided that such payment is received by The Regents within [**] days of receipt of written notice by The Regents that Licensee has not met a due diligence date.

9. PROGRESS AND ROYALTY REPORTS

9.1 Beginning [**], and [**] thereafter, Licensee shall submit to The Regents a written progress report covering Licensee's and any Affiliate or sublicensee's activities related to the development and testing of all Combination Product and Licensed Product and the obtaining of the governmental approvals necessary for marketing. Progress reports are required for each Combination Product and Licensed Product until the first commercial sale of that Combination Product or Licensed Product occurs in the U.S. and shall be again required if commercial sales of such Combination Product or Licensed Product are suspended or discontinued.

9.2 Progress reports submitted under Paragraph 9.1 shall include, but are not limited to, the following topics:

[**].

9.3 Licensee has a continuing responsibility to keep The Regents informed of the small business entity status as defined by the U.S. Patent and Trademark Office of itself and its sublicensees and Affiliates.

9.4 Licensee shall report to The Regents in its immediately subsequent progress and royalty report the date of first commercial sale of a Combination Product and/or Licensed Product in each country.

9.5 After the first commercial sale of a Combination Product or Licensed Product anywhere in the world, Licensee shall make quarterly royalty reports to The Regents on or before each February 28, May 31, August 31 and November 30 of each year. Each royalty report will cover Licensee's most recently completed calendar quarter and will show:

9.5.1 the [**] and [**] of Combination Product and Licensed Product sold during the most recently completed calendar quarter;

9.5.2 the [**] of Combination Product and Licensed Product sold;

9.5.3 the [**] of Combination Product and Licensed Product;)

9.5.4 the [**]; and

9.5.5 the [**] used.

9.6 If no sale of Combination Product or Licensed Product has been made during any reporting period, a statement to this effect is required.

10. BOOKS AND RECORDS

10.1 Licensee shall keep accurate books and records showing all Combination Product and Licensed Product manufactured, used and/or sold under the terms of this Agreement. Books and records must be preserved for at least [**] years from the date of the royalty payment to which they pertain.

10.2 All records shall be available during normal business hours for inspection at the expense of The Regents by The Regents' Internal Audit Department or by a Certified Public Accountant selected by The Regents and in compliance with the other terms of this Agreement for the sole purpose of verifying reports and payments. Such inspector shall not disclose to The Regents any information other than information relating to the accuracy of reports and payments, made under this Agreement and other compliance issues. In the event that any such inspection shows an under reporting and underpayment in excess of five percent (5%) for any twelve (12) month period, then Licensee shall pay the cost of the audit as well as any additional sum that would have been payable The Regents had the Licensee reported correctly.

11. LIFE OF THE AGREEMENT

11.1 Unless otherwise terminated by operation of law or by acts of the parties in accordance with the terms of this Agreement, this Agreement will be in force from the Effective Date until the date of expiration of the last-to-expire patent licensed under this Agreement; or until the last patent application licensed under this Agreement is abandoned and no patent in Regents' Patent Rights ever issues.

11.2 Any termination of this Agreement will not affect the rights and obligations set forth in the following Articles and Paragraphs:

Article 3	Sublicenses
Article 10	Books and Records
Paragraph 11.2	Surviving Provisions
Article 14	Disposition of Combination Product and Licensed

	Product on Hand Upon Termination
Article 15	Use of Names and Trademarks
Article 20	Indemnification
Article 21	Notices
Article 24	Failure to Perform
Article 25	Governing Laws
Article 29	Secrecy
Article 30	Miscellaneous

12. TERMINATION BY THE REGENTS

If Licensee fails to perform or violates any term of this Agreement, then The Regents may give written notice of default ("Notice of Default") to Licensee. If Licensee fails to repair the default within [**] days after the effective date of Notice of Default, The Regents may terminate this Agreement and its licenses by a second written notice ("Notice of Termination"). If a Notice of Termination is sent to Licensee, this Agreement will automatically terminate on the effective date of that notice. Such termination will not relieve Licensee of its obligation to pay any fees owing at the time of termination and will not impair any accrued right or obligation of The Regents or Licensee. These notices are subject to Article 21 (Notices).

13. TERMINATION BY LICENSEE

13.1 Licensee has the right at any time to terminate this Agreement in whole or as to any portion of Regents' Patent Rights by giving notice in writing to The Regents. Such notice of termination will be subject to Article 21 (Notices) and termination of this Agreement will be effective sixty (60) days after the effective date of such notice.

13.2 Any termination under the above Paragraph 13.1 does not relieve Licensee of any obligation or liability accrued under this Agreement prior to termination or rescind any payment made to The Regents or anything done by Licensee prior to the time termination becomes effective. Termination does not affect in any manner any rights of The Regents arising under this Agreement prior to termination.

14. DISPOSITION OF COMBINATION PRODUCT AND LICENSED PRODUCT ON HAND UPON TERMINATION

Upon termination of this Agreement Licensee is entitled to dispose of all previously made or partially made Combination Product and Licensed Product, but no more, within a period

of [**] days provided that the sale of Combination Product and Licensed Product is subject to the terms of this Agreement, including but not limited to the rendering of reports and payment of royalties required under this Agreement.

15. USE OF NAMES AND TRADEMARKS

15.1 Nothing contained in this Agreement confers any right to use in advertising, publicity or other promotional activities any name, trade name, trademark or other designation of either party hereto including contraction, abbreviation or simulation of any of the foregoing. Unless required by law, the use by Licensee of the name "The Regents of the University of California" or the name of any campus of the University of California is prohibited. Notwithstanding the foregoing, Licensee may disclose and report that Licensee has this Agreement with The Regents after receiving prior approval from The Regents of the text of such disclosure, which approval will not be unreasonably withheld.

15.2 The Regents is free to release to the inventors and senior administrators employed by The Regents the terms and conditions of this Agreement. If such release is made, then The Regents shall give notice of the confidential nature and shall request that the recipient does not disclose such terms and conditions to others. If a third party inquires whether a license to Regents' Patent Rights is available, then The Regents may disclose the existence of this Agreement and the extent of the grant in Article 2 (Life of Patent Grant) to such third party, but will not disclose the name of Licensee or any other terms or conditions of this Agreement, except where The Regents is required to release information under either the California Public Records Act, a governmental audit requirement, or other applicable law.

16. LIMITED WARRANTY

16.1 The Regents warrants to Licensee that it has the lawful right to grant this license.

16.2 This license and the associated Invention are provided WITHOUT WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED. THE REGENTS MAKES NO REPRESENTATION OR WARRANTY THAT THE COMBINATION PRODUCT AND LICENSED PRODUCT OR LICENSED METHOD WILL NOT INFRINGE ANY PATENT OR OTHER PROPRIETARY RIGHT.

16.3 IN NO EVENT MAY THE REGENTS BE LIABLE FOR ANY INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES RESULTING FROM EXERCISE OF THIS LICENSE OR THE USE OF THE INVENTION OR COMBINATION PRODUCT AND LICENSED PRODUCT.

16.4 This Agreement does not:

16.4.1 express or imply a warranty or representation as to the validity or scope of any of Regents' Patent Rights;

16.4.2 express or imply a warranty or representation that anything made, used, sold, offered for sale or imported or otherwise disposed of under any license granted in this Agreement is or will be free from infringement of patents of third parties;

16.4.3 obligate The Regents to bring or prosecute actions or suits against third parties for patent infringement except as provided in Article 19 (Patent Infringement);

16.4.4 confer by implication, estoppel or otherwise any license or rights under any patents of The Regents other than Regents' Patent Rights as defined in this Agreement, regardless of whether those patents are dominant or subordinate to Regent's Patent Rights; or

16.4.5 obligate The Regents to furnish any know-how not provided in Regents' Patent Rights.

17. PATENT PROSECUTION AND MAINTENANCE

17.1 As long as Licensee has [**] patent costs as provided for in this Article 17 (Patent Prosecution and Maintenance), The Regents shall diligently endeavor to prosecute and maintain the U.S. and foreign patents comprising Regents' Patent Rights using counsel of its choice, and The Regents shall provide Licensee with copies of all relevant documentation so that Licensee may be informed of the continuing prosecution, and Licensee agrees to keep this documentation confidential. The Regents shall furnish to Licensee draft copies of proposed filings and

correspondence addressed to the U.S. Patent and Trademark Office concerning the Regents' Patent Rights whenever it is reasonably feasible to do so; give due consideration to the requests and recommendations from Licensee concerning the patent prosecution matters; and furnish to Licensee estimates of anticipated patent costs on a country-by-country basis. The Regents shall advise the Licensee about approaching deadlines for proposed filings, including foreign filings and other patent actions. However, The Regents' counsel will take instructions only from The Regents, and all patent applications and patents comprising the Regents' Patent Rights will be assigned solely to The Regents. In addition, under any circumstances, The Regents reserves the rights to instruct The Regents' counsel in order to preserve The Regents' Patent Rights.

17.2 The Regents shall use reasonable efforts to amend any patent application in advance of filing to include claims reasonably requested by Licensee to protect the products contemplated to be sold under this Agreement.

17.3 Licensee shall apply for an extension of the term of any patent included within Regents' Patent Rights if appropriate under the Drug Price Competition and Patent Term Restoration Act of 1984 and/or European, Japanese and other foreign counterparts of this Law. Licensee shall prepare all documents and The Regents agrees to execute the documents and to take additional action as Licensee reasonably requests in connection therewith.

17.4 If either party (in the case of The Regents, the Licensing Associate responsible for administration of this Agreement) receives notice pertaining to infringement or potential infringement of any issued patent included within Regents' Patent Rights under the Drug Price Competition and Patent Term Restoration Act of 1984 (and/or foreign counterparts of this Law), that party shall notify the other party within [**] days after receipt of notice of infringement.

17.5 Licensee shall [**] of preparing, filing, prosecuting and maintaining all U.S. and foreign patent applications contemplated by this Agreement; excepting, however, Licensee shall [**] percent ([**]%) of such costs for Regents' Patent Rights-Group B. Costs billed by The Regents' counsel will be [**] to Licensee and are due within [**] days of [**] by The Regents. These costs include patent prosecution costs for the Invention incurred by The Regents prior to the execution of this Agreement and any patent prosecution costs that may be incurred for patentability opinions, re-examination, re-issue, interferences or inventorship determinations.

Prior prosecution costs will be due upon execution of this Agreement and billing by The Regents and are at least approximately [**] dollars ($[**]) as of October 16, 2000.

17.6 Licensee may request The Regents to obtain patent protection on the Invention in foreign countries if available and if Licensee so desires. The Regents will provide Licensee with advance notice of such approaching deadlines. Licensee shall notify The Regents of its decision to obtain or maintain foreign patents not less than [**] days prior to the deadline for any payment, filing or action to be taken in connection therewith, provided that The Regents has provided Licensee with adequate advance notice of such approaching deadline. This notice concerning foreign filing must be in writing, must identify the countries desired and must reaffirm Licensee's obligation to underwrite the costs thereof. The absence of such a notice from Licensee to The Regents will be considered an election not to obtain or maintain foreign rights.

17.7 Licensee's obligation to underwrite and to pay patent prosecution costs will continue for so long as this Agreement remains in effect, but Licensee may terminate its obligations with respect to any given patent application or patent upon thirty (30) days written notice to The Regents. The Regents will use its best efforts to curtail patent costs when a notice of termination is received from Licensee. The Regents may prosecute and maintain such application(s) or patent(s) at its sole discretion and expense, but Licensee will have no further right or licenses thereunder. Non-payment of patent costs may be deemed by The Regents as an election by Licensee not to maintain application(s) or patent(s).

17.8 The Regents may file, prosecute or maintain patent applications at its own expense in any country in which Licensee has not elected to file, prosecute or maintain patent applications in accordance with this Article 17 (Patent Prosecution and Maintenance) and those applications and resultant patents will not be subject to this Agreement.

17.9 The Regents will give instruction to The Regents' patent counsel to forward all relevant patent prosecution documentation covered in Regents' Patent Rights to Licensee simultaneously when forwarding such documentation to The Regents as long as this Agreement is active. Licensee may request that The Regents supply estimates of patent expenses associated with the filing and prosecution of foreign and U.S. patents in Regents' Patent Rights, and The Regents shall make reasonable efforts to supply such information to Licensee on a timely basis.

Licensee may also request estimates of such expenses from The Regents patent counsel if Licensee desires to do so. The Regents will authorize and instruct its patent counsel to furnish such cost estimates to Licensee from time to time upon request by Licensee.

18. PATENT MARKING

Licensee shall mark all Combination Product and Licensed Product made, used or sold under the terms of this Agreement, or their containers, in accordance with the applicable patent marking laws.

19. PATENT INFRINGEMENT

19.1 If Licensee or The Regents' patent administrator responsible for the administration of the Regents' Patent Rights learns of the substantial infringement of any patent licensed under this Agreement, then it shall call The Regents' attention thereto in writing and provide The Regents with reasonable evidence of infringement. Neither party will notify a third party of the infringement of any of Regents' Patent Rights without first obtaining consent of the other party, which consent will not be unreasonably denied. Both parties shall use their best efforts in cooperation with each other to terminate infringement without litigation.

19.2 Licensee may request that The Regents take legal action against the infringement of Regents' Patent Rights. Such request must be in writing and must include reasonable evidence of infringement and damages to Licensee. If the infringing activity has not abated within [**] days following the effective date of request, The Regents then has the right to:

19.2.1 commence suit on its own account or

19.2.2 refuse to participate in the suit.

19.3 The Regents shall give notice of its election in writing to Licensee by the end of the [**] day after receiving notice of written request from Licensee. Licensee may thereafter bring suit for patent infringement, at its own expense, if and only if, The Regents elects not to commence suit and if the infringement occurred during the period and in a jurisdiction where Licensee had exclusive rights under this Agreement. If, however, Licensee elects to bring suit in accordance with this Paragraph, The Regents may thereafter join that suit at [**] expense. If The

Regents elects to bring suit, Licensee may join that suit at [**] expense. Licensee agrees not to bring suit for patent infringement without following the procedures of this Paragraph, and both parties agree to be bound by the outcome of a suit for patent infringement through the pendency of such a suit under this Paragraph.

19.4 Each party shall cooperate with the other in litigation proceedings instituted hereunder but at the expense of [**]. Litigation will be controlled by the party bringing the suit, except that The Regents may be represented by counsel of its choice in any suit brought by Licensee, and Licensee may be represented by counsel of its choice in any suit brought by The Regents.

20. INDEMNIFICATION

20.1 Licensee shall indemnify, hold harmless and defend The Regents, its officers, employees and agents; the sponsors of the research that led to the Invention; and the inventors of the patent applications and patents in Regents' Patent Rights and their employers against any and all claims, suits, losses, liabilities, damages, costs, fees and expenses resulting from or arising out of exercise of this license or any sublicense. This indemnification includes, but is not limited to, any product liability.

20.2 From and after the time when Licensee commences clinical trials using any Combination Product or Licensed Product, Licensee, at its sole cost and expense, shall insure its activities in connection with the work under this Agreement and obtain, keep in force and maintain insurance as follows or an equivalent program of self insurance.

20.3 Comprehensive or commercial form general liability insurance (contractual liability included) with limits as follows:

- Each Occurrence $[**]
- Products/Completed Operations Aggregate $[**]
- Personal and Advertising Injury $[**]
- General Aggregate (commercial form only) $[**]

The coverage and limits referred to under the above do not in any way limit the liability of Licensee. Licensee shall furnish The Regents with certificates of insurance showing compliance with all requirements. Certificates must:

- Provide for [**] days' advance written notice to The Regents of any modification.
- Indicate that The Regents has been endorsed as an additional Insured under the coverage referred to under the above.
- Include a provision that the coverage will be primary and will not participate with nor will be excess over any valid and collectable insurance or program of self-insurance carried or maintained by The Regents.

20.4 The Regents shall notify Licensee in writing of any claim or suit brought against The Regents in respect of which The Regents intends to invoke the provisions of this Article 20 (Indemnification). Licensee shall keep The Regents informed on a current basis of its defense of any claims under this Article 20 (Indemnification).

21. NOTICES

21.1 Any notice or payment required to be given to either party shall be deemed to have been properly given and to be effective:

21.1.1 on the date of delivery if delivered in person to the respective addresses given below or to another address as designated in writing by the party changing its prior address;

21.1.2 on the date of mailing if mailed by first-class certified mail, postage paid to the respective addresses given below or to another address as designated in writing by the party changing its prior address.; or

21.1.3 on the date of mailing if mailed by any global express carrier service that requires the recipient to sign the documents demonstrating the delivery of such notice of payment, to the respective addresses given below or to another address as designated in writing by the party changing its prior address.

In the case of Licensee:

Hermes Biosciences, Inc.
61 Airport Boulevard, Suite B
South San Francisco, CA 94080
Attention: V.P. Research Technology

In the case of The Regents:

The Regents of the University of California Office of Technology Transfer
1111 Franklin Street, 5th Floor
Oakland, CA 94607-5200
Attention: Executive Director
Research Administration and Technology Transfer
RE: UC Case Nos. [**]

22. ASSIGNABILITY

This Agreement may be assigned by The Regents, but is personal to Licensee and assignable by Licensee only with the written consent of The Regents, which consent will not be unreasonably withheld. Notwithstanding the foregoing, this Agreement may be assigned by Licensee upon notice to The Regents without consent to its successor-in -interest pursuant to a merger, consolidation, reorganization or transfer of substantially all of the business to which this Agreement relates; provided, however, that such successor-in-interest agrees to be bound by all of the terms and conditions hereof.

23. NO WAIVER

No waiver by either party of any default of this Agreement may be deemed a waiver of any subsequent or similar default. A suspension of duty under this Agreement due to force majeure shall not be for a period longer than one year.

24. FAILURE TO PERFORM

If either party finds it necessary to undertake legal action against the other on account of failure of performance due under this Agreement, then the prevailing party is entitled to reasonable attorney's fees in addition to costs and necessary disbursements.

25. 25. GOVERNING LAWS

THIS AGREEMENT WILL BE INTERPRETED AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF CALIFORNIA WITHOUT REGARD TO WHICH PARTY DRAFTED PARTICULAR PROVISIONS OF THIS AGREEMENT, but the scope and validity of any patent or patent application will be governed

by the applicable laws of the country of the patent or patent application. Disputes between the parties regarding this Agreement will utilize only courts within California for disputes that go to court.

26. PREFERENCE FOR U.S. INDUSTRY

Because this Agreement grants an exclusive right to use or sell the Invention in the U.S., Licensee agrees that any products sold in the U.S. embodying this Invention or produced through the use thereof will be manufactured substantially in the U.S.

27. GOVERNMENT APPROVAL OR REGISTRATION

Licensee shall notify The Regents if it becomes aware that this Agreement is subject to any U.S. or foreign government reporting or approval requirement. Licensee shall make all necessary filings and pay all costs including fees, penalties and all other out-of-pocket costs associated with such reporting or approval process.

28. EXPORT CONTROL LAWS

Licensee shall observe all applicable U.S. and foreign laws with respect to the transfer of Combination Product and Licensed Product and related technical data to foreign countries, including, without limitation, the International Traffic in Arms Regulations (ITAR) and the Export Administration Regulations.

29. SECRECY

29.1 With regard to confidential information ("Data"), which means any and all oral or written or tangible property or confidential ideas, inventions, information, data, materials, know-how or the like owned or controlled by either party and disclosed by or on behalf of one party to the other from time to time in connection with this Agreement. The party providing the Data shall endeavor to identify the Data disclosed hereunder, but the failure of such party to identify the Data as such shall not destroy the confidential status of the information, as defined below, which can be oral or written or both, received from either party regarding this Invention, the parties agree:

29.1.1 not to use Data of the other party except for the sole purpose of performing under the terms of this Agreement;

29.1.2 to safeguard Data of the other party against disclosure to others with the same degree of care as it exercises with its own data of a similar nature;

29.1.3 not to disclose Data of the other party to others (except to its employees, agents or consultants who are bound to such party by a like obligation of confidentiality) without the express written permission of the disclosing party, except that neither party shall be prevented from using or disclosing any Data that:

29.1.3.1 the receiving party can demonstrate by written records was previously known to it;

29.1.3.2 is now or becomes in the future, public knowledge other than through acts or omissions of the receiving party; or

29.1.3.3 is lawfully obtained by the receiving party from sources independent of the disclosing party; and

29.1.4 that the secrecy obligations of the receiving party with respect to Data will continue for a period ending [**] years from the termination date of this Agreement.

29.2 With regard to biological material received by Licensee from The Regents, if any, including any cell lines, vectors, genetic material, derivatives, products progeny or material derived therefrom ("Biological Material"), Licensee agrees:

29.2.1 not to use Biological Material except for the sole purpose of performing under the terms of this Agreement;

29.2.2 not to transfer Biological Material to others (except to its employees, agents or consultants who are bound to Licensee by like obligations conditioning and restricting access, use and continued use of Biological Material) without the express written permission of The Regents, except that Licensee is not prevented from transferring Biological Material that:

29.2.2.1 becomes publicly available other than through acts or omissions of Licensee; or

29.2.2.2 is lawfully obtained by Licensee from sources independent of The Regents;

29.2.3 to safeguard Biological Material against disclosure and transmission to others with the same degree of care as it exercises with its own biological materials of a similar nature;

29.2.4 to destroy all copies of Biological Material at the termination of this Agreement.

30. MISCELLANEOUS

30.1 The headings of the several sections are inserted for convenience of reference only and are not intended to be a part of or to affect the meaning or interpretation of this Agreement.

30.2 This Agreement is not binding on the parties until it has been signed below on behalf of each party. It is then effective as of the Effective Date.

30.3 No amendment or modification of this Agreement is valid or binding on the parties unless made in writing and signed on behalf of each party.

30.4 This Agreement embodies the entire understanding of the parties and supersedes all previous communications, representations or understandings, either oral or written, between the parties relating to the subject matter hereof. The Secrecy Agreements with The Regents covering UC Case No. [**] (UC Control No. [**]) dated [**]; UC Case No [**] (UC Control No. [**]) dated [**]; UC Case No. [**] (UC Control No. [**]) dated [**]; UC Case No. [**] (UC Control No. [**]) dated [**]; and UC Case No. [**] (UC Control No. [**]) dated [**], are hereby terminated.

30.5 In case any of the provisions contained in this Agreement is held to be invalid, illegal or unenforceable in any respect, that invalidity, illegality or unenforceability will not

affect any other provisions of this Agreement and this Agreement will be construed as if the invalid, illegal or unenforceable provisions had never been contained in it.

30.6 None of the provisions of this Agreement is intended to create any form of joint venture between the parties, rights in third parties or rights that are enforceable by any third party.

IN WITNESS WHEREOF, both The Regents and Licensee have executed this Agreement, in duplicate originals, by their respective and duly authorized officers on the day and year written.

HERMES BIOSCIENCES, INC.		**THE REGENTS OF THE UNIVERSITY OF CALIFORNIA**	
By:	/s/ John Park (Signature)	By:	/s/ Alan B. Bennett (Signature)
Name:	John Park (Please Print)	Name:	Alan B. Bennett
Title:	President	Title:	Executive Director Research Administration and Technology Transfer
Date:	10-23-00	Date:	November 1, 2000

FIRST AMENDMENT TO EXCLUSIVE LICENSE AGREEMENT

and

CO-EXCLUSIVE LICENSE AGREEMENT

BETWEEN THE REGENTS AND HERMES BIOSCIENCES, INC.

This first amendment ("First Amendment") is made this 6th day of October, 2003 ("Effective Date"), between The Regents of the University of California, a California corporation, having its statewide administrative offices at 1111 Franklin Street, 12th Floor, Oakland, California 94607-5200 ("The Regents") and Hermes Biosciences, Inc., a California corporation, having its principal place of business at 61 Airport Boulevard, Suite D, South San Francisco, California 94080 ("Licensee").

BACKGROUND

A. The Regents and Licensee entered into an Exclusive License Agreement for the technologies generally characterized as "[**] (UC Case No. [**])," [**]" (UC Case No. [**]), "[**]" (UC Case No. [**]) and Co-Exclusive License Agreement for technologies generally characterized as "[**]" (UC Case No. [**]) and "[**]" (UC Case No. [**], effective [**] (UC Control No. [**]) ("License Agreement"). The License Agreement granted Licensee an exclusive license to certain technologies covered by Regents' Patent Rights-Group A (UC Case Nos. [**]) and a co-exclusive license to certain technologies covered by Regents' Patent Rights-Group B (UC Case Nos. [**]).

B. Pursuant to Paragraph 2.2 of the License Agreement, an additional license to Regents' Patent Rights-Group B was first offered to California Recombinant Antibodies. Since a license agreement was not completed by California Recombinant Antibodies, an exclusive license to Regents' Patent Rights-Group B is now being offered to the Licensee.

C. The Regents and Licensee wish to amend the License Agreement as provided herein in order to grant exclusive rights to Licensee for Regents' Patent Rights-Group B.

****

THEREFORE, in view of the foregoing, the parties agree as follows:

I. LICENSE AMENDMENT FEE

1.1 Licensee shall pay to The Regents a license amendment fee of [**] dollars ($[**]) within [**] days after the Effective Date of this First Amendment. This fee is non-refundable, non-cancelable and is not an advance against royalties.

II. PAST PATENT PROSECUTION EXPENSES

2.1 Licensee shall pay to The Regents [**] patent prosecution costs for UC Case Nos. [**] (except for UC Case No. [**]) and UC Case No. [**]. These costs are due upon execution of this First Amendment and within [**] days of billing by The Regents and are at least approximately [**] dollars ($[**]).

III. DEFINITIONS

3.1 All definitions and paragraph numbers referred to in this First Amendment shall have the same meaning as in the License Agreement.

3.2 Paragraphs 1.6, 1.7 and 1.8 are deleted in their entirety and replaced with the following:

"1.6 "Regents' Patent Rights" means The Regents' interest in the subject matter claimed in:

UC Case Number	U.S. Application Number or U.S. Patent Number	Filing or Issue Date
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]

[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]

and continuing applications thereof including divisions and substitutions but excluding continuation-in-part applications to the extent that claims are not supported in the parent; any patents issuing from said applications including reissues, reexaminations and extensions; and any corresponding foreign applications or patents."

IV. LIFE OF PATENT GRANT

4.1 Paragraph 2.1 is deleted in its entirety and replaced with the following:

"2.1 Subject to the limitations set forth in this Agreement, The Regents grants to Licensee a world-wide exclusive license under Regents' Patent Rights to make, have made, use, sell, offer to sell and import Licensed Product and to practice Licensed Method to the extent permitted by law."

4.2 Paragraph 2.2 and any reference to it in the License Agreement is deleted in its entirety.

V. SUBLICENSES

5.1 Paragraph 3.1 is deleted in its entirety and replaced by the following:

"3.1 The Regents also grants to Licensee the right to issue sublicenses to third parties to make, have made, use, sell, offer to sell and import Licensed Product and to practice Licensed Method under Regents' Patent Rights as long as Licensee has current exclusive rights

thereto under this Agreement. To the extent applicable, sublicenses must include all of the rights of and obligations due to The Regents and the U.S. Government contained in this Agreement."

VI. PAYMENT TERMS

6.1 Paragraph 4.1 is deleted in its entirety and replaced by the following:

"4.1 Paragraphs 1.2, 1.3, 1.4 and 1.6 define Combination Product, Licensed Method, Licensed Product and Regents' Patent Rights respectively, so that royalties are payable on products and methods covered by both pending patent applications and issued patents. Royalties will accrue in each country for the duration of Regents' Patent Rights in that country and are payable to The Regents when Combination Product and Licensed Product are invoiced or if not invoiced, when delivered to a third party."

VII. PATENT PROSECUTION AND MAINTENANCE

7.1 Paragraph 17.5 is deleted in its entirety and replaced with the following:

"17.5 Licensee shall [**] of preparing, filing, prosecuting and maintaining all U.S. and foreign patent applications contemplated by this Agreement. Costs billed by The Regents' counsel will be [**] to Licensee and are due within [**] days of [**] by The Regents. These costs include any patent prosecution costs that may be incurred for patentability opinions, re-examination, re-issue, interference or inventorship determinations."

The License Agreement shall remain in full force and effect in accordance with its terms except as amended herein.

The Regents and Licensee have executed this First Amendment in duplicate originals by their respective and duly authorized officers, as evidenced by the signatures and dates shown below.

HERMES BIOSCIENCES, INC.	THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
By: /s/ John Park (Signature)	By: /s/ Alan B. Bennett (Signature)
Name: John Park (Please Print)	Name: Alan B. Bennett
Title: President/CEO	Title: Executive Director

Research Administration and Technology Transfer

Date: 9-29-03	Date: October 6, 2003

SECOND AMENDMENT TO EXCLUSIVE LICENSE AGREEMENT

BETWEEN THE REGENTS AND HERMES BIOSCIENCES, INC.

This second amendment ("Second Amendment") is made this 13th day of September, 2006 ("Effective Date of Second Amendment"), between The Regents of the University of California, a California corporation, having its statewide administrative offices at 1111 Franklin Street, 12th Floor, Oakland, California 94607-5200 ("The Regents") and Hermes Biosciences, Inc., a California corporation, having its principal place of business at 61 Airport Boulevard, Suite D, South San Francisco, California 94080 ("Licensee").

BACKGROUND

A. The Regents and Licensee are parties to an Exclusive License Agreement with an effective date of November 1, 2000. UC Control No. [**] ("Agreement") pursuant to which The Regents granted the Licensee certain rights for the commercial development, use and sale of products from the Invention in accordance with the terms and conditions therein.

B. The Regents and Licensee executed an amendment to the Agreement ("First Amendment"). The purpose of the First Amendment was to grant exclusive rights to Licensee for Regents' Patent Rights Group B as defined therein.

C. The Regents and Licensee now wish to amend the Agreement to reflect certain changes to the diligence requirements, add milestone payments, and delay the start of the minimum annual royalty payments.

THEREFORE, in view of the foregoing, the parties agree as follows:

Article I Definitions

1.1 All definitions and paragraph members referred to in this Second Amendment have the same meaning as in the Agreement.

Article II Sublicenses

2.1 The following paragraph is added to Paragraph 3.3:

3.3.4 the amounts received from a sublicensee by Licensee as reimbursement of the patent prosecution costs paid by Licensee under Paragraph 17.5, except as may be otherwise agreed upon in writing by the parties.

Article III Earned Royalties and Minimum Annual Royalties

3.1 The heading for Article 7 is deleted in its entirety and replaced with the following:

7. "Earned Royalties, Minimum Annual Royalties, and Milestone Payments"

3.2 In Paragraph 7.4.2, Line 1, delete "[**]" and replace with "[**]".

3.3 The following paragraphs are added:

7.6 With respect to each Licensed Product or Combination Product, the Licensee will pay to The Regents the following non-refundable, non-creditable amounts:

7.6.1 [**] dollars ($[**]);

7.6.2 [**] dollars ($[**]); and

7.6.3 [**] dollars ($[**]).

7.7 For the avoidance of doubt, each of the milestone payments set forth in Paragraphs 7.6.1 through 7.6.3 will be payable with respect to each Licensed Product or Combination Product. Furthermore, each such milestone payment will be payable regardless of whether the applicable milestone event has been achieved by the Licensee, any Affiliate, or any sublicensee. If a payment is due to The Regents under Paragraph 7.6 and a payment is due to The Regents under Paragraph 3.3 for the same milestone event in connection with the same Licensed Product or Combination Product, then Licensee shall pay The Regents whichever amount is larger within [**] days of the milestone event.

7.8 All milestone payments are due to The Regents within [**] days of the occurrence of the applicable milestone event.

Article IV Due Diligence

4.1 Article 8 is deleted in its entirety and replaced with the following:

"8. DUE DILIGENCE

8.1 Licensee, upon execution of this Agreement, shall diligently proceed with the development, manufacture and sale of Combination Product or Licensed Product and shall earnestly and diligently endeavor to market the same within a reasonable time after execution of this Agreement and in quantities sufficient to meet market demands.

8.2 Licensee shall endeavor to obtain all necessary governmental approvals for the manufacture, use and sale of Combination product or Licensed Product.

8.3 For Licensed Product or Combination Product, Licensee and/or its Affiliates and/or its sublicensees shall;

8.3.1 file an IND or the equivalent covering at least one Combination Product or Licensed Product with the FDA or equivalent foreign regulatory agency no later than November 30, 2008;

8.3.2 if not filed by November 30, 2008, file an IND or the equivalent covering at least one Combination Product or Licensed Product with the FDA no later than November 30, 2010;

8.3.3 [**] no later than [**];

8.3.4 if not filed by [**] no later than [**];

8.3.5 [**] within [**] months of [**] for the Combination Product or Licensed Product but no later than [**] within [**] months of [**] for such Combination Product or Licensed Product but no later than [**];

8.3.6 if not marketed by [**] within [**] months of [**] for the Combination Product or Licensed Product but no later than [**]; and

8.3.7 [**] during the life of this Agreement.

8.3.8 If Licensee does not perform, or have performed, any of the provisions in 8.3.1 through and including 8.3.7, then if Licensee does not exercise its right to extend the diligence dates pursuant to Paragraph 8.3.9, The Regents has the right and option to either terminate this Agreement or reduce Licensee's exclusive license to a non-exclusive license. This right, if exercised by The Regents, supersedes the rights granted in Article 2 (Life of Patent Grant).

8.3.9 In the event that the Licensee is unable to meet any of the deadlines set forth in Paragraphs 8.3.1 through 8.3.6, the Licensee may request an extension of such missed deadline. Each such request shall be made in writing at least [**] days prior to the deadline that the Licensee will be unable to meet and will be accompanied by: (i) a statement of the deadline for which the extension is being sought; and (ii) payment of an extension fee ("Extension Fee") of [**] dollars ($[**]). Upon receipt of such request and payment, The Regents shall grant an extension of the missed deadline, for which an extension is being sought, for [**].

Each such missed deadline may be extended, with payment of the Extension Fee, for a total of [**] years from the original missed deadline. For the sake of clarity, any extension granted by The Regents is applicable only to the missed deadline for which the extension is being sought and does not apply to any other deadline.

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8.4 Notwithstanding Paragraph 8.3.8, if the Licensee is selling a Licensed Product or Combination Product at the time of termination, then the Licensee will have the right to a limited non-exclusive license under The Regents' Patent Rights but only to the extent required to continue selling such Licensed Product or Combination Product provided that such sales are subject to the terms of this Agreement, including but not limited to the rendering of reports and payment of royalties as required under this Agreement.

This Agreement shall remain in full force and effect in accordance with its terms except as amended herein.

In witness whereof, The Regents and Licensee have executed this Second Amendment in duplicate originals by their respective and duly authorized officers on the day and year written.

HERMES BIOSCIENCES, INC.		THE REGENTS OF THE UNIVERSITY OF CALIFORNIA	
By:	/s/ John Park (Signature)	By:	/s/ William T. Tucker (Signature)
Name:	John Park (Please print)	Name:	William T. Tucker
Title:	President	Title:	Executive Director Research Administration and Technology Transfer
Date:	9/11/06	Date:	September 13, 2007

UNIVERSITY OF CALIFORNIA

BERKELEY • DAVIS • IRVINE • LOS ANGELES • MERCED • RIVERSIDE • SAN DIEGO • SAN FRANCISCO SANTA BARBARA • SANTA CRUZ

OFFICE OF THE PROVOST AND EXECUTIVE VICE PRESIDENT –
ACADEMIC AND HEALTH AFFAIRS

OFFICE OF TECHNOLOGY TRANSFER
1111 Franklin Street, 5th Floor
Oakland, California 94607-5200
Web Site: www.ucop.edu/ott/
Tel: (510) 587-6000
Fax: (510) 587-6090

May 31,2007
Via Federal Express
(650) 873-2583

IN DUPLICATE

Raymond Poon, Ph.D.
Vice President, Business Development
Hermes Biosciences, Inc.
61 Airport Boulevard, Suite D
South San Francisco, CA 94080

RE: Letter Agreement for Repayment of Amounts
Due The Regents under:
Exclusive License Agreement
UC Agreement Control No. [**]

Dear Dr. Poon:

As we discussed on May 22, 2007, Hermes has [**] patent prosecution payments under the above referenced Exclusive License Agreement ("License Agreement"). Exhibit A to this Letter Agreement shows the outstanding amount currently due to The Regents for such patent prosecution matters ($[**]) ("Preliminary Amount Due"). The Preliminary Amount Due includes accrued interest as of May 22, 2007, as provided for in Paragraph 4.7 of the License Agreement. Hermes shall pay the Preliminary Amount Due plus (1) any other amounts which may be billed to Hermes by The Regents for Interference No. [**] plus any interest accruing on such amounts; and (2) any additional interest accruing on the Preliminary Amount Due as a result of the schedule in the Payment Plan, as provided for in Exhibit B ("Payment Plan"). Notwithstanding anything to the contrary in this letter, Hermes may make any payment provided for in the Payment Plan before the scheduled due date.

For avoidance of doubt, beginning June 1, 2007, Hermes shall pay any and all amounts billed to Hermes by The Regents for patent prosecution matters unrelated to Interference No. [**] as provided for in Article 17 (Patent Prosecution and Maintenance) of the License Agreement.

As provided for in Article 12 (Termination by The Regents), if Hermes fails to make any payments as required under the License Agreement, which includes the terms and provisions of this Letter Agreement, then The Regents may give written notice of default to Hermes. If Hermes fails to repair the default within [**] days after the effect date of Notice of Default, The Regents may terminate the License Agreement and its licenses by a second written notice ("Notice of Termination").

Please acknowledge your acceptance of these terms by signing this Letter Agreement and the duplicate original in the spaces provided and return both to this office. I will then have both originals executed on behalf of The Regents and return one fully executed original to you.

Regards,

/s/ Patricia Anderson
Patricia Anderson Cotton, Ph.D.
Director, Business Development &
Intellectual Property Management

Encl: Exhibit A (Preliminary Amount Due)
Exhibit B (Payment Plan)

c: Chief Financial Officer Fraysse
Director Kirschbaum, OTM, UCSF

AGREED:

HERMES BIOSCIENCES, INC.:		THE REGENTS OF THE UNIVERSITY OF CALIFORNIA:	
By:	/s/ Raymond Poon (Signature)	By:	/s/ William T. Tucker (Signature)
Name:	Raymond Poon (Please print)	Name:	William T. Tucker
Title:	Vice President Business Development	Title:	Executive Director Research Administration and Technology Transfer
Date:	June 5, 2007	Date:	June 6, 2007

EXHIBIT A
Preliminary Amount Due
Hermes Biosciences, Inc.
UC Agreement [**]
Rebilling Interest Calculation
As of 5/22/2007

	Days Past Due	Interest (10% per annual)	Payment	Cummulative Total
[**] [**]	[**]	[**]		[**]
[**] [**]	[**]	[**]		[**]
[**] [**]	[**]	[**]		[**]
[**] [**]	[**]	[**]		[**]
[**] [**]	[**]	[**]		[**]
[**] [**]	[**]	[**]		[**]
[**] [**]	[**]	[**]		[**]
[**] [**]	[**]	[**]		[**]
[**] [**]	[**]	[**]		[**]
[**] [**]	[**]	[**]		[**]
[**] [**]	[**]	[**]		[**]
[**]				
		[**]		
			Total amount due	[**]

Exhibit B

Hermes Biosciences, Inc.

Patent Prosecution Payment Plan to the University of California

Time and/or Event	Amount	
[**]	$	[**]
Upon [**] (estimated to be [**]) but no later than [**]	$	[**]
Monthly payment of $[**] beginning [**] and ending [**]	$	[**]
Upon [**] (estimated to be paid end of [**] but no later than [**]	$	[**]
Monthly payment of $[**] Beginning [**] and ending [**]	$	[**]
Upon [**] but no later than [**]	$	[**]
Remaining sum by [**]		To be determined

FOURTH AMENDMENT TO EXCLUSIVE LICENSE AGREEMENT

BETWEEN THE REGENTS AND HERMES B1OSCIENCES, IMC.

This fourth amendment ("Fourth Amendment") is made this 28th day of September, 2007 ("Effective Date of Fourth Amendment"), between The Regents of the University of California, a California corporation, having its statewide administrative offices at 1111 Franklin Street, 12th Floor, Oakland, California 94607-5200 ("The Regents") and Hermes Biosciences, Inc., a California corporation, having its principal place of business at 61 Airport Boulevard, Suite D, South San Francisco, California 94080 ("Licensee").

BACKGROUND

A. The Regents and Licensee are parties to an Exclusive License Agreement with an effective date of November 1, 2000, UC Control No. [**] ("Agreement") pursuant to which The Regents granted the Licensee certain rights for the commercial development, use and sale of products from the Invention in accordance with the terms and conditions therein.

B. The Regents and Licensee executed a First Amendment to the Agreement- The purpose of this amendment was to grant exclusive rights to Licensee for Regents' Patent Rights Group B as defined therein.

C. The Regents and Licensee executed a Second Amendment to the Agreement. The purpose of this amendment was to amend the diligence requirements, add milestone payments and delay the start of the minimum annual royalty payments.

D. The Regents and Licensee executed a third amendment to the Agreement in the form of a letter agreement. The puipose of this amendment was to provide for a payment plan under which Hermes would reimburse The Regents for an)' amounts billed to Hermes for Interference No. [**] and prior prosecution costs.

E. Certain patent rights owned or controlled by The Regents (UC Case No. [**]) along with certain patent rights owned or controlled by [**] are involved in Interference No. [**] ("Interference").

F. [**] is a sublicensee of Licensee under the Exclusive License Agreement by virtue of an Interim development Agreement dated September 21, 2001, as currently amended ("Hermes-[**] Agreement").

G. The Regents, Licensee, and [**] have executed an agreement ("Agreement and Amendment") to settle all claims which had been brought in Interference No. [**].

H. Under the Agreement and Amendment, [**] grants to The Regents a non-exclusive license to conduct Activities under the [**] Patent Rights. [**] also grants to The Regents under such non-exclusive license the right to grant sublicenses to one third party and its affiliates as affiliate is defined in the Agreement and Amendment (see definition of Agreement and Amendment Affiliate below). Each such sublicensee may grant further sublicenses. The rights may not be further sublicensed except that The Regents and any sublicensee or further sublicensee may grant educational, non-profit, or governmental organizations the right to conduct Activities under the [**] Patent Rights for educational and research purposes only.

I. Under the Agreement and Amendment, The Regents grants to [**] a non-exclusive license to conduct Activities under the Regents' Patent Rights Licensed to [**]. The Regents also grants to [**] under such non-exclusive license the right to grant sublicenses to one third party and its affiliates as affiliate is defined in the Agreement and Amendment (see definition of Agreement and Amendment Affiliate below). Each such sublicensee may grant further sublicenses. The rights may not be further sublicensed except that [**] and any sublicensee or further sublicense may grant educational, non-profit, or governmental organizations the right to conduct Activities under the Regents' Patent Rights Licensed to [**] for educational and research purposes only.

J. The Regents and Licensee now wish to amend the Agreement to grant Hermes a sublicense to the [**] Patent Rights and to amend certain other provisions of the Agreement in accordance with the terms of the Agreement and Amendment.

****

THEREFORE, in view of the foregoing, the parties agree as follows:

Article I. Definitions

1.1 All definitions and paragraph members referred to in this Fourth Amendment have the vsame meaning as in the Agreement.

1.2 The following definitions are added:

1.7 "[**] Patent Rights" means U.S. Patent Application No. [**], U.S. Patent Application No. [**], U.S. Patent Application [**] and U.S. Patent No. [**] and all United States applications and patents claiming priority thereto and any reissues, re-examinations, or extensions thereof, but excluding solely those claims (if any) of any continuation-in-part application filed after the execution date of the Agreement and Amendment, provided that each such claim is supported in part under 35 U.S.C. § 112 by new matter first described in the continuation-in-part application and therefore such claim is not entitled to the benefit of priority based on an earlier filing date of one of the foregoing applications or patents.

1.8 "Activities" means researching, developing, having developed, making, having made, using, offering for sale, selling, promoting, having promoted, distributing, commercializing, marketing, and importing for human or veterinary pharmaceutical, therapeutic, or prophylactic use.

1.9 "Regents' Patent Rights Licensed to [**]" means U.S. Patent No. [**] U.S. Patent Application No. [**], U.S. Patent Application No. [**] and U.S. Patent [**] and all United States applications and patents claiming priority thereto and any reissues, re-examinations, or extensions thereof, but excluding solely those

claims (if any) of any continuation-in-part application filed after the execution date of the Agreement and Amendment, provided that each such claim is supported in part under 35 U.S.C. § 112 by new matter first described in the continuation-in-part application and therefore such claim is not entitled to the benefit of priority based on an earlier filing date of one of the foregoing applications or patents.

1.10 "Licensed Rights" means [**] Patent Rights and Regents' Patent Rights.

1.11 "Agreement and Amendment Affiliate" means an affiliate as defined in the Agreement and Amendment, to wit any entity which, directly or indirectly. Controls the party, is Controlled by the party, or is under common Control with the party. For purposes of this Fourth amendment final definition, "Control" means (i) possession of at least fifty percent (50%) of the voting stock or other ownership interest of the other entity; (ii) the power to direct or cause the direction of the management and policies of the other entity; (iii) the power to elect or appoint at least fifty percent (50%) of the members of the governing body of the other entity through the ownership of the outstanding voting securities or by contract or otherwise; or (iv) in any country where the local law will not permit foreign equity participation of a majority, ownership or

control of the maximum percentage of such outstanding stock or voting rights permitted by local law.

1.12 "[**]" means a product as defined in Section 1.10 of the Hermes-[**] Agreement. A copy of the definitions from the Hermes-[**] Agreement is attached.

1.13 "Hermes-[**] Agreement" is defined in Paragraph F of the Background.

1.3 The following definitions are deleted in their entirety and replaced with the following:

1.2 "Combination Product" means a product that consists of the Licensed Product combined with other active components not subject to this Agreement that:

1.2.1 are not covered by Licensed Rights;

1.2.2 the manufacture, sale, use or import by itself does not contribute to the infringement of Licensed Rights;

1.2.3 can be sold separately by Licensee, an Affiliate or sublicense.

1.3 "Licensed Method" means any method that is covered by Licensed Rights, or the use of which would constitute, but for the license granted to Licensee under this Agreement, an infringement of any pending or issued claim within Licensed Rights.

1.4 "Licensed Product" means any material that is either covered by Licensed Rights, that is identified or produced by the Licensed Method, or that the use of which would constitute, but for the license granted to Licensee under this Agreement, an infringement of any pending or issued claim within Licensed Rights.

1.5 "Net Sales" means the total of the gross invoice prices from the Final Sale of Licensed Product to an independent, unaffiliated third party or Licensed Method performed by Licensee, an Affiliate or a sublicensee, less the sum of the following actual and customary deductions where applicable: cash, trade or quantity discounts; sales, use, tariff, import/export duties or other excise taxes imposed on particular sales (excepting value added taxes or income taxes): transportation charges, including insurance; and allowances or credits to customers because of rejections or returns. Final Sale means the sale which is the last act of infringement of Licensed Rights within the control of Licensee, an Affiliate or sublicensee, regardless of whether Licensee, an Affiliate or sublicensee had control over prior infringing acts. For purposes of calculating Net Sales, any distribution or transfer among Licensee, an Affiliate or sublicensee for end use by Licensee, an Affiliate or sublicensee (which event is the last act of

infringement of Licensed Rights) will be considered a Final Sale at the price normally charged to independent, unaffiliated third parties.

Article II. Life of Patent Grant

2.1 The following paragraphs are added;

2.5 Notwithstanding Paragraph 2.1, the exclusive license granted to Licensee in Paragraph 2.1 is reduced to a non-exclusive license to the extent of the grant of rights to [**] by The Regents to conduct Activities under the Agreement and Amendment. The grant of rights to [**] by The Regents is defined in Paragraph I of the Background.

2.6 Subject to the limitations set forth in this Agreement, The Regents grants to Licensee a non-exclusive license to make, have made, use, sell, offer to sell and import Licensed Product and to practice Licensed Method to the extent permitted by law under its non-exclusive license under the [**] Patent Rights granted under the Agreement and Amendment. The rights granted to The Regents by [**] are defined in Paragraph H of the Background.

Article III. Sublicenses

3.1 The following two paragraphs are added at the end of Paragraph 3.1:

The Regents also grants to Licensee the right to issue sublicenses to third parties to make, have made, use, sell, offer to sell and import Licensed Product and to practice Licensed Method under [**] Patent Rights as long as Licensee has rights thereto under this Agreement. The rights may not be further sublicensed by such third parties except that each such third party sublicensee may grant educational, nonprofit, or governmental organizations the right to conduct Activities under the [**] Patent Rights for educational and research purposes only."

"Notwithstanding the foregoing, if, but only if, sublicensee is an Agreement and Amendment Affiliate, Licensee may grant its Agreement and Amendment Affiliate the right to grant further sublicenses. The rights may not be further sublicensed except that each such sublicensee of the Agreement and Amendment Affiliates may grant educational, non-profit, or governmental organizations the right to conduct Activities under the [**] Patent Rights for educational and

research purposes only To the extent applicable, all such sublicenses must include all of the rights of and obligations due to The Regents contained in this Agreement."

Article IV. Payment Terms

4.1 Paragraph 4.1 is deleted in its entirety and replaced with the following:

"4.1 Paragraphs 1.2, 1.3, 1.4 and 1.10 define Combination Product, Licensed Method, Licensed Product and Licensed Rights respectively, so that royalties are payable on products and methods covered by both pending patent applications and issued patents. Royalties will accrue in each country for the duration of Licensed Rights in that country and are payable to The Regents when Combination Product and License Product are invoiced or if not invoiced, when delivered to a third party."

4.2 Paragraph 4.5 is deleted in its entirety and replaced with the following:

"4.5 If any patent or patent claim within Licensed Rights is held invalid in a final decision by a court of competent jurisdiction and last resort and from which no appeal has or can be taken, all obligation to pay royalties based on that patent or claim or any claim patentably indistinct therefrom will cease as of the date of final decision. Licensee will not, however, be relieved from paying any royalties that accrued before the final decision or that are based on another patent or claim not involved in the final decision or that are based on The Regents' property rights."

4.3 Paragraph 4.8 is deleted in its entirety and replaced with the following:

"4.8 For the avoidance of doubt, the parties hereby agree that, notwithstanding how many patent applications or patents under Licensed Rights are utilized for a single Combination Product. Licensed Product or Licensed Method, only one royalty will be earned on the sale of that Combination Product, Licensed Product or Licensed Method."

Article V. Earned Royalties, Minimum Annual Royalties and Milestone Payments

5.1 The following paragraph is added at the end of Paragraph 7.1:

"Notwithstanding the above, in the event that a Licensed Product or Licensed Method is covered only by [**] Patent Rights and/or Regents' Patent Rights Licensed to [**] and is not covered by any other rights granted by The Regents to Licensee under this Agreement, then

Licensee shall pay to The Regents an earned royalty of [**] percent ([**]%) of the Net Sales of such Licensed Product or the practice of such Licensed Method. For Net Sales of such Licensed Product or the practice of such Licensed Method by a sublicensee, Licensee shall pay to The Regents an earned royalty equal to [**] percent ([**]%) of the royalty payable by the sublicensee to Licensee, but in no event shall the royalty rate payable to The Regents by Licensee for such Licensed Product or the practice of such Licensed Method be less than [**] percent ([**]%) and not more than [**] percent ([**]%) of the sublicensee's Net Sales."

Article VI. Diligence

6.1 Paragraph 8.4 is deleted in its entirety and replaced with the following:

"8.4 Notwithstanding Paragraphs 8.3.8 and 8.5.3, if the Licensee is selling a Licensed Product or Combination Product at the time of termination, then the Licensee will have the right to a limited non-exclusive license under Licensed Rights but only to the extent required to continue selling such Licensed Product or Combination Product provided that such sales are subject to the terms of this Agreement, including but not limited to the rendering of reports and payment of royalties as required under this Agreement."

6.2 Paragraph 8.5 is added:

"8.5 Notwithstanding any other provision of Article 8 of this Agreement, the following diligence terms shall apply to [**] when [**] or its assignee is a sublicensee of Licensee under this Agreement:

8.5.1 Licensee shall diligently proceed with the development manufacture and sale of Licensed Product or Combination Product and shall earnestly and diligently endeavor to market the same and in quantities sufficient to meet market demands. Licensee will be considered to be diligently proceeding with the development, manufacture and sale of Licensed Products or Combination Products so long as it is engaged in any of the following safe-harbor activities: (i) [**].

8.5.2 Licensee may satisfy its obligations set forth in Section 8.5.1 through the activities of its Affiliates and sublicensees.

8.5.3 If Licensee does not perform or have performed any of the diligence requirements set forth above, The Regents has the right and option to terminate this Agreement provided that the Licensee has not met the diligence requirements set forth in Paragraphs 8.3.1 through and including 8.3.7 and has not exercised its right to extend the diligence dates pursuant to Paragraph 8.3.9. "

Article VII. Life of the Agreement

7.1 Paragraph 11.1 is deleted in its entirety and replaced with the following:

"11.1 Unless otherwise terminated by operation of law or by acts of the parties in accordance with the terms of this Agreement, this Agreement will be in force from the Effective Date until the date of expiration of the last-to-expire patent licensed under this Agreement; or until the last patent application licensed under this Agreement is abandoned and no patent in Licensed Rights ever issues."

Article VIII. Limited Warranty

8.1 The following paragraphs are deleted in their entirety and replaced with the following:

16.4.1 express or imply a warranty or representation as the validity or scope of any of Licensed Rights;

16.4.4 confer by implication, estoppel or otherwise any license or rights under any patents of The Regents other than Licensed Rights as defined in this Agreement, regardless of whether those patents are dominant or subordinate to Licensed Rights;

16.4.5 obligate The Regents to furnish any know-how not provided in Licensed Rights.

Article IX. Patent Prosecution and Maintenance

9.1 The first sentence of Paragraph 17.5 is deleted in its entirety and replaced with the following:

"17.5 Licensee shall [**] of preparing, filing, prosecuting and maintaining all U.S. and foreign patent applications in Regents' Patent Rights."

9.2 The following paragraph is added;

"17.10 In regard to [**] Patent Rights, The Regents does not control patent prosecution of such rights. However, The Regents will inform Licensee of any material matters related to the [**] Patent Rights which have been communicated to The Regents by [**] in accordance with the Agreement and Amendment and Licensee agrees to keep such information confidential. As provided for in the Agreement and Amendment, in the event that [**] wishes to abandon any [**] Patent Rights, [**] shall give advance written notice to The Regents. Upon receipt of [**] notice, The Regents shall inform Licensee of [**] intent and The Regents will require [**] to maintain such [**] Patent Rights, provided that Licensee agrees in writing to reimburse The Regents for the costs involved in further prosecuting or maintaining such patent rights. Licensee's obligation to pay such costs will continue for so long as this Agreement remains in effect, but Licensee may terminate its obligations with respect to any given patent application or patent within [**] Patent Rights upon [**] days written notice to The Regents. The Regents may prosecute or maintain such application(s) or patent(s) at its sole discretion and expense, but Licensee will have no further right or licenses thereunder. Non-payment of patent costs may be deemed by The Regents as an election by Licensee not to maintain such application(s) or patent(s)."

Article X. Indemnification

10.1 The following paragraph is added at the end of Paragraph 20.1:

"Licensee shall, and shall require that its sublicensees of [**] Patent Rights, indemnify, hold harmless and defend The Regents, its officers, employees and agents; [**], its Affiliates, and their officers, directors, employees and agents; and the inventors of any invention claimed in [**] Patent Rights against any and all claims, suits, losses, liabilities, damages, costs, fees and expenses resulting from or arising out of exercise of this license to [**] Patent Rights or any sublicense to [**] Patent Rights. This indemnification includes, but is not limited to, any product liability."

remainder of page left blank deliberately-

Article XI. Secrecy

11.1 The following paragraph is added:

"29.3 In Section 6 of the Agreement and Amendment, Licensee, [**] and The Regents agreed to certain confidentiality provisions regarding the terms of the Agreement and Amendment. To the extent such terms are disclosed in this Agreement, Licensee and The Regents will follow the provisions of Section 6 of the Agreement and Amendment."

This Agreement shall remain in full force and effect in accordance with its terms except as amended herein.

In witness whereof, The Regents and Licensee have executed this Fourth Amendment in duplicate originals by their respective and duly authorized officers on the day and year written.

HERMES BIOSCIENCES, INC.:		THE REGENTS OF THE UNIVERSITY OF CALIFORNIA:	
By:	/s/ Dmitri B. Kirpotin (Signature)	By:	/s/ William T. Tucker (Signature)
Name:	Dmitri B. Kirpotin (Please print)	Name:	William T. Tucker
Title:	Vice President, Pharmaceutical R&D	Title:	Executive Director Research Administration and Technology Transfer
Date:	9/26/2007	Date:	September 28, 2007

DEFINITIONS FROM THE HERMES-[**] AGREEMENT

1. Definitions. For the purposes of this IDA, the following terms will have the respective meanings set forth below:

1.1 “Act” will mean the United States Food Drug and Cosmetic Act 21 U.S.C. 5 **[illegible]** from time to time, and the regulations promulgated the ourder.

1.2 “Affiliate” will mean a corporation or other entity that directly, or indirectly through one or more intermediaries, controls, is controlled by, or is under common control with, the designated party, but only for so long as the relationship exists. “Control” shall mean ownership of shares of stock having at least 50% of the voting power entitled to vote for the election of directors in the case of a corporation.

1.3 “Confidential Information” will mean in the case of Hermes Information disclosed by Hermes to [**] concerning the Targeting Technology, the **[illegible]** Technology, and the Micellar Conjugation Technology as such, or the use thereof, owned by or licensed to Hermes prior to the date of the Confidentiality Agreement or developed by Hermes after the date of the Confidentiality Agreement **[illegible]** the Program are without reference in or use of any Program Information or [**] Confidential Information, and (ii) in the case of [**], information disclosed by [**] to Hermes concerning the System (including the incorporation of drug into the System), or the use or manufacture thereof or otherwise useful to the Program, owned by or licensed to [**] prior to the date of the Confidentiality Agreement or developed by [**] after the date of the Confidentiality Agreement outside the Program and without reference to or use of any Program Information or Hermes Confidential Information. Confidential Information will not include any information which is (i) now in the public domain or subsequently enters the public domain without fault on the part of the receiving party; (ii) known by the receiving party from its own sources, as evidenced by the receiving party’s written records made prior to the date of the Confidentiality Agreement; (iii) received from any third party not under any obligation to keep such information confidential; or (iv) proven by the receiving party to have been independently developed by the other party without the use of the other party’s Confidential Information.

1.4 “Early State Program Plan” will mean a plan approved by the JDC for the Program activities through the completion of the first Phase I clinical trial of a Product.

1.5 “Effective Date” will mean the first date on which this IDA is executed by both parties.

1.6 “GMPs” will mean current Good Manufacturing Practices as defined from time to time by the Act and as related to regulations or any successor laws or regulations governing the manufacture, storage, handing or control of the Targeting Technology or internalizing Technology in the United States.

1.7 “[**]” will mean Hermes’ proprietary [**] solely to the extent that it relates to [**].

1.8 “Joint Development Committee” and “JDC” will mean the joint development committee described in Section 2.1, below.

1.9 “[**]” will mean the [**] used by Hermes and/or the National Cancer Institute for [**] as of the Effective Date.

1.10 “Product” will mean a product developed under the Program which is composed of the [**] Technology and the [**] Technology combined with a System containing doxorubicin, with or without the [**] Technology, or another product that is substantially identical to Product; for example any product in a different strength (i.e., a different amount of active ingredient delivered in the same pattern) or having only cosmetic changes such as size, color, shape, etc., or similar nontherapeutic changes **[illegible]**.

1.11 “Program” will mean all activities undertaken by either or both parties in accordance with the terms hereof for the development of any Product, including regulatory, pre-clinical and clinical activities. Program includes the activities conducted pursuant to the Early Stage Program Plan.

1.12 “Program Information” will mean know-how, ideas, trade secrets, inventions (including patents covering such inventions), data, technology and information, including improvements and modifications to any thereof, processes and analytical methodology used in development, testing, analysis and manufacture, and medical, clinical, toxicological and other scientific data developed or acquired by either party under, in connection with or as a result of the Program. Notwithstanding the foregoing, Program Information will not include trademarks.

1.13 “System” will mean a sterically stabilized, pegylated liposomal system for the delivery of drugs. The term “System” will include anything incorporated in or used in connection with, or which is an attribute of, a Product, or the development thereof, including anything which affects or may affect the [**] or [**] of a therapeutic agent, or the [**] or use of

a [**], including but not limited to, [**], in the System, provided, however that “System” shall not include the [**] Technology, the [**] Technology or the [**] Technology.

1.14 “[**] Technology” will mean Hermes’ proprietary [**] technology consisting of [**] for therapeutic targeted delivery.

1.15 “Term Sheet” will mean the document attached hereto as Exhibit A which sets forth the essential terms of the Agreement.

1.16 “Territory” will mean worldwide.

Exhibit 10.21

EXCLUSIVE LICENSE AGREEMENT

between

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

and

MERRIMACK PHARMACEUTICALS, INC.

for

[**]
(UC Case No. [**])

[**]
(UC Case No. [**])

and

[**]
(UC Case No. [**])

TABLE OF CONTENTS

Confidential Materials omitted and filed separately with the
Securities and Exchange Commission. Asterisks denote omissions.

EXCLUSIVE LICENSE AGREEMENT
for
[**] (UC Case No. [**]),
[**] (UC Case No. [**]) AND
[**] (UC Case No. [**])

This license agreement ("Agreement") is made effective this 16th day of March, 2005 ("Effective Date"), by and between The Regents of the University of California, a California corporation, having its statewide administrative offices at 1111 Franklin Street, 12th Floor, Oakland, California 94607-5200 ("The Regents") and Merrimack Pharmaceuticals, Inc., a Massachusetts corporation, having a principal place of business at 101 Binney Street, Cambridge, Massachusetts 02142 ("Licensee").

BACKGROUND

A. Certain inventions (collectively "Inventions"), generally characterized as:

(i) "[**]" and disclosed in UC Case No. [**], were made in the course of research at the University of California, San Francisco, by [**], and are claimed in Patent Rights Group A as defined below;

(ii) "[**]" and disclosed in UC Case No. [**], were made in the course of research at the University of California, San Francisco, by [**], and are claimed in Patent Rights Group B as defined below; and

(iii) "[**]" disclosed in UC Case No. [**], are claimed in Property Rights and were made in the course of research at the University of California, San Francisco, by [**].

B. The development of the Invention was sponsored in part by the Department of Health and Human Services and the United States Army Medical Research and Development Command and, as a consequence, this license is subject to overriding obligations to the United States Federal Government under 35 U.S.C. §§ 200-212 and applicable regulations including a non-exclusive, non-transferable, irrevocable, paid-up license to practice or have practiced the Invention for or on behalf of the United States Government throughout the world.

C. The Invention of UC Case No. [**] was jointly developed by the University of California, San Francisco and [**] and is jointly owned by The Regents and [**]. The Regents

and [**] have executed an Interinstitutional Agreement (UC Control No. [**]) effective August 22, 2003, whereby [**] shall not grant to any person or entity (other than The Regents) any right, title or interest in, to or under the Patent Rights Group B and will grant The Regents the sole responsibility to commercialize and administer the Inventions in such patent applications and patents. Pursuant to the Interinstitutional Agreement, The Regents will provide a copy of this Agreement to [**].

D. The Licensee has evaluated the Inventions under the following Agreements with The Regents: Secrecy Agreement (UC Control No. [**]) for UC Case No. [**] with an effective date of January 20, 2004; a Secrecy Agreement (UC Control No. [**], for UC Case No. [**] with an effective date of May 16, 2003; a Material Evaluation Agreement (UC Control No. [**]) for UC Case No. [**] with an effective date of August 11, 2003; a Secrecy Agreement for Data and Biological Materials (UC Control Nos. [**] and [**]) for UC Case Nos. [**] and [**] with effective dates of September 3, 2003.

E. The Licensee wishes to obtain certain rights from The Regents for the commercial development of the Inventions, in accordance with the terms and conditions set forth herein and The Regents is willing to grant those rights so that the Inventions may be developed and the benefits enjoyed by the general public.

F. The scope of such rights granted by The Regents (except for the Property Rights) is intended to extend to the scope of the patents and patent applications in Patent Rights, but only to the extent that The Regents has proprietary rights in and to the Valid Claims of such Patent Rights.

G. As of the date this Agreement is signed on behalf of the Licensee, the Licensee is a "small business firm" as defined in 15 U.S.C. §632.

H. Both parties recognize and agree that Earned Royalties are due under this Agreement with respect to products, services and methods and that such royalties will be paid with respect to both pending patent applications and issued patents, in accordance with the terms and conditions set forth herein.

I. Both parties recognize and agree that Earned Royalties due under this Agreement will be based on the Licensee's or a Sublicensee's last act of infringement of Patent Rights within the control of the Licensee or a Sublicensee, regardless of whether the Licensee or a Sublicensee had control over prior infringing acts; the parties intend that Earned Royalties due

under this Agreement will be calculated based on the Net Sales of the product or service resulting from the last act of infringement by the Licensee and its Sublicensees.

J. The Licensee acknowledges that the Licensee may make and use the Biological Materials and Property Rights solely as permitted under this Agreement and for no other purpose.

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The parties agree as follows:

1. DEFINITIONS

As used in this Agreement, the following terms, whether used in the singular or plural, shall have the following meanings:

1.1 "Affiliate" of the Licensee means any entity which, directly or indirectly, Controls the Licensee, is Controlled by the Licensee or is under common Control with the Licensee. "Control" means (i) having the actual, present capacity to elect a majority of the directors of such entity; (ii) having the power to direct at least fifty percent (50%) of the voting rights entitled to elect directors; or (iii) in any country where the local law will not permit foreign equity participation of a majority, having the power to direct or cause the direction of the management and policies of such entity.

1.2 "Attributed Income" means the total gross proceeds (exclusive of earned royalties of Sublicensees, but including, without limitation, any license fees, maintenance fees, or milestone payments (any milestone payment being subject to Paragraph 8.2 below)), whether consisting of cash or the fair market value of any other form of consideration and whether any rights other than Patent Rights are granted, received by or payable to the Licensee, any Affiliate and/or Joint Venture from any Sublicensee in consideration of the grant of a sublicense and from any Development Partner in consideration of any agreement, arrangement or other relationship described in Paragraph 1.6. Notwithstanding the foregoing, Attributed Income shall not include proceeds reasonably and fairly attributed in such sublicense or such agreement, arrangement or other relationship to bona fide (i) debt financing; (ii) equity (and conditional equity, such as warrants, convertible debt and the like) investments in the Licensee or any Affiliate and/or Joint Venture at not more than one hundred twenty five percent (125%) of "market value"; (iii) reimbursements of Patent Prosecution Costs; and (iv) reimbursement for the cost of research

and/or development services provided on the basis of full-time equivalent ("FTE") efforts of personnel at or below commercially reasonable and standard FTE rates for the biotechnology industry. For the purposes of this Agreement, a standard FTE rate for the biotechnology industry means no more than [**] to [**] dollars ($[**] - $[**]; 2004 dollars) per FTE. The term "market value" shall mean: (i) if Licensee's common stock is publicly traded, the value of such equity using a per share price equal to the average of the reported closing prices of such stock on the exchange for the twenty trading days prior to such purchase; or (ii) otherwise, the value of such equity using the per share purchase price determined as follows:

1.2.1 If the Licensee, an Affiliate or Joint Venture, as applicable, consummates an equity financing during the period commencing on the date that is [**] days prior to, and ending on the date that is [**] days following, the date of determination, then the market value of a share of stock of such entity issued in connection with such sublicensing arrangement shall be the purchase price of a share of stock of such entity issued in the last equity financing, if any, consummated during such period; or

1.2.2 If no equity financing is consummated by the Licensee, an Affiliate or Joint Venture, as applicable, during the period described in Paragraph 1.2.1 above, then the market value of a share of stock of such entity shall be determined in good faith by such entity's Board of Directors (or functional equivalent thereof) and The Regents shall be notified thereof in writing. The Regents at its expense may, upon written notice to Licensee, appoint an independent certified public accountant or investment banking firm (an "Independent Appraiser") reasonably acceptable to Licensee to determine the market value of a share of stock of such entity. Notwithstanding the above, in the event that the Licensee has rejected three (3) appointees, then The Regents shall have the right to choose an Independent Appraiser without Licensee's assent. If The Regents fails to notify the Licensee of its election to exercise its valuation rights within [**] days after its receipt of the initial determination, then the market value thereof shall be the amount as

determined by such Board of Directors. If The Regents exercises its valuation right, The Regents shall cause its Independent Appraiser to provide its determination of such market value in writing to the Licensee and The Regents. Following receipt of such determination, the parties shall, in good faith, attempt to mutually agree upon the market value of a share of stock of the applicable entity. If the parties are unable to so agree within [**] days following their receipt of such determination, the parties shall appoint a mutually acceptable Independent Appraiser to determine the market value of a share of stock of the applicable entity (such costs and expense of the Independent Appraiser shall be shared equally by The Regents and the Licensee). In such case the determinations made by the applicable entity's Board of Directors, the Independent Appraiser appointed by The Regents and the Independent Appraiser jointly appointed by the parties shall be compared, and the market value shall be the middle determination (and not an average thereof).

1.3 "Biological Materials" means: (a) the Original Materials, their Progeny, mutations, hybrids, fragments or derivatives derived therefrom by the Licensee ("Materials"); (b) any material which incorporates the Materials; (c) material contained in or produced by the Materials, including cells, DNA, RNA, or secreted products or encoded products obtained by the Licensee from the Materials, or fragments or derivatives thereof derived by the Licensee from the Materials; or (d) any material described in (c) above, produced by the Licensee using chemical synthesis or any other method based on use of the Materials.

1.4 "[**]" is defined in Article 6 (License Issue Fee).

1.5 “Combination Product” means a combined Product that contains or uses a Licensed Product and at least one other Product or process (a “Combination Product Component”), where (i) such Combination Product Component is not a Licensed Product, (ii) if such Combination Product Component were removed from such combined Product, the manufacture, use, Sale or import of the resulting Product in or into a particular country would infringe, but for a license, the same Valid Claim in the country where such manufacture, use, Sale or import occurs as such combined Product, (iii) such Combination Product Component and

such Licensed Product are Sold separately from such combined Product by the Licensee or any Affiliate, Joint Venture or Sublicensee, (iv) such Combination Product Component does not function together with a Licensed Product so as to achieve the purpose for which such Licensed Product is Sold and (v) the market price of such combined Product is higher than the market price for such Licensed Product as a result of such combined Product containing or using such Combination Product Component.

1.6 “Development Partner” means any person or entity other than a Sublicensee that has an agreement, arrangement or other relationship with the Licensee, any Affiliate, any Joint Venture or any Sublicensee for the research or development of Licensed Products.

1.7 “Diagnostic Licensed Product” means a Licensed Product that is used as a human diagnostic and/or prognostic.

1.8 “Earned Royalty” means Sublicensee Royalty (as defined in Paragraph 8.2) and Royalty (as defined in Paragraph 9.1).

1.9 “Field of Use” means use as a therapeutic or diagnostic in humans. The Field of Use specifically excludes (i) providing Licensed Services to third parties; (ii) the Sale, transfer, lease, exchange or other disposition or provision of Biological Materials, other than as incorporated in Licensed Products for Sale or as expressly permitted in this Agreement; (iii) the making, using or Selling of Biological Materials or Licensed Products for use in drug discovery or as a research reagent (other than for the development of Licensed Products); (iv) the making, using or Selling of Non-Patent Products; and (v) all other uses and applications of Biological Material or Licensed Products, except as expressly permitted in this Agreement. Notwithstanding anything to the contrary in this Agreement, the Licensee may make (propagate), have made and use the Biological Material as provided for in Paragraph 2.2. Notwithstanding the above, the Licensee may Sell Licensed Products for which the Patent Rights have expired as provided for in Paragraph 5.1

1.10 “FTE” is defined in Paragraph 1.2 (Attributed Income).

1.11 “Joint Venture” means any separate entity established pursuant to an agreement between a third party and the Licensee and/or Sublicensee to constitute a vehicle for a joint venture, in which the separate entity manufactures, uses, purchases, Sells or acquires Licensed Products from the Licensee or Sublicensee.

1.12 “Licensed Method” means any process, art or method the use or practice of which, but for the license granted in this Agreement, would infringe, or contribute to, or induce the infringement of, any Patent Rights in any country were they issued at the time of the infringing activity in that country.

1.13 “Licensed Product(s) “ means any Product, including, without limitation, a Product for use or used in practicing a Licensed Method and any Product made by practicing a Licensed Method, the manufacture, use, Sale, offer for Sale or import of which, but for the license granted in this Agreement, would infringe, or contribute to, or induce the infringement of, any Patent Rights in any country were they issued at the time of the infringing activity in that country.

1.14 “Licensed Service” means any service provided for consideration (whether in cash or any other form), when such service (i) involves the use of a Licensed Product; (ii) involves the practice of a Licensed Method; or (iii) involves the use of Property Rights or Biological Materials.

1.15 “Modifications” means substances created by or for the Licensee and/or any Sublicensee which contain or incorporate the Original Materials, Progeny and/or Unmodified Derivatives.

1.16 “Net Invoice Price” means (a) the gross invoice price charged and the fair market value of any other non-cash consideration owed to the Licensee and/or any Sublicensee for a Licensed Product, or (b) in those instances where the Licensed Product is combined in any manner with any other Product or service, the gross invoice price charged and the fair market value of any other non-cash consideration owed to the Licensee and/or any Sublicensee for the combined Product or service in its entirety, less the following items, but only to the extent that they actually pertain to the disposition of such Licensed Product and are separately billed:

1.16.1 Amounts repaid or credited to customers for rejections, returns and prompt payment and volume discounts;

1.16.2 Freight, transport packing and insurance charges associated with transportation;

1.16.3 Taxes, including Deductible Value Added Tax, tariffs or import/export duties based on Sales when included in the gross invoice price, but excluding value-added taxes other than Deductible Value Added Tax or

taxes assessed on income derived from Sales. “Deductible Value Added Tax” means value added tax only to the extent that such value added tax is actually incurred and is not reimbursable, refundable or creditable under the tax authority of any country;

1.16.4 Only those discounts and rebates that are given as a part of a formulary program and that are paid or credited to customers, third-party payers, healthcare systems, or administrators for a Licensed Product when included in such formulary program, as permitted by applicable law;

1.16.5 Only those wholesaler’s discounts and rebates that are part of a formulary program and that are paid or credited to customers, third-party payers, health care systems, or administrators for a Licensed Product when included in such formulary program, as permitted by applicable law; and

1.16.6 Rebates and discounts paid or credited pursuant to applicable law.

1.17 “Net Sale” means:

1.17.1 except in the instances described in Paragraphs 1.17.2, 1.17.3 and 1.17.4 of this Paragraph, the Net Invoice Price;

1.17.2 for any Relationship-Influenced Sale of a Licensed Product, Net Sales shall be based on the Net Invoice Price at which the Relationship-Influenced Sale Purchaser resells such Licensed Product;

1.17.3 in those instances where Licensed Product is not Sold, but is otherwise exploited for purposes other than for the further research and development (pre and/or post-approval) of Licensed Products, which research and development purposes include quality assurance and control and testing of Licensed Products (in any case regardless of whether other benefits arise out of such activities, so long as the primary purpose was for the research and development of the Licensed Product in question), the Net Sales for such Licensed Product shall be the Net Invoice Price of products of the same or similar kind and quality, Sold in similar quantities, currently being offered for Sale by the Licensee and/or any Sublicensee. Where such products or services are not

currently being offered for Sale by the Licensee and/or any Sublicensee, the Net Sales for Licensed Product otherwise exploited, for the purpose of computing royalties, shall be the average Net Invoice Price at which products of the same or similar kind and quality, Sold in similar quantities, are then currently being offered for Sale by other manufacturers. Where such products or services are not currently Sold or offered for Sale by the Licensee and/or any Sublicensee, or others, then the Net Sales shall be the Licensee's and/or any Sublicensee's cost of manufacture of Licensed Product or the cost of conducting the service, determined according to generally accepted accounting principles ("GAAP"), plus [**] percent ([**]%); and

1.17.4 in those instances where the Licensee or any Sublicensee acquires a Licensed Product and then subsequently Sells or otherwise exploits (as such exploitation is described in Subparagraph 1.17.3) such Licensed Product, Net Sales shall mean the Net Invoice Price upon the Sale or other exploitation of such Licensed Product by the Licensee or any Sublicensee, with the resulting royalty amount due to The Regents subject to a deduction for any royalty amounts paid to The Regents on account of an earlier Sale or other exploitation of such Licensed Product, if any.

For a Combination Product, Net Sales shall be calculated as:

A/(A+B) x [Net Sales, calculated without regard to this formula, of the Licensed Product that is the Combination Product],

Where:

(i) "A" is the total of Net Sales of each Licensed Product contained within or used in the Combination Product when Sold separately; and

(ii) "B" is the total of Net Sales of each Combination Product Component contained within or used in the Combination Product when Sold separately,

provided, however, that in no event shall Net Sales for a Combination Product be less than [**] percent ([**]%) of Net Sales, calculated without regard to this formula, of the Licensed Product that is the Combination Product.

1.18 "New Developments" means inventions, or claims to inventions, which constitute advancements, developments or improvements, whether or not patentable and whether or not the subject of any patent application, which are not sufficiently supported by the specification of a previously-filed patent or patent application within the Patent Rights to be entitled to the priority date of the previously-filed patent or patent application.

1.19 "Non-Patent Product" means a Product that is the subject of, is covered by, uses or is developed or derived from Property Rights or any Biological Materials; and is not a Licensed Product in any country.

1.20 "Non-US Major Market Country" means the United Kingdom, Germany, France, Italy, Spain, Ireland, Canada, Japan, or Australia.

1.21 "Other Exploitation" is described in Subparagraph 1.17.3.

1.22 "Original Materials" means the materials listed in Appendix B.

1.23 "Patent Prosecution Costs" is defined in Paragraph 21.4.

1.24 "Patent Rights" means Patent Rights Group A and Patent Rights Group B.

1.25 "Patent Rights Group A" means the Valid Claims of, to the extent assigned to or otherwise obtained by The Regents, the following United States patents and patent applications:

UC Case Number	United States Application Number or United States Patent Number	Filing or Issue Date
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]

Patent Rights Group A shall further include the Valid Claims of, to the extent assigned to or otherwise obtained by The Regents, the corresponding foreign patents and patent applications (requested under Paragraph 21.7 herein), any continuations, divisions, and continuation-in-part applications (but only those Valid Claims in the continuation-in-part applications that are entirely supported in the specification and entitled to the priority date of the parent application) of any referenced United States or foreign application, any patents issuing on such referenced United States or foreign applications, and any re-examinations, reissues, extensions or substitutions of such referenced United States or foreign patents. This definition of Patent Rights Group A excludes any rights in and to New Developments.

1.26 “Patent Rights Group B” means the Valid Claims of, to the extent assigned to or otherwise obtained by The Regents, the following United States patents and patent applications::

UC Case Number	United States Application Number or United States Patent Number	Filing or Issue Date
[**]	[**]	[**]
[**]	[**]	[**]
[**]	[**]	[**]

Patent Rights Group B shall further include the Valid Claims of, to the extent assigned to or otherwise obtained by The Regents, the corresponding foreign patents and patent applications (requested under Paragraph 21.7 herein), any continuations, divisions, and continuation-in-part applications (but only those Valid Claims in the continuation-in-part applications that are entirely supported in the specification and entitled to the priority date of the parent application) of any referenced United States or foreign application, any patents issuing on such referenced United States or foreign applications, and any re-examinations, reissues, extensions or substitutions of such referenced United States or foreign patents. This definition of Patent Rights Group B excludes any rights in and to New Developments.

1.27 “Product” means any kit, article of manufacture, composition of matter, material, compound, component or product.

1.28 “Progeny” means descendants from the Original Materials, Progeny and/or Unmodified Derivatives, including those with mutations such as: virus from virus; cell from cell; or organism from organism.

1.29 “Property Rights” means The Regents’ personal property rights in the Biological Materials.

1.30 “Related Party” means a corporation, firm or other entity with which, or individual with whom, the Licensee and/or any Sublicensee (or any of their respective stockholders, subsidiaries or Affiliates) have any agreement, understanding or arrangement (for example, but not by way of limitation, an option to purchase stock or other equity interest, or an arrangement involving a division of revenue, profits, discounts, rebates or allowances) unrelated to the Sale or exploitation of the Licensed Products without which such other agreement, understanding or arrangement, the amounts, if any, charged by the Licensee or any Sublicensee to such entity or individual for the Licensed Product, would be higher than the Net Invoice Price

actually received, or if such agreement, understanding or arrangement results in the Licensee or any Sublicensee extending to such entity or individual lower prices for such Licensed Product than those charged to others without such agreement, understanding or arrangement buying similar products or services in similar quantities.

1.31 “Relationship-Influenced Sale” means a Sale of a Licensed Product, or any exploitation of the Licensed Product or Licensed Method between the Licensee and/or any Sublicensee and (i) an Affiliate; (ii) a Joint Venture; (iii) a Related Party or (iv) the Licensee and/or a Sublicensee.

1.32 “Relationship-Influenced Sale Purchaser” means the purchaser of Licensed Product in a Relationship-Influenced Sale.

1.33 “Sale” means the act of selling, leasing or otherwise transferring, providing, or furnishing for use for any consideration. Correspondingly, “Sell” means to make or cause to be made a Sale and “Sold” means to have made or caused to be made a Sale.

1.34 “Sublicensee” means any person or entity (including any Affiliate or Joint Venture) to which any of the license rights granted to the Licensee hereunder are sublicensed.

1.35 “Sublicense Fee” is defined in Paragraph 8.1.

1.36 “Therapeutic Licensed Product” means a Licensed Product that is used to prevent, treat or cure one or more diseases and/or conditions of humans.

1.37 “Unmodified Derivatives” means substances derived from the Original Materials or from Progeny, including substances that constitute an unmodified functional subunit or product expressed by the Original Materials, Progeny and/or Unmodified Derivatives. Some examples include: subclones of cell lines; purified or fractionated subsets of the Original Materials or Progeny; DNA or RNA; genetic material; secreted or encoded products obtained from the Original Materials, Progeny and/or Unmodified Derivatives, including expressed proteins; or monoclonal antibodies secreted by a hybridoma cell line.

1.38 “Valid Claim” means a claim of a patent or patent application in any country that (i) has not expired; (ii) has not been disclaimed; (iii) has not been cancelled or superseded, or if cancelled or superseded, has been reinstated; and (iv) has not been revoked, held invalid, or otherwise declared unenforceable or not allowable by a tribunal or patent authority of competent jurisdiction over such claim in such country from which no further appeal has or may be taken.

2. GRANT

2.1 Subject to the limitations and other terms and conditions set forth in this Agreement including the license granted to the United States Government set forth in the background and in Paragraph 2.4.1, The Regents grants to the Licensee a license under its rights in and to Patent Rights to make, have made, use, Sell, offer for Sale and import Licensed Products and to practice Licensed Methods, in the United States and in other countries where The Regents may lawfully grant such licenses, only in the Field of Use.

2.2 Subject to the limitations and other terms and conditions set forth in this Agreement including the license granted to the United States Government set forth in the background and in Paragraph 2.4.1, The Regents grants to the Licensee a license under its rights in and to Property Rights to make (propagate), have made and use the Biological Materials to make, have made, use, Sell, offer for Sale and import Licensed Products, or to practice Licensed Methods, in the United States and in other countries where The Regents may lawfully grant such licenses, only in the Field of Use. In order to exercise its have made right under this Agreement, the Licensee may transfer the Biological Materials to its third party manufacturers under a written agreement such written agreement to include the following provisions: 1. the third party manufacturers may not transfer the Biological Materials to any party other than the Licensee; 2. the third party manufacturers may use the Biological Materials solely to manufacture Licensed Products to be Sold by the Licensee under the terms of this Agreement; and 3. the third party manufacturers must return to the Licensee all Biological Materials upon termination or expiration of the agreement between the third party manufacturer and the Licensee.

2.3 Except as otherwise provided for in this Agreement, the license granted under Patent Rights in Paragraph 2.1 is non-exclusive for Patent Rights Group A and is exclusive for Patent Rights Group B. Except as otherwise provided for in this Agreement, the license granted under Property Rights in Paragraph 2.2 is non-

exclusive.

2.4 The license granted in Paragraphs 2.1, 2.2 and 2.3 is subject to the following:

2.4.1 The obligations to the United States Government under 35 U.S.C. §§ 200-212 and all applicable governmental implementing regulations, as amended from time to time, including the obligation to report on the utilization of the Invention as set forth in 37 CFR. § 401.14(h), and all

applicable provisions of any license to the United States Government executed by The Regents; and

2.4.2 the National Institutes of Health "Principles and Guidelines for Recipients of NIH Research Grants and Contracts on Obtaining and Disseminating Biomedical Research Resources," 64 F.R. 72090 (Dec. 23, 1999), as amended from time to time.

2.5 The license granted in Paragraphs 2.1, 2.2 and 2.3 is limited to methods and products that are within the Field of Use. For other methods and products, the Licensee has no license under this Agreement.

2.6 Title in and to the Original Materials, Progeny and Unmodified Derivatives and any rights, including any and all intellectual property rights, relating thereto is not transferred to the Licensee under this Agreement. Licensee will own any Modifications, except for any Original Materials, Progeny and/or Unmodified Derivatives contained or incorporated in any Modifications. The Regents agrees and acknowledges that the Licensee may receive samples of certain Original Materials from Dr. [**] or Dr. [**]. The Licensee may use such Original Materials and any Biological Materials solely as permitted under this Agreement; provided, however, in no event may the Licensee Sell, transfer, lease, exchange or otherwise dispose or provide such Original Materials and/or any Biological Materials to any third party except solely as provided for in Paragraph 32.6.2. The Licensee shall transfer a reasonable number of samples of Original Materials, Progeny and Unmodified Derivatives but not Modifications developed under this Agreement to The Regents or [**] from time to time, upon reasonable request by The Regents or [**]. The Licensee shall notify The Regents if the Licensee receives any additional biological material (specifically including any additional ErbB/HER antibodies) when such biological material is being provided for use by Licensee or is used by Licensee under this Agreement from Drs. [**] or Dr. [**] or any representative of The Regents which is not listed in Appendix B. The Licensee may not use such biological material without the written permission of The Regents.

2.7 The Regents and [**] reserve and retain their rights (and the rights granted to the Licensee in this Agreement shall be limited accordingly) to make, use and practice the Invention, the Property Rights, the Biological Materials and any technology relating to any of the foregoing and to make and use any Products and to practice any process that is the subject of the Patent

Rights (and to grant any of the foregoing rights to other educational and non-profit institutions) for educational and research purposes, including without limitation, any sponsored research performed for or on behalf of commercial entities and including publication and other communication of any research results. For the avoidance of doubt, to the extent the Invention, the Property Rights, the Original Materials and any biological materials made from the Original Materials and any technology relating to any of the foregoing are not the subject of the exclusive license under the Patent Rights granted to the Licensee hereunder, The Regents shall be free to make, use, Sell, offer to Sell, import, practice and otherwise commercialize and exploit (including to transfer, license to, or have exercised by, third parties) for any purpose whatsoever and in its sole discretion, such Invention, Property Rights, Original Materials and any biological materials made from the Original Materials, technology and any Products or processes that are the subject of any of the foregoing. Notwithstanding the foregoing, nothing in this Agreement shall be construed to grant to The Regents or [**] any rights to make, use, sell or otherwise commercialize Modifications for any purpose. However, The Regents and [**] are not limited in any way in practicing their independent developments.

2.8 Because the Invention was made under funding provided by the United States Government, Licensed Products, the Invention, and any products embodying the Invention sold in the United States will be substantially manufactured in the United States.

3. SUBLICENSES

3.1 The Regents also grants to the Licensee the right to sublicense to third parties (including to Affiliates and Joint Ventures) the rights granted to the Licensee hereunder, with no right to further sublicense except as provided below, as long as the Licensee has current exclusive rights thereto under this Agreement (and to sublicense the non-exclusive rights granted for Patent Rights Group A and/or the Property Rights provided that such rights are licensed in conjunction with the exclusive rights granted herein). Each Sublicensee must be subject to a written sublicense agreement. Such sublicenses will include all of the terms, conditions, obligations and other restrictions of this Agreement that protect or benefit The Regents' (and, if applicable, the United States Government's and other sponsors') rights and interests, other than those terms, conditions and obligations specified in Article 6 (License Issue Fee), Article 7 (License Maintenance Fee) and Paragraph 9.3 (Minimum Annual Royalty) and Paragraphs 21.4

and 21.8 (reimbursement for Patent Prosecution Costs). For the avoidance of doubt, the Licensee shall have no right to permit any Sublicensee and no Sublicensee shall have any right to further sublicense any of the rights granted to the Licensee hereunder, except that each Sublicensee (except Affiliates and Joint Ventures) may sublicense to its Affiliates as Affiliate is defined in Paragraph 1.1 with sublicensee substituted for Licensee in the definition, to the extent reasonably needed for the development and commercialization of Licensed Products in accordance with this Agreement. Also, for the avoidance of doubt, Affiliates and Joint Ventures shall have no licenses under this Agreement unless such Affiliates and Joint Ventures are granted a sublicense. Notwithstanding the above, The Regents, upon Licensee's request, agrees to confer with the Licensee and the Licensee's Sublicensee (or potential Sublicensee) to discuss allowing such Sublicensee to further sublicense any of the rights granted to Licensee hereunder.

3.2 Upon the license granted to Licensee hereunder becoming non-exclusive in a Field of Use for any reason, all exclusive sublicenses granted by Licensee hereunder in such Field of Use may remain in effect but shall become non-exclusive, provided that such Sublicensees are not in breach of the terms of this Agreement, and Licensee shall thereafter have no right to grant additional sublicenses of its rights hereunder in such Field of Use.

3.3 In the event that The Regents and the Licensee each own an undivided interest in any Patent Rights licensed hereunder, the Licensee will not separately grant a license to any third party under its rights without concurrently granting a license under The Regents' rights on the terms and conditions described in this Article 3 (Sublicenses).

3.4 The Licensee will notify The Regents of each sublicense granted hereunder and will provide The Regents with a complete copy of each sublicense and each amendment to such sublicense within [**] days of issuance of such sublicense or such amendment. The Licensee will collect from Sublicensees and pay to The Regents all fees, payments, royalties and the cash equivalent of any consideration due The Regents. The Licensee will guarantee all monies due The Regents from Sublicensees. For clarity, if the Licensee grants a sublicense that contains a provision for payment of royalties by any Sublicensee in an amount that is less than the Sublicensee Royalty required to be paid under Paragraph 8.3 below, then the Licensee will pay to The Regents a total amount equal to the Sublicensee Royalty based on the Sublicensees' Net Sales as provided for in Paragraph 8.3 and 8.4. The Licensee will require Sublicensees to provide it with copies of all progress reports and royalty reports in accordance with the

provisions herein and the Licensee will collect and deliver all such reports due The Regents from Sublicensees.

3.5 If Licensee licenses patent rights assigned to or otherwise acquired by it ("Licensee's Patent Rights"), and it believes, in good faith, that the recipient of such license will infringe Patent Rights in practicing the Licensee's Patent Rights, then the Licensee will not separately grant a license to such recipient under Licensee's Patent Rights without concurrently granting a sublicense under Patent Rights on the terms required under this Agreement.

3.6 Upon any expiration (unless the continuing license to Property Rights exists under Paragraph 14.1) or termination of this Agreement for any reason, all sublicenses shall automatically terminate, unless The Regents, at its sole discretion, agrees in writing to an assignment to The Regents of any sublicense. The Regents shall not be bound to any duties under an assigned sublicense beyond The Regents' duties under this Agreement. In the event of termination of this Agreement and if The Regents accepts assignment of any sublicense, any such assignment will include a modification to the sublicense that requires payment of Earned Royalties directly to The Regents by the Sublicensee as if it were the Licensee at a rate that is no lower than the rate set forth in Article 9 (Earned Royalties and Minimum Annual Royalties) in accordance with Article 5 (Payment Terms). Upon the Licensee's reasonable request, at any time during the term of this Agreement, The Regents agrees to meet and confer in good faith with the Licensee and any Sublicensee or potential Sublicensee to discuss what assurances The Regents will give to the Sublicensee or potential Sublicensee that the subject sublicenses will not be terminated upon termination of this Agreement. To the extent The Regents is willing to give such assurances, The Regents agrees that it shall enter into a written agreement with the Licensee and such Sublicensee regarding setting forth The Regents' assurances and The Regents' agreement not to require termination of the sublicense.

4. MANDATORY SUBLICENSING

4.1 If at any time following the two (2) year anniversary date of the Effective Date, The Regents (as represented by the actual knowledge of the licensing professional responsible for administration of this Agreement) is notified by a third party of an application or use for Products covered by Patent Rights Group B within the licensed Field of Use and within the exclusive rights granted hereunder but for which Licensed Products have not been developed or

are not, at such time, being developed by Licensee and such third party has requested a license to such application or use, then The Regents, through the Office of Technology Transfer, may give written notice to Licensee thereof.

4.2 Within [**] days of such notice, Licensee shall give The Regents written notice stating whether Licensee agrees to [**] Licensed Products for such application ("New Licensed Products"). Such notice shall be accompanied by (i) [**]; and (ii) [**] (collectively, the "[**]"). If Licensee has not notified The Regents, in accordance with the foregoing, that Licensee agrees to [**] such New Licensed Products within such [**] day period, or if the [**] is not reasonably acceptable to The Regents, and after receiving written notice of its deficiencies from The Regents, the Licensee has not resubmitted a [**] that is reasonably acceptable to The Regents within [**] days of receiving such notice, then Licensee shall be deemed to not so agree.

4.3 If Licensee agrees, as set forth in Paragraph 4.2, to [**] such New Licensed Products, then Licensee shall (i) [**] of such New Licensed Products and [**] in accordance with the diligence milestones of the [**] and in [**]; and (ii) Licensee shall submit a written progress report setting forth in detail the status of such [**] every [**] months to The Regents. The Licensee and The Regents agree to negotiate in good faith for a period of up to [**] days to amend Article 11 (Due Diligence) solely to incorporate the additional due diligence milestones for the New Licensed Products, consistent with the [**]. However, if such negotiations are not concluded within the [**] day period, the Licensee shall be deemed to not agree to the [**] of the New Licensed Products and The Regents will be free to [**] in accordance with Paragraphs 4.4 and 4.5 below. No amendment to this Agreement is valid or binding on the parties unless it is made in writing and signed on behalf of each party.

4.4 If Licensee does not agree, as set forth in Paragraph 4.2, to [**] such New Licensed Products, or if Licensee fails to [**] thereof in accordance with the amended Article 11 (Due Diligence), as per Paragraph 4.3, then The Regents shall have the right to seek one or more third parties for the [**] of such New Licensed Products and refer such third party to Licensee so that such third party may request a sublicense allowing for [**] of such New Licensed Products. If the third party requests a sublicense, then Licensee shall report such request, together with the terms and conditions thereof, to The Regents within [**] days from the date of such request.

4.5 If Licensee does not grant a sublicense to the third party within a reasonable time after such request (and, in any event, within [**] days after such request), or refuses to grant such

sublicense under reasonable terms, then the Licensee shall promptly, or in the event of such refusal, within [**] days after such refusal, submit to The Regents a written report specifying the [**] and a [**]. If The Regents, at its sole discretion, determines that the [**] of the sublicense proposed by the third party are [**], then The Regents shall have the right to grant to the third party (and the rights granted to Licensee in this Agreement shall be limited accordingly) a license to make, have made, use, sell, offer for sale and import Licensed Products and to practice the Licensed Methods for the [**] of such New Licensed Products (within the licensed Field of Use and otherwise) [**] by the [**] providing that the [**] are [**] than the [**] hereunder. However, if The Regents agrees with the Licensee that the [**] of the sublicense proposed by the third party are [**], then the Licensee shall have, at its sole discretion, the right to submit to The Regents a [**] for the [**] of the New Licensed Products as provided for in Paragraph 4.2, and The Regents agrees to consider such [**] in good faith. Notwithstanding the above, The Regents shall be under no obligation whatsoever to Licensee and reserves the right to grant to a third party (and the rights granted to the Licensee in this Agreement shall be limited accordingly) a license to make, use Sell, offer for Sale and import Licensed Products and to practice the Licensed Methods allowing for the [**] of New Licensed Products.

4.6 For the sake of clarity, if the Licensee [**] a Licensed Product for the [**] to The Regents referred to in Paragraph 4.1, then this Article 4 (Mandatory Sublicensing) shall not apply.

5. PAYMENT TERMS

5.1 Paragraphs 1.12, 1.13 and 1.24 define Licensed Method, Licensed Product, and Patent Rights, so that Earned Royalties are payable on products and methods covered by both pending patent applications and issued patents. Earned Royalties will accrue in each country for the duration of Patent Rights in that country and will be payable to The Regents when Licensed Products are invoiced, or if not invoiced, when delivered or otherwise exploited by the Licensee or Sublicensee in a manner constituting a Net Sale as defined in Paragraph 1.17. Notwithstanding the previous sentence, upon the expiration or abandonment of applicable Patent Rights or in countries where Patent Rights have never existed, Earned Royalties will be due to The Regents on Net Sales of Licensed Products that contain or are comprised of the Biological Material at the Earned Royalty rate specified in Articles 8 (Payments on Sublicenses) and 9

(Earned Royalties and Minimum Annual Royalties), until such time as a total of nine (9) years have passed from the date of the First Sale of such Licensed Product in each country. Sublicense Fees with respect to any Attributed Income shall accrue to The Regents within [**] days of the date that such Attributed Income is paid to the Licensee.

5.2 The Licensee will pay to The Regents all Earned Royalties, Sublicense Fees and other consideration payable to The Regents quarterly on or before February 28 (for the calendar quarter ending December 31), May 31 (for the calendar quarter ending March 31), August 31 (for the calendar quarter ending June 30) and November 30 (for the calendar quarter ending September 31) of each calendar year. Each payment will be for Earned Royalties, Sublicense Fees and other consideration which has accrued within the Licensee's most recently completed calendar quarter.

5.3 All consideration due The Regents will be payable and will be made in United States dollars by check payable to "The Regents of the University of California" or by wire transfer to an account designated by The Regents. The Licensee is responsible for all bank or other transfer charges. When Licensed Products are Sold for monies other than United States dollars, the Earned Royalties and other consideration will first be determined in the foreign currency of the country in which such Licensed Products were Sold and then converted into equivalent United States dollars. The exchange rate will be the exchange rate quoted in the *The Wall Street Journal* on the last day of the reporting period.

5.4 Sublicense Fees and Earned Royalties on Net Sales of Licensed Products and other consideration accrued in, any country outside the United States may not be reduced by any taxes, fees or other charges imposed by the government of such country, except those taxes, fees and charges allowed under the provisions of Paragraph 1.17.

5.5 Notwithstanding the provisions of Article 28 (Force Majeure) if at any time legal restrictions prevent the prompt remittance of Earned Royalties or other consideration owed to The Regents by the Licensee ("Blocked Payments") with respect to any country where a sublicense is issued or a Licensed Product is Sold or otherwise exploited, then the Licensee shall convert the amount owed to The Regents into United States dollars and will pay The Regents directly from another source of funds in order to remit the entire amount owed to The Regents.

5.6 In the event that any patent or claim thereof included within the Patent Rights is held invalid in a final decision by a court of competent jurisdiction and last resort and from

which no appeal has or can be taken, then all obligation to pay royalties based on that patent or claim or any claim patentably indistinct therefrom will cease as of the date of final decision. The Licensee will not, however, be relieved from paying any royalties that accrued before such final decision and the Licensee shall be obligated to pay the full amount of royalties due hereunder to the extent that The Regents licenses one or more Valid Claims within the Patent Rights to the Licensee with respect to Licensed Products or to the extent that Licensed Products are based on Property Rights.

5.7 No Earned Royalties will be collected or paid hereunder to The Regents on Licensed Products Sold to, or otherwise exploited for, the account of the United States Government as provided for in the license to the United States Government. The Licensee, and its Sublicensees will reduce the amount charged for Licensed Products Sold to, or otherwise exploited by, the United States Government by an amount equal to the Earned Royalty for such Licensed Products otherwise due The Regents. Such reduction in Earned Royalties will be in addition to any other reductions in price required by the United States Government.

5.8 In the event that royalties, fees, reimbursements for Patent Prosecution Costs or other monies owed to The Regents are not received by The Regents when due, the Licensee will pay to The Regents interest at a rate of [**] percent ([**]%) simple interest per annum. Such interest will be calculated from the date payment was due until actually received by The Regents. Such accrual of interest will be in addition to and not in lieu of, enforcement of any other rights of The Regents due to such late payment.

5.9 No multiple running royalties will be payable because any Licensed Product or Licensed Method, its manufacture, use, lease, sale or import are or shall be covered by more than one patent application or issued patent licensed under this Agreement.

6. LICENSE ISSUE FEE

The Licensee shall pay to The Regents a **license issue fee** of [**] dollars ($[**]) within [**] days of the Effective Date. This fee is non-refundable, non-cancelable and is not an advance or otherwise creditable against any royalties or other payments required to be paid under the terms of this Agreement. The Licensee shall also pay to The Regents an additional **license issue fee** of [**] dollars ($[**]) within [**] days of the issuance of a claim corresponding

substantially to the claim listed in Paragraph 1 of Appendix A or the [**] listed in Paragraph 2 of Appendix A ("[**]").

7. LICENSE MAINTENANCE FEE

7.1 The Licensee shall also pay to The Regents a license maintenance fee on the one-year anniversary of the Effective Date in an amount equal to twenty thousand dollars ($20,000). Subject to Paragraph 7.2. the Licensee will pay a license maintenance fee on each subsequent anniversary of the Effective Date in an amount equal to:

7.1.1 [**] dollars ($[**]) in the case that rights to neither Patent Rights Group A nor Patent Rights Group B have been terminated, or

7.1.2 [**] dollars ($[**]) in the case that rights to either Patent Rights Group A or Patent Rights Group B have been terminated.

Notwithstanding the above, in the case that the Licensee has not terminated its rights to Patent Rights Group B, and a [**] issues, the applicable fee in Paragraphs 7.1.1 or 7.1.2 will be increased by [**] dollars ($[**]).

7.2 The license maintenance fee is not due on any anniversary of the Effective Date if on that date, the Licensee is Selling or otherwise exploiting Licensed Products and is paying an Earned Royalty to The Regents on the Net Sales of such Licensed Product. The license maintenance fee is non-refundable and is not an advance or otherwise creditable against any royalties or other payments required to be paid under the terms of this Agreement.

8. PAYMENTS ON SUBLICENSES

8.1 The Licensee will pay to The Regents the following non-refundable and non-creditable sublicense fees ("Sublicense Fees"):

8.1.1 [**] percent ([**]%) of all Attributed Income unless Paragraph 8.1.2 applies; or

8.1.2 [**] percent ([**]%) of all Attributed Income where, in addition to a sublicense of any of the rights granted to the Licensee hereunder, the Licensee grants to the Sublicensee a license under a third party's patent rights which license is necessary for the Sublicensee to make, use and Sell Licensed Products without infringing such patent rights, provided

and only to the extent that the total aggregate consideration for such combined license is treated as Attributed Income.

8.2 Notwithstanding Paragraph 8.1, in the event that a milestone payment received by the Licensee from any Sublicensee or any Development Partner is for one of the milestone events recited in Paragraphs 10.1.1 through 10.1.5 or Paragraphs 10.2.1 through 10.2.2 for which a milestone payment is due to The Regents, then the Licensee shall pay to the Regents the larger of the milestone payment due or the appropriate percentage of Attributed Income, whichever is larger. In regard to payment, the Licensee will pay any milestone payment due as provided for in Paragraph 10.4 and will then pay any additional amount due under this Paragraph 8.2 in regard to Attributed Income as provided for in Article 5 (Payment Terms).

8.3 The Licensee will also pay to The Regents, with respect to each Sublicensee (other than an Affiliate or Joint Venture), an earned royalty of: (i) [**] percent ([**]%) of the Net Sales of each Licensed Product or Licensed Method ("Sublicensee Royalty").

8.4 In the event that the Licensee or a Sublicensee, as applicable, must pay to a third party royalties to obtain a patent right from such third party that is required to make, use, Sell or import a given Licensed Product or practice a given Licensed Method, then [**] percent of any payment to such third party for such patent right may be credited against up to [**] percent of the amounts payable to The Regents under Paragraph 8.3 above on a going-forward basis. Any credit pursuant to this Paragraph shall be available with respect to the full royalty payable to The Regents pursuant to Paragraph 8.3, provided that in no event shall the royalty payable to The Regents be reduced to less than [**] percent ([**]%) of Net Sales of Licensed Products or Licensed Methods by the Sublicensee as a result of all credits applied under this Agreement and provided further that no such credit shall by available with respect to any Combination Product to the extent attributable to payments under such third party license for patent rights that cover the Combination Product Component. In addition, any credit must be used within the royalty reporting period that such credit is earned and may not roll forward from one royalty reporting period to the next.

9. EARNED ROYALTIES AND MINIMUM ANNUAL ROYALTIES

9.1 The Licensee will also pay to The Regents an earned royalty of (i) [**] percent ([**]%) of the Net Sales of Licensed Product or Licensed Method by the Licensee or any Affiliate or Joint Venture ("Royalty").

9.2 In the event it becomes necessary for the Licensee to license patent rights owned by a third party to make, use or Sell Licensed Products or to practice Licensed Methods, then the Licensee shall have the right to obtain a license from such third party and to credit [**] percent ([**]%) of any payment made to such third party under such license against up to [**] percent ([**]%) of the amounts payable to The Regents under Paragraph 9.1 above on a going-forward basis. Any credit pursuant to this Paragraph shall be available to the Licensee with respect to the full royalty payable pursuant to Paragraph 9.1, provided that in no event shall the royalty payable to The Regents be reduced to less than [**] percent ([**]%) of Net Sales of Licensed Products or Licensed Methods by the Licensee or any Affiliate as a result of all credits applied under this Agreement and provided further that no such credit shall be available with respect to any Combination Product to the extent attributable to payments under such third party license for patent rights that cover the Combination Product Component. In addition, any credit must be used within the royalty reporting period that such credit is earned and may not roll forward from one royalty reporting period to the next.

9.3 The Licensee will also pay to The Regents a minimum annual royalty for the life of Patent Rights as follows:

(i) [**] dollars ($[**]) beginning with the year of the first Sale of Licensed Product, but no later than calendar year 2015;

(ii) [**] dollars ($[**]) for the second year of Sales of Licensed Product;

(iii) [**] dollars ($[**]) for the third and fourth years of Sales of Licensed Product; and

(iv) [**] dollars ($[**]) for the fifth year of Sales of Licensed Product and for each year thereafter for the life of Patent Rights.

9.4 The minimum annual royalty will be paid to The Regents by [**] of each year and will be credited against the Earned Royalty due for the calendar year in which the minimum payment was made. However, if the year of the first Sale is earlier than calendar year 2015, then the Licensee's obligation to pay the minimum annual royalty will be pro-rated for the number of

months remaining in that calendar year when Sales commence and will be due the following [**] (along with the minimum annual royalty payment for that year), to allow for crediting of the pro-rated year's Earned Royalties.

10. MILESTONE PAYMENTS

10.1 With respect to each Therapeutic Licensed Product, the Licensee will pay to The Regents the following non-refundable, non-creditable amounts:

10.1.1 [**] dollars ($[**]) upon the [**] Therapeutic Licensed Product; and

10.1.2 [**] dollars ($[**]) for the [**] Therapeutic Licensed Product; and

10.1.3 [**] dollars ($[**]) upon the [**] Therapeutic Licensed Product; and

10.1.4 [**] dollars ($[**]) upon the [**] Therapeutic Licensed Product [**]Therapeutic Licensed Product [**]; and

10.1.5 [**] dollars ($[**]) upon the [**] Therapeutic Licensed Product [**].

10.2 With respect to each Diagnostic Licensed Product, the Licensee will pay to The Regents the following non-refundable, non-creditable amounts:

10.2.1 [**] dollars ($[**]) upon the [**] Diagnostic Licensed Product [**]; and

10.2.2 [**] dollars ($[**]) upon the [**] Diagnostic Licensed Product [**].

10.3 For the avoidance of doubt, each of the milestone payments set forth in Paragraphs 10.1.1 through 10.1.5 and 10.2.1 through 10.2.2 will be payable with respect to each Licensed Product. Furthermore, each such milestone payment will be payable regardless of whether the applicable milestone event has been achieved by the Licensee or any Affiliate, Joint Venture, Sublicensee, or Development Partner. For the sake of clarity, each such milestone payment shall be made only once with respect to each Licensed Product. No additional payments shall be made by the Licensee in connection with filings, or with grants of approval by regulatory agencies in additional jurisdictions following the initial achievement of the applicable milestone event in any jurisdiction, foreign or domestic.

10.4 All milestone payments are due to The Regents within [**] days of the occurrence of the applicable milestone event by the Licensee, any Affiliate or Joint Venture, and within [**] days of the occurrence of the applicable milestone event by a Sublicensee or Development Partner.

10.5 Notwithstanding anything to the contrary in this Agreement, the milestone payments shall be payable for Therapeutic Licensed Products as set forth in Paragraphs 10.1.1 through 10.1.5, except that no payments shall be due for (i) a [**], and (ii) a [**], except as provided for in Paragraph 10.1.5.

11. DUE DILIGENCE

11.1 The Licensee, upon execution of this Agreement, will diligently proceed with the development, manufacture and Sale of Licensed Products and will earnestly and diligently market the same after execution of this Agreement and in quantities sufficient to meet the market demands therefor.

11.2 The Licensee will obtain all necessary governmental approvals in each country where Licensed Products are manufactured, used, Sold, offered for Sale or imported.

11.3 For Therapeutic Licensed Products, the Licensee will:

11.3.1 initiate pre-clinical toxicology studies suitable for submission to the FDA or equivalent foreign regulatory agency by December 31, 2007;

[**];

Notwithstanding the above, the Licensee will develop Therapeutic Licensed Products for Sale in the United States and will:

[**]

11.4 For Diagnostic Licensed Products, the Licensee will:

[**]

11.5 The Regents recognizes that, taking into account the uncertainties of scientific research and development, the nascent state of the technology licensed under this Agreement, and the need for considerable further research and development of the technology before it will be possible to commercialize a Licensed Product, it may be necessary from time to time to amend the milestones of Paragraphs 11.3 and 11.4. Accordingly, The Regents hereby agrees to consider in good faith any reasonable proposals from the Licensee to amend the milestones of Paragraphs 11.3 and 11.4 in the light of the Licensee's experience in implementing the development of the Licensed Products under this Agreement, and The Regents and the Licensee agree to negotiate, in good faith, for a period of [**] days as may be appropriate to carry out the purposes and intent of this Agreement if despite diligent effort by the Licensee, by a date

specified in Paragraphs 11.3 or 11.4 the Licensee is unable to meet a specified milestone. If, however, notwithstanding good faith negotiation, the parties are unable to agree upon any modification to this Agreement, then the parties will be under no further obligation to negotiate, and the Agreement's terms shall govern. No amendment or modification of this Agreement is valid or binding on the parties unless made in writing and signed on behalf of each party.

11.6 In the event that the Licensee is unable to meet any of the deadlines set forth in Paragraphs 11.3 or 11.4, or to cure within the cure period set forth in Paragraph 11.10, the Licensee may request an extension of such missed deadline. Each such request shall be made in writing at least [**] days prior to the deadline that the Licensee will be unable to meet (or within the cure period, as applicable) and will be accompanied by: (i) a statement of the deadline for which the extension is being sought; and (ii) payment of an extension fee ("Extension Fee") of [**] dollars ($[**]). Upon receipt of such request and payment, The Regents shall grant an extension of the missed deadline, for which an extension is being sought, for [**]. Each such missed deadline may be extended, with payment of the Extension Fee, for a total of [**] from the original missed deadline. For the sake of clarity, any extension granted by The Regents is applicable only to the missed deadline for which the extension is being sought and does not apply to any other deadline.

11.7 If the Licensee is unable to perform any of the provisions set forth in Paragraphs 11.3 or 11.4 as extended, regarding Therapeutic Licensed Products, Diagnostic Licensed Products, or both, then The Regents has the right and option to either: (i) if the deadlines, as extended, in Paragraph 11.3 are not met, terminate this Agreement or reduce the exclusive license granted to a non-exclusive license in accordance with Paragraph 11.10, as to therapeutic applications only; or (ii) if the deadlines, as extended, in Paragraph 11.4 are not met, terminate this Agreement or reduce the exclusive license granted to a non-exclusive license in accordance with Paragraph 11.10, as to diagnostic applications only. This right, if exercised by The Regents, supersedes the rights granted in Article 2 (Grant).

11.8 In addition to the obligations set forth above, the Licensee shall spend an aggregate of not less than [**] dollars ($[**]) for the development of Licensed Products during the first two (2) years of this Agreement.

11.9 If the Licensee fails or is unable to comply with the spending requirement set forth in Paragraph 11.8, then The Regents has the right and option to either terminate this

Agreement or reduce the exclusive license granted to the Licensee to a nonexclusive license. This right, if exercised by The Regents, supersedes the rights granted in Article 2 (Grant).

11.10 To exercise either the right, under Paragraph 11.7, to terminate this Agreement or to reduce the exclusive license granted to the Licensee to a non-exclusive license as to diagnostic and/or therapeutic applications for lack of diligence required in this Article 11 (Due Diligence), The Regents will give the Licensee written notice of the deficiency. The Licensee thereafter has [**] days to cure the deficiency. If The Regents has not received written tangible evidence satisfactory to The Regents that the deficiency has been cured by the end of the [**]-day period, then The Regents may, at its option, terminate this Agreement immediately without the obligation to provide [**] days' notice as set forth in Article 15 (Termination by The Regents) or reduce the exclusive license granted to the Licensee to a non-exclusive license by giving written notice to the Licensee.

12. PROGRESS AND ROYALTY REPORTS

12.1 Beginning on March 31, 2005 and [**] thereafter, the Licensee will submit to The Regents a written progress report as described in Paragraph 12.2 below covering the Licensee's (and any Affiliates', Joint Ventures', Sublicensee's) activities related to the development and testing of all Licensed Products, the obtaining of the governmental approvals necessary for marketing and the activities required and undertaken in order to meet the diligence requirements set forth in Article 11 (Due Diligence). Progress reports are required for each Licensed Product until the first Sale or other exploitation of that Licensed Product occurs in the United States and shall be again required if Sales of such Licensed Product are suspended or discontinued.

12.2 Progress reports submitted under Paragraph 12.1 shall include, but are not limited to, a detailed summary of the following topics so that The Regents will be able to determine the progress of the development of Licensed Products and will also be able to determine whether or not the Licensee has met its diligence obligations set forth in Article 11 (Due Diligence) above:

12.2.1 [**] as of the submission date of the progress report;

12.2.2 [**] as of the submission date of the progress report;

12.2.3 [**] as of the submission date of the progress report;

12.2.4 [**] specified in Article 11 (Due Diligence);

12.2.5 [**] of Licensed Products including the anticipated and actual [**] of each Licensed Product;

12.2.6 [**] relating to the above items, if there are any [**];

12.2.7 for the first [**] years of this Agreement, a [**] in the reporting period; and

12.2.8 [**] by Licensee pursuant to Paragraph 4.2 of this Agreement.

12.3 If the Licensee fails to submit a timely progress report to The Regents, then The Regents will be entitled to terminate this Agreement, subject to Article 15 (Termination by The Regents). If either party terminates this Agreement before any Licensed Products are Sold or before this Agreement's expiration, then a final progress report covering the period prior to termination must be submitted within [**] days of termination or expiration.

12.4 The Licensee has a continuing responsibility to keep The Regents informed of the business entity status (small business entity status or large business entity status as defined by the United States Patent and Trademark Office) of itself, any Affiliates, Joint Ventures, or Sublicensees. The Licensee will notify The Regents of any change of its status or that of any Affiliate, Joint Venture, or Sublicensee within [**] days of the change in status.

12.5 The Licensee will report to The Regents the date of first Sale or other exploitation of a Licensed Product in each country in its first progress and royalty reports following such first Sale of a Licensed Product.

12.6 Beginning with the earlier of (i) the first Sale or other exploitation of a Licensed Product or (ii) the first transaction that results in Sublicense Fees accruing to The Regents, the Licensee will make quarterly royalty and Sublicensee Fee reports to The Regents on or before each February 28 (for the quarter ending December 31), May 31 (for the quarter ending March 31), August 31 (for the quarter ending June 30) and November 30 (for the quarter ending September 30) of each year. Each royalty and Sublicensee Fee report will cover Licensee's most recently completed calendar quarter and will, at a minimum, show:

12.6.1 [**] and Net Sales of Licensed Products Sold or otherwise exploited (itemizing the [**] and any [**] therefrom), and any Attributed Income (itemizing the [**] and any [**] therefrom);

12.6.2 [**] of Licensed Product Sold or otherwise exploited;

12.6.3 the [**] each Licensed Product was made, used or Sold or otherwise exploited;

12.6.4 the [**], in United States dollars, payable with respect to Net Sales;

12.6.5 the [**], in United States dollars, payable with respect to [**];

12.6.6 the [**], specifying all [**] taken and the dollar amount of [**];

12.6.7 the [**] used, if any;

12.6.8 the [**] and the [**] of the [**] of any [**] including the [**] the [**];

12.6.9 for each Licensed Product, the specific Patent Rights and Property Rights identified by UC Case Number exercised by the Licensee or any Affiliate, Joint Venture and Sublicensee in the course of making, using, selling, offering for Sale or importing such Licensed Product; and

12.6.10 any other information reasonably necessary to confirm Licensee's calculation of its financial obligations hereunder.

12.7 If no Sales of Licensed Products have been made and no Licensed Products have been otherwise exploited and no Attributed Income is due to the Licensee during any reporting period, then a statement to this effect must be provided by the Licensee in the immediately subsequent royalty and Sublicense Fee report.

13. BOOKS AND RECORDS

13.1 The Licensee will keep accurate books and records showing all Licensed Product under development, manufactured, used, offered for Sale, imported, Sold and or otherwise exploited; all Net Sales, all Attributed Income, and other amounts payable hereunder; and all sublicenses granted under the terms of this Agreement. Such books and records will be preserved for at least [**] years after the date of the payment to which they pertain and will be open to inspection, on a confidential basis, by representatives or agents of The Regents at reasonable times to determine their accuracy and assess the Licensee's compliance with the terms of this Agreement.

13.2 The Regents shall pay the fees and expenses of such examination. If, however, an error in royalties of more than five percent (5%) of the total royalties due for any year is discovered in any examination, then the Licensee shall bear the fees and expenses of such

examination and shall remit such underpayment to The Regents within [**] days of the examination results.

14. LIFE OF THE AGREEMENT

14.1 Unless otherwise terminated by operation of law, Paragraph 14.2, or by acts of the parties in accordance with the terms of this Agreement, this Agreement will remain in effect from the Effective Date until the later of (i) the expiration or abandonment of the last of the Patent Rights licensed hereunder or (ii) nine (9) years from the market introduction of the last to be introduced Licensed Product that contains or is comprised of the Biological Material in the last country in which it is introduced. Licensee shall have a perpetual, fully-paid, worldwide, non-exclusive license under The Regents' rights in and to the Property Rights to make (propagate) and use the Biological Materials to make, use and Sell those Licensed Products for which the Licensee has paid an Earned Royalty to The Regents under this Agreement on a country by country basis for the longer of a period of nine (9) years or the life of the Patent Rights (if Patent Rights existed in a given country), in the United States and in other countries where The Regents may lawfully grant such licenses, only in the Field of Use.

14.2 This Agreement will automatically terminate without the obligation to provide 60 days' notice as set forth in Article 15 (Termination By The Regents) upon the filing of a petition for relief under the United States Bankruptcy Code by or against the Licensee as a debtor or alleged debtor.

14.3 Any termination or expiration of this Agreement will not affect the rights and obligations set forth in the following Articles:

Article 1	Definitions
Paragraph 5.8	Late Payments
Article 6	License Issue Fee
Article 8	Payments on Sublicenses
Paragraphs 9.1 and 9.3	Earned Royalties and Minimum Annual Royalties
Article 13	Books and Records
Article 14	Life of the Agreement
Article 17	Disposition of Licensed Products on Hand Upon Termination or Expiration
Article 18	Use of Names and Trademarks
Article 19	Limited Warranty
Article 20	Limitation of Liability
Paragraphs 21.4 & 21.8	Patent Prosecution and Maintenance
Article 24	Indemnification

Article 25	Notices
Article 29	Governing Laws; Venue; Attorneys Fees
Article 32	Confidentiality

14.4 The termination or expiration of this Agreement will not relieve the Licensee of its obligation to pay any fees, royalties or other payments owed to The Regents at the time of such termination or expiration and will not impair any accrued right of The Regents, including the right to receive Earned Royalties in accordance with Articles 8 (Payments on Sublicenses), 9 (Earned Royalties and Minimum Annual Royalties) and 17 (Disposition of Licensed Products Upon Termination or Expiration).

15. TERMINATION BY THE REGENTS

If the Licensee fails to perform or violates any term or covenant of this Agreement, then The Regents may give written notice of such default ("Notice of Default") to the Licensee. If the Licensee fails to repair such default within [**] days after the effective date of such notice, then The Regents will have the right to

immediately terminate this Agreement and its licenses by providing a written notice of termination ("Notice of Termination") to the Licensee.

16. TERMINATION BY LICENSEE

The Licensee has the right at any time to terminate this Agreement by providing a Notice of Termination to The Regents. Moreover, the Licensee will be entitled to terminate the rights under Patent Rights on a country-by-country basis by giving notice in writing to The Regents. Termination of this Agreement (but not termination of any patents or patent applications under Patent Rights, which termination is subject to Paragraph 21.8) will be effective sixty (60) days from the effective date of such notice.

17. DISPOSITION OF LICENSED PRODUCT UPON TERMINATION OR EXPIRATION

17.1 Upon termination (but not expiration) of this Agreement, within a period of [**] days after the date of termination, the Licensee is entitled to dispose of all previously made or partially made Licensed Product, but no more provided that the Sale or use of such Licensed Product is subject to the terms of this Agreement, including, but not limited to, the rendering of reports and payment of Earned Royalties, Sublicense Fees and any other payments therefore required under this Agreement. The Licensee may not otherwise make, Sell, offer for Sale or import Licensed Products, or practice the Licensed Method after the date of termination.

17.2 If applicable Patent Rights exist at the time of any making, Sale, offer for Sale, or import of a Licensed Product, then Earned Royalties shall be paid at the times provided herein and royalty reports shall be rendered in connection therewith, notwithstanding the absence of applicable Patent Rights with respect to such Licensed Product at any later time. Any fees or other payments owed to The Regents at the time of expiration not based on the Sales of a Licensed Product will be paid to The Regents at the time such fee or other payment would have been due had this Agreement not expired.

18. USE OF NAMES AND TRADEMARKS

Nothing contained in this Agreement will be construed as conferring any right to either party to use in advertising, publicity or other promotional activities any name, trade name, trademark or other designation of the other party (including a contraction, abbreviation or simulation of any of the foregoing). Without the Licensee's consent case-by-case, The Regents and [**] may list Licensee's name as a licensee of technology without further identifying the technology. Unless required by law or unless consented to in writing by Executive Director, Office of Technology Transfer of The Regents, the use by the Licensee of the name "The Regents of the University of California" or the name of any campus of the University of California in advertising, publicity or other promotional activities is expressly prohibited. Unless required by law or unless consented to in writing by Vice President, Business Development of [**], the use by the Licensee of the name "[**]" in advertising, publicity or other promotional activities is expressly prohibited. The Licensee's requests under this Article 18 may be made by e-mail or fax and shall be directed to such Executive Director or Vice President, and the Executive Director or Vice President shall approve or disapprove each request by e-mail, fax or other writing.

19. LIMITED WARRANTY

19.1 The Regents warrants to the Licensee that it has the lawful right to grant this license.

19.2 Except as expressly set forth in this Agreement, this license and the associated Invention, Patent Rights, Licensed Products, Licensed Methods and any Biological Materials are provided by The Regents and/or [**] WITHOUT WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER WARRANTY OF ANY KIND,

EXPRESS OR IMPLIED. THE REGENTS MAKES NO EXPRESS OR IMPLIED REPRESENTATION OR WARRANTY THAT THE INVENTION, PATENT RIGHTS, LICENSED PRODUCTS, LICENSED METHODS OR BIOLOGICAL MATERIALS WILL NOT INFRINGE ANY PATENT, COPYRIGHT, TRADEMARK OR OTHER RIGHTS.

19.3 This Agreement does not:

19.3.1 express or imply a warranty or representation as to the validity, enforceability, or scope of any Patent Rights or Property Rights; or

19.3.2 express or imply a warranty or representation that anything made, used, Sold, offered for Sale or imported or otherwise exploited under any license granted in this Agreement is or will be free from infringement of patents, copyrights, or other rights of third parties; or

19.3.3 obligate The Regents or [**] to bring or prosecute actions or suits against third parties for patent infringement except as provided in Article 23 (Patent Infringement); or

19.3.4 confer by implication, estoppel or otherwise any license or rights under any patents or other rights of The Regents or [**] other than Patent Rights and Property Rights, regardless of whether such patents are dominant or subordinate to Patent Rights; or

19.3.5 confer by implication, estoppel or otherwise any license or rights under any patents or other rights of the Licensee, regardless of whether such patents are dominant or subordinate to Patent Rights or Property Rights; or

19.3.6 obligate The Regents or [**] to furnish any New Developments, know-how, technology or information not provided in Patent Rights or Property Rights; or

19.3.7 obligate The Regents or [**] to update the technology in Property Rights.

20. LIMITATION OF LIABILITY

NEITHER THE REGENTS NOR [**] WILL BE LIABLE FOR ANY LOST PROFITS, COSTS OF PROCURING SUBSTITUTE GOODS OR SERVICES, LOST BUSINESS,

ENHANCED DAMAGES FOR INTELLECTUAL PROPERTY INFRINGEMENT OR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR OTHER SPECIAL DAMAGES SUFFERED BY LICENSEE, SUBLICENSEES, JOINT VENTURES, OR AFFILIATES ARISING OUT OF OR RELATED TO THIS AGREEMENT FOR ALL CAUSES OF ACTION OF ANY KIND (INCLUDING TORT, CONTRACT, NEGLIGENCE, STRICT LIABILITY AND BREACH OF WARRANTY) EVEN IF THE REGENTS OR [**] HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. EXCEPT FOR LIABILITY AS A RESULT OF LICENSEE'S BREACH OF THE LICENSE GRANTED IN SECTION 2.1 BY EXCEEDING THE FIELD OF USE OR DAMAGES AWARDED RELATED TO LICENSEE'S INDEMNITY OBLIGATIONS UNDER THIS AGREEMENT, IN NO EVENT SHALL LICENSEE, OR ITS SUBLICENSEES, JOINT VENTURES, AFFILIATES OR DEVELOPMENT PARTNERS, OR THEIR RESPECTIVE DIRECTORS, OFFICERS OR EMPLOYEES, BE LIABLE FOR INDIRECT, OR INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR OTHER SPECIAL DAMAGES REGARDLESS OF WHETHER LICENSEE SHALL BE ADVISED, SHALL HAVE OTHER REASON TO KNOW, OR IN FACT SHALL KNOW OF THE POSSIBILITY OF THE FOREGOING.

21. PATENT PROSECUTION AND MAINTENANCE

21.1 As long as the Licensee has [**] Patent Prosecution Costs as provided for in this Article 21 (Patent Prosecution and Maintenance), The Regents will diligently prepare, file, prosecute and maintain the United States and foreign patent applications and patents comprising Patent Rights using counsel of its choice, reasonably acceptable to the Licensee. Notwithstanding the above, in the event that the Licensee has rejected three (3) choices of prosecution counsel, then The Regents shall have the right to use counsel of its choice without Licensee's assent. The Regents' counsel will take instructions only from The Regents. The Regents will provide the Licensee with copies of all relevant documentation so that the Licensee will be informed of the continuing preparation, filing, prosecution, maintenance and decisions to pursue patentability opinions, re-examinations, re-issues, interferences and oppositions and may comment upon such documentation sufficiently in advance of any initial deadline for filing a response or other document, provided, however, that if the Licensee has not commented upon such documentation in a reasonable time for The Regents to sufficiently consider the Licensee's

comments prior to a deadline with the relevant government patent office, or The Regents must act to preserve the Patent Rights, The Regents will be free to respond without consideration of the Licensee's comments, if any. The Regents will provide the Licensee, either itself or through its patent attorney, with copies of all documents promptly upon filing. The Licensee agrees to keep this documentation confidential as provided for in Article 32 (Confidentiality).

21.2 The Regents shall use reasonable efforts to amend any patent application to include claims reasonably requested by the Licensee to protect the products and services contemplated to be Sold, or the Licensed Method to be practiced, under this Agreement.

21.3 The Licensee will apply for an extension of the term of any patent included within the Patent Rights if appropriate under the Drug Price Competition and Patent Term Restoration Act of 1984 and/or European, Japanese and other foreign or domestic counterparts or successors of this law. The Licensee shall prepare all documents and The Regents agrees to execute the documents and to take additional action as the Licensee reasonably requests in connection therewith. Licensee shall be liable for [**] relating to such application.

21.4 The Licensee will [**] of preparing, filing, prosecuting and maintaining the United States and foreign patent applications elected by Licensee under this Paragraph 21.4 and contemplated by this Agreement ("Patent Prosecution Costs") as provided for in Paragraphs 21.5 and 21.6. Patent Prosecution Costs billed by The Regents' counsel will be [**] to the Licensee and are due within [**] days of rebilling by The Regents. Invoices for Patent Prosecution Costs [**] by The Regents will contain a description of the services and activities (as provided to The Regents by its counsel) that are being [**] to the Licensee. These Patent Prosecution Costs will include, without limitation, patent prosecution costs for the Invention incurred by The Regents prior to the execution of this Agreement and any patent prosecution costs that may be incurred for patentability opinions, re-examinations, re-issues, interferences, oppositions or inventorship determinations.

21.5 For Patent Rights Group B, the Licensee will [**] Patent Prosecution Costs that have been incurred by The Regents and that have not been reimbursed (not including any reimbursement that The Regents may have received under the Interinstitutional Agreement with [**]) by an optionee or licensee. Prior Patent Prosecution Costs will be due upon execution of this Agreement and billing by The Regents and are at least [**] cents ($[**] (to be updated prior to execution)). If the license granted under Paragraph 2.3 ever becomes non-exclusive for Patent

Rights Group B as to the therapeutic applications, then the Licensee will bear the lesser of [**] or [**] of the Patent Prosecution Costs on a going forward basis, that have been incurred by The Regents and that have not been reimbursed by an optionee or licensee (not including any reimbursement that The Regents may receive under any interinstitutional agreement), where [**] by The Regents to each patent or patent application under Patent Rights Group B that are in effect at the time the payment is due, not including the license granted to the United States Government and not including any licenses granted to third parties where the rights granted are limited to the right to make and use for internal drug discovery purposes.

21.6 For Patent Rights Group A, the Licensee will bear the lesser of [**] or [**] of the Patent Prosecution Costs that have been incurred by The Regents and that have not been reimbursed by an optionee or licensee (not including any reimbursement that The Regents may receive under any interinstitutional agreement), where [**] by The Regents to each patent or patent application under Patent Rights Group A that are in effect at the time payment is due, not including the license granted to the United States Government and not including any licenses granted to third parties where the rights granted are limited to the right to make and use for internal drug discovery purposes. Prior Patent Prosecution Costs will be due upon execution of this Agreement and billing by The Regents and are at least [**] cents ($[**] (to be updated prior to execution)).

21.7 The Licensee may request that The Regents obtain patent protection on the Invention in foreign countries, if available and if it so desires. After receiving notice of a deadline from The Regents or its patent counsel, the Licensee will notify The Regents of its decision to obtain or maintain foreign patents or applications not less than [**] days prior to the deadline for any payment, filing or action to be taken in connection therewith. This notice concerning foreign filing must be in writing, must identify the countries desired and must reaffirm the Licensee's obligation to pay the Patent Prosecution Costs thereof. The absence of such a notice from the Licensee to The Regents will be considered an election not to obtain or maintain foreign Patent Rights.

21.8 The Licensee will be obligated to pay any Patent Prosecution Costs incurred during the [**]-month period after receipt by either party of a Notice of Termination, even if the invoices for such Patent Prosecution Costs are received by the Licensee after the end of the [**]-month period following receipt of a Notice of Termination. The Licensee may terminate its

obligation to pay Patent Prosecution Costs with respect to any given patent application or patent under Patent Rights in any or all designated countries upon [**]-months' written notice to The Regents. The Licensee will, however, be obligated to pay Patent Prosecution Costs with respect to any action agreed to, or requested by, the Licensee prior to its Notice of Termination. Notwithstanding the above, in the event that The Regents elects to no longer continue to pursue any patent or patent application under Patent Rights that the Licensee has designated in its Notice of Termination, The Regents will use reasonable efforts to curtail Patent Prosecution Costs with respect to such patent application or patent under Patent Rights in any or all countries designated by the Licensee. The Regents may continue prosecution and/or maintenance of such application(s) or patent(s) at its sole discretion and expense, provided, however, that the Licensee will have no further right or licenses thereunder. Non-payment of Patent Prosecution Costs may be deemed by The Regents as an election by the Licensee not to maintain such application(s) or patent(s).

21.9 The Regents may file, prosecute or maintain patent applications or patents at its own expense in any country in which the Licensee has not elected to file, prosecute or maintain patent applications or patents in accordance with this Article 21 (Patent Prosecution and Maintenance) and those applications, resultant patents and patents will not be subject to this Agreement.

22. PATENT MARKING

The Licensee will mark all Licensed Products made, used or Sold under the terms of this Agreement or their containers in accordance with the applicable patent marking laws.

23. PATENT INFRINGEMENT

23.1 In the event that The Regents (to the extent of the actual knowledge of the licensing professional responsible for the administration of this Agreement) or the Licensee learns of infringement in the Field of Use of potential commercial significance of any patent licensed under this Agreement, the knowledgeable party will provide the other (i) with written notice of such infringement and (ii) with any evidence of such infringement available to it (the "Infringement Notice"). During the period in which, and in the jurisdiction where, the Licensee has exclusive rights under this Agreement, neither The Regents nor the Licensee will notify a possible infringer of infringement or put such infringer on notice of the existence of any Patent Rights without first obtaining consent of the other. If the Licensee puts such infringer on notice of the existence of any Patent

Rights with respect to such infringement without first obtaining the written consent of The Regents and if a declaratory judgment action is filed by such infringer against The Regents, then Licensee's right to initiate a suit against such infringer for infringement under Paragraph 23.2 below will terminate immediately without the obligation of The Regents to provide notice to the Licensee. Both The Regents and the Licensee will use their diligent efforts to cooperate with each other to terminate such infringement without litigation.

23.2 If infringing activity of potential commercial significance by the infringer has not been abated within [**] days following the date the Infringement Notice takes effect, then the Licensee may institute suit for patent infringement against the infringer. The Regents may voluntarily join such suit at its own expense, but may not thereafter commence suit against the infringer for the acts of infringement that are the subject of the Licensee's suit or any judgment rendered in that suit. The Licensee may not join The Regents as a party in a suit initiated by the Licensee without The Regents' prior written consent. If, in a suit initiated by the Licensee, The Regents is involuntarily joined other than by the Licensee, then the Licensee will [**] by The Regents arising out of such suit, including but not limited to, any [**] of counsel that The Regents selects and retains to represent it in the suit.

23.3 If, within [**] days following the date the Infringement Notice takes effect, infringing activity of potential commercial significance by the infringer has not been abated and if the Licensee has not brought suit against the infringer, then The Regents may institute suit for patent infringement against the infringer. If The Regents institutes such suit, then the Licensee may not join such suit without The Regents' consent and may not thereafter commence suit against the infringer for the acts of infringement that are the subject of The Regents' suit or any judgment rendered in that suit.

23.4 Notwithstanding anything to the contrary in this Agreement, in the event that the infringement or potential infringement pertains to an issued patent included within the Patent Rights and written notice is given under the Drug Price Competition and Patent Term Restoration Act of 1984 (and/or foreign or domestic counterparts or successors of this Law), then the party in receipt of such notice under the Act (in the case of The Regents, to the extent of the actual knowledge of the Licensing Officer responsible for the administration of this Agreement) shall provide the Infringement Notice to the other party promptly. If the time period is such that

the Licensee will lose the right to pursue legal remedy for infringement by not notifying a third party or by not filing suit, the combined notification period and the time period to file suit will be accelerated to within [**] days of the date of such notice to either party under the Act.

23.5 Any recovery or settlement received in connection with any suit will first be shared by The Regents and the Licensee equally to cover any litigation costs each incurred and next shall be paid to The Regents or the Licensee to cover any litigation costs it incurred in excess of the litigation costs of the other. In any suit initiated by the Licensee, any recovery in excess of litigation costs will be shared between Licensee and The Regents as follows: (a) for any recovery other than amounts paid for willful infringement: (i) The Regents will receive [**] percent ([**]%) of the recovery if The Regents was not a party in the litigation and did not incur any litigation costs, (ii) The Regents will receive [**] percent ([**]%) of the recovery if The Regents was a party in the litigation whether joined as a party under the provisions of Paragraph 23.2 or otherwise, but did not incur any litigation costs, and (iii) The Regents will receive [**] percent ([**]%) of the recovery if The Regents incurred more than [**] litigation costs in connection with the litigation; and (b) for any recovery for willful infringement, The Regents will receive [**] percent ([**]%) of the recovery. In any suit initiated by The Regents, any recovery in excess of litigation costs will belong to The Regents. The Regents and the Licensee agree to be bound by all determinations of patent infringement, validity and enforceability (but no other issue) resolved by any adjudicated judgment in a suit brought in compliance with this Article 23 (Patent Infringement).

23.6 Any agreement made by the Licensee for purposes of settling litigation or other dispute shall comply with the requirements of Article 3 (Sublicenses) of this Agreement. Any up-front fees (e.g., fees, royalties on past sales, or other payments) paid to the Licensee as part of a sublicense or other agreement made in the settlement of an infringement action will be applied first to reimburse the legal expenses and legal fees of the Licensee (and The Regents, if applicable) relating to such suit. The balance remaining of any such up-front fees will be considered revenue from a Sublicensee and The Regents will receive [**] percent ([**]%) of such amount.

23.7 Each party will cooperate with the other in litigation proceedings instituted hereunder but at the expense of the party who initiated the suit (unless such suit is being jointly prosecuted by the parties).

23.8 Any litigation proceedings will be controlled by the party bringing the suit, except that The Regents may be represented by counsel of its choice in any suit brought by the Licensee, with counsel paid for the Licensee in case of conflict of interest, and by The Regents in any other cases. In any suit brought by The Regents, the Licensee may be represented by counsel of its choice, with counsel paid for by The Regents in case of conflict of interest, and by the Licensee in any other cases.

24. INDEMNIFICATION

24.1 The Licensee will, and will require its Sublicensees to, indemnify, hold harmless and defend The Regents, [**], the sponsors of the research that led to the Invention and the development of the Original Materials, and the inventors of the Original Materials and any invention claimed in patents or patent applications under Patent Rights (including the Licensed Products, Licensed Services and Licensed Methods contemplated thereunder) and their employers, and the officers, employees and agents of any of the foregoing, against any and all third party claims, suits, losses, damage, costs, fees and expenses resulting from, or arising out of, the exercise of this license or any sublicense. This indemnification will include, but not be limited to, any product liability. If The Regents, in its sole discretion, believes that there will be a conflict of interest in being represented by counsel chosen by the Licensee to defend The Regents in accordance with this Paragraph 24.1, then The Regents may retain counsel of its choice to represent it and the Licensee will pay all legal expenses for such representation.

24.2 The Licensee, at its sole cost and expense, will insure its activities in connection with any work performed hereunder and will obtain and maintain the following insurance:

24.2.1 Commercial Form General Liability Insurance (contractual liability included) with limits as follows:

Each Occurrence	$	[**]
Personal Injury	$	[**]
General Aggregate (commercial form only)	$	[**]

24.3 Notwithstanding the above, no later than the earlier of: i) [**] days before the anticipated date of market introduction of any Licensed Product; or ii) [**] days before the first use of any Licensed Product in a human under this Agreement (including without limitation in pre-commercial clinical trials), the Licensee, at its sole cost and expense, shall insure its

activities in connection with any work performed under this Agreement and obtain, keep in force and maintain the following insurance:

24.3.1 Commercial Form General Liability Insurance (contractual liability included) with limits as follows:

Each Occurrence	$	[**]
Products/Completed Operations Aggregate	$	[**]
Personal and Advertising Injury	$	[**]
General Aggregate (commercial form only)	$	[**]

If the above insurance is written on a claims-made form, it shall continue for [**] years following termination or expiration of this Agreement. The insurance shall have a date of placement coinciding with a date no later than the earlier of: [**] days before the anticipated date of market introduction of any Licensed Product or [**] days before the first use of any Licensed Product in a human

24.4 The coverage and limits referred to in Paragraph 24.2.1 and 24.3.1 above will not in any way limit the liability of the Licensee under this Article 24 (Indemnification). Upon the execution of this Agreement and upon the change in coverage provided for in Paragraph 24.3, the Licensee will furnish The Regents with certificates of insurance evidencing compliance with all requirements. Such certificates will:

- Provide for [**] days' ([**] days' for non-payment of premium) advance written notice to The Regents of any cancellation of insurance coverage; the Licensee will promptly notify The Regents of any material modification of the insurance coverage;
- Indicate that The Regents has been endorsed as an additional insured under the coverage described above in Paragraph(s) 24.2.1 and 24.3.1; and
- Include a provision that the coverage will be primary and will not participate with, nor will be excess over, any valid and collectable insurance or program of self-insurance maintained by The Regents.

24.5 The Regents will promptly notify the Licensee in writing of any claim or suit brought against The Regents for which The Regents intends to invoke the provisions of this Article 24 (Indemnification). The Regents will cooperate with the Licensee as reasonably

requested, at the Licensee's expense. The Licensee will have sole control of the defense and any settlement, provided that the Licensee may not admit liability or wrong doing on the part of The Regents without The Regents' written consent. The Licensee will keep The Regents informed of its defense of any claims pursuant to this Article 24 (Indemnification).

25. NOTICES

25.1 Any notice or payment required to be given to either party under this Agreement will be in writing and will be deemed to have been properly given and to be effective as of the date specified below if delivered to the respective address given below or to another address as designated by written notice given to the other party:

25.1.1 on the date of delivery if delivered in person;

25.1.2 on the date of mailing if mailed by first-class certified mail, postage paid; or

25.1.3 on the date of mailing if mailed by any global express carrier service that requires the recipient to sign the documents demonstrating the delivery of such notice or payment.

In the case of Licensee: Merrimack Pharmaceuticals, Inc.
101 Binney Street

Cambridge, MA 02142
Attention: President and CEO

with a copy to:

Lawrence S. Wittenberg, Esq.
Goodwin Procter, LLP
Exchange Place
53 State Street
Boston, MA 02109

In the case of The Regents:

The Regents of the University
of California
Office of Technology Transfer
1111 Franklin Street, 5th Floor
Oakland, CA 94607-5200
Attention: Executive Director
Research Administration and
Technology Transfer
RE: UC Case Nos. [**]

26. ASSIGNABILITY

This Agreement is personal to the Licensee. The Licensee may not assign or transfer this Agreement, including by merger, operation of law, or otherwise, without The Regents' prior written consent, except that such consent will not be required in the case of assignment or transfer to a party that succeeds to all or substantially all of Licensee's business or assets relating to this Agreement, whether by sale, merger, operation of law or otherwise, provided that such assignee or transferee promptly agrees to be bound by the terms and conditions of this Agreement and signs The Regents' standard substitution of party letter (the form of which is attached hereto as Appendix C). Any attempted assignment by the Licensee in violation of this Article 26 (Assignability) will be null and void. This Agreement is binding upon and will inure to the benefit of The Regents, its successors and assigns.

27. WAIVER

No waiver by either party of any breach or default of any of the covenants or agreements contained herein will be deemed a waiver as to any subsequent and/or similar breach or default. No waiver will be valid or binding upon the parties unless made in writing and signed by a duly authorized officer of each party.

28. FORCE MAJEURE

28.1 Except for the Licensee's obligation to make any payments to The Regents hereunder, the parties shall not be responsible for any failure to perform due to the occurrence of any events beyond their reasonable control which render their performance impossible or onerous, including, but not limited to: accidents (environmental, toxic spill, etc.); acts of God; biological or nuclear incidents; casualties; earthquakes; fires; floods; governmental acts; orders or restrictions; inability to obtain suitable and sufficient labor, transportation, fuel and materials; local, national or state emergency; power failure and power outages; acts of terrorism; strike; and war.

28.2 Either party to this Agreement, however, will have the right to terminate this Agreement upon thirty (30) days' prior written notice if either party is unable to fulfill its obligations under this Agreement due to any of the causes specified in Paragraph 28.1 for a period of one (1) year.

29. GOVERNING LAWS; VENUE; ATTORNEYS FEES

29.1 THIS AGREEMENT WILL BE INTERPRETED AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF CALIFORNIA, excluding any choice of law rules that would direct the application of the laws of another jurisdiction and without regard to which party drafted particular provisions of this Agreement, but the scope and validity of any patent or patent application will be governed by the applicable laws of the country of such patent or patent application.

29.2 Any legal action brought by the parties hereto relating to this Agreement will be conducted in San Francisco, California.

29.3 The prevailing party in any suit related to this Agreement will be entitled to recover its reasonable attorneys' fees in addition to its costs and necessary disbursements.

30. GOVERNMENT APPROVAL OR REGISTRATION

If this Agreement or any associated transaction is required by the law of any nation to be either approved or registered with any governmental agency, the Licensee will assume all legal obligations to do so. The Licensee will notify The Regents if it becomes aware that this Agreement is subject to a United States or foreign government reporting or approval requirement. The Licensee will make all necessary filings and pay all costs including fees, penalties and all other out-of-pocket costs associated with such reporting or approval process.

31. COMPLIANCE WITH LAWS

The Licensee shall comply with all applicable international, national, state, regional and local laws and regulations material to performing its obligations hereunder and in its use, manufacture, Sale or import of the Licensed Products or practice of the Licensed Method. The Licensee will observe all applicable United States and foreign laws with respect to the transfer of Licensed Products and related technical data to foreign countries, including, without limitation, the International Traffic in Arms Regulations (ITAR) and the Export Administration Regulations. The Licensee shall manufacture Licensed Products and practice the Licensed Method in compliance with applicable government importation laws and regulations of a particular country for Licensed Products made outside the particular country in which such Licensed Products are used, Sold or otherwise exploited.

32. CONFIDENTIALITY

32.1 The Licensee and The Regents will treat and maintain the other party's proprietary business, patent prosecution, software, engineering drawings, process and technical information and other proprietary information, including the negotiated terms of this Agreement and any sublicense agreements, progress reports and royalty reports ("Proprietary Information") in confidence using at least the same degree of care as the receiving party uses to protect its own proprietary information of a like nature, but no less than a reasonable degree of care, from the date of disclosure until [**] years after the termination or expiration of this Agreement. This confidentiality obligation will apply to the information defined as "Data" under the Secrecy Agreements (UC Control Nos. [**]) and such Data will be treated as Proprietary Information hereunder.

32.2 For the sole purpose of performing under the terms of this Agreement, The Licensee and The Regents may use and disclose Proprietary Information to their employees, agents, consultants, contractors and, in the case of the Licensee, its Sublicensees, its non-employee directors and its potential investors, and in the case of The Regents, [**], provided that such parties are bound by a like duty of confidentiality as that found in this Article 32 (Confidentiality). Notwithstanding anything to the contrary contained in this Agreement, The Regents and [**] may release this Agreement, including any terms contained herein and information regarding royalty payments or other income received in connection with this Agreement to their respective inventors and senior administrative officials and, in the case of The Regents, individual Regents, upon their request. If such release is made, The Regents and [**] will request that such terms be kept in confidence in accordance with the provisions of this Article 32 (Confidentiality). In addition, notwithstanding anything to the contrary in this Agreement, if a third party inquires whether a license to Patent Rights is available, then The Regents and [**] may disclose the existence of this Agreement and the extent of the grant in Articles 2 (Grant) and 3 (Sublicenses) and related definitions to such third party, but will not disclose the name of the Licensee unless Licensee has already made such disclosure publicly.

32.3 All written Proprietary Information will be labeled or marked confidential or proprietary. If the Proprietary Information is orally disclosed, it will be reduced to writing or some other physically tangible form, marked and labeled as confidential or proprietary by the

disclosing party and delivered to the receiving party within thirty (30) days after the oral disclosure.

32.4 Nothing contained herein will in any way restrict or impair the right of the Licensee, The Regents or [**] to use or disclose any Proprietary Information:

32.4.1 that recipient can demonstrate by written records was previously known to it prior to its disclosure by the disclosing party;

32.4.2 that recipient can demonstrate by written records is now, or becomes in the future, public knowledge other than through acts or omissions of recipient;

32.4.3 that recipient can demonstrate by written records was lawfully obtained without restrictions on the recipient from sources independent of the disclosing party; and

32.4.4 that The Regents and/or [**] is required to disclose pursuant to the California Public Records Act or other applicable law, provided that the party subject to the disclosure obligation uses reasonable efforts to give the other party sufficient notice of such required disclosure to allow such party the reasonable opportunity to object to, and to take legal action to prevent, such disclosure; and

32.4.5 that recipient can demonstrate by written records results from research and development of the receiving party independent of such disclosure.

The Licensee or The Regents also may use or disclose Proprietary Information that is required to be disclosed (i) to a governmental entity or agency in connection with seeking any governmental or regulatory approval, governmental audit, or other governmental contractual requirement or (ii) by law, provided that the recipient uses reasonable efforts to give the party owning the Proprietary Information sufficient notice of such required disclosure to allow the party owning the Proprietary Information reasonable opportunity to object to, and to take legal action to prevent, such disclosure.

32.5 Upon termination of this Agreement, the Licensee and The Regents will, and The Regents will request that [**], destroy or return any of the disclosing party's Proprietary Information in its possession within fifteen (15) days following the termination of this Agreement. The Licensee and The Regents will provide each other, within thirty (30) days

following termination, with written notice that such Proprietary Information has been returned or destroyed. Each party may, however, retain one copy of such Proprietary Information for archival purposes in non-working files. Under the terms of the Interinstitutional Agreement with [**], The Regents has the right to request that [**] destroy or return to The Regents within fifteen (15) days following termination of this Agreement any Proprietary Information provided to [**] by The Regents. However, [**] may retain one copy of such Proprietary Information for archival purposes in non-working files.

32.6 With regard to Biological Material, the Licensee agrees:

32.6.1 not to use the Biological Materials except for the sole purpose of performing under the terms of this Agreement;

32.6.2 not to transfer the Biological Materials to others (except to its Sublicensees and others, such as employees, agents or consultants who are bound to the Licensee or the Sublicensee by like obligations conditioning and restricting access, use and continued use of Biological Materials) without the express written permission of The Regents, except that the Licensee is not prevented from transferring any Biological Material that is lawfully obtained by the Licensee from sources independent of The Regents;

32.6.3 to safeguard the Biological Materials against disclosure and transmission to others with the same degree of care as it exercises with its own biological materials of a similar nature;

32.6.4 to destroy all copies of the Biological Materials at the termination of this Agreement within fifteen (15) days following the effective date of such termination; and

32.6.5 to destroy all copies of the Biological Material at the expiration of this Agreement unless the Licensee is using the Biological Material as provided for in Paragraph 14.1.

33. MISCELLANEOUS

33.1 The headings of the several sections are inserted for convenience of reference only and are not intended to be a part of or to affect the meaning or interpretation of this Agreement.

33.2 This Agreement is not binding on the parties until it has been signed below on behalf of each party. It is then effective as of the Effective Date.

33.3 No amendment or modification of this Agreement is valid or binding on the parties unless made in writing and signed on behalf of each party.

33.4 This Agreement embodies the entire understanding of the parties and supersedes all previous communications, representations or understandings, either oral or written, between the parties relating to the subject matter hereof. The following Agreements are hereby terminated: Secrecy Agreement (UC Control No. [**]) for UC Case No. [**] with an effective date of January 20, 2004; a Secrecy Agreement (UC Control No. [**], for UC Case No. [**] with an effective date of May 16, 2003; a Material Evaluation Agreement (UC Control No. [**]) for UC Case No. [**] with an effective date of August 11, 2003; a Secrecy Agreement for Data and Biological Materials (UC Control Nos. [**] and [**]) for UC Case Nos. [**] and [**] with effective dates of September 3, 2003.

33.5 In case any of the provisions contained in this Agreement is held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability will not affect any other provisions of this Agreement and this Agreement will be construed as if such invalid, illegal or unenforceable provisions had never been contained in it.

33.6 This Agreement includes the attached Appendix(es) A, B and C.

33.7 No provisions of this Agreement are intended or shall be construed to confer upon or give to any person or entity other than The Regents and the Licensee any rights, remedies or other benefits under, or by reason of, this Agreement.

33.8 In performing their respective duties under this Agreement, each of the parties will be operating as an independent contractor. Nothing contained herein will in any way constitute any association, partnership, or joint venture between the parties hereto, or be construed to evidence the intention of the parties to establish any such relationship. Neither party will have the power to bind the other party or incur obligations on the other party's behalf without the other party's prior written consent.

IN WITNESS WHEREOF, both The Regents and the Licensee have executed this Agreement, in duplicate originals, by their respective and duly authorized officers on the day and year written.

MERRIMACK PHARMACEUTICALS, INC.		THE REGENTS OF THE UNIVERSITY OF CALIFORNIA	
By:	/s/ Vincent F. Simmon (Signature)	By:	/s/ William T. Tucker (Signature)
Name:	Vincent F. Simmon (Please Print)	Name:	William T. Tucker
Title:	COO	Title:	Interim Executive Director Research Administration and Technology Transfer
Date:	3/15/05	Date:	March 16, 2005

Appendix A

[**].

Appendix B - Original Materials

UC Case No. [**].

UC Case No. [**].

UC Case No. [**].

Appendix C

UC Case No. XX-XXX

CONSENT TO SUBSTITUTION OF PARTY

This substitution of parties ("Agreement") is effective this day of , 200 , among The Regents of the University of California ("The Regents), a California corporation, having its statewide administrative offices at 1111 Franklin Street, 12th Floor, Oakland, California 94607-5200; [original Licensee name] [("XXX")], a [insert state] corporation, having a principal place of business at ; and [new licensee name] [("YYY")] a corporation, having a principal place of business at .

BACKGROUND

A. The Regents and [XXX] entered into a [type: Letter, Option or License] Agreement effective (UC Control No. - -), entitled ("[type] Agreement"), wherein [XXX] was granted certain rights.

B. [XXX] desires that [YYY] be substituted as [Licensee] (defined in the [type] Agreement) in place of [XXX], and The Regents is agreeable to such substitution.

C. [YYY] has read the [type] Agreement and agrees to abide by its terms and conditions.

The parties agree as follows:

1. [YYY] assumes all liability and obligations under the [type] Agreement and is bound by all its terms in all respects as if it were the original [Licensee] of the [type] Agreement in place of [XXX].

2. [YYY] is substituted for [XXX], provided that [YYY] assumes all liability and obligations under the [type] Agreement as if [YYY] were the original party named as [Licensee] as of the effective date of the [type] Agreement.

3. The Regents releases [XXX] from all liability and obligations under the [type] Agreement arising before or after the effective date of this Agreement.

The parties have executed this Agreement in triplicate originals by their respective authorized officers on the following day and year.

[XXX] COMPANY

By: _____
(Signature)

Name: _____
(Please print)

Title: _____

Date: _____

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

By: _____

Name: [Licensing Officer Name]

Title: [Licensing Officer] Office of Technology Transfer

Date:

[YYY] COMPANY

By: _____
(Signature)

Name: _____
(Please print)

Title: _____

Date: _____

FIRST AMENDMENT TO LICENSE AGREEMENT BETWEEN THE REGENTS AND MERRIMACK PHARMACEUTICALS, INC.

This First Amendment ("First Amendment") to is made and effective this 17th day of November 2009 ("Amendment Effective Date") by and between The Regents of the University of California, a California corporation, having its statewide administrative offices at 1111 Franklin Street, 12th Floor, Oakland, California 94607-5200, acting through its Office of Technology Management, University of California San Francisco, 185 Berry Street, Suite 4603, San Francisco, CA 94107 ("The Regents") and Merrimack Pharmaceuticals, Inc., a Massachusetts corporation, having its principal place of business at One Kendall Square Suite B7201 Cambridge, MA 02139-1670 ("Merrimack").

BACKGROUND

A. The Regents and Merrimack entered into an License Agreement ("License Agreement") effective March 16, 2005 (UC Control Nos. [**] and [**]) for [**] (UC Case No. [**] (UC Case [**]), and [**] (UC Case No. [**]).

B. The Regents and Merrimack wish to amend the License Agreement as provided herein in order to amend certain due diligence deadlines and [**] milestone payments solely for the [**] Therapeutic Licensed Product.

NOW, THEREFORE, in view of the foregoing, the parties hereby agree as follows:

ARTICLE I DEFINITIONS

1.1 All definitions and paragraph numbers referred to in this First Amendment have the same meaning ascribed to them in the License Agreement.

ARTICLE II MILESTONE PAYMENTS

2.1 Paragraph 10.1 is deleted in its entirety and replaced with the following:

10.1. With respect to each Therapeutic Licensed Product, the Licensee will pay to The Regents the following non-refundable, non-creditable amounts, except that [**] each payment due under paragraphs 10.1.1 through 10.1.5 will be [**]:

10.1.1 [**] dollars ($[**]) upon the [**] Therapeutic Licensed Product; and

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10.1.2 [**] dollars ($[**]) for the [**] Therapeutic Licensed Product; and

10.1.3 [**] dollars ($[**]) upon the [**] Therapeutic Licensed Product; and

10.1.4 [**] dollars ($[**]) upon the [**] Therapeutic Licensed Product [**]; and

10.1.5 [**] dollars ($[**]) upon the [**] Therapeutic Licensed Product [**].

ARTICLE III DUE DILIGENCE

3.1 Paragraph 11.3 is deleted in its entirety and replaced with the following:

11.3 For Therapeutic Licensed Products, the Licensee will:

11.3.1 initiate pre-clinical toxicology studies suitable for submission to the FDA or equivalent foreign regulatory agency by December 31, 2007;

11.3.2 submit an IND or equivalent covering a Therapeutic Licensed Product to the FDA or equivalent foreign regulatory agency by June 30, 2009;

[**];

Notwithstanding the above, the Licensee will develop Therapeutic Licensed Products for Sale in the United States and will:

11.3.10 submit an IND or equivalent covering a Therapeutic Licensed Product to the FDA by June 30, 2009;

[**];

ARTICLE IV FEES

4.1 In consideration for the amendment of the License Agreement as provided in this First Amendment, Merrimack shall pay to The Regents a fee ("Amendment Fee") of [**] dollars ($[**]), payable in [**] installments as follows:

4.1.1 the [**] of [**] dollars ($[**]) is due within [**] days of the Amendment Effective Date.

4.1.2 The [**] of [**] dollars each ($[**]) are due on the [**] of the Amendment Effective Date, [**].

4.2 This Amendment Fee is non-refundable, non-cancelable and is not an advance or otherwise creditable against any royalties or other payments required to be paid under the terms of the License Agreement.

4.3 Any Extension Fees due to the Regents as per the terms of paragraph 11.6 of the License Agreement and any breach or default by Merrimack in connection with any failure by Merrimack to meet any due diligence deadlines prior to the Amendment Effective Date of this First Amendment are hereby waived.

ARTICLE V MISCELLANEOUS

5.1 This First Amendment shall be made part of the License Agreement and be governed by all its terms.

5.2 Except as expressly amended hereby, the License Agreement remains unchanged and in full force and effect.

5.3 This First Amendment may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, The Regents and Merrimack have executed this First Amendment in duplicate by their respective and duly authorized officers, as evidenced by their signatures below.

MERRIMACK PHARMACEUTICALS, INC.		THE REGENTS OF THE UNIVERSITY OF CALIFORNIA	
By:	/s/ Edward J. Stewart (Signature)	By:	/s/ Joel B. Kirschbaum (Signature)
Name:	Edward J Stewart	Name:	Joel B. Kirschbaum
Title:	SVP Business Development	Title:	Director, UCSF Office of Technology Management
Date:	11/10/09	Date:	11/17/09

Exhibit 10.22

CONFIDENTIAL
Execution Copy - 11-16-2009

Confidential Materials omitted and filed separately with the
Securities and Exchange Commission. Asterisks denote omissions.

COLLABORATION AGREEMENT

THIS COLLABORATION AGREEMENT (the "**Agreement**") is made as of November 16, 2009 (the "**Effective Date**"), by and between **ADIMAB, INC**., a Delaware corporation having an address at 16 Cavendish Court, Lebanon, NH 03766 ("**Adimab**") and **MERRIMACK PHARMACEUTICALS, INC.,** a Massachusetts corporation having an address at One Kendall Square, Suite B7201, Cambridge, MA 02139 ("**Merrimack**").

BACKGROUND

WHEREAS, Adimab is the leader in the business of yeast-based fully human antibody discovery using its proprietary core technology platform;

WHEREAS, Merrimack wishes to discover and develop as therapeutic and diagnostic products one or more antibodies directed to a disease-related biological target of interest to Merrimack;

WHEREAS, the Parties wish to collaborate to have Adimab discover antibodies directed against this disease-related biological target, and to have Merrimack determine their activity and have the option to license certain of these antibodies for development as a pharmaceutical product, all as more particularly set forth in this Agreement;

NOW, THEREFORE, in consideration of the foregoing premises and the mutual covenants set forth below, and for other good and valuable consideration, the receipt of which is hereby acknowledged, Adimab and Merrimack hereby agree as follows:

ARTICLE 1

DEFINITIONS.

The following initially capitalized terms have the following meanings (and derivative forms of them shall be interpreted accordingly):

1.1 "**Adimab Materials**" means any tangible biological or chemical materials (including all [**] and other [**] in the form of tangible biological or chemical materials) provided by Adimab to Merrimack under the Research Program[**].

1.2 "**Adimab Program Antibody Know-How**" means all Know-How Controlled by Adimab [**] that [**] for Merrimack [**] or [**] Program Antibodies as provided in the Research Plan, or [**]. The Adimab Program Antibody Know-How excludes [**] that is [**] or [**] than the [**] of the foregoing sentence. The Parties do not intend for Merrimack to obtain under this Agreement the ability or right to practice the Platform/Core Technology for antibody discovery purposes.

1.3 "**Adimab Program Antibody Patents**" means any and all Program Antibody Patents the subject invention of which is an Adimab Program Invention or a Joint Invention.

1.4 "**Adimab Program Inventions**" means all Program Inventions for which Adimab (or its Affiliate) has (meaning that it employs or has engaged as a consultant) at least one (1) person who would be a properly named inventor on the U.S. Patent claiming such invention, other than Joint Program Inventions. Inventorship for purposes of this definition, and all intellectual property-related definitions in this Agreement, shall be determined in accordance with United States patent law.

1.5 "**Affiliate**" means an entity that, directly or indirectly, through one or more intermediaries, controls, is controlled by or is under common control with a Party. For this purpose, "control" means the ownership of fifty percent (50%) or more of the voting securities entitled to elect the directors or management of the entity, or the actual power to elect or direct the management of the entity.

1.6 "**BLA**" means a Biologic License Application (as defined in the U.S. Federal Food, Drug, and Cosmetic Act, as amended, and the regulations promulgated thereunder (21 C.F.R. §§ 600-680) in the United States or a comparable filing in any other jurisdiction (i.e., a filing with a Regulatory Authority that must be made prior to importing, marketing and selling a biological product), in each case with respect to a Product.

1.7 "**Confidential Information**" has the meaning given in Section 6.1.

1.8 "**Control**" means, with respect to any Know-How or Patent, [**]other than pursuant to this Agreement[**]of the [**] as provided for in this Agreement without violating the terms of any written agreement with any Third Party.

1.9 "**Cover**" means, with respect to a particular item (which may be an antibody or a product) and a particular Patent, that such Patent claims or covers [**] of [**] of [**] or [**] or [**] or [**] of [**] of [**] of the [**] and/or [**] or [**] or [**] or [**] of [**], for [**] of the [**] of the [**] or [**] in the [**] in the [**] of a [**] on [**] in the [**] in the [**].

1.10 "**Diagnostic Product**" means a Product for the diagnosis of any human disease or condition.

1.11 "**EU**" means the European Union.

1.12 "**Evaluation Term**" means the time period beginning at the end of the Research Term and ending [**] months thereafter.

1.13 "**Field**" means treatment, prophylaxis and diagnosis of any and all diseases and all diseases and conditions in humans.

1.14 "**First Commercial Sale**" means, with respect to a Product in any country, the first sale, transfer or disposition for value or for end use or consumption of such Product in such country after BLA (or equivalent) approval (in the case of Therapeutic Products) or other Regulatory Approval (in the case of Diagnostic Products) has been achieved for such Product in such country.

1.15 "**Joint Inventions**" means any and all Program Inventions for which Adimab (or its Affiliate) and Merrimack (or its Affiliate) each have (meaning that each employs or has engaged as a consultant) at least one (1) person who would be a properly named inventor on the U.S. patent claiming such invention.

1.16 "**Joint Program Antibody Patent**" means any Program Antibody Patent the subject invention of which is a Joint Invention.

1.17 "**Joint Serendipitous Inventions**" means all Joint Inventions other than those claimed by Joint Program Antibody Patents or constituting Platform/Core Technology Improvements.

1.18 "**Know-How**" means all technical information and know-how, including inventions, discoveries, trade secrets, specifications, instructions, processes, formulae, materials (including cell lines, vectors, plasmids, nucleic acids and the like), methods, protocols, expertise and other technology applicable to formulations, compositions or products or to their manufacture, development, registration, use or marketing or to methods of assaying or testing them or processes for their manufacture, formulations containing them or compositions incorporating or comprising them, and including all biological, chemical, pharmacological, biochemical, toxicological, pharmaceutical, physical and analytical, safety, quality control, manufacturing, preclinical and clinical data, instructions, processes, formula, and expertise.

1.19 "**Licensed Antibody**" has the meaning given in Section 3.2.

1.20 "**Licensed Antibody Program Patents**" means those Program Antibody Patents that Cover one or more Licensed Antibody/ies.

1.21 "**Major EU Countries**" means Great Britain, France, Germany, Italy and Spain.

1.22 "**Major Market**" means any of the United States, the EU or Japan.

1.23 "**Merrimack Materials**" means any tangible biological or chemical materials (including antigen samples and other Know-How in the form of tangible biological or chemical materials) provided by Merrimack to Adimab under the Research Program.

1.24 "**Merrimack Program Antibody Patent**" means any Program Antibody Patent the subject invention of which is a Merrimack Program Invention.

1.25 "**Merrimack Program Inventions**" means all Program Inventions for which Merrimack (or its Affiliate) has (meaning that it employs or has engaged as a consultant) at least one (1) person who would be a properly named inventor on the U.S. Patent claiming such invention, other than Joint Program Inventions.

1.26 "**Net Sales**" means the gross amount invoiced by Merrimack, or its Affiliates, licensees or sublicensees for the sale of a Product, less any of the following applicable deductions to the extent actually granted and included in the invoiced amounts: [**], and [**] and [**], in [**] or [**] and [**] or [**], or [**] on [**] for [**] and [**]; or [**] for [**]. Even

if there is overlap between any of deductions [**] each individual item shall only be deducted once in each Net Sales calculation.

Net Sales calculated as described above shall be adjusted for Combination Products, as provided in Section 4.7. The same adjustment shall be applied to product bundles (in the countries where bundling is permitted).

Net Sales shall, as to any unit of Product, be calculated based on the first sale of such unit of Product by Merrimack or any of its Affiliates, licensees or sublicensees to a Third Party (other than a licensee or sublicensee). Net Sales excludes amounts from sales of Product between Merrimack and any of its Affiliates, licensees or sublicensees, *provided* that the Product quantities are intended for use in a clinical trial or in other research or development activities, as a free sample, or for resale (in circumstances in which if resold the resale will be included in the calculation of Net Sales).

If Merrimack (or its Affiliates, licensees or sublicensees) structure a commercial transfer of quantities of Product as something other than a "sale" such that Merrimack (or its Affiliates, licensees or sublicensees) receives value as a direct result of such other commercial transfer, and excluding the situation where the transfer is to provide a Product quantity for use in a clinical trial or in other research or development activities, as a free marketing sample or is intended for resale by Merrimack or its Affiliates, licensees or sublicensees, then such transfer shall be deemed to be a sale at the value received by Merrimack (or its Affiliates, licensees or sublicensees). For non-limiting example, if Merrimack (or its Affiliates, licensees or sublicensees) purports to lease Product rather than sell Product, the lease revenues would be included in the gross amounts invoiced that are used to calculate Net Sales. As another non-limiting example, if Merrimack (or its Affiliates, licensees or sublicensees) were to give away quantities of Product for free in connection with a sale transaction with the transferee in which the transferee purchases quantities of another product, a reasonable portion of the amounts paid by the transferee for the other product would be deemed to be gross sales amount allocable to a sale of the Product.

1.27 "**Option**" means Merrimack's option as described in Section 3.2.

1.28 "**Party**" means Adimab or Merrimack.

1.29 "**Patent**" means any patent application or patent anywhere in the world, including all of the following kinds: provisional, utility, divisional, continuation, continuation-in-part, and substitution applications; and utility, re-issue, re-examination, renewal and extended patents, and patents of addition, and any Supplementary Protection Certificates, restoration of patent terms and other similar rights.

1.30 "**Phase I Clinical Trial**" means, with respect to a Product, a clinical trial on sufficient numbers of human patients or subjects for the primary purposes of evaluating safety, metabolism and pharmacokinetics, as described in 21 C.F.R. §312.21(a), or similar clinical study in a country other than the United States.

1.31 "**Phase III Clinical Trial**" means, with respect to a Product, a clinical trial on sufficient numbers of human patients that is designed to establish that such Product is safe and

efficacious for its intended use, and to define warnings, precautions and adverse reactions that are associated with such Product in the dosage range to be prescribed, and more directly (than a phase II clinical trial) supporting Regulatory Approval or label expansion of such Product, as described as a phase III clinical trial in 21 C.F.R.

§312.21(c), or similar clinical study in a country other than the United States, or other pivotal trial intended to serve to gather the pivotal data to support Regulatory Approval of the Product.

1.32 "**Platform/Background Patents**" means all Patents [**] the [**] that [**] not [**] the [**] or [**] on the basis of the [**] in which [**] under the [**].

1.33 "**Platform/Core Technology**" means [**] and [**] that [**] antibody [**] and [**] in the [**] and [**] of [**] of the [**].

1.34 "**Platform/Core Technology Improvement**" means all [**] or [**] of the Research Program and [**] (and Patents claiming them) [**] or [**] including any and all [**] or [**] to [**] as [**] of the [**].

1.35 "**Product**" means any product that [**] or [**] or [**] as [**] of, [**] and [**] of [**].

1.36 "**Program Antibody**" means each antibody [**] or [**] under the Research Program. It is understood and agreed that [**] to [**] of [**], the [**] are [**] to [**] of [**] are [**] to [**].

1.37 "**Program Antibody Patents**" means Patents that [**] a Program Antibody or product containing a Program Antibody [**] are [**] and [**] is [**] of the [**] and [**] do not [**] the [**], and [**] (for example, a reformulation or a dosing regimen), and a [**] is [**] be considered a Program Antibody Patent [**] to [**] on [**] are [**] to [**] Program Antibody Patent).

1.38 "**Program-Benefited Antibody**" has the meaning given in Section 9.4.

1.39 "**Program Inventions**" means any patentable invention that is conceived and/or first reduced to practice in the course of or as a result of the activities conducted under this Agreement.

1.40 "**Program Know-How**" means all Know-How made, developed, invented or discovered by employees, contractors or agents of either Party or of both Parties pursuant to this Agreement, excluding Program Inventions claimed in any Program Patent that has published or issued.

1.41 "**Program Patent**" means any Patent claiming a Program Invention.

1.42 "**Regulatory Approval**" means with respect to a particular country or region, all approvals, licenses, registrations or authorizations by any Regulatory Authority necessary in order to legally sell a Product in such country or region for the purpose for which it is labeled.

1.43 "**Regulatory Authority**" means the FDA or any counterpart of the FDA outside the United States.

1.44 "**Research Plan**" means the plan set forth in Exhibit A.

1.45 "**Research Program**" means the program of research conducted under this Agreement in accordance with the Research Plan.

1.46 "**Research Term**" means the period beginning on the Effective Date and ending upon completion of the Research Plan.

1.47 "**Research Committee**" has the meaning given in Section 2.2.

1.48 "**Specific Antibody Information**" has the meaning given in Section 6.1.

1.49 "**Target**" means the disease-related biological target of interest to Merrimack that is specified in Exhibit A.

1.50 "**Therapeutic Area**" means a [**] and [**].

1.51 "**Therapeutic Product**" means a Product that is a pharmaceutical (or biologic drug) composition and is to be used for the treatment or prevention of any human disease or condition.

1.52 "**Third Party**" means an entity other than a Party or the Affiliate of a Party.

1.53 "**Valid Claim**" means a claim of a Patent within the Licensed Antibody Program Patents, which claim is issued and unexpired and has not been found to be unpatentable, invalid or unenforceable by a court or other authority having jurisdiction, from which decision no appeal is taken, will be taken or can be taken; or (ii) is pending and has not been finally abandoned or finally rejected and has been pending for no more than [**] years.

1.54 References in the body of this Agreement to "Sections" refer to the sections of this Agreement. The terms "include," "includes," "including" and derivative forms of them shall be deemed followed by the phrase "without limitation" regardless of whether such phrase appears there (and with no implication being drawn from its inconsistent inclusion or non-inclusion).

1.55 To avoid doubt, the term "antibody" as used everywhere else in this Agreement includes full-length antibodies, fragments thereof, and chemically modified versions thereof (including pegylated versions and regardless of whether containing amino acid substitutions), all of the foregoing whether naturally occurring, artificially produced, raised in an artificial system, or created through modification of an antibody produced in any of the foregoing ways or otherwise.

ARTICLE 2

PROGRAM.

2.1 **General**. Each Party shall use its reasonable efforts to carry out the Research Program activities assigned to such Party in the portion of the Research Plan that relates to "Part 1," on the applicable timeline set forth in the Research Plan. Adimab's performance obligations under the Research Program shall be contingent upon Merrimack providing the Merrimack Materials set forth in the Research Plan and the project funding set forth in Section 4.2, and shall expire at the end of the Research Term. Merrimack's performance obligations under the Research Program shall be contingent upon Adimab providing the Adimab Materials set forth in the Research Plan, and shall expire at the end of the Research Term.

The Research Plan also includes certain activities labeled "Part 2," relating generally to [**]. Part 2 is optional for both Parties, and is outlined in the Research Plan only to facilitate the Parties mutual understanding of what further work they could consider doing together. Adimab is under no obligation to perform the work in Part 2, and Merrimack is under no obligation to fund such work, in each case, unless the Parties otherwise mutually agree in writing in a formal amendment to this Agreement. If after Part 1, Merrimack believes it would like to proceed to Part 2, it shall notify Adimab, and the Parties shall discuss in good faith fees for Part 2, and if they reach agreement will execute a written amendment to this Agreement to reflect their agreement.

2.2 Scientific Research Committee. Promptly after the Effective Date, the Parties shall form a steering committee consisting of [**] representatives from each Party (the "**Research Committee**"). The Research Committee shall meet from time to time promptly after the date of a written request by either Party. It shall operate by consensus. Adimab's initial members of the Research Committee shall be [**]. Merrimack's initial such members shall be [**] Program. Either Party may change its Research Committee members upon written notice to the other Party. The Research Committee may meet in person or by teleconference or videoconference. Each Party shall designate one of its Research Committee members as co-chair. The co-chairs shall be responsible to circulate, finalize and agree on minutes of each meeting within thirty (30) days after the meeting date. The Research Committee's role is to facilitate communication regarding progress in relation to the Program Antibodies and collaboration generally. The Research Committee shall [**], other than the following: The co-chairs of the Research Committee (one from each Party) may by mutual written agreement [**] in a manner that does not materially increase either Party's performance obligations under this Agreement ("**[**]**"). Other than the [**], the Research Committee shall have [**].

2.3 Reports.

(a) By Adimab. Within [**] days after delivering the last installment of Program Antibodies to Merrimack under the Research Program, Adimab shall provide written reports to Merrimack of the Program Antibodies Adimab has identified and any information with respect to them the Research Plan provides for Adimab to disclose. Adimab shall not be required to disclose any [**] to Merrimack.

(b) By Merrimack. Within [**] days after achieving milestones [**] in Section 4.2(b), and then every [**] months throughout the term of the Option and for so long as Merrimack or its Affiliates, licensees or sublicensees generate Program-Benefited Antibodies, Merrimack shall provide written reports to Adimab. Merrimack's reports shall provide any data

and other Know-How Merrimack is required to provide under the Research Plan and shall disclose all Program-Benefited Antibodies since the date of the last report.

2.4 Use of Adimab Materials. Merrimack shall not use Adimab Materials in any way outside of the Research Program or other than pursuant to the license granted under this Agreement while such license is in effect. Among other things, this means that, except under the Research Program or pursuant to such license, Merrimack shall not: (i) provide Adimab Materials to any Third Party, (ii) sequence or modify the Adimab Materials, or (iii) use sequence information regarding Program Antibodies that constitutes Confidential Information of Adimab and remains subject to the confidentiality restrictions in Article 6 or quantities of Program Antibodies delivered to Merrimack by Adimab or Adimab Materials, in the case of each of the foregoing clauses (i), (ii) and (iii) for any purpose other than to pursue the research, development, manufacture and commercialization of Products and potential Products in accordance with this Agreement.

Adimab retains title to the Adimab Materials, including all quantities of Program Antibodies that it provides under the Research Program. Such quantities of Adimab Materials are for use solely in assessing whether to exercise the Option or for research and development activities subsequent to Merrimack's exercise of the Option within the scope of the resulting license under Section 3.3(b). Such quantities shall not be [**]. Merrimack shall return to Adimab or destroy such quantities on expiration of the Evaluation Term, if Merrimack does not exercise the Option and Adimab requests such return or destruction in writing.

2.5 Use of Merrimack Materials. Adimab shall use the Merrimack Materials solely to perform the Research Program. Adimab shall not transfer the Merrimack Materials outside of Adimab. Within [**] days after the Research Term ends, Adimab will return to Merrimack or, if requested, destroy any remaining Merrimack Materials.

ARTICLE 3

LICENSES; OPTION; DEVELOPMENT & COMMERCIALIZATION

3.1 Mutual Research Program Licenses.

(a) To Merrimack. Adimab hereby grants Merrimack a non-exclusive license under the Adimab Program Antibody Patents and Adimab Program Antibody Know-How, for Merrimack to perform Merrimack's responsibilities as provided for in the Research Plan as part of the Research Program during the Research Term and to perform non-clinical research during Evaluation Term in order to evaluate whether to exercise the Option.

(b) To Adimab. Similarly, Merrimack and its Affiliates hereby grant to Adimab a non-exclusive license under all Patents and Know-How Controlled by Merrimack (or its Affiliate) and relating in any way to the Target or any Merrimack Materials, for Adimab to perform Adimab's responsibilities as provided for in the Research Plan as part of the Research Program during the Research Term and Evaluation Term.

3.2 Merrimack Option. Adimab hereby grants Merrimack the exclusive option to obtain the assignment and license of Section 3.3, exercisable by written notice to Adimab on or

before expiration of the Evaluation Term and by payment of the option exercise fee of Section 4.3 by the time set forth in that Section. Merrimack shall, in its written notice to exercise the Option, specify up to [**] Program Antibodies as, and together with any Program-Benefited Antibodies, the up to [**] Program Antibodies specified by Merrimack in such notice shall be, the "**Licensed Antibodies**."

3.3 Development/Commercialization Assignment and License. Adimab hereby, effective on Merrimack's exercise of the Option:

(a) assigns to Merrimack, subject to the terms and conditions of this Agreement, all right, title and interest in and to the Licensed Antibody Program Patents; and

(b) grants to Merrimack, subject to the terms and conditions of this Agreement, a worldwide, sublicenseable, non-exclusive license under the Platform/Background Patents, Program Patents (other than Licensed Antibody Program Patents) and Adimab Program Antibody Know-How, in the Field, to research, develop, make, have made, use, sell, offer to sell, import and export Licensed Antibodies and Products during the term of this Agreement; provided that, on a Product-by-

Product and country-by-country basis, such license shall convert to a fully paid-up, non-royalty-bearing, perpetual, non-exclusive license upon the expiration of the applicable Royalty Term (but not upon earlier termination of this Agreement).

3.4 Diligent Development and Commercialization. "**Commercially Reasonable Efforts**" means the level of efforts required to carry out a task in a diligent and sustained manner without undue interruption, pause or delay; which level is at least commensurate with the level of efforts that a biopharmaceutical company of similar size to, and with similar resources as, Merrimack would devote to a product of similar potential and having similar commercial and scientific advantages and disadvantages resulting from the company's own research efforts, taking into account safety and efficacy; the competitiveness of alternative products; proprietary position of the product; pricing and reimbursement; and all other relevant scientific, regulatory and commercial factors. Merrimack, together with its Affiliates, licensees and sublicensees, shall, if Merrimack exercises the Option, devote Commercially Reasonable Efforts to [**] develop, seek [**] for, and [**] commercialize at least [**] in each of the Major Markets. As to the EU, Merrimack shall be deemed to have satisfied such Commercially Reasonable Efforts obligation if [**].

[**] to terminate Merrimack's licenses hereunder with respect to [**], subject to the notice and cure provisions in Section 9.2. In the event that Merrimack's licenses hereunder are terminated [**] to [**] with [**] are [**] and [**] and [**] or [**].

[**], Merrimack will provide Adimab with a written report of Product progress in development and commercialization, Merrimack's and its Affiliates' activities in that regard. If requested by Adimab, then, within [**] days of receipt, Merrimack shall meet with Adimab to discuss such report at a mutually convenient time and location. Merrimack shall make the following personnel available for such meetings: the [**] (or equivalent) for Product Development, and a person at [**] or above with responsibility for alliance management (or equivalent). Each Party shall be responsible for its own out-of-pocket costs of any such meeting requested by Adimab.

3.5 Section 365(n) of the Bankruptcy Code. The licenses granted under this Article 3 shall be treated as licenses of rights to "intellectual property" (as defined in Section 101(56) of Title 11 of the United States Code, as amended (the "**Bankruptcy Code**")) for purposes of Section 365(n) of the Bankruptcy Code. The Parties agree that Merrimack may elect to retain and may fully exercise all of its rights and elections under the Bankruptcy Code. Under no circumstances, however, shall this be interpreted to mean that Merrimack (or any Affiliate, licensee or sublicensee of Merrimack) has any right to receive disclosure or documentation of the Platform/Core Technology (including its operation), whether or not alleged to be an "update" or an embodiment of intellectual property licensed under this Agreement.

ARTICLE 4

FINANCIAL TERMS.

4.1 Technology Access Fee. Merrimack shall pay Adimab a technology access fee equal to [**] Dollars ($[**]) within [**] business days after the Effective Date.

4.2 Project Funding.

(a) Lead Identification Research Fee. Merrimack shall pay to Adimab [**] Dollars ($[**]) within [**] days after Adimab's initiation of activities under the Work Plan. Adimab shall notify Merrimack promptly in writing when such initiation has occurred.

(b) Lead Identification Research Success Fees/Milestone Payments. Merrimack shall report in writing achievement of each event (except for, as to achievement of the first such event (i.e., the event described in row 1 of the table below) by Adimab, Adimab shall report such achievement to Merrimack in writing) within [**] days after such achievement, and simultaneously Merrimack shall pay the corresponding research milestone payment to Adimab, as to the first achievement of each of the corresponding milestone events in the following table. If Merrimack requires an invoice for such purposes, it may request one in advance in order to be able to make timely payment.

Research Milestone Event	Research Milestone Payment
1. [**]	1. [**] Dollars ($[**])
2. [**]	2. [**] Dollars ($[**])
3. [**]	3. [**] Dollars ($[**])

Each of the foregoing research milestone payments is payable a maximum of one (1) time only, even if achieved more than once.

4.3 Option Exercise Fee. Merrimack shall, within [**] days after the date of Merrimack's notice of exercise of the Option under Section 3.2, pay to Adimab an option exercise fee of One Million Dollars ($1,000,000), together with any and all research milestone payments not previously paid under Section 4.2 (whether or not the events set forth in Section 4.2 have actually been achieved). If Merrimack requires an invoice for this purpose, it may request one from Adimab in advance in order to be able to make timely payment.

4.4 Milestone Payments.

(a) Therapeutic Development Milestones. For each Therapeutic Product in each of its first 4 Therapeutic Areas, Merrimack shall report in writing to Adimab the achievement of each event and pay the corresponding development milestone payment (each a "**Therapeutic Development Milestone**") to Adimab, each within [**] days after achievement of the corresponding Therapeutic Development Milestone event in the following table (whether achieved by or on behalf of Merrimack or its Affiliate or any other entity acting on behalf of any of them or having received a license, sublicense or other rights from any of the foregoing). If Merrimack requires an invoice for this purpose, then Merrimack may request one in advance in order to be able to make timely payment.

Therapeutic Development Milestone Event	Therapeutic Development Milestone Payment
1. [**]	1. [**] Dollars ($[**]), subject to reduction to [**] Dollars ($[** as provided In Section 4.4(a)(i).
2. [**]	2. [**] Dollars ($[**])
3. [**]	3. [**] Dollars ($[**])
4. [**]	4. [**] Dollars ($[**])
5. [**]	5. [**] Dollars ($[**])
Maximum per Therapeutic Product in each of the first 4 Therapeutic Areas	[**] Dollars ($[**])

(i) The payment for Therapeutic Development Milestone 1 shall be reduced to [**] Dollars ($[** months [**].

(ii) All Therapeutic Development Milestones are payable on a Therapeutic Product-by-Therapeutic Product and Therapeutic Area-by-Therapeutic Area basis for each of the first 4 Therapeutic Areas per Therapeutic Product. No Therapeutic Development Milestones are due for Therapeutic Areas beyond the fourth Therapeutic Area (i.e., a "[**]" or "[**]" Therapeutic Area, and so on). Notwithstanding the foregoing, if a Therapeutic

Development Milestone is paid on a Therapeutic Product with respect to a Therapeutic Area, and subsequently further development and/or commercialization of such Therapeutic Product for such Therapeutic Area is abandoned, and following such abandonment Merrimack achieves the same Therapeutic Development Milestone with a different Therapeutic Product for the same Therapeutic Area, such Therapeutic Development Milestone shall not be due with respect to such subsequent milestone achievement.

(iii) For this purpose, all Therapeutic Products [**] shall be considered a [**] Therapeutic Product. [**]. A [**] Therapeutic Product containing [**] Licensed Antibody shall be considered a [**] Therapeutic Product from [**] that Licensed Antibody and [**] antibodies (whether Licensed Antibodies or otherwise).

(iv) On a Therapeutic Product-by-Therapeutic Product basis: if Merrimack achieves a Therapeutic Development Milestone event with respect to a "first," "second," "third," or "fourth" Therapeutic Area without having achieved a prior Therapeutic Development Milestone event with respect to such "first," "second," "third," or "fourth"[**]Therapeutic Area as applicable, then Merrimack will make the prior Therapeutic Development Milestone payment together with the payment of the Therapeutic Development Milestone payment for the achieved subsequent milestone event. For all purposes under this Section, whether a Therapeutic Area is "first," "second," "third," or "fourth" for any given milestone event will be determined not based on which Therapeutic Area started first in development, but rather on which Therapeutic Area first achieves the milestone event. For a non-limiting example, [**].

(b) Diagnostic Development Milestones. For each Diagnostic Product, Merrimack shall report in writing to Adimab the achievement of each event and pay the corresponding development milestone payment to Adimab (each, a "**Diagnostic Development Milestone**"), each within [**] days after the achievement of the corresponding Diagnostic Development Milestone event in the following table (whether achieved by or on behalf of Merrimack or its Affiliate or any other entity acting on behalf of any of them or having received a license, sublicense or other rights from any of the foregoing). If Merrimack requires an invoice for such purposes, it may request one in advance in order to be able to make timely payment.

Diagnostic Development Milestone Event	Diagnostic Development Milestone Payment
1. [**]	1. [**] Dollars ($[**])
2. [**]	2. [**] Dollars ($[**])

(i) All Diagnostic Development Milestones are payable on a Diagnostic Product-by-Diagnostic Product basis [**] per Diagnostic Product.

(ii) For this purpose, even if a Product contains [**], it shall be considered a [**] for purposes of this Section 4.4. The principles of Section 4.4(a)(iii) shall apply [**] as they do to [**].

4.5 Royalty Payments. Merrimack shall pay Adimab royalties on Net Sales of Therapeutic Products at the rate of [**] percent ([**]%) and royalties on Net Sales of Diagnostic Products at the rate of [**] percent ([**]%), in each case with respect to all Net Sales achieved during the applicable Royalty Term (determined on a country-by-country and Product-by-Product basis in accordance with Section 4.6).

4.6 Royalty Term. "**Royalty Term**" means, on a Product-by-Product and country-by-country basis, the time from the First Commercial Sale of such Product in such country until the later to occur of (a) the expiration of the last Valid Claim Covering the Product in the country in which such Product is sold, or (b) [**] the [**], on [**] of [**] with [**] to [**] of the [**] in a [**] of the [**] is [**] in the [**].

4.7 Combination Products. If Merrimack, its Affiliate or the Product licensee or sublicensee of any of them sells any Product as a combination product containing one or more active ingredient(s) that are not Licensed Antibody(ies) (whether combined in a single formulation or sold as a bundle of separate formulations) ("**Combination Product**"), Net Sales for such Combination Product shall be calculated by multiplying actual Net Sales of such Combination Product by the fraction A/(A+B) where A is the invoice price of the Licensed Antibody(ies) in such Combination Product if sold separately, and B is the total invoice price of any other active ingredient or ingredients in the combination, if sold separately. If, on a country-by-country basis, A or B is not available, then (a) Net Sales of such Combination Product shall be calculated by multiplying actual Net Sales of such Combination Product by the fraction of C/C+D where C is the fair market value of the Licensed Antibody(ies) and D is the fair market value of all other drug product(s) included in the Combination Product and (b) Merrimack shall notify Adimab of its good faith determination of such fair market values and make any applicable royalty payments based on such determination; provided that, if Adimab disagrees with such good faith determination, Adimab shall notify Merrimack of such disagreement and the Parties shall seek to resolve such disagreement in accordance with Section 10.2; provided further that, if the Parties are unable to resolve such disagreement through Senior Executives Discussions, either Party may request that the Parties resolve such dispute by appointing a mutually agreeable Third Party with expertise in commercial pharmaceutical matters to resolve the dispute, in which case the Parties shall appoint such Third Party within [**] days after such request and instruct such Third Party to resolve the dispute as promptly as possible, and any such resolution shall be binding on both Parties. [**]. Both Parties shall use all reasonable efforts to cause the process to be completed within [**] days after it begins. The Third Party dispute resolver shall be, and is hereby, instructed to fashion and cause the Parties to follow a procedure that limits discovery, allows written submissions of no more than [**] pages from each Party, and allows a presentation by each Party of their position not to exceed [**] hours (though the Parties' may respond within time and page limits set by the Third Party to any questions the Third Party may have).

4.8 Quarterly Payment Timings. All royalties due under Section 4.5 shall be paid quarterly, on a country-by-country basis, within [**] days after the end of the relevant calendar quarter for which royalties are due.

4.9 Royalty Payment Reports. With respect to each calendar quarter, at the time(s) when the payments of Section 4.8 are due, Merrimack shall provide to Adimab a written report stating the number and description of all Products sold during the relevant calendar quarter; the gross sales associated with such sales; and the calculation of Net Sales on such sales. The report shall provide all such information on a country-by-country and Product-by-Product basis.

4.10 Payment Method. All payments due under this Agreement to Adimab shall be made by bank wire transfer in immediately available funds to an account designated by Adimab. All payments hereunder shall be made in the legal currency of the United States of America, and all references to "**$**" or "**dollars**" shall refer to United States dollars (i.e., the legal currency of the United States).

4.11 Taxes. Merrimack shall be responsible for and may withhold from payments made to Adimab under this Agreement any taxes required to be withheld by Merrimack under applicable law. Accordingly, if any such taxes are levied on such payments due hereunder ("**Withholding Taxes**"), Merrimack shall (i) deduct the Withholding Taxes from the payment amount, (ii) pay all applicable Withholding Taxes to the proper taxing authority, and (iii) send evidence of the obligation and payment of such tax to Adimab concurrently with the payment by Merrimack to Adimab of the payment hereunder subject to such Withholding Taxes.

4.12 Records; Inspection.

(a) Merrimack shall keep, for a period of [**] years following the end of the calendar year to which such records relate, and ensure that its Affiliates keep, complete and accurate records of its sales of Product including all records that may be necessary for the purposes of calculating all payments due under this Agreement. Merrimack shall make such records available for inspection by an accounting firm selected by Adimab at Merrimack's premises in the United States on reasonable notice during regular business hours.

(b) At Adimab's expense no more than [**] per calendar year, Adimab has the right to retain an independent certified public accountant from a nationally recognized (in the U.S.) accounting firm (that is not an Affiliate of Adimab) to perform on behalf of Adimab an audit, conducted in accordance with GAAP, of such books and records of Merrimack and its Affiliates as are necessary (in the reasonable opinion of the auditor) to verify Net Sales for the period or periods requested by Adimab and the correctness of any report or payments made under this Agreement, and solely for such purpose. Merrimack may require that such independent accounting firm enter into a confidentiality agreement reasonably satisfactory to Merrimack as a condition to obtaining access to such records.

(c) If the audit reveals an underpayment, Merrimack shall promptly pay to Adimab the amount of such undisputed underpayment plus interest in accordance with Section 4.16. If the audit reveals that the undisputed monies owed by Merrimack to Adimab has been

understated by more than five percent (5%) for any calendar year, Merrimack shall, in addition, pay the reasonable costs of such audit.

4.13 Licensee/Sublicensee Reports, Records and Audits. If Merrimack grants any Product licenses or sublicenses, the agreements for such licenses and sublicenses shall include an obligation for the sublicensee to (i) maintain, for a period of [**] years following the end of the calendar year to which such records relate, records adequate to document and verify the proper payments to be paid to Adimab hereunder; (ii) provide reports with sufficient information to allow such verification; and (iii) allow Adimab (or Merrimack if requested by Adimab) to verify the payments due (such audit right is not required to be any stronger than that of Section 4.12). Merrimack may require that any such audit of a licensee or sublicensee be conducted as part of an audit by Merrimack of such licensee or sublicensee, if Merrimack is conducting an audit of the same licensee or sublicensee for the same reporting period(s).

4.14 Foreign Exchange. If any currency conversion shall be required in connection with the calculation of amounts payable hereunder, such conversion shall be made using the average of the exchange rates for the purchase and sale of U.S. dollars, as reported by Bank of America in New York, New York (or its successor entity) on the last business day of the calendar quarter to which such payment pertains. With any payment in relation to which a currency conversion is performed to calculate the amount of payment due, Merrimack shall provide to Adimab a true, accurate and complete copy of the exchange rates used in the calculation.

4.15 Non-refundable, non-creditable payments. Each payment that is required under this Agreement is non-refundable and non-creditable.

4.16 Late Payments. Any amount owed by Merrimack to Adimab under this Agreement that is not paid within the applicable time period set forth herein will accrue interest at the rate of [**] percent ([**]%) above the then-applicable short-term three-month London Interbank Offered Rate (LIBOR) as quoted in the Wall Street Journal (or if it no longer exists, a similarly authoritative source) calculated on a daily basis, or, if lower, the highest rate permitted under applicable law.

Third Party Patents. [**] or [**] are [**] in [**] a [**] or the [**] to [**] and [**] of the [**] to [**] to [**] and [**] to [**] to the [**]:

[**]

on a[**] of [**] and [**] the [**] of the [**] to [**] to [**] are [**] to [**] are [**] be [**] and [**]

and [**] as to [**] to [**] of the [**] to the [**] that [**] of the [**], and [**]may [**] of the [**] are [**] of [**] with [**] and [**] of [**] and [**].

ARTICLE 5

INTELLECTUAL PROPERTY.

5.1 Program Patent and Program Know-How Ownership.

(a) Adimab shall solely own, regardless of inventorship, all Program Patents directed to Platform/Core Technology Improvements.

(b) Adimab shall solely own, regardless of inventorship, all Program Antibody Patents (including Adimab Program Antibody Patents and Merrimack Program Antibody Patents), until and unless Merrimack exercises the Option, at which time the assignment to Merrimack of the Licensed Antibody Program Patents as set forth in Section 3.3(a) shall be effective and [**].

(c) All Program Patents other than those directed to Platform/Core Technology Inventions and Program Antibody Patents shall be owned based on inventorship determined in accordance with United States patent law.

(d) Program Know-How that constitutes Platform/Core Technology Improvements shall be owned by Adimab regardless of by which Party developed the Know-How.

(e) All other Program Know-How shall be owned by the Party that created it.

5.2 Disclosure. During the term of the Agreement, each Party shall promptly disclose to the other Party the making, conception or reduction to practice of any Program Inventions that would be Covered by Program Antibody Patents, and, additionally in Merrimack's case, of those that are Platform/Core Technology Improvements. Such disclosure shall occur as soon as possible, but in any case within [**] days after the Party determines such Program Inventions have been invented. (To avoid doubt, this Section shall not be read to require Adimab to disclose Program Inventions constituting Platform/Core Technology Improvements to Merrimack.)

5.3 Patent Prosecution and Maintenance.

(a) Core Technology. To avoid doubt, Adimab shall have, and retains, the sole right to file, prosecute, maintain, defend and enforce all Program Patents directed to Platform/Core Technology Improvements and all Platform/Background Patents, all at its own expense, and without any right of Merrimack to disclosure, input or commentary.

(b) Program Antibody Patents, Other than Licensed Antibody Program Patents After Option Exercise. Except as otherwise provided in this Section 5.3(b) as regards Program Antibody Patents during the Research Term and the Evaluation Term and in Sections 5.3(c), 5.4 and 5.7 as regards Licensed Antibody Program Patents after Option exercise, Adimab shall have the sole right to file, prosecute, maintain, defend and enforce all Program Antibody Patents, all at its own expense.

For the initial provisional patent filing(s) of each Program Antibody Patent, during the Research Term and the Evaluation Term, the Parties shall cooperate in preparing these provisional filings (including providing data and information and the like; but Adimab is not required to disclose the details of the Platform/Core Technology). [**] and [**] and [**], at [**] or [**] to [**] in [**]. Both Parties will have the opportunity to review and comment upon such provisional patent applications prior to their filing.

[**] be [**] to [**] of the [**] of [**] to [**] the [**] on [**] to [**] with [**] to [**].

(c) Licensed Antibody Program Patents After Option Exercise. If Merrimack exercises the Option then:

(i) [**].

(ii) Merrimack shall thereafter have the right and shall use Commercially Reasonable Efforts to perform the preparation, prosecution and maintenance of the Licensed Antibody Program Patents with the goal of obtaining issued valid Coverage for the Licensed Antibodies through the Licensed Antibody Program Patents. This shall be at Merrimack's expense (including the costs of all foreign and PCT filings). Adimab will have the opportunity to review and comment upon drafts of any and all patent applications and substantive correspondence related to preparing, prosecuting and maintaining such Licensed Antibody Program Patents. Merrimack shall [**] to the [**] of [**] on the [**] has [**] and [**] has [**] and [**] the [**] or [**] has [**] or [**], to [**] of a [**] with the [**] be [**].

(iii) Merrimack shall seek and maintain all Licensed Antibody Program Patents in the United States, the Major EU Countries [**].

(iv) Notwithstanding anything express or implied in this Agreement, Merrimack's rights and obligations to file, prosecute and maintain Program Antibody Patents are limited to the Licensed Antibody Program Patents. Merrimack shall not be entitled to (and shall not) prosecute, file, maintain or enforce Program Antibody Patents that disclose the sequences of Program Antibodies disclosed by Adimab to Merrimack pursuant to the Research Program other than Licensed Antibody Program Patents that disclose the sequences of Licensed Antibodies. Merrimack shall not be entitled to, and shall not, in the Licensed Antibody Program Patents, disclose or claim the sequence of any Program Antibody that is not a Licensed Antibody (or the corresponding nucleic acid sequence). [**] to [**] on [**] the [**] on [**] that [**] in [**] of [**] is [**], and [**], is [**].

(c) Serendipitous Program Inventions.

(i) Adimab Program Inventions. As between the Parties, Adimab shall have the sole right, at its sole expense and in its sole discretion, to prepare, file, prosecute, enforce and maintain (including conducting or participating in interferences and oppositions) all Patents directed to Adimab Program Inventions but not falling within the Program Antibody Patents or the Platform/Core Technology Improvements (which, to avoid doubt, are both addressed above).

(ii) Merrimack Program Inventions. Merrimack shall have the sole right, at its sole expense and in its sole discretion, to prepare, file, prosecute, enforce and maintain (including conducting or participating in interferences and oppositions) all Program Patents on Merrimack Program Inventions, other than Program Antibody Patents and Platform/Core Technology Improvements (which, to avoid doubt, are both addressed above).

(iii) Serendipitous Joint Program Inventions. The Parties shall mutually agree which of them shall be responsible for either using its in-house patent attorneys or through mutually agreed upon outside counsel to prepare, file, prosecute, enforce and maintain

Program Patents on Joint Serendipitous Inventions, and how the costs of such activities will be shared.

5.4 Patent Term Restoration. The Parties shall cooperate with each other, including by providing necessary information and assistance as the other Party may reasonably request, to obtain patent term restoration or supplemental protection certificates or their equivalents in any country where applicable to Licensed Antibody Program Patents. After Option exercise, if elections with respect to obtaining such patent term restoration are to be made with respect to Licensed Antibody Program Patents and the Parties do not agree, [**] where it would have been possible to do so, Merrimack shall pay to Adimab royalties on Net Sales in the applicable country for the Royalty Term that would have resulted if Merrimack had elected to extend the Licensed Antibody Program Patent.

5.5 Cooperation of the Parties. At the reasonable request of the responsible (as provided for in this Article 5) Party, the other Party agrees to cooperate fully in the preparation, filing, prosecution, enforcement and maintenance of any Program Patents under this Agreement. Such cooperation includes executing all papers and instruments (or causing its personnel to do so) reasonably useful to enable the other Party to apply for and to prosecute patent applications in any country; and promptly informing the other Party of any matters coming to such Party's attention that may affect the preparation, filing, prosecution, enforcement or maintenance of any such Patents.

5.6 Implementation.

(a) Assignments. Each Party hereby assigns to the other Party Program Inventions, associated Patents, and Program Know-How as necessary to achieve ownership as provided in Sections 5.1 and 3.3(a). Each assigning Party shall execute and deliver all documents and instruments reasonably requested by the other Party to evidence or record such assignment or to file for, perfect or enforce the assigned rights. Each assigning Party hereby appoints the other Party as attorney-in-fact

solely to execute and deliver the foregoing documents and instruments if such other Party after making reasonable inquiry does not obtain them from the assigning Party. Each Party (and its Affiliates) shall perform its activities under this Agreement through personnel who have made a similar assignment and appointment to and of such Party or its Affiliate. Each assigning Party shall make its relevant personnel (and their assignments and signatures on such documents and instruments) reasonably available to the other Party for assistance in accordance with this Article at no charge.

(b) Joint Ownership Implementation. As regards Joint Serendipitous Inventions and the Program Patents to the extent claiming them, either Party is entitled to practice and license them without consent of and without a duty of accounting to the other Party. Each Party hereby grants all permissions, consents and waivers with respect to, and all licenses under, the Joint Serendipitous Inventions and the Program Patents claiming them as necessary to achieve throughout the world the nature of joint ownership rights of the foregoing as described in Section 5.1 and the foregoing sentence. To avoid doubt, this Section does not imply any permission, consent or waiver with respect to, or license under, any Patent or item of Know-How other than the Joint Serendipitous Inventions and the Program Patents to the extent claiming them.

5.7 Infringement of Patents by Third Parties.

(a) Notification. Each Party shall promptly notify the other Party in writing if the notifying Party reasonably believes that any Licensed Antibody Program Patent is being or has been infringed or misappropriated by a Third Party (such infringement, together with any that may be imminently threatened to occur by any potential generic version of a Product arising under the implementing procedures of 35 U.S.C. 271(e)(2) or ex-U.S. equivalent, "**Infringement**", and "**Infringe**" shall be interpreted accordingly).

(b) License-Competitive Infringement of Licensed Antibody Program Patents.

(i) First Right. Merrimack shall have the first right, but not the obligation, to enforce the Licensed Antibody Program Patents against Infringement through [**] ("**License-Competitive Infringement**"). Merrimack shall reasonably consider Adimab's comments on any such enforcement activities. Except as provided in subsection (d) or in Section 5.8, Merrimack shall bear all costs and expenses for enforcement under this Section 5.7(b)(i) (including the costs of Adimab's cooperation as required under subsection (e)).

(ii) Back-up Right for License-Competitive Infringement of Licensed Patents. If Merrimack does not bring action to prevent or abate License-Competitive Infringement within [**] after notification thereof to or by Merrimack pursuant to Section 5.7(a), then Adimab shall have the right, but not the obligation, to bring, at its own expense, an appropriate action against any person or entity engaged in such License-Competitive Infringement directly or contributorily. [**] and [**] to [**], as [**] and [**].

(iii) Proceeds. Recoveries on suits under this Section 5.7(b) will be handled as provided in Section 5.8.

(c) Non-License-Competitive Infringement. With respect to any Infringement of Program Antibody Patents anywhere in the world other than License-Competitive Infringement, Adimab shall have the exclusive right (but not the obligation) to prevent or abate such Infringement, and as between the Parties shall bear all related expenses and retain all related recoveries. In that case, Adimab shall notify Merrimack of such Infringement and keep Merrimack reasonably informed with respect to the disposition of any action taken in connection with them.

(d) Participation of the other Party with Respect to Infringement Suits. If a Party brings an action against infringement under this Section 5.7, the other Party shall be entitled to separate representation in such matter by counsel of its own choice and at its own expense, and such Party shall reasonably cooperate with the Party bringing the action, including by joining such suit as a party plaintiff if necessary to obtain standing for such action (all at the expense on a pass-through basis of the enforcing Party).

(e) Settlement. Adimab shall not settle a claim brought under this Section 5.7 involving Program Antibody Patents in a manner that would limit or restrict the ability of Merrimack to sell Products for use in the Field, or impair the exclusivity of Merrimack's license rights under this Agreement, or narrow the Licensed Antibody Program Patents or shorten their

life, in each case without the prior written consent of Merrimack (which consent shall not be unreasonably withheld, conditioned or delayed). Merrimack shall not settle a suit under this Section 5.7 in a way that would narrow the Licensed Antibody Program Patents or shorten their life, in each case without the prior written consent of Adimab (which consent shall not be unreasonably withheld, conditioned or delayed).

5.8 Allocation of Proceeds. If monetary damages are recovered from any Third Party in an action brought by a Party under Section 5.7(b), such recovery shall be allocated first to the reimbursement of any costs and expenses incurred by the Party controlling such litigation (including, for this purpose, a reasonable allocation of expenses of internal counsel or other personnel acting in such capacity (i.e., coordination of litigation matters and the like)), then to the costs of the non-controlling Party incurred by the non-controlling Party to cooperate as requested by the controlling Party (to the extent not previously reimbursed and to avoid doubt including costs of the non-controlling Party's independent counsel), and any remaining amounts shall be split as follows: [**].

5.9 Patent Challenges. [**] the [**] or [**] or [**] to [**] of [**] to [**] the [**] and [**] to [**] the [**] and [**] the [**] and [**] the [**] the [**] and/or [**] in [**] of the [**] or [**] and [**] or [**] are [**] the [**] of the [**] in [**].

ARTICLE 6

CONFIDENTIALITY; PUBLICITY.

6.1 General. Any and all information disclosed or submitted in writing or in other tangible form — or if disclosed orally, that is indicated to be confidential at the time of disclosure and confirmed in writing as such within [**] days after initial disclosure — to one Party by the other Party under this Agreement or that certain Confidentiality Agreement between them dated June 12, 2009 is the "**Confidential Information**" of the disclosing Party. In addition, information embodied in Adimab Materials is Adimab's Confidential Information, and information embodied in the Merrimack Materials is Merrimack's Confidential Information. Each Party shall receive and maintain the other Party's Confidential Information in strict confidence. Neither Party shall disclose any Confidential Information of the other Party to any Third Party. Neither Party shall use the Confidential Information of the other Party for any purpose other than as reasonably required to perform its obligations or exercise its rights hereunder. Notwithstanding the foregoing, each Party may disclose the other Party's Confidential Information to the receiving Party's employees and contractors

requiring access thereto for the purposes of this Agreement and, in the case of Merrimack, to Merrimack's licensees, sublicensees and other Third Parties as reasonably required for Merrimack to exercise its rights with respect to the research, development, manufacture and commercialization of Program Antibodies and Products hereunder, *provided, however*, that prior to making any such disclosures, each such Third Party shall be bound by written agreement or other legally binding obligations to maintain Confidential Information in confidence and not to use such information for any purpose other than in accordance with the terms and conditions of this Agreement, *provided further* that such agreements must include confidentiality and non-use provisions at least as stringent as those in this Agreement, and *provided further, however,* that in the case of disclosures that are reasonably required to be made to Regulatory Authorities or patent offices from which obtaining such confidentiality undertakings is not practicable, no such undertakings shall be required. [**] the [**], to the[**] is [**] in a [**] ("**Specific Antibody Information**"), as [**] for [**] and [**]. Each Party agrees to take reasonable steps to ensure that the other Party's Confidential Information shall be maintained in confidence including such steps as it takes to prevent the disclosure of its own proprietary and confidential information of like character. Each Party shall take all steps necessary to ensure that its Affiliates and employees and contractors shall comply with the terms and conditions of this Agreement. The foregoing obligations of confidentiality and non-use shall survive, and remain in effect for a period of [**] years from, the termination or expiration of this Agreement in accordance with Article 9.

6.2 Exclusions from Nondisclosure Obligation. The nondisclosure and nonuse obligations in Section 6.1 shall not apply to any Confidential Information to the extent that the receiving Party can establish by competent written proof that it:

(a) at the time of disclosure is publicly known;

(b) after disclosure, becomes publicly known by publication or otherwise, except by breach of this Agreement by such Party;

(c) was in such Party's possession in documentary form at the time of disclosure hereunder;

(d) is received by such Party from a Third Party who has the lawful right to disclose the Confidential Information and who shall not have obtained the Confidential Information either directly or indirectly from the disclosing Party; or

(e) is independently developed by such Party (i.e., without reference to Confidential Information of the disclosing Party).

6.3 Required Disclosures. If either Party is required, pursuant to a governmental law, regulation or order, to disclose any Confidential Information of the other Party, the receiving Party, if practicable (i) shall give advance written notice to the disclosing Party, (ii) shall make a reasonable effort to cooperate with the other Party's efforts to obtain a protective order requiring that the Confidential Information so disclosed be used only for the purposes for which the law or regulation required and (iii) shall disclose the Confidential Information solely to the extent required by the law or regulation; provided that, this Section 6.3 shall not permit any disclosure or use of such Confidential Information beyond the required disclosure (and shall not permit use of the disclosed information, if disclosure remains confidential from the general public, as may be the case of information disclosed pursuant to a protective order).

6.4 Terms of Agreement. The terms of this Agreement are the Confidential Information of both Parties. However, each Party shall be entitled to disclose the terms of this Agreement under legally binding obligations of confidence and limited use to: legal, financial and investment banking advisors; and potential and actual investors, lenders, acquirors and licensees or sublicensees and counsel for the foregoing. In addition, if legally required, a copy of this Agreement may be filed by either Party with the SEC (or relevant ex-U.S. counterpart). In that case, the filing Party will if requested by the other Party diligently seek confidential treatment for terms of this Agreement for which confidential treatment is reasonably available, and shall provide the non-filing Party reasonable advance notice of the terms proposed for redactions and a reasonable opportunity to request that the filing Party make additional redactions to the extent confidential treatment is reasonably available under the law. Such reasonable opportunity shall include at least [**] weeks to comment in the case of the initial public filing of this Agreement. [**].

6.5 Return of Confidential Information. Promptly after the termination or expiration of this Agreement for any reason, each Party shall return to the other Party all tangible manifestations of such other Party's Confidential Information at that time in the possession of the receiving Party.

6.6 Publicity. The Parties have agreed there will not be a press release to announce the execution of this Agreement. Other than a mutually agreed press release (should the Parties ever agree to one), and other than repeating information in a mutually agreed press release, neither Party will generate or allow any publicity regarding this Agreement or the transaction contemplated hereunder. Notwithstanding the foregoing, each Party may make such public announcements as may be required in order to comply with applicable securities laws and

regulations, but in this case shall if practicable first confer and seek approval from (i.e., attempt to reach consensus with) the other Party as to what will be said in the disclosure, allowing a reasonable time prior to the disclosure for the other Party to review and for the attempt to reach consensus as to the text of any such required disclosure in advance. In addition, it is understood and agreed between the Parties that for its marketing purposes Adimab may without disclosing that Merrimack is Adimab's counterparty under this Agreement or the Target, disclose that this Agreement has been executed, and as success events under this Agreement occur (Research Program and other milestones under this Agreement).

6.7 Certain Data.

(a) Notwithstanding this Article 6, without disclosing Merrimack's identity or the identity of the Program Antibody, other antibodies previously tested by or for Merrimack or the Target (although the class of protein of the Target may be disclosed), Adimab shall be entitled to disclose the following Program Know-How: (i) [**].

(b) In addition, Merrimack [**] to [**], and [**] to [**] or [**] as [**] by [**] to [**] and [**]. Such data [**] in [**] to [**] by [**]. Any such data that [**] for [**] as [**] will be responsible for [**] of the [**] to [**] as [**] to the [**] or the [**], but is [**] to [**] for [**] and [**]. To be clear, if there is [**] for [**] no data [**] the [**] for data [**] be disclosed pursuant to Section 6.7(a) above. Further, for the sake of clarity, this Section 6.7 does not [**] to [**] the data for [**] described in Section 6.7(a) or 6.7(b) to [**], and [**] to the extent that it is [**].

6.8 Publications. Merrimack and its Affiliates, licensees and sublicensees shall have the right to publish or present scientific or technical data, results or other information with respect to any Licensed Antibody or Product. In the event that Merrimack or any of its Affiliates, licensees or sublicensees desires to make any such publication or presentation that would disclose non-public information about a Licensed Antibody or Product, Merrimack shall notify Adimab of such planned publication or presentation at least [**] days (or at least [**] days in the case of abstracts or oral presentations) prior to submission for publication for review by Adimab. If Adimab notifies Merrimack that such publication or presentation, in Adimab's reasonable judgment, contains an invention for which Adimab desires to obtain patent protection, Merrimack shall further delay such publication or presentation for a period reasonably sufficient to permit the timely preparation and filing by Adimab of a patent application(s) on any invention disclosed in such publication or presentation (but no more than [**] days from the date of Adimab's notice thereof). To avoid doubt, this Section 6.8 shall not be read to permit the disclosure of any Confidential Information of Adimab other than Specific Antibody Information.

ARTICLE 7

REPRESENTATIONS, WARRANTIES AND COVENANTS.

7.1 **Mutual**. Each of Adimab and Merrimack hereby represents and warrants to the other of them that the representing and warranting Party is duly organized in its jurisdiction of incorporation; that the representing and warranting Party has the full power and authority to enter

into this Agreement; that this Agreement is binding upon the representing and warranting Party; and that this Agreement has been duly authorized by all requisite corporate action within the representing and warranting Party.

7.2 **By Adimab**. Adimab hereby represents and warrants to Merrimack that:

[**]

7.3 **Adimab Covenants**. Adimab hereby covenants to Merrimack that:

(a) Adimab shall not during the term of this Agreement enter into any agreement or arrangement with a Third Party that would preclude or conflict with the grant to Merrimack of the rights that Adimab grants under this Agreement;

(b) [**] the [**] the [**] of this [**] the [**], and [**] of this [**] and [**] to [**] of [**] by [**] and [**] to the [**] to [**] to the [**] of a [**] the [**] with [**] by the [**] to [**] and [**] the [**] with the [**] and [**] to [**] to a [**] that [**] and [**] of the [**].

(c) [**] and [**] that [**] or the [**], and the [**] of the [**] as [**] and [**].

7.4 **Merrimack Covenant**. [**] to [**] and [**] of [**] and the [**] as [**] in the [**] or [**] and [**], and [**] and [**] for the [**] in the [**] and [**] and [**] with [**], and the [**].

7.5 **DISCLAIMER OF WARRANTIES**. OTHER THAN THE EXPRESS WARRANTIES AND COVENANTS OF SECTIONS 7.1, 7.2, 7.3 AND 7.4, EACH PARTY DISCLAIMS ALL WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR THAT ANY PRODUCTS DEVELOPED UNDER THIS AGREEMENT ARE FREE FROM THE RIGHTFUL CLAIM OF ANY THIRD PARTY, BY WAY OF INFRINGEMENT OR THE LIKE OR THAT ANY PROGRAM PATENTS WILL ISSUE OR BE VALID OR ENFORCEABLE.

ARTICLE 8

INDEMNIFICATION

8.1 **By Adimab**. Adimab hereby agrees to indemnify, defend and hold harmless (collectively, "**Indemnify**") Merrimack, its Affiliates and its and their directors, officers, agents and employees (collectively, "**Merrimack Indemnitees**") from and against any and all liability, loss, damage or expense (including without limitation reasonable attorneys fees) (collectively, "**Losses**") they may suffer as the result of Third-Party claims, demands and actions (collectively, "**Third-Party Claims**") arising out of or relating to any breach of a representation, warranty or covenant made by Adimab under Article 7 or other breach by Adimab of its obligations under this Agreement, except to the extent of any Losses (i) [**].

8.2 **By Merrimack**. Merrimack hereby agrees to Indemnify Adimab, its Affiliates and its and their directors, officers, agents and employees (collectively, "**Adimab Indemnitees**") from and against any and all Losses they may suffer as the result of Third-Party Claims arising out of or relating to (a) any breach of a representation, warranty or covenant made by Merrimack under Article 7, (b) Merrimack's research, testing, development, manufacture, use, sale, distribution, licensing and/or commercialization of Program Antibodies and/or Products (or Program-Benefited Antibodies or products incorporating them), or (c) Target-related intellectual property (including Patents directed to antibodies based on their interaction with the Target) and Target-related contractual obligations of Merrimack and its Affiliates, except in each case to the extent of any Losses (i) [**].

8.3 **Procedures**. Each of the foregoing agreements to Indemnify is conditioned on the relevant Adimab Indemnitees or Merrimack Indemnitees (i) providing prompt written notice of any Third-Party Claim giving rise to an indemnification obligation hereunder, (ii) permitting the indemnifying Party to assume full responsibility to investigate, prepare for and defend against any such Third-Party Claim, (iii) providing reasonable assistance in the defense of such claim at the indemnifying Party's reasonable expense, and (iv) not compromising or settling such Third-Party Claim without the indemnifying Party's advance written consent. If the Parties cannot agree as to the application of the foregoing Sections 8.1 and 8.2, each may conduct separate defenses of the Third-Party Claim, and each Party reserves the right to claim indemnity from the other in accordance with this Article 8 upon the resolution of the underlying Third-Party Claim.

8.4 **Limitation of Liability**. EXCEPT TO THE EXTENT SUCH PARTY MAY BE REQUIRED TO INDEMNIFY THE OTHER PARTY UNDER THIS ARTICLE 8 (INDEMNIFICATION) OR AS REGARDS A BREACH OF A PARTY'S RESPONSIBILITIES PURSUANT TO ARTICLE 6 (CONFIDENTIALITY), NEITHER PARTY NOR ITS RESPECTIVE AFFILIATES SHALL BE LIABLE FOR ANY SPECIAL, INDIRECT, EXEMPLARY, CONSEQUENTIAL OR PUNITIVE DAMAGES HEREUNDER, WHETHER IN CONTRACT, WARRANTY, TORT, STRICT LIABILITY OR OTHERWISE.

ARTICLE 9

TERM.

9.1 **Term**. The term of this Agreement shall commence on the Effective Date and shall expire upon (a) the expiration of the Option (if it expires unexercised), or (b) if later, on a country-by-country basis on the expiration of the last Royalty Term for a Product in the particular country (and payment of any required payments to Adimab in such country), in each case, unless earlier terminated by a Party as set forth below in this Article 9.

9.2 **Material Breach**. Either Party may terminate this Agreement for the material breach of this Agreement by the other Party, if such breach remains uncured [**] days following notice from the non-breaching Party to the breaching Party specifying such breach; provided that, with respect to any such material breach of Merrimack's diligence obligations pursuant to Section 3.4 relating to one or more (but not all) of the Major Regions, if such breach remains uncured [**] days following notice from the non-breaching Party to the breaching Party

specifying such breach, this Agreement shall not terminate, but Merrimack's licenses hereunder shall terminate on a Major Region-by-Major Region basis (and as to the rest of the world) as set forth in Section 3.4; provided that, if Merrimack's licenses hereunder terminate in all three (3) Major Regions pursuant to Section 3.4, this Agreement shall also terminate.

Notwithstanding anything to the contrary in this Section 9.2 above, if the asserted material breach is a payment breach, [**], then this Agreement shall terminate only upon a final determination by a competent court in accordance with Section 10.2 that such a material breach has occurred; and provided that, in the case of a payment breach that is so determined by a competent court to be a basis for termination, this Agreement shall not terminate if, within [**] days after such final determination, Merrimack pays Adimab all amounts held to be owed to Adimab.

9.3 Elective Termination. Merrimack may terminate this Agreement at any time on ninety (90) days prior written notice.

9.4 Commitments Regarding Program-Benefited Antibodies. This Agreement gives Merrimack the right to modify the Licensed Antibodies, by including modified versions of them and derivatives of them that bind the same epitope(s) in the definition of "Product" provided above. Each (a) [**] of a [**] and [**] or a [**], or by [**] or a [**] and that [**] and [**] or [**] as a [**] (nor license, assist or enable a Third Party to do the same).

9.5 Survival in All Cases. Termination of this Agreement shall be without prejudice to or limitation on any other remedies available to nor any accrued obligations of either Party. In addition, Sections 3.3(b) (to avoid doubt, with the perpetual license that the last clause of such Section provides only applying after an expiration of the applicable Royalty Term; no license granted to Merrimack hereunder shall convert to such a perpetual license after any early termination of this Agreement), 4.12, 5.1, 7.2, 9.4, 9.5, and 9.6 and Articles 6, 8 and 10 shall survive any expiration or termination of this Agreement.

9.6 Additional Effects of Termination for Merrimack Fault or Merrimack Elective Termination. If Adimab terminates this Agreement for Merrimack's uncured material breach, or Merrimack terminates this Agreement at-will under Section 9.3, then Merrimack and its Affiliates hereby assign — effective upon such termination — to Adimab all right, title and interest in and to the Licensed Antibody Program Patents, and Merrimack shall either, at Adimab's option, return to Adimab or destroy all Adimab Materials.

ARTICLE 10

MISCELLANEOUS.

10.1 Independent Contractors. The Parties shall perform their obligations under this Agreement as independent contractors. Nothing contained in this Agreement shall be construed to be inconsistent with such relationship or status. This Agreement and the Parties' relationship in connection with it shall not constitute, create or in any way be interpreted as a joint venture, fiduciary relationship, partnership or agency of any kind.

10.2 Dispute Resolution. Either Party may refer any dispute in connection with this Agreement to senior executives of the Parties (for Adimab, its CEO or his designee and for Merrimack, a senior vice president or officer of greater seniority) for good-faith discussions over a period of not less than [**] days (the "**Senior Executives Discussions**"). Each Party will make its executives reasonably available for such discussions. If the Parties are unable to resolve the dispute through the Senior Executives Discussions within such [**] days, then either Party may proceed to seek a judicial resolution of the matter.

10.3 Governing Law. This Agreement shall be governed by and interpreted in accordance with the laws of the State of New York without regard to its conflict of laws principles.

10.4 Entire Agreement. This Agreement (including its Exhibits) sets forth all the covenants, promises, agreements, warranties, representations, conditions and understandings between the Parties with respect to the subject matter hereof and supersedes and terminates all prior agreements and understandings between the Parties with respect to such subject matter (including that certain Confidentiality Agreement between the Parties dated June 12, 2009). No subsequent alteration, amendment, change or addition to this Agreement shall be binding upon the Parties unless reduced to writing and signed by the respective authorized officers of the Parties.

10.5 Assignment. Neither Party may assign in whole or in part this Agreement without the advance written consent of the other Party, except as set forth in the following sentence. Either Party may assign this Agreement in its entirety to the successor to all or substantially all of its business or assets to which this Agreement relates or in connection with its merger with, or the sale of all or substantially all of its assets to which this Agreement relates to, another entity. In addition, Adimab may assign this Agreement, or any of its rights under this Agreement, in connection with the sale of, monetization of, transfer of, or obtaining financing on the basis of the payments due to Adimab under this Agreement or debt or project financing in connection with this Agreement, it being understood and agreed that such assignment shall not undo the license or assignment to Merrimack in Section 3.3 in the case that Merrimack exercises or has exercised its Option. Notwithstanding the foregoing, in the case of any permitted assignment (other than a partial assignment of this Agreement by Adimab under the foregoing sentence), the assignment shall only be made if the assignee agrees in writing to be bound by all terms and conditions applicable to the assigning Party, and (in all cases, including in the case of a partial assignment of this Agreement by Adimab under the foregoing sentence) the assigning Party shall remain primarily liable to the other Party for the performance of all of the assigning Party's obligations hereunder. Subject to the foregoing, this Agreement shall be binding upon and shall inure to the benefit of the Parties and their respective successors and permitted assigns. Any assignment of this Agreement not made in accordance with this Agreement is prohibited hereunder and shall be null and void.

10.6 Severability. If one or more of the provisions in this Agreement are deemed unenforceable by law, then such provision shall be deemed stricken from this Agreement and the remaining provisions shall continue in full force and effect.

10.7 Force Majeure. Both Parties shall be excused from the performance of their obligations under this Agreement to the extent that such performance is prevented by a Force Majeure (defined below) and the nonperforming Party promptly provides notice of the prevention to the other Party. Such excuse shall be continued so long as the condition constituting Force Majeure continues and the nonperforming Party takes reasonable efforts to remove the condition, but no longer than six (6) months. For purposes of this Agreement, "**Force Majeure**" means conditions beyond a Party's reasonable control or ability to plan for, including acts of God, war, terrorism, civil commotion, labor strike or lock-out; epidemic; failure or default of public utilities or common carriers; and destruction of production facilities or materials

by fire, earthquake, storm or like catastrophe; *provided, however*, the payment of invoices due and owing under this Agreement shall not be excused by reason of a Force Majeure affecting the payor.

10.8 Notices. Any notice required or permitted to be given under this Agreement shall be in writing, shall specifically refer to this Agreement and shall be deemed to have been sufficiently given for all purposes if mailed by first class certified or registered mail, postage prepaid, delivered by express delivery service or personally delivered. Unless otherwise specified in writing, the mailing addresses of the Parties shall be as described below.

If to Adimab:

Adimab, Inc.
16 Cavendish Court
Lebanon, NH 03766
(603) 727-7107
Attention: CEO
Facsimile: [**]

with a required copy to each of :

Attention: Head, Business Development at the same address and fax.

and

Morrison & Foerster LLP
425 Market Street
San Francisco, CA 94105
Attention: Laura O. Spiegelman
Facsimile: [**]

In the case of Merrimack:

Merrimack Pharmaceuticals, Inc.
One Kendall Square, Suite B7201
Cambridge, MA 02139
Attention: SVP, Business Development
Facsimile: [**]

with a required copy to:

WilmerHale
60 State Street
Boston, MA 02109
Attention: Steven D. Barrett
Facsimile: (617) 526-5000

10.9 Construction. This Agreement has been prepared jointly and shall not be strictly construed against either Party. Ambiguities, if any, in this Agreement shall not be construed against any Party, irrespective of which Party may be deemed to have authored the ambiguous provision.

10.10 Headings. The headings for each article and section in this Agreement have been inserted for convenience of reference only and are not intended to limit or expand on, nor to be used to interpret, the meaning of the language contained in the particular article or section.

10.11 No Waiver. Any delay in enforcing a Party's rights under this Agreement or any waiver as to a particular default or other matter shall not constitute a waiver of such Party's rights to the subsequent enforcement of its rights under this Agreement, excepting only as to an express written and signed waiver as to a particular matter for a particular period of time executed by an authorized officer of the waiving Party.

10.12 Performance by Affiliates. A Party may perform some or all of its obligations under this Agreement through Affiliate(s) or may exercise some or all of its rights under this Agreement through Affiliates. However, each Party shall remain responsible and be guarantor of the performance by its Affiliates and shall cause its Affiliates to comply with the provisions of this Agreement in connection with such performance. In particular and without limitation, all Affiliates of a Party that receive Confidential Information of the other Party pursuant to this Agreement shall be governed and bound by all obligations set forth in Article 6, and shall (to avoid doubt) be subject to the intellectual property license, assignment and other intellectual property provisions of Articles 3 and 5 as if they were the original Party to this Agreement (and be deemed included in the actual Party to this Agreement for purposes of all intellectual property-related definitions). A Party and its Affiliates shall be jointly and severally liable for their performance under this Agreement.

10.13 Counterparts. This Agreement may be executed in one or more identical counterparts, each of which shall be deemed to be an original, and which collectively shall be deemed to be one and the same instrument. In addition, signatures may be exchanged by facsimile or PDF.

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IN WITNESS WHEREOF, the Parties have by duly authorized persons executed this Agreement as of the date first written above.

MERRIMACK PHARMACEUTICALS, INC.: **ADIMAB, INC.:**

By:	/s/ Robert J. Mulroy	By:	/s/ Errik B. Anderson
Title:	President and CEO	Title:	COO
Date:	Nov. 16, 2009	Date:	Nov. 16, 2009

EXHIBIT A

RESEARCH PLAN

See following pages.

Adimab-Merrimack Collaboration Work Plan

[**]

Summary of Proposed Work Plan

[**]

Confidential materials omitted and filed separately with the Securities and Exchange Commission pursuant to a request for confidential treatment. A total of three pages were omitted.

Work Plan

Confidential materials omitted and filed separately with the Securities and Exchange Commission pursuant to a request for confidential treatment. A total of four pages were omitted.

[**]

FIRST AMENDMENT

THIS FIRST AMENDMENT (the "**Amendment**") is made as of 4/27, 2010 (the "**Amendment Effective Date**"), by and between **ADIMAB, INC**., a Delaware corporation having an address at 16 Cavendish Court, Lebanon, NH 03766 ("**Adimab**") and **MERRIMACK PHARMACEUTICALS, INC.,** a Massachusetts corporation having an address at One Kendall Square, Suite B7201, Cambridge, MA 02139 ("**Merrimack**").

BACKGROUND

1. Adimab and Merrimack are parties to that certain Collaboration Agreement dated November 16, 2009 ("**Collaboration Agreement**").

2. Adimab and Merrimack wish to amend the Collaboration Agreement to expand the Research Plan and make certain related amendments.

AGREEMENT

Adimab and Merrimack hereby agree as follows:

1. Initially capitalized terms used but not defined in this First Amendment shall have the meanings given in the Collaboration Agreement.

2. The Collaboration Agreement is hereby amended to add to the Research Plan of Exhibit A to the Collaboration Agreement, all of the activities set forth in Exhibit A to this Amendment

3. Without limiting Adimab's data disclosure rights under the Collaboration Agreement as originally executed, the Collaboration Agreement is hereby amended such that data generated by Merrimack pertaining to the Research Plan effected by this Amendment ("**Amendment/New Data**") shall be included under and governed by Section 6.7 of the Collaboration Agreement.

4. Except as amended above, the Collaboration Agreement remains unchanged and in full force and effect.

5. Article 10 of the Collaboration Agreement applies to this Amendment as if set forth herein in its entirety.

[remainder of page intentionally blank]

IN WITNESS WHEREOF, the Parties have by duly authorized persons executed this Agreement as of the date first written above.

MERRIMACK PHARMACEUTICALS, INC.: **ADIMAB, INC.:**

By:	/s/ Edward J. Stewart	By:	/s/ Errik B. Anderson
Title:	SVP, Business Development	Title:	COO
Date:	April 27, 2010	Date:	4/27/2010

EXHIBIT A TO FIRST AMENDMENT

ADDITION TO RESEARCH PLAN

Confidential materials omitted and filed separately with the Securities and Exchange Commission pursuant to a request for confidential treatment. A total of two pages were omitted.

[**]

SECOND AMENDMENT

THIS SECOND AMENDMENT (the "**Amendment**") is made as of June 2, 2011 (the "**Amendment Effective Date**"), by and between **ADIMAB, LLC**, a Delaware limited liability company having an address at 16 Cavendish Court, Lebanon, NH 03766 ("**Adimab**") and **MERRIMACK PHARMACEUTICALS, INC.,** a Delaware corporation having an address at One Kendall Square, Suite B7201, Cambridge, MA 02139 ("**Merrimack**").

BACKGROUND

1. Adimab and Merrimack are parties to that certain Collaboration Agreement dated November 16, 2009 and first amended April 27, 2010 ("**Collaboration Agreement**").

2. To avoid any confusion, the original Adimab signatory to the Collaboration Agreement was "Adimab, Inc., a Delaware corporation." Effective December 31, 2010, Adimab, Inc., a Delaware corporation merged into Adimab, LLC, a Delaware limited liability company, such that Adimab, LLC is the current Adimab party to the Collaboration Agreement.

3. Adimab and Merrimack wish to amend the Collaboration Agreement to provide accommodation to Merrimack on the first Therapeutic Development Milestone event under the Collaboration Agreement.

4. Merrimack is the successor to Merrimack Pharmaceuticals, Inc., a Massachusetts corporation.

AGREEMENT

Adimab and Merrimack hereby agree as follows:

1. Initially capitalized terms used but not defined in this Second Amendment shall have the meanings given in the Collaboration Agreement.

2. By way of background, the Research Term under the Collaboration Agreement expired on [**], such that the deadline under Section 4.4(a)(i) as originally written for Merrimack to have the right to pay [**] dollars rather than [**] dollars in respect of Therapeutic Development Milestone event 1 ("[**]") was [**].

3. The language in the cell of the milestone table in Section 4.4(a) that is in the righthand column, in the second row (the row for Therapeutic Development Milestone event 1) that reads "[**] Dollars ($[**]), subject to reduction to [**] Dollars as provided in Section 4.4(a)(i)" is hereby amended to read "[**] Dollars ($[**]) subject to reduction as provided in Section 4.4(a)(i)."

4. Section 4.4(a)(i) of the Collaboration Agreement is hereby deleted and replaced with the following:

"(i) The payment for Therapeutic Development Milestone 1 shall be reduced by X, where X is equal to [**] Dollars ($[**]) minus [**] that such Therapeutic Development Milestone 1 is achieved. A [**] for this purpose shall mean any [**] that is not a [**]. As non-limiting examples:

[**]

For the avoidance of doubt, Merrimack shall not have to pay Adimab more than [**] Dollars ($[**]) in respect of such achievement of Therapeutic Development Milestone 1 under any circumstances.

5. This Amendment is being entered into effective as of the same date as that certain Second Collaboration Agreement between the Parties. The consideration to Adimab, with respect to the accommodations to Merrimack set forth in this Amendment, is contained in that Second Collaboration Agreement.

6. There shall be a press release with respect to the existence of the Collaboration Agreement, and the speed with which antibodies discovered are entered into the clinic. The Parties shall mutually cooperate to mutually agree as to the wording of such an announcement. Notwithstanding the foregoing, public disclosure shall be permitted in language and on a timeline that at a minimum ensures compliance with Securities and Exchange Commission and other regulations. Section 6.6 of the Collaboration shall remain otherwise unchanged and this Section 6 shall not be used to interpret or limit either Party's disclosure rights under Section 6.6 of the Collaboration Agreement.

7. The address for the required copy to Adimab's counsel of written notices under Section 10.8 of the Collaboration Agreement is hereby updated to reflect the following information:

Spiegelman Life Sciences

1459 Eighteenth Street — PMB 309
San Francisco, CA 94107
Attention: Laura O. Spiegelman
fax [**]

8. Except as amended above, the Collaboration Agreement remains unchanged and in full force and effect.

9. Adimab shall be entitled to terminate this Amendment by written notice to Merrimack if Merrimack does not execute and deliver to Adimab, within 2 Business Days after the Amendment Effective Date, the Second Collaboration Agreement for which Adimab is providing its signature alongside Adimab's signature on this Amendment.

10. Article 10 of the Collaboration Agreement applies to this Amendment as if set forth herein in its entirety.

IN WITNESS WHEREOF, the Parties have by duly authorized persons executed this Agreement as of the date first written above.

MERRIMACK PHARMACEUTICALS, INC.:		**ADIMAB, LLC:**	
By:	/s/ William A. Sullivan	By:	/s/ Errik B. Anderson
Title:	CFO	Title:	COO
Date:	6/1/2011	Date:	6/2/11

THIRD AMENDMENT

THIS THIRD AMENDMENT (this "**Amendment**") is made as of October 11, 2011 (the "**Amendment Effective Date**"), by and between **ADIMAB, LLC**, a Delaware limited liability company having an address at 16 Cavendish Court, Lebanon, NH 03766 ("**Adimab**") and **MERRIMACK PHARMACEUTICALS, INC.,** a Delaware corporation having an address at One Kendall Square, Suite B7201, Cambridge, MA 02139 ("**Merrimack**").

BACKGROUND

1. Adimab and Merrimack are parties to that certain Collaboration Agreement dated November 16, 2009 and previously amended April 27, 2010 and June 2, 2011 ("**Collaboration Agreement**").

2. Adimab is the successor to Adimab, Inc., a Delaware corporation.

3. Merrimack is the successor to Merrimack Pharmaceuticals, Inc., a Massachusetts corporation.

4. Merrimack executed Option (as defined in the Collaboration Agreement) on [**].

AMENDMENT

Adimab and Merrimack hereby agree as follows:

1. Initially capitalized terms used but not defined in this Amendment shall have the meanings given in the Collaboration Agreement.

2. The Parties have previously agreed (and hereby ratify such agreement) that, although Merrimack exercised the Option as of [**], Merrimack would have until [**] to specify Licensed Antibodies pursuant to Section 3.2 of the Collaboration Agreement.

3. This Amendment constitutes an amendment to the Collaboration Agreement to extend the date for Merrimack's specification of Licensed Antibodies pursuant to Section 3.2 of the Collaboration Agreement until [**], and to make the amendments set forth below.

4. Section 3.2 of the Collaboration Agreement is hereby amended to [**] the number of Licensed Antibodies that Merrimack is permitted to specify to [**].

5. Attached as Appendix A to this Amendment is a listing of the [**] Licensed Antibodies that Merrimack hereby specifies.

6. Article 10 of the Collaboration Agreement applies to this Amendment as if set forth herein in its entirety.

IN WITNESS WHEREOF, the Parties have by duly authorized persons executed this Amendment as of the date first written above.

MERRIMACK PHARMACEUTICALS, INC.:		**ADIMAB, LLC:**	
By:	/s/ Edward J. Stewart	By:	/s/ Errik B. Anderson
Title:	SVP, Business Development	Title:	COO
Date:	10/11/11	Date:	10/12/2011

APPENDIX A

LICENSED ANTIBODIES

[**]

Exhibit 10.24

Confidential Materials omitted and filed separately with the
Securities and Exchange Commission. Asterisks denote omissions.

AMENDED AND RESTATED
COLLABORATION AGREEMENT

This AMENDED AND RESTATED COLLABORATION AGREEMENT ("Agreement"), effective as of January 24, 2007 (the "Effective Date"), is between **DYAX CORP.**, a Delaware corporation, with offices at 300 Technology Square, Cambridge, Massachusetts 02139, U.S.A. ("Dyax"), and **MERRIMACK PHARMACEUTICALS, INC.**, a Massachusetts corporation with its principal place of business located at One Kendall Square, Building 700, 2nd Floor, Cambridge, MA 02139, U.S.A. ("Merrimack").

WHEREAS, Dyax possesses intellectual property and know-how related to, among other things, the discovery of antibodies having novel binding properties using phage display;

WHEREAS, Merrimack is a biotechnology company focused on developing therapeutics in the fields of autoimmune disease and cancer;

WHEREAS, Dyax and Merrimack previously entered into a Collaboration Agreement, dated effective as of December 6, 2005 (the "Original Agreement"), under which Dyax agreed to perform research using Dyax Libraries (as hereinafter defined) to identify Dyax Antibodies (as hereinafter defined) to targets to be provided by Merrimack so that Merrimack may evaluate the utility of using and use such antibodies as therapeutics and/or diagnostics; and

WHEREAS, Dyax and Merrimack wish to expand the scope of the research activities to be performed by Dyax and amend certain other terms under the Original Agreement; and

WHEREAS, to accomplish the foregoing, the Parties have agreed to amend and restate the Original Agreement as set forth herein.

NOW, THEREFORE, in consideration of the mutual covenants set forth in this Agreement, the Parties hereby agree that, from and after the Effective Date hereof, the Original Agreement is hereby amended and restated as follows:

ARTICLE I
DEFINITIONS

1.1 "Affiliate" means, with respect to either Party, a corporation or other legal entity that controls, is controlled by, or is under common control with such Party. For purposes of this definition, "control" means the ownership, directly or indirectly, of more than fifty percent (50%) of the outstanding equity securities of a corporation which are entitled to vote in the election of directors or a more than fifty percent (50%) interest in the net assets or profits of an entity which is not a corporation.

1.2 "Antibody" means a molecule or a gene encoding such a molecule comprising or containing one or more immunoglobulin variable domains or parts of such domains or any existing or future fragments, variants, modifications or derivatives thereof.

1.3 "CAT Agreement" means that certain Amendment Agreement dated January 3, 2003 by and between Cambridge Antibody Technology Limited ("CAT") and Dyax, as amended

by the Second Amendment Agreement between Dyax and CAT dated September 18, 2003. Redacted copies of these agreements were provided to Merrimack prior to the Effective Date.

1.4 "CAT Gatekeeping Procedure" means the procedure set out in Appendix B hereto which CAT shall carry out in respect of a Nominated Target prior to the grant of the CAT Product License.

1.5 "CAT Patent Rights" means the patents and patent applications listed in Appendix C hereto and any patents issuing from such patent applications, together with any divisionals, registrations, confirmations, reissues, extensions, renewals, continuations, continuations-in-part, revalidations, additions, substitutions, renewals or supplementary protection certificates thereof throughout the world and any other patent applications or patents licensed to Dyax under the CAT Agreement or the CAT Product License.

1.6 "CAT Product License" means a license from CAT which is required, under the terms of the CAT Agreement, to be granted ([**] of a Therapeutic Antibody Product or [**] for any Diagnostic Antibody Product) in order to commercialize Dyax Antibodies to any Target, as described in more detail in Section 3.2. The form of CAT Product License is attached hereto as Appendix D.

1.7 "CAT Valid Claim" means a claim of an issued and unexpired patent included within the CAT Patent Rights which has been licensed to CAT by the Medical Research Council which has not been held permanently revoked, unenforceable or invalid by a decision of a court or other governmental agency of competent jurisdiction unappealed within the time allowed for appeal, and which has not been admitted to be invalid or unenforceable through reissue or disclaimer or otherwise.

1.8 "Commercial Field" means all human therapeutic and diagnostic uses, excluding (i) Research Products, (ii) Separations Applications, (iii) therapeutic products designed to localize an additional non-antibody, active molecule to a Target for therapeutic purposes (e.g. radio-labeled therapeutics, antibody-toxin conjugates), and (iv) with respect to Antibodies directed against any Third Party In Vivo Target, *in vivo* diagnostic uses. For the avoidance of doubt, item (iii) in the foregoing sentence is not intended to exclude Products as a result of the incorporation of Poly-Specific Antibodies within such Products.

1.9 "Commercial License" has the meaning set forth in Section 3.1(b) hereof.

1.10 "Confidential Information" means all information, inventions, data and know-how disclosed to either party by the other party relating to any technology, use, process, method, trade secret, document, technical report, specification, diagram, research project, development program, clinical data, test result, or non-publicly available agreement or document, whether in written, oral, graphic, electronic or any other media or form.

1.11 "Diagnostic Antibody Product" means any preparation in the form of a device, composition, compound, kit or service with utility in the diagnosis, prognosis, prediction or management or susceptibility to treatment of a disease or disorder which contains, comprises or the process of development or manufacture of which utilizes a Dyax Antibody. For the avoidance of doubt, the parties acknowledge and agree that [**].

1.12 "Display Library" means a collection of at least 1,000 genetically different organisms that each contain genetic information encoding a different fusion protein, wherein such collection was created for the purpose of displaying such fusion protein on the outer surface of such organisms.

1.13 "Dispose" means to transfer, assign, lease or in any other fashion dispose of control, ownership or possession, but shall not mean to license or sell. "Disposition" shall have the correlative meaning.

1.14 "Dyax Antibody" means any Antibody that is delivered by Dyax to Merrimack in connection with the Research Program and which was identified, generated, developed, produced, optimized, or obtained by Dyax from a Dyax Library, and any variant, modification or derivative of such Antibody, including a Poly-Specific Antibody, whether synthesized by Merrimack or Dyax.

1.15 "Dyax Antibody Information" means any data, know-how or other information relating, concerning or pertaining to a specific Dyax Antibody, including, [**] or [**] or [**] or [**], or[**] or [**].

1.16 "Dyax Antibody IP" means any patent(s) and/or patent application(s) relating to one or more Dyax Antibodies.

1.17 "Dyax Libraries" means Dyax's proprietary phagemid-based Fab Display Libraries and phage-based Fab Display Libraries.

1.18 "Dyax Patent Rights" means the patents and patent applications set forth in Appendix E [**] of the [**] and [**], together with any reissues, re-examinations, renewals, and extensions thereof, and all continuations, continuations-in-part and divisionals of the applications throughout the world.

1.19 "Dyax Research Know-How" means any unpatented know-how, technical or other information generated or utilized by Dyax during the conduct of the Research Program that [**] to the [**] in the [**] of the [**], and/or [**] of the [**] that is [**] by the [**].

1.20 "Dyax Research Materials" means any materials, including but not limited to Antibody coding expression vectors (but excluding the Dyax Antibodies) provided to Merrimack by Dyax in connection with the Research Program.

1.21 "First Commercial Sale" means the first commercial sale of any Product by Merrimack, its Affiliates or sublicensees in any country after grant of a Marketing Authorization.

1.22 "FTE" means the equivalent of the work time of a full-time scientist or a full-time project team leader over a twelve-month period (including normal vacations, sick days and holidays). In the case of less than a full-time person, the portion of an FTE year devoted by such person to the Research Program shall be determined by dividing the number of days during any twelve-month period devoted by such person to the Research Program by the total number of working days of such person's full-time scientist during such twelve-month period. One person cannot be counted as more than one FTE for a given year.

1.23 "FTE Rate" means $[**] per annum per FTE (or $[**] per hour based on an FTE year of [**] hours). The FTE Rate includes all salary, employee benefits, materials and all other expenses including support staff and overhead for or associated with Dyax scientists performing activities in connection with the Research Program.

1.24 "Indication" means a new and distinct disease category (for example, cancer versus inflammation) and does not mean a different type or subpopulation within the same primary disease (for example, colon cancer versus breast cancer).

1.25 "Major Market" any one of the following: (i) the United States of America, (ii) any country in Europe which is subject to the Marketing Authorization procedure of the European Medicines Evaluation Agency, or (iii) Japan.

1.26 "Marketing Authorization" means any approval (including all applicable pricing and governmental reimbursement approvals) required from the relevant Regulatory Authority to market and sell a Product in a particular country.

1.27 "Merrimack Materials" means the Merrimack Targets and other materials that are delivered to Dyax by Merrimack pursuant to the Research Program.

1.28 "Merrimack Targets" means Targets that are delivered to Dyax by Merrimack and accepted by Dyax for inclusion in the Research Program as provided under Section 2.4(a). For the avoidance of doubt, the identity of Merrimack Targets shall constitute Confidential Information of Merrimack.

1.29 "NDA" means New Drug Application as defined in 21 CFR 314 or other comparable regulation imposed by the U.S. Food and Drug Administration, or its foreign counterpart.

1.30 "Net Sales" means, with respect to any Product sold by Merrimack, its Affiliates or sublicensees, the price invoiced by that party to the relevant purchaser (or in the case of a sale or other disposal otherwise than at arm's length, the price which would have been invoiced in a bona fide arm's length contract or sale) but [**] and[**] or [**], and [**] or [**] and [**]in the [**] to the [**]. In the event the Product is sold as part of a Combination Product (as defined below), the Net Sales from the Combination Product, for the purposes of determining royalty payments, shall be determined by [**] of the [**] the [**], by[**] is the [**] of the [**] and [**] in the [**] the [**] and the [**] in the [**] in which [**]. In the[**] the [**] and [**] in the [**] for the [**] shall be [**] of the [**] is the [**] of the [**] is the [**] of [**] in the [**]. As used above, the term "Combination Product" means any pharmaceutical or biologic product which contains a Product and other active compounds and/or active ingredients.

1.31 "Nominated Target" has the meaning set forth in Section 3.2(a)(iii) hereof.

1.32 "Party" means Dyax or Merrimack, and "Parties" means Dyax and Merrimack.

1.33 "Patent Rights" means patent applications or patents, author certificates, inventor certificates, utility certificates, improvement patents, and models and certificates of addition, and all foreign counterparts of them and includes divisionals, renewals, continuations, continuations-

in-part, extensions, reissues, substitutions, confirmations, registrations, revalidations, or additions of or to them as well as any supplementary protection certificate or any other post patent expiration extension of patent protection in respect to them.

1.34 "Phase I Clinical Trial" means a human clinical trial in any country that is intended to initially evaluate the safety of an investigational Product in volunteer subjects or patients that would satisfy the requirements of 21 CFR 312.21(a), or other comparable regulation imposed by the U.S. Food and Drug Administration, or its foreign counterpart.

1.35 "Phase III Clinical Trial" means a pivotal human clinical trial in any country the results of which could be used to establish safety and efficacy of a Product as a basis for a marketing application that would satisfy the requirements of 21 CFR 312.21(c) or other comparable regulation imposed by the U.S. Food and Drug Administration, or its foreign counterpart.

1.36 "Poly-Specific Antibody" means a Dyax Antibody that is directed to more than one Nominated Target as described in Section 3.2(e).

1.37 "Product" means any Diagnostic Antibody Product and/or Therapeutic Antibody Product.

1.38 "Quarter" means each period of three (3) months ending on March 31, June 30, September 30, or December 31 and "Quarterly" shall be construed accordingly.

1.39 "Regulatory Authority" means the United States Food and Drug Administration, or any national or local agency, authority, department, inspectorate, minister, ministry official, parliament or public or statutory person (whether autonomous or not) of any government of any country having jurisdiction over any of the activities contemplated by this Agreement or the Parties, or any successor bodies thereto.

1.40 "Research Campaign" means one of [**] separate funded research campaigns (referred to herein as "Campaign I", [**]"), each with its own Research Plan, designed to result in the identification of antibodies against each Merrimack Target. Each Research Campaign will include [**] Merrimack Targets.

1.41 "Research Field" means use in *in vitro* and *in vivo* studies (excluding any studies in humans) in connection with Merrimack's internal discovery and development programs, and not for any other purpose.

1.42 "Research Plan" means the written description of work to be performed by Dyax for each Research Campaign describing the activities to be conducted by Dyax and Merrimack in connection with the discovery, development and validation of Antibodies against Merrimack Targets. The Research Plan for Campaign I is attached hereto as Appendix A. The Research Plan for Campaigns [**] will be drafted, reviewed and approved prior to the commencement of each such Research Campaign.

1.43 "Research Products" means (i) any kit, vial or array (protein chip) containing one or more Antibodies intended for sale to an end user solely for research purposes and (ii) any

Antibodies sold to a Third Party for incorporation into any kit, vial or array (protein chip) that are intended for sale to an end user for research purposes. Research Products shall exclude Therapeutic Antibody Products and Diagnostic Products.

1.44 "Research Program" means the research activities undertaken by Dyax and Merrimack in accordance with the Research Plan for each Research Campaign and the terms of this Agreement.

1.45 "Research Term" has the meaning set forth in Section 9.1 hereof.

1.46 "Research Steering Committee" has the meaning set forth in Section 2.3(a) hereof.

1.47 "Research and Development" means, for the purposes of the XOMA Covenant and the restrictions applicable thereto, the identification, selection, isolation, purification, characterization, study and/or testing of an Antibody for any purpose, including, without limitation, the discovery and development of human therapeutics. Included within the definition of "Research and Development" shall be all [**]. "Research and Development" shall not include [**].

1.48 [**].

1.49 [**].

1.50 [**].

1.51 "Selected Target" has the meaning set forth in Section 3.2(d) hereof.

1.52 "Separations Applications" means the use of Antibodies for the development and manufacture of affinity chromatography purification media for use in the separation and purification of pharmaceuticals.

1.53 "Target" means an antigen and/or DNA as identified by a full length protein sequence that it encodes.

1.54 "Target Acceptance Notification" has the meaning set forth in Section 3.2(b)(iii) hereof.

1.55 "Therapeutic Antibody Product" means any preparation which is intended for use in the Commercial Field which contains, comprises, or the process of development or manufacture of which utilizes a Dyax Antibody. For the avoidance of doubt, the parties acknowledge and agree that term "Therapeutic Antibody Product" shall not include [**].

1.56 "Third Party" means any entity other than Dyax or Merrimack or their respective Affiliates.

1.57 "Third Party Phage Display Agreements" means the CAT Agreement and the XOMA Agreement.

1.58 "Third Party In Vivo Target" means any Target to which Dyax has granted an undisclosed Third Party exclusive rights in the field of *in vivo* diagnostics pursuant to an agreement with such Third Party that was entered into prior to the date hereof. To the extent that the agreement with such undisclosed Third Party terminates or is amended or modified in any way that would allow Dyax to expand the Commercial Field to include rights to [**] in the field of *in vivo* diagnostics, Dyax will promptly notify Merrimack and grant such rights to Merrimack.

1.59 "Transferred Materials" means, for the purposes of the XOMA Covenant and the restrictions applicable thereto, the Dyax Libraries, any Dyax Antibodies, Dyax Antibody Information or the product of the practice of any method that in each of the foregoing cases is within the scope of the XOMA Patent Rights.

1.60 "Valid Claim" means (a) a claim of an issued and unexpired patent included in the Dyax Patent Rights, CAT Patent Rights or XOMA Patent Rights, as the case may be, which has not been held invalid in a final decision of a court of competent jurisdiction from which no appeal may be taken, and which has not been disclaimed or admitted to be invalid or unenforceable through reissue or otherwise, or (b) a claim of a pending patent application within the XOMA Patent Rights.

1.61 "XOMA Agreement" means that certain License Agreement dated October 16, 2002 by and between XOMA Ireland Limited ("XOMA") and Dyax, a redacted copy of which has been provided by Dyax to Merrimack on or prior to the Effective Date.

1.62 "XOMA Covenant" has the meaning set forth in Section 3.1(c) hereof.

1.63 "XOMA Know-How" means unpatented or unpatentable technical information, including ideas, concepts, inventions, discoveries, data, designs, formulas, specifications, procedures for experiments and tests and other protocols, results of experimentation and testing, fermentation and purification techniques, and assay protocols, whether now existing or obtained in the future, owned by XOMA which XOMA has the right to license or sublicense and which may be necessary for the practice of the XOMA Patent Rights or which would be misappropriated by the activities of Merrimack contemplated hereunder but for this Agreement. All XOMA Know-How shall be confidential information of XOMA.

1.64 "XOMA Patent Rights" means the patent applications and patents set forth in Appendix F attached hereto and incorporated herein, and, solely to the extent any Valid Claim would cover or be included in the license grants provided for herein, all divisionals, continuations, continuations-in-part, applications claiming priority thereto, and substitutions thereof; all foreign patent applications corresponding to the preceding applications; all U.S. and foreign patents issuing on any of the preceding applications, including extensions, reissues and re-examinations; and any other patent rights owned by XOMA which XOMA has the right to license or sublicense and which would be infringed by the activities contemplated hereunder but for this Agreement. XOMA Patent Rights shall also include (i) any improvements of the foregoing that are owned or controlled by XOMA and (ii) any patents or patent applications, whether now existing or obtained in the future, owned or controlled by XOMA containing a claim that is dominating over the foregoing patent rights (i.e., is necessarily infringed by the practicing of a claim in one of the foregoing applications).

The above definitions are intended to encompass the defined terms in both the singular and plural forms.

ARTICLE II
RESEARCH PROGRAM

2.1 Goal of Research Program. The initial goal of the Research Program is to identify Dyax Antibodies that bind to the Merrimack Targets provided to Dyax under the terms of the Research Plan for each Research Campaign. Each Party acknowledges that the outcome of the Research Program cannot be predicted and each Party agrees to cooperate in good faith with the other to modify the Research Plan for each Research Campaign as may be reasonably required to accomplish the goal of the Research Program.

2.2 Research Campaigns; Research Plans. The Research Program will be divided into [**] separate Research Campaigns (referred to herein as "Campaign I", [**]). The Research Plan for each Research Campaign will be designed to result in the identification of antibodies against [**] Merrimack Targets. Unless otherwise agreed in writing, each of Research Campaigns [**] shall be initiated within [**] years after the Effective Date ([**] was initiated and completed prior to the Effective Date). The Research Plan for Campaign I is attached hereto as Appendix A. The parties acknowledge and agree that, as of the date of this Amended and Restated Collaboration Agreement, the research activities contemplated under the Research Plan for [**] have been completed. The Research Plan for Campaigns [**] will be drafted, reviewed and approved prior to the commencement of each such Research Campaign. During the Research Term, the Research Plan for each Research Campaign may be amended or revised, as appropriate, by the Research Steering Committee.

2.3 Research Steering Committee.

(a) Structure and Function. A committee shall be established to manage the Research Program (the "Research Steering Committee"). The Research Steering Committee shall be composed of three (3) representatives appointed by Dyax and three (3) representatives appointed by Merrimack. The Research Steering Committee shall direct and administer the Research Program and shall perform the following functions: (a) oversee and monitor the activities contemplated by the Research Plan for each Research Campaign (provided that either Party may enforce the provisions of this Agreement irrespective of such oversight); (b) review and pre-approve external expenditures; (c) review the written progress reports of the parties and maintain frequent communication with the parties regarding the status of the Research Program; (d) amend or revise any Research Plan as necessitated by the outcome of the work conducted under such Research Plan; and (e) identify and select Dyax Antibodies that bind to the Merrimack Targets provided to Dyax under the terms of any Research Plan [**].

(b) Formation and Meetings. As soon as practical after the Effective Date, each Party shall identify to the other, its representatives on the Research Steering Committee. The Research Steering Committee shall meet as needed during each Research Campaign. Such meetings shall be at times and places or in such form (e.g., telephone or videoconference) as the members of the Research Steering Committee shall agree. A Party may change one or more of its

representatives to the Research Steering Committee at any time upon notification to the other Party. A quorum for a meeting requires at least two representatives from each Party.

(c) Attendance and Voting. A member of the Research Steering Committee may be represented at any meeting by another member of the Research Steering Committee from the same Party or by a deputy that will be entitled to vote for the absent member. All approvals, determinations and other actions must be made by unanimous consent of the members of the Research Steering Committee or their deputies present at the relevant Research Steering Committee meeting. In the event that the Research Steering Committee is unable to reach consensus with respect to any material matter and becomes deadlocked, the parties will seek to resolve the matter through their chief executive officers. Representatives of either Party who are not members of the Research Steering Committee or their deputies may attend meetings of the Research Steering Committee as agreed to by the representative members of the other Party.

(d) Record Keeping and Communications. At or before the commencement of each meeting, the Research Steering Committee shall appoint one of its members to act as secretary for such meeting or shall arrange for a person to be present in such capacity. The Research Steering Committee shall keep accurate minutes of its meetings and shall record all proposed decisions and all actions recommended or taken. Copies of the minutes shall be provided to each member of the Research Steering Committee after each meeting and shall be approved, if appropriate, at the next meeting. In addition, the Research Steering Committee will arrange with the appropriate representatives of each Party for the preparation of written progress reports on the status of the Research Program at least [**] and the members of the Research Steering Committee will generally maintain close and frequent communication among themselves and with the parties. All records of the Research Steering Committee shall at all times be available to both parties.

2.4 Obligations of Parties During the Research Term.

(a) Target Identification and Approval. Prior to commencing activities under any Research Campaign, Merrimack will first provide Dyax with a written notice identifying each Target that Merrimack wishes to include in such Research Campaign as a Target against which Dyax Antibodies would be directed (which must be accompanied by a GenBank® accession number, if available, or similar information which uniquely identifies each such Target). Dyax shall then have [**] business days to notify Merrimack (i) whether or not it will be able to perform research to identify Dyax Antibodies to such Target on a nonexclusive basis in accordance with the terms set forth in Section 2.4(d) below, and (ii) if any such Target is a Third Party In Vivo Target. If Dyax rejects any Target submitted by Merrimack, Merrimack shall have the option to identify a new Target for inclusion in such Research Campaign.

(b) Merrimack Responsibilities. For each Merrimack Target for which Dyax has agreed to perform research under Section 2.4(a), Merrimack agrees to provide to Dyax a reasonable quantity of such Merrimack Targets and other Merrimack Materials as set forth in each Research Plan prior to the commencement of each Research Campaign. Dyax shall use such Merrimack Targets and other Merrimack Materials solely in accordance with the applicable Research Plan and nothing in this Agreement shall be construed as a grant by Merrimack to Dyax of any rights to any Merrimack Target after the term of this Agreement.

(c) Dyax Responsibilities. For each Merrimack Target for which Dyax has agreed to perform research under Section 2.4(a), Dyax agrees to [**] for each Research Campaign, and to [**]. Dyax shall deliver the Dyax Antibodies, Dyax Antibody Information, Dyax Research Materials [**]. Dyax's activities under each Research Plan will be deemed complete [**]. Notwithstanding the foregoing, Merrimack acknowledges and agrees that the results of each Research Plan cannot be predicted and that Dyax's sole obligation is to perform the work set forth in such Research Plan and to deliver the Deliverables to Merrimack that are contemplated by such Research Plan based on the outcome of Dyax's activities thereunder. During the course of the work under any Research Plan, Dyax's representatives primarily responsible for oversight of Dyax's activities under such Research Plan shall consult with representatives of Merrimack [**], to respond to questions, facilitate the exchange of appropriate information and review the progress of such Research Plan.

(d) Other Research and Licensing Activities. Without limiting Dyax' confidentiality obligations hereunder, Merrimack acknowledges and agrees that:

(i) Dyax has previously licensed Dyax Libraries to Third Parties and may continue to do so in the future, and that such Third Parties may be using one or more Dyax Libraries to identify Antibodies to Merrimack Targets;

(ii) Dyax may have previously conducted research on behalf of Third Parties to identify and/or develop, or cooperate or participate to identify and/or develop, Antibodies to Merrimack Targets and may continue to do so during the Research Term and in the future; and

(iii) Dyax will not deliver to Merrimack any Antibodies that are identified by Dyax as a result of the Research Program if such Antibodies were previously delivered to Third Parties in connection with research activities conducted on behalf of Third Parties.

ARTICLE III
GRANT OF RIGHTS TO MERRIMACK

3.1 Dyax Grants.

(a) Research License. Subject to the terms and conditions of this Agreement, including without limitation, the restrictions set forth in Section 3.2 and the payment obligations set forth in Article 4, Dyax hereby grants to Merrimack and its Affiliates a world-wide, non-exclusive, royalty-free, non-transferable license, without the right to sublicense, under the Dyax Patent Rights, Dyax Research Know-How, Dyax Antibody Information, Dyax Antibody IP, and CAT Patent Rights to use Dyax Research Materials and to research, develop and make Dyax Antibodies, solely in the Research Field.

(b) Commercial License. During the term of this Agreement and prior to the commencement of the first Phase I Clinical Trial of a Therapeutic Antibody Product or prior to the first filing for Marketing Authorization for any Diagnostic Antibody Product, provided that

Merrimack is not then in breach of any material terms or conditions hereof, Merrimack shall have the option to obtain a worldwide, non-exclusive license, to use Dyax Antibodies to develop, make, have made, use, sell, offer for sale, import and export Therapeutic Antibody Products and Diagnostic Antibody Products to the applicable Merrimack Target in the Commercial Field (the "Commercial License") on the following terms:

(i) Merrimack shall have no rights to obtain a Commercial License unless, prior to the commencement of the first Phase I Clinical Trial of a Therapeutic Antibody Product or prior to the first filing for Marketing Authorization for any Diagnostic Antibody Product, Merrimack obtains a sublicense to a CAT Product License with respect to the applicable Merrimack Target(s) as contemplated in Section 3.2(a) hereof;

(ii) Once Merrimack has obtained a sublicense to a CAT Product License to the applicable Merrimack Target(s), Dyax shall and hereby does grant to Merrimack a Commercial License to Dyax Antibodies and Products directed to the applicable Merrimack Target(s), including a license to the applicable Dyax Antibody Information and Dyax Antibody IP;

(iii) the Commercial License granted to Merrimack under Section 3.1(b) shall be subject to the terms and conditions of this Agreement, including without limitation, the restrictions set forth in Sections 3.2, and 3.3 and the payment obligations set forth in Article 4; and

(iv) subject to the terms and conditions of any applicable CAT Product License, Merrimack shall have the right to sublicense the Commercial License granted to Merrimack under this Section 3.1(b) to allow Third Parties to develop, make, have made, use, sell,

offer for sale, import and export Therapeutic Antibody Products and Diagnostic Antibody Products directed to the applicable Merrimack Target(s) in the Commercial Field.

(c) XOMA Covenant. Subject to the terms and conditions of this Agreement, including the provisions of Section 3.3 below, Dyax represents to Merrimack that, pursuant to a covenant running from XOMA to Dyax (the "XOMA Covenant"), XOMA has agreed that it shall not initiate or permit any Third Party over whom it has control to initiate or assist in any way in the initiation or prosecution of any action asserting a claim of infringement under the XOMA Patent Rights or misappropriation of the XOMA Know-How to the extent reasonably necessary to allow the parties to use the Dyax Libraries and Dyax Library Materials to conduct Research and Development activities under the terms of this Agreement. The XOMA Covenant extends to [**]. The XOMA Covenant expressly does not extend to use of the XOMA Patent Rights to make or the means or methods to make any amount of Dyax Antibodies other than quantities reasonably required for Research and Development purposes.

3.2 Restrictions on the CAT Patent Rights. [**], the parties acknowledge and agree that the licenses granted to Merrimack under the CAT Patent Rights pursuant to Sections 3.1(a) and 3.1(b) above are subject to the following provisions:

(a) CAT Product License

(i) [**], in the event that Merrimack wishes to develop and commercialize any Product with respect to [**], then [**] in relation to any Therapeutic Antibody Product or [**] for any Diagnostic Antibody Product, Merrimack must first obtain a sublicense under a CAT Product License with respect to such Targets.

(ii) [**] of this Section 3.2. [**] and [**] or [**] with this Section 3.2.

(iii) In order [**] a CAT Product License [**] with respect to a Target, Merrimack must [**] that Dyax [**] through the CAT Gatekeeping Procedure described in Section 3.2(b).

(b) CAT Gatekeeping.

(i) Any request by Merrimack that Dyax submit a Nominated Target through the CAT Gatekeeping Procedure shall be in writing and must identify the Nominated Target against which Dyax Antibodies are directed (which must be accompanied by a GenBank® accession number, if available, or similar information which uniquely identifies such Nominated Target).

(ii) If CAT notifies Dyax under the CAT Agreement that the Nominated Target has not passed the CAT Gatekeeping Procedure, then Dyax shall promptly notify Merrimack in writing that Dyax will not be granted a CAT Product License, and Merrimack shall have no rights pursuant to Section 3.1(b) with respect to such Nominated Target; provided, however, [**].

(iii) Upon receipt of a request by Merrimack under Section 3.2(b)(i), Dyax shall promptly [**] request that CAT subject the Nominated Target to CAT's Gatekeeping Procedure (as described in Appendix B hereto) in accordance with the CAT Agreement. If CAT determines that the Nominated Target has passed the CAT Gatekeeping Procedure, then pursuant to the terms of the CAT Agreement, CAT is obligated to notify Dyax (the "Target Acceptance Notification") that a CAT Product License is available for such Target [**].

(c) [**]. In certain circumstances described below, Dyax may allow Merrimack [**]. Pursuant to the terms of the CAT Agreement, Dyax [**] the CAT Gatekeeping Procedure [**]. For the purposes of this Section 3.2(c), [**] *provided that*, if, at any time [**], Dyax will then so notify Merrimack. Merrimack will then have [**] from the date of such notice to decide whether or not it wishes to take a CAT Product License for that Nominated Target. If Merrimack notifies Dyax within that period that it does not wish to take such a CAT Product

License or fails to notify Dyax that it does wish to take such a CAT Product License, then [**] CAT may grant an exclusive license to a Third Party in respect of such Nominated Target.

Prior to [**], Merrimack shall have the [**]. In addition [**], both [**], Merrimack may [**] to [**] of a [**] will be [**], and [**] to [**] to [**] of[**] will be [**], at the [**].

[**] to the [**] of the [**] that [**] will be [**] of the [**] for the [**] be so [**].

(d) Sublicense of CAT Product License. Upon receipt of a Target Acceptance Notification, [**], Merrimack may, by written notice, request that Dyax secure a CAT Product License for the Nominated Target (which shall thereafter be referred to as a "Selected Target"). In such event, Dyax [**] a CAT Product License with respect to such Selected Target, and to deliver to Merrimack a fully executed redacted copy thereof. [**], and subject to the prior payment by Merrimack to Dyax of the Product License Fee referred to in Section 4.3, Dyax and Merrimack shall enter into a written sublicense agreement, the form of which is attached hereto as Appendix H, under which Dyax shall grant to Merrimack a worldwide, non-exclusive sublicense under the rights granted to Dyax under Clause 2 of the CAT Product License to develop, make, have made, use, sell, offer for sale, import and export Products against such Selected Target in the Commercial Field. [**] after the [**] to the [**] with the [**] the [**] is [**] to [**] under [**].

(e) Poly-Specific Antibodies. Notwithstanding anything to the contrary contained in this Section 3.2 or in the form of CAT Product License attached hereto as Appendix D, in the case where a Dyax Antibody is directed to multiple Targets, then each such Target shall be considered a Nominated Target and [**]. If CAT notifies Dyax that each [**] to which such Poly-Specific Antibody is directed has [**] then, pursuant to an amendment to the CAT Agreement, Dyax shall have the right to obtain a single CAT Product License that will [**] to which Poly-Specific Antibodies bind; provided however, that such CAT Product License shall be limited so as to allow Merrimack to exploit only Products that comprise or contain Poly-Specific Antibodies directed against all such [**]. For the avoidance of doubt, Dyax agrees that the [**] applicable to the development and commercialization of a Poly-Specific Antibody under such a CAT Product License [**], as described in Sections 4.2 through 4.8. Except as expressly provided for herein, the form of the CAT Product License that would be applicable to any such Poly-Specific Antibody would be negotiated between Dyax and CAT.

(f) Effect of Termination of CAT Agreement. Pursuant to the terms of the CAT Agreement, upon termination of the CAT Agreement, Dyax represents and warrants that (i) [**] and the [**], and (ii) any sublicense granted by Dyax to Merrimack under a CAT Product License pursuant to this Agreement will continue in force provided [**]. The Parties acknowledge that Merrimack derives independent and significant value from the agreements set forth in the CAT Agreement and may rely thereon and to that extent only shall have the right to enforce the provisions of Section 3.2(f)(ii) above and be a Third Party beneficiary for that purpose only.

(g) Merrimack Acknowledgement. As required by the CAT Agreement, Merrimack hereby acknowledges and agrees that Dyax must request, and be granted a CAT Product License, in relation to a Therapeutic Antibody Product prior to Dyax or Merrimack's commencement of the [**] in relation to a Therapeutic Antibody Products, or in relation to a Diagnostic Antibody Product prior to Dyax or Merrimack's [**] on the relevant Dyax Antibody.

(h) Third Party Beneficiary Right. As required by the CAT Agreement, Merrimack agrees that CAT shall be a Third Party beneficiary of the sublicense under the CAT Product License and CAT shall have the right to enforce (including claim damages as a result of any breach) of such sublicense. If at any time CAT does have to enforce its rights under such sublicense Dyax will, if requested by CAT, supply to CAT a copy of this Agreement as soon as possible.

3.3 XOMA Covenant. As required by the XOMA Agreement, the Parties acknowledge and agree that the XOMA Covenant is subject to the following provisions:

(a) Merrimack will abide by each of the limitations, restrictions and other obligations applicable to Merrimack provided for in the XOMA Agreement including, without limitation, the restrictions on use of Transferred Materials for purposes other than Research and Development;

(b) Merrimack covenants not to use the Transferred Materials for any purpose other than for Research and Development purposes;

(c) Merrimack agrees that the "first sale" doctrine does not apply to any Disposition of Transferred Materials;

(d) Merrimack shall Dispose of Transferred Materials only to a Third Party who otherwise meets the definition of a Dyax Collaborator under the XOMA Agreement and who executes a written agreement in which its undertakes all of the obligations set forth herein;

(e) XOMA shall be an intended Third Party beneficiary with respect to the foregoing provisions of Section 3.3(a) through (d);

(f) If Merrimack or any person or entity controlled by Merrimack contests the validity or enforceability of any of the XOMA Patent Rights hereunder, XOMA shall have the right to terminate (or cause Dyax to terminate) all of the rights hereby granted to Merrimack under the XOMA Patent Rights;

(g) Merrimack acknowledges and agrees that it has received from Dyax, and is subject to the relevant provisions of, the following documents: (i) a redacted copy of the XOMA Agreement containing all of the limitation, restrictions and other obligations provided therein with respect to the XOMA Patent Rights; and (ii) the Form of Notice attached hereto as Appendix G and incorporated herein;

(h) Merrimack acknowledges and agrees that nothing in this Agreement shall be construed as a release or waiver of past, present or future infringement of the XOMA Patent Rights by Merrimack acting outside the scope of this Agreement nor as a release from Dyax

from any claim of infringement of the XOMA Patent Rights nor as any right to release any Third Party from any claim of infringement under the XOMA Patent Rights;

(i) Merrimack acknowledges and agrees that the XOMA Covenant shall not extend to infringement of the XOMA Patent Rights arising out of making or the means or methods used to make any amount of a Dyax Antibody or Product other than those quantities of Antibody reasonably required for Research and Development purposes; *provided*, *however*, that Dyax or Merrimack shall be permitted to make or have made any Dyax Antibody by any means of its selection other than those which otherwise infringe a Valid Claim of the XOMA Patent Rights;

(j) Merrimack acknowledges and agrees that the XOMA Covenant shall become void and without effect as to Merrimack if Merrimack fails to materially discharge or comply with any terms of this Agreement with respect to the XOMA Patent Rights;

(k) Merrimack acknowledges and agrees that the XOMA Covenant is personal to Dyax and Merrimack and Merrimack's Affiliates and cannot be assigned or transferred;

(l) Merrimack agrees that Dyax shall have the right to deliver to XOMA a written report which shall specify the name, address and contact person for Merrimack; and

(m) In the event of the termination of the XOMA Agreement by Dyax, the covenants, licenses and rights granted to Dyax and Merrimack under the XOMA Agreement shall survive. In the event of the termination of the XOMA Agreement by XOMA, the licenses and rights granted to Dyax and Merrimack under the XOMA Agreement shall terminate.

Notwithstanding anything to the contrary in this Agreement, Merrimack's sole and exclusive liability for any failure to comply with the foregoing provisions of this Section 3.3 shall be that the XOMA Covenant may not apply.

3.4 Limitation of Rights. Merrimack acknowledges that its rights with respect to the Dyax Libraries, Dyax Library Materials, Dyax Library Technology, CAT Patent Rights and XOMA Patent Rights are limited to those expressly granted in this Article 3. Each Party agrees that, except as expressly set forth in this Agreement, no other rights or licenses, express or implied, are granted to any patents, patent applications, inventions, trademarks, trade secrets or other intellectual property, or to any materials, information, data or know-how, of the other Party. Merrimack also agrees that no rights are granted to Merrimack by Dyax outside of the Research Field and, upon exercise of its option to obtain a Commercial License, the Commercial Field. Merrimack acknowledges that Dyax has previously licensed and will continue to license use of its phage display libraries and phage display patent rights to Third Parties for use in the Research Field and the Commercial Field and that these Third Party licensees of Dyax may discover antibodies or products that are the same or similar to the Dyax Antibodies or Products. Merrimack also acknowledges that, in connection with Dyax's own internal research and development activities, Dyax has used and will continue to use its phage display libraries and phage display patent rights to discover antibodies or products that are the same or similar to the

Dyax Antibodies or Products. Merrimack agrees that any expression vectors provided by Dyax to Merrimack are to be used for research purposes only.

3.5 Diligence Requirement. Merrimack agrees to use commercially reasonable efforts to research and develop the Dyax Antibodies into commercial Products. Specifically, upon exercise of its option to obtain a Commercial License, Merrimack agrees to use commercially reasonable efforts to develop, pre-clinically and clinically test, market and sell Products in the Commercial Field. Until the first filing for Marketing Authorization for any Product, Merrimack shall provide Dyax with annual written reports summarizing its development and commercialization efforts for all Products during the period since the previous such report; provided that such reports shall not be required to include any non-public technical or scientific information.

ARTICLE IV
PAYMENTS AND REPORTS

4.1 Research Payments; FTEs.

(a) In consideration for the obligations undertaken by Dyax under the Research Plan for each Research Campaign and the other terms and conditions of this Agreement, Merrimack shall compensate Dyax for the work performed by Dyax in accordance with each Research Plan in accordance with the budget established for such Research Campaign. For work performed by Dyax at Merrimack's request in addition to the work set forth in the applicable Research Plan, Merrimack shall compensate Dyax at the FTE Rate; provided that the Parties shall agree on the scope of such work prior to Dyax' commencement thereof. The FTE rate includes all salary, employee benefits, materials and all other expenses including support staff and overhead for or associated with Dyax scientists performing activities under each Research Plan. FTE payments shall be made as follows:

(i) Campaign [**]. The parties acknowledge and agree that, as of the date of this Amended and Restated Collaboration Agreement, the research activities contemplated under the Research Plan for Campaign [**] have been completed and all FTE payments due in connection with such research activities have been paid. Additionally, the parties acknowledge and agree that as of the Effective Date, Campaign [**] Technical Milestones associated with 4.2(a)(i) in the amount of $[**] and Campaign [**] Technical Milestones associated with 4.2(a)(ii) in the amount of $[**] have been paid.

(ii) Campaigns [**]. Prior to the commencement of each of Campaigns [**], Merrimack shall deliver to Dyax a payment equal to [**] percent ([**]%) of the total estimated FTEs that will be due under the Research Plan for each such Research Campaign. The remaining balance of the estimated FTEs for each such Research Campaign, plus any additional FTE expenses reasonably incurred by Dyax in connection with the conduct of such Research Plan, shall be delivered to Dyax within [**] days following the receipt of the report by Merrimack at the conclusion of each such Research Campaign.

(b) Merrimack shall reimburse Dyax for any mutually agreed upon external costs and expenses incurred in connection with the Research Program.

4.2 Technical Milestones

(a) Campaigns [**].

(i) Upon completion of each Research Campaign, Merrimack shall pay to Dyax [**] US Dollars ($[**]) for each Merrimack Target against which Dyax was able to identify Antibodies.

(ii) Within [**] days of the commencement of the first *[**]* with respect to any Dyax Antibody directed against [**] Merrimack Targets, Merrimack shall pay to Dyax [**] US Dollars ($[**]) for each Merrimack Target against which Dyax was able to identify Antibodies.

(b) (b) Campaigns [**]. Merrimack shall pay to Dyax a technical milestone of [**] US Dollars ($[**]) upon delivery of Antibodies to Merrimack under each Research Campaign; provided however, that such fee shall not be due unless Dyax is able to identify Antibodies that bind to each Merrimack Target included in such Research Campaign. For the avoidance of doubt, Technical Milestones will be paid no more than once per Research Campaign.

4.3 Product License Fee. Prior to entering into a sublicense under a CAT Product License with respect to any Selected Target in accordance with Section 3.2(d), Merrimack shall pay to Dyax a Product License Fee of [**] US Dollars (US $[**] by wire transfer. If, for any reason, Dyax has not executed the applicable sublicense within [**] business days after the receipt of such fee, Dyax shall, at Merrimack's request, immediately return such fee.

4.4 Development Milestones. Within [**] days of the occurrence of each of the following events by Merrimack, its Affiliates or sublicensees with respect to Therapeutic Antibody Products against a particular Selected Target (or as described in Section 3.2(e), against more than one Selected Target), Merrimack shall make the following payments to Dyax:

(a) Upon the first achievement of any of the foregoing milestones by a Therapeutic Antibody Product in any Indication:

Milestone Event	Payment
Upon dosing of first patient in a Phase I Clinical Trial	US $[**]
Upon dosing of first patient in a Phase III (or equivalent) Clinical Trial	US $[**]
Upon first BLA/MAA filing in any Major Market Country	US $[**]
Upon first BLA/MAA approval in any Major Market Country	US $[**]
Upon second BLA/MAA approval in any Major Market Country	US $[**]

(b) Upon the first achievement of any of the foregoing milestones by a Therapeutic Antibody Product in a second Indication:

Milestone Event	Payment
Upon dosing of first patient in a Phase III (or equivalent) Clinical Trial	US $[**]
Upon first BLA/MAA filing in any Major Market Country	US $[**]
Upon first BLA/MAA approval in any Major Market Country	US $[**]
Upon second BLA/MAA approval in any Major Market Country	US $[**]

(c) Upon the first achievement of any of the foregoing milestones by a Therapeutic Antibody Product in a third Indication:

Milestone Event	Payment

Upon dosing of first patient in a Phase III (or equivalent) Clinical Trial	US $[**]
Upon first BLA/MAA filing in any Major Market Country	US $[**]
Upon first BLA/MAA approval in any Major Market Country	US $[**]
Upon second BLA/MAA approval in any Major Market Country	US $[**]

4.5 Diagnostic Antibody Product Milestones. Within US $[**] days of the occurrence of each of the following events by Merrimack, its Affiliates or sublicensees with respect to Diagnostic Antibody Products against a particular Selected Target (or as described in Section 3.2(e), against more than one Selected Target), Merrimack shall make the following payments to Dyax:

Milestone Event	Payment
Upon first BLA/MAA approval in any Major Market Country	US $[**]
Upon first BLA/MAA approval in any Major Market Country	US $[**]

4.6 Therapeutic Antibody Product Royalties. Merrimack shall pay to Dyax the following royalties on Net Sales for Therapeutic Antibody Products commercialized by Merrimack, its Affiliates or sublicensees, calculated separately for each Therapeutic Antibody Product:

Annual Net Sales Worldwide	Royalty Rate
Portion ≤ US$[**] in a calendar year	[**]%
Portion > US$[**] but ≤ US$[**] in a calendar year	[**]%
Portion > US$[**] in a calendar year	[**]%

4.7 Diagnostic Antibody Product Royalties. Merrimack shall pay a [**]% royalty on Net Sales for Diagnostic Antibody Products commercialized by Merrimack, its Affiliates or sublicensees, calculated separately for each Diagnostic Antibody Product.

4.8 Duration of Royalty Payments. The royalties payable by Merrimack to Dyax pursuant to Sections 4.6 and 4.7 shall be payable on a country-by-country and Product-by-Product basis for a period commencing with the First Commercial Sale and ending ten (10) years after First Commercial Sale; *provided*, *however*, in the event that such ten (10) years period for a Product in a particular country ends prior to the expiration of the last CAT Valid Claim in such country, then royalties shall be payable until the expiration of last CAT Valid Claim.

4.9 [**]. In the event that Merrimack, its Affiliates or sublicensees [**] to [**] or [**] to [**], then Merrimack, its Affiliates and sublicensees [**] to [**] to Dyax [**] to [**] the [**] Sections [**] above.

4.10 Reports, Payments, Records and Audits.

(a) Merrimack shall make the payments due to Dyax under this Article 4 in United States Dollars. Where the payments due to Dyax under this Article 4 are being converted from a currency other than United States Dollars, Merrimack will use the conversion rate reported in *The Wall Street Journal* two (2) Business Days before the day on which Merrimack pays Dyax. Such payment will be made without deduction of exchange, collection or other charges.

(b) All royalty payments will be made at Quarterly intervals. Within [**] days of the end of each Quarter after the First Commercial Sale of each Product in any country, Merrimack shall prepare a statement which shall show on a country-by-country basis for the previous Quarter Net Sales of each Product by Merrimack or its Affiliates or sublicensees and all monies due to Dyax based on such Net Sales and shall submit such statement to Dyax within such [**] day period together with remittance of the monies due.

(c) All payments shall be made free and clear of and without deduction or deferment in respect of any disputes or claims whatsoever and/or as far as is legally possible in respect of any taxes imposed by or under the authority of any government or public authority. Any tax (other than VAT) which Merrimack is required to pay or withhold with respect of the payments to be made to Dyax hereunder shall be deducted from the amount otherwise due provided that, in regard to any such deduction, Merrimack shall give Dyax such assistance, which shall include the provision of such documentation as may be required by any revenue authority and other revenue services, as may reasonably be necessary to enable Dyax to claim exemption therefrom or obtain a repayment thereof or a reduction thereof and shall upon request provide such additional documentation from time to time as is needed to confirm the payment of tax. If by law, regulation or fiscal policy of a particular country, a remittance of royalties in the currency stipulated in Section 4.9(a) above is restricted or forbidden, notice thereof will be promptly given to Dyax, and payment of the royalty shall be made by the deposit thereof in local currency to the credit of Dyax in a recognized banking institution designated by Dyax or its Affiliates. When in any country a law or regulation that prohibits both the transmittal and deposit of such payments ceases to be in effect, all royalties or other sums that Merrimack would

have been under obligation to transmit or deposit but for the prohibition, shall forthwith be deposited or transmitted promptly to the extent allowable.

(d) Merrimack shall keep and shall procure that its Affiliates and sublicensees keep true and accurate records and books of account containing all data necessary for the calculation of the amounts payable by it to Dyax pursuant to this Agreement. Those records and books of account shall be kept for [**] years following the end of the calendar year to which they relate. Upon Dyax's written request, a firm of accountants appointed by agreement between the Parties or, failing such agreement within [**] business days of the initiation of discussions between them on this point Dyax shall have the right to cause an international firm of independent certified public accountants that has not performed auditing or other services for either Party or their Affiliates and is acceptable to Merrimack, such acceptance not to be unreasonably withheld, to inspect such records and books of account. In particular such firm:

(i) shall be given access to and shall be permitted to examine and copy such books and records of Merrimack and its Affiliates and sublicensees upon [**] business days notice having been given by Dyax and at all reasonable times on business days for the purpose of certifying that the Net Sales or other relevant sums calculated by Merrimack and its Affiliates and sublicensees during any calendar year were reasonably calculated, true and accurate or, if this is not their opinion, certify the Net Sales figure or other relevant sums for such period which in their judgment is true and correct;

(ii) prior to any such examination taking place, such firm of accountants shall undertake to Merrimack and its Affiliates and sublicensees, as applicable, that they shall keep all information and data contained in such books and records, strictly confidential and shall not disclose such information or copies of such books and records to any third person including Dyax, but shall only use the same for the purpose of calculations which they need to perform in order to issue the certificate to which this Section envisages;

(iii) any such access examination and certification shall occur no more than [**] per calendar year and will not go back over records more than [**] years old;

(iv) Merrimack and its Affiliates and sublicensees shall make available personnel to answer queries on all books and records required for the purpose of that certification; and

(v) the cost of the accountant shall be the responsibility of Merrimack if the certification shows it to have underpaid monies to Dyax by more than five percent (5%) and the responsibility of Dyax otherwise.

(e) All payments due to Dyax under the terms of this Agreement are expressed to be exclusive of value added tax (VAT) howsoever arising. If Dyax is required to charge VAT on any such payment, Dyax will notify Merrimack. Merrimack will then use all commercially reasonable endeavours to obtain a VAT registration as soon as reasonably possible in order to allow it to reclaim any VAT so chargeable. If Merrimack does obtain a VAT registration then VAT will be added to any relevant payment at the applicable rate. If having used all commercially reasonable endeavours Merrimack is not able to reclaim the VAT (in whole or in part) the parties agree that the amount of any VAT payable will be shared between them equally.

(f) All payments made to Dyax under this Agreement shall be made by wire transfer to the following bank account of Dyax, or such other bank account as notified by Dyax to Merrimack from time to time:

To:	[**]
Routing/Transit:	[**]
For Credit to:	Dyax Corp.
Account No.:	[**]
By Order of:	
	Name of Sender

4.11 Late Payments. If Merrimack fails to make any payment to Dyax hereunder on the due date for payment, without prejudice to any other right or remedy available to Dyax it shall be entitled to charge Merrimack interest (both before and after judgment) of the amount unpaid at the [**] rate plus [**] percent ([**]%) calculated on a daily basis until payment in full is made without prejudice to Dyax's right to receive payment on the due date.

4.12 Merrimack Acknowledgement. Merrimack acknowledges and agrees that the amount of milestones and royalties due under this Article 4 and the duration of the royalty payments (set forth in Section 4.8) have been chosen for the convenience of the Parties as payment for Dyax's services and use of the Dyax Libraries, Dyax Patent Rights, Dyax Research Know-How and Dyax Research Materials to discover Antibodies to Merrrimack Targets, and not as patent royalties.

ARTICLE V
INTELLECTUAL PROPERTY

5.1 Ownership.

(a) Dyax Antibodies and Dyax Antibody Information. Subject to the licenses granted to Merrimack in Section 3.1, Dyax is and shall remain the owner of all Dyax Antibodies that are identified, generated, developed, produced, optimized, or obtained by Dyax from a Dyax Library that is delivered by Dyax to Merrimack in connection with the Research Program, together with the Dyax Antibody Information applicable thereto.

(b) Dyax Libraries. Dyax is and shall remain the owner of the Dyax Libraries and all improvements thereon developed during the term of this Agreement.

(c) Dyax Research Materials and Dyax Research Know-How. Subject to the licenses granted to Merrimack in this Agreement, Dyax is and shall remain the owner of the Dyax Research Materials and Dyax Research Know-How generated or utilized during the conduct of the Research Program.

(d) Merrimack Targets and Merrimack Materials. Merrimack is and shall remain the owner of the Merrimack Targets and Merrimack Materials.

5.2 Inventions. Title to all inventions and other subject matter not accounted for in Section 5.1, (including all intellectual property rights therein) conceived, reduced to practice or otherwise made solely by Dyax personnel in connection with this Agreement shall be owned by Dyax; title to all inventions and other subject matter (including all intellectual property rights therein) conceived, reduced to practice or otherwise made solely by Merrimack personnel in connection with this Agreement shall be owned by Merrimack or any of its Affiliates; and title to all inventions and other subject matter (including all intellectual property rights therein) conceived, reduced to practice or otherwise made jointly by personnel of Dyax and Merrimack in connection with this Agreement shall be jointly owned by Dyax and Merrimack or any of its Affiliates. Except as expressly provided in this Agreement, it is understood that neither Party shall have any obligation to account to the other for profits, or to obtain any approval of the other Party to license or exploit a joint invention, by reason of joint ownership of any invention or other intellectual property and each Party hereby waives any right it may have under the laws of any country to require such accounting or approval. Dyax shall promptly notify Merrimack of all Dyax Antibodies identified against Merrimack Targets in accordance with the applicable Research Plan, together with all Dyax Antibody Information applicable thereto.

5.3 Patenting Antibody Inventions under the Research Program.

(a) Filing and Prosecution. Prior to the exercise of its option to obtain a Commercial License as set forth in Section 3.1(b), Dyax will at Merrimack's request and expense file and prosecute any Patent Rights in any country for any invention solely owned by Dyax which is directed or relating to any Antibody that are identified, generated, developed, produced, optimized, or obtained by Dyax from a Dyax Library that is delivered by Dyax to Merrimack in connection with the Research Program. Thereafter, such Patent Rights shall be deemed to be included in the rights licensed to Merrimack under Section 3.1. Dyax shall (i) keep Merrimack fully informed as to the filing, prosecution and maintenance of such Patent Rights, (ii) furnish to Merrimack copies of all documents relevant to any such filing, prosecution and maintenance, and (iii) allow Merrimack [**] days to review and comment upon, and to incorporate Merrimack's reasonable comments into, any such document filed with any patent office with respect to such Patent Rights prior to filing such documents.

Upon exercise of its option to obtain a Commercial License with respect to a Dyax Antibody, as set forth in Section 3.1(b), Merrimack may, at Merrimack's expense (i) in Dyax's name, file, maintain, defend and enforce Patent Rights for any invention solely owned by Dyax which is directed or relating to such Dyax Antibody and assume the prosecution of any such Patent Rights filed by Dyax pursuant to this Section 5.3, or (ii) require Dyax to assign to Merrimack any Patent Rights for any invention solely owned by Dyax which is directed or relating to such Dyax Antibody. Dyax will use reasonable efforts to cooperate with Merrimack in such activities.

Dyax shall have [**] days to review and comment upon any patent application before it is filed by Merrimack pursuant to this Section 5.3, and Merrimack shall incorporate Dyax's reasonable comments. For the avoidance of doubt, Dyax acknowledges and agrees that if, upon Merrimack's election to obtain a Commercial License with respect to a Dyax Antibody, Dyax is unable to obtain a CAT Product License with respect to the Target against which such Dyax Antibody is directed because Dyax no longer has any CAT Product License options available to it under the terms of the CAT Agreement, Merrimack's rights under clauses (i) and (ii) of this paragraph above shall apply notwithstanding such inability by Dyax to obtain a CAT Product License and Merrimack may, at Merrimack's expense, require Dyax to assign to Merrimack any Patent Rights for any invention solely owned by Dyax which is directed or relating to such Dyax Antibody.

(b) Enforcement. Merrimack shall have the right but not the obligation, at its expense, to enforce any Patent Rights which relate to any Antibody that are identified, generated, developed, produced, optimized, or obtained by Dyax from a Dyax Library that is delivered by Dyax to Merrimack in connection with the Research Program. Dyax shall cooperate with Merrimack, at Merrimack's expense, in pursuing any litigation or other enforcement action to enforce such Patent Rights, including allowing Merrimack to file suit in Dyax's name, making Dyax employees available to Merrimack, and promptly executing any documents which may be required to pursue such action. Merrimack shall control any such litigation or other enforcement action and shall enter into, or permit, the settlement of any such litigation or other enforcement action. All monies recovered upon the final judgment or settlement of any suit to enforce such Patent Rights shall first be paid to recover the respective actual out-of-pocket expenses of Merrimack and Dyax, or equitable portion thereof, associated with the enforcement. The remainder of any such monies shall be deemed to be Net Sales for purposes of determining the royalties owed by Merrimack to Dyax under Sections 4.5. and 4.6.

5.4 Further Assurances. Each Party has and will have appropriate agreements with its employees and contractors necessary to fully effect the provisions of Sections 5.1, 5.2 and 5.3. Each Party agrees to execute such assignments and other documents, to cause its employees and agents to execute such assignments and other documents, and to take such other actions, as may reasonably be requested by the other Party from time to time to give effect to the provisions of Sections 5.1, 5.2 and 5.3.

ARTICLE VI
CONFIDENTIALITY, PUBLICITY AND PUBLICATIONS

6.1 Confidentiality. With respect to any Confidential Information received by one Party from the other Party, the receiving Party undertakes and agrees, during the term of this Agreement and for an additional period of [**] years thereafter, to:

(a) only use the Confidential Information for the purposes envisioned under this Agreement and not to use the same for any other purpose whatsoever;

(b) ensure that only those of its officers, directors, employees, consultants and permitted sublicensees who are directly concerned with the carrying out of this Agreement have

access to the Confidential Information on a strictly "need to know" basis and are informed of the secret and confidential nature of it;

(c) keep the Confidential Information secret, confidential, safe and secure and shall not directly or indirectly disclose or permit to be disclosed the same to any Third Party, including any consultants or other advisors, without the prior written consent of the disclosing Party, except to the extent disclosure is in connection with its use as envisioned under this Agreement;

(d) ensure that the Confidential Information will not be covered by any lien or other encumbrance in any way; and

(e) not copy, reproduce or otherwise replicate for any purpose or in any manner whatsoever any documents containing the Confidential Information except in connection with its use as envisioned under this Agreement.

Merrimack acknowledges and agrees that Dyax shall be permitted to disclose this Agreement in confidence to CAT and XOMA to the extent reasonably necessary to comply with Dyax's obligations pursuant to the CAT Agreement and XOMA Agreement.

Dyax agrees, at Merrimack's request, to enforce the confidentiality and non-use provisions of the CAT Agreement and any CAT Product License against CAT if Merrimack reasonably believes that CAT has failed to adhere to such obligations with respect to any Merrimack Confidential Information that CAT learns through the CAT Gatekeeping Procedure set forth in Appendix B.

6.2 Exclusions. The obligations referred to in Section 6.1 above shall not extend to any Confidential Information which:

(a) was in the public domain prior to this Agreement or becomes part of the public domain through no fault of the receiving Party, or

(b) is known or becomes known to the receiving Party (having been generated independently by the receiving Party or by a Third Party in circumstances where it has not been derived directly or indirectly from any improper use of Confidential Information of the disclosing Party), or

(c) is or was disclosed to the receiving Party at any time by a Third Party having no obligation of confidentiality with respect to such Confidential Information, or

(d) is required to be disclosed by applicable law, rule, regulation or administrative or court proceeding (including as part of any regulatory submission or approval process) and then only when prompt written notice of this requirement has been given to the disclosing party so that it may, if so advised, seek appropriate relief to prevent such disclosure, provided always that in such circumstances such disclosure shall be only to the extent so required and shall be subject to prior consultation with the disclosing party with a view to agreeing on the timing and content of such disclosure (i.e., obligations under Section 6.1 shall not apply to such required disclosure), or

(e) is information concerning Product which Merrimack is reasonably required to disclose to consultants (such as advertising agencies, reimbursement experts and marketing research companies), customers, healthcare professionals, consumers or regulatory agencies, or which is disclosed by Merrimack to

Affiliates and distributors and sublicensees in order to allow them to market and sell Product (i.e., Merrimack's obligations under Section 6.1 shall not extend to such disclosure by Merrimack, but nothing in this clause (e) shall relieve Dyax of obligations under Section 6.1); or

(f) is disclosed by Merrimack to a Third Party in exercising the rights and licenses granted under this Agreement, provided that such Third Party has confidentiality obligations similar to those of this Agreement (i.e., Merrimack's obligations under Section 6.1 shall not extend to such disclosure by Merrimack, but nothing in this clause (f) shall relieve Dyax of obligations under Section 6.1).

6.3 Dyax Antibodies. Notwithstanding anything to the contrary contained herein, the fact that any given Dyax Antibody is identified in a Research Campaign against a Merrimack Target shall constitute Confidential Information of Merrimack.

6.4 Publicity. No public announcement or other disclosures concerning the terms of this Agreement shall be made to a Third Party, whether directly or indirectly, by either Party (except confidential disclosures to professional advisors) without first obtaining the approval of the other Party and agreement upon the nature and text of such announcement or disclosure except that: (i) a Party may disclose those terms which it is required by regulation or law to disclose, provided that it takes advantage of all provisions to keep confidential as many terms as possible; and (ii) a Party desiring to make such public announcement or other public disclosure shall obtain the consent of the other Party to the proposed announcement or public disclosure prior to public release. Each Party agrees that it shall cooperate fully with the other with respect to all disclosures regarding this Agreement as required under the regulations of the U.S. Securities and Exchange Commission, applicable stock exchanges, NASDAQ and any other comparable foreign body including requests for confidential information or proprietary information of either Party included in any such disclosure. Merrimack agrees that Dyax may include Merrimack on a list of Dyax licensees. In addition, a Party may disclose the terms and conditions of this Agreement to a Third Party in connection with an equity investment in such Party, a loan or other financing, a merger, consolidation, change in control or similar transaction by such Party, the transfer or sale of the assets of such Party relating to this Agreement, or in connection with the granting of a sublicense under this Agreement.

6.5 Publication. In the event that either Party (the "Publishing Party") wishes to publish, in oral or written form, any Confidential Information of the other Party (the "Non-Publishing Party"), such Party will promptly notify the Non-Publishing Party and provide the Non-Publishing Party with a written copy of the proposed publication prior to its submission for publication. At the Non-Publishing Party's request, such the Publishing Party will delay publication in order to permit the Non-Publishing Party to take the steps necessary to secure rights to any intellectual property arising from the Publishing Party's use of Confidential Information, including the filing of one or more patent applications. In no event will such delay exceed [**] days from the date the Non-Publishing Party receives a written copy of the proposed publication. If the Non-Publishing Party makes such a request, the Publishing Party agrees to

cooperate with the Non-Publishing Party in securing such intellectual property rights using the Non-Publishing Party's choice of counsel and the Non-Publishing Party will bear all costs of such filing. No patent application describing an invention resulting from the Publishing Party's use of Confidential Information will be filed or caused to be filed by the Publishing Party without first notifying the Non-Publishing Party as described above for proposed publications. Any publication or patent application will acknowledge the Non-Publishing Party's contribution. No publication or patent application will disclose any Confidential Information of a Party without the prior written permission of that Party.

ARTICLE VII
REPRESENTATIONS, WARRANTIES AND COVENANTS.

7.1 Authorization. Each Party represents and warrants to the other Party that it has the legal right and power to enter into this Agreement, to extend the rights and licenses granted to the other in this Agreement, and to fully perform its obligations hereunder, and that the performance of such obligations will not conflict with its charter documents or any agreements, contracts, or other arrangements to which it is a party.

7.2 Dyax Representations and Warranties. Dyax represents and warrants to Merrimack that:

[**].

7.3 Dyax Covenants. Dyax hereby covenants and agrees that [**] or [**] of the [**] of [**] to be [**] the [**] during the [**] of the [**] not be [**] not be [**] with the [**] in the [**] the [**] or [**]; and [**], and to the [**] have the [**] to [**]. Merrimack agrees that Dyax shall not be deemed to have breached its obligations under this Section 7.3 unless Merrimack's rights to research, develop and/or commercialize Products under this Agreement are adversely affected.

7.4 Disclaimer. Except as otherwise set forth in Section 5.3, nothing in this Agreement is or shall be construed as obligating Dyax to (a) bring or prosecute actions or suits against Third Parties for infringement of any of the patent rights licensed or sublicensed by Dyax to Merrimack hereunder, (b) maintain any patent or to continue to prosecute any patent application licensed or sublicensed by Dyax to Merrimack hereunder, or (c) granting by implication, estoppel, or otherwise (excluding explicit license and sublicense grants) any licenses or rights under patents or other rights of Dyax or Third Parties, regardless of whether such patents or other rights are dominant or subordinate to any patent rights licensed or sublicensed by one Party to the other Party hereunder.

7.5 No Other Warranties. Except as otherwise set forth in Section 7.1 and 7.2, nothing in this Agreement shall be construed as a warranty or representation by Dyax that the use of the Dyax Libraries or Dyax Library Materials and the practice of the patent rights and know-how licensed or sublicensed to Merrimack hereunder will result in any Dyax Antibodies or Products, or as a warranty or representation by Dyax that the exploitation of any of the foregoing will be free from infringement of patents of Third Parties. EXCEPT AS OTHERWISE SET FORTH IN SECTION 7.1 and 7.2 ABOVE, NEITHER PARTY HERETO MAKES ANY

REPRESENTATIONS OR WARRANTIES WITH RESPECT TO ANY OF THE PATENT RIGHTS, MATERIALS (INCLUDING WITHOUT LIMITATION THE DYAX LIBRARIES AND DYAX MATERIALS) OR KNOW-HOW LICENSED HEREUNDER, EXPRESS OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, BY STATUTE OR OTHERWISE, OR THAT ANY PRODUCT OR SERVICE MADE, USED, SOLD, OR OTHERWISE DISPOSED OF UNDER ANY LICENSE OR SUBLICENSE GRANTED IN THIS AGREEMENT IS OR WILL BE FREE FROM INFRINGEMENT OF ANY PATENT RIGHTS OR OTHER INTELLECTUAL PROPERTY RIGHT OF ANY THIRD PARTY. EACH PARTY SPECIFICALLY DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY, OF FITNESS FOR A PARTICULAR PURPOSE, OF VALIDITY OR SCOPE OF SUCH PATENT RIGHTS, MATERIALS OR KNOW-HOW, ARISING FROM COURSE OF DEALING OR OF NON-INFRINGEMENT OF THE INTELLECTUAL PROPERTY RIGHTS OF ANY THIRD PARTY.

7.6 Limitation of Liability. Neither Party shall be liable to the other for consequential, incidental, indirect or punitive damages arising from the performance or nonperformance of such Party under this Agreement whether such claim is based on contract, tort (including negligence) or otherwise, even if an authorized representative of such Party is advised of the possibility or likelihood of same.

ARTICLE VIII
INDEMNIFICATION

8.1 Indemnification by Merrimack. Merrimack shall indemnify, defend, and hold harmless Dyax and its Affiliates, directors, officers, employees, and agents and their respective successors, heirs and assigns (the "Dyax Indemnitees") against any liability, damage, loss, or expense (including reasonable attorneys fees and expenses of litigation) incurred by or imposed upon the Dyax Indemnitees or any one of them in connection with any claims, suits, actions, demands, or judgments in each case initiated by a Third Party which arise out of: (a) any Product developed or commercialized by or on behalf of Merrimack; (b) the gross negligence or willful misconduct of Merrimack in connection with this Agreement; or (c) any breach of any obligation of Merrimack under this Agreement, including without limitation, the failure of Merrimack to comply with the provisions of Sections 3.3 through 4.6 of this Agreement. Notwithstanding the foregoing, Merrimack shall have no obligation under this Section 8.1 with respect to claims, suits, actions, demands or judgments to the extent the same is caused by the gross negligence or willful misconduct of a Dyax Indemnitee.

8.2 Indemnification by Dyax. Dyax shall indemnify, defend, and hold harmless Merrimack and its Affiliates, directors, officers, employees, and agents and their respective successors, heirs and assigns (the "Merrimack Indemnitees") against any liability, damage, loss, or expense (including reasonable attorneys fees and expenses of litigation) incurred by or imposed upon the Merrimack Indemnitees or any one of them in connection with any claims, suits, actions, demands, or judgments in each case initiated by a Third Party which arise out of: (a) the gross negligence or willful misconduct of Dyax in connection with this Agreement; or (b) any breach of any obligation of Dyax under this Agreement. Notwithstanding the foregoing, Dyax shall have no obligation under this Section 8.2 with respect to claims, suits, actions,

demands or judgments to the extent the same is caused by the gross negligence or willful misconduct of a Merrimack Indemnitee.

8.3 Procedure. A Party (for purposes of this Section 8.3, the "Indemnitee") that intends to claim indemnification under this Article 8 shall: (i) promptly notify the indemnifying party (the "Indemnitor") in writing of any claim, action, suit, or other proceeding brought by Third Parties in respect of which the Indemnitee or any of its Affiliates, directors, officers, employees, successors or assigns intend to claim such indemnification hereunder; (ii) provide the Indemnitor sole control of the defense and/or settlement thereof, and (iii) provide the Indemnitor, at the Indemnitor's request and expense, with reasonable assistance and full information with respect thereto. Notwithstanding the foregoing, the indemnity obligation in this Article 8 shall not apply to amounts paid in settlement of any loss, claim, damage, liability or action if such settlement is effected without the consent of the Indemnitor, to the extent such consent is not withheld unreasonably or delayed. Without limiting the foregoing provisions of this Section 8.3, the Indemnitor shall keep the Indemnitee reasonably informed of the progress of any claim, suit or action under this Section 8.3 and the Indemnitee shall have the right to participate in any such claim, suit or proceeding with counsel of its choosing at its own expense, but the Indemnitor shall have the sole right to control the defense or settlement thereof.

ARTICLE IX
TERM AND TERMINATION

9.1 Research Term. The term of the Research Program (the "Research Term") commenced on the effective date of the Original Agreement, has continued in effect through the Effective Date hereof, and shall remain in effect until all activities required to be taken by Dyax and Merrimack under all Research Campaigns of the Research Program have been completed.

9.2 Term of Agreement. This Agreement commenced on the effective date of the Original Agreement, has continued in effect through the Effective Date hereof, and shall remain in effect, unless earlier terminated as provided in this Article 9, for so long as Merrimack or any of its Affiliates or sublicensees continues to develop and/or commercialize Products that are or may be royalty-bearing hereunder or under any CAT Product License and thereafter shall terminate, on a country-by-country and Product-by-Product basis on the earliest the date after which no payments are due to Dyax under Article 4 of this Agreement.

9.3 Termination by Merrimack. After the expiration of the term of the Research Program, Merrimack shall have the right to terminate this Agreement in its entirety or on a Product-by-Product basis at any time by providing ninety (90) days prior written notice to Dyax.

9.4 Termination by Dyax. In the event that Merrimack fails to make timely payment of any amounts due to Dyax under Article 5 of this Agreement, Dyax may terminate this Agreement upon thirty (30) days prior written notice to Merrimack, unless Merrimack pays all undisputed past-due amounts prior to the expiration of such thirty (30) day notice period.

9.5 Termination for Other Material Breach. In the event that either Party commits a material breach of any of its obligations under this Agreement, and such Party fails to remedy that breach within [**] days after receiving written notice thereof from the other Party, then the

other Party may immediately terminate this Agreement upon written notice to the breaching Party.

9.6 Effect of Termination.

(a) Upon termination of this Agreement in its entirety or with respect to any particular Product pursuant to Section 9.3, 9.4 or 9.5 hereof, all of Merrimack's rights and obligations under this Agreement (including any license rights) with respect to all Products or such particular Product, as applicable, shall terminate immediately and, except as set forth in Section 9.6(c), Merrimack shall cease the development and commercialization of all Products or such particular Product, as applicable; *provided however* that, subject to the terms of any Third Party Phage Display Agreement, [**].

(b) The following provisions shall survive the expiration or termination of this Agreement: Articles 5, 6, 8 and 10 and Sections , 4.10, 4.11, 7.4, 7.5, 7.6, and this Section 9.6; as well as Merrimack's obligation to make payments with respect to Products sold prior to the effective date of termination. In the event of the termination of this Agreement with respect to a Product in a country under Section 9.2, upon satisfaction of Merrimack's payment obligations pursuant to Article 4, any license granted under Article 3 with respect thereto shall be fully paid up and royalty free.

(c) Upon any termination of this Agreement in its entirety or with respect to a Product, at its option, Merrimack shall be entitled to complete production of and/or sell any in-process and/or completed inventory of Product under the licenses granted under this Agreement which remains on hand as of the date of termination, so long as Merrimack pays to Dyax the payments applicable to said subsequent sales in accordance with the same terms and conditions set forth in this Agreement.

(d) Upon expiration or termination of this Agreement for any reason, nothing herein shall be construed to release either Party from any obligation that matured prior to the effective date of such expiration or termination.

(e) In the event that Merrimack disputes a payment obligation and Merrimack notifies Dyax of such dispute and makes the payment under protest, then notwithstanding such payment, Merrimack shall have the right to bring an action as to whether or not Merrimack is obligated to make such payment and to the extent Merrimack prevails in such action, Dyax shall return such disputed payment to Merrimack.

(f) This Agreement may be terminated only as expressly provided in this Article 9.

ARTICLE X
MISCELLANEOUS

10.1 Relationship of Parties. Nothing in this Agreement or in the course of business between Dyax and Merrimack shall make or constitute either Party a partner, employee or agent of the other. Neither Party shall have any right or authority to commit or legally bind the other in

any way whatsoever including, without limitation, the making of any agreement, representation or warranty.

10.2 Notices. All notices, requests, demands and other communications required or permitted to be given pursuant to this Agreement shall be in writing and shall be deemed to have been duly given upon the date of receipt if delivered by hand, recognized international overnight courier, confirmed facsimile transmission, or registered or certified mail, return receipt requested, postage prepaid to the following addresses or facsimile numbers:

If to Dyax:
Dyax Corp.
300 Technology Square
Cambridge, MA 02139
Attention: Vice President, Business Development
Attention: Corporate Counsel, Legal Department
Facsimile: (617) 225-2501

If to Merrimack:
Merrimack Pharmaceuticals, Inc.
One Kendall Square
Building 700, 2nd Floor
Cambridge, MA 02139
Attention: Senior Director, Business Development
Facsimile: (617) 491-1386

Either Party may change its designated address and facsimile number by notice to the other Party in the manner provided in this Section.

10.3 Assignment. This Agreement may not be assigned by either Party without the prior written consent of the other Party, except that either Party may assign this Agreement (i) to any of its Affiliates, (ii) in connection with the grant of a security interest, or (iii) or to a successor in connection with the merger, consolidation, or sale of all or substantially all of its assets or that portion of its business pertaining to the subject matter of this Agreement, with prompt written notice to the other Party of any such assignment and provided that the assignee assumes in writing all of the obligations of the assignor. This Agreement shall inure to the benefit of and be binding upon the Parties and their respective lawful successors and assigns

10.4 Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts, without regard to any choice of law principles that would dictate the application of the laws of another jurisdiction.

10.5 Compliance With Law. Nothing in this Agreement shall be construed so as to require the commission of any act contrary to law, and wherever there is any conflict between any provision of this Agreement and any statute, law, ordinance or treaty, the latter shall prevail, but in such event the affected provisions of the Agreement shall be conformed and limited only to the extent necessary to bring it within the applicable legal requirements.

10.6 Force Majeure. Neither Party shall be liable for failure or delay in performance of any obligation under this Agreement, other than payment of any amount due and payable, if such failure or delay is caused by circumstances beyond the control of the Party concerned, including, without limitation, failures resulting from fires, earthquakes, power surges or failures, accidents, labor stoppages, war, revolution, civil commotion, acts of public enemies, blockade, embargo, inability to secure materials or labor, any law, order, proclamation, regulation, ordinance, demand, or requirement having a legal effect of any government or any judicial authority or representative of any such government, acts of God, or acts or omissions of communications carriers, or other causes beyond the reasonable control of the Party affected, whether or not similar to the forgoing. Any such cause shall delay the performance of the affected obligation until such cause is removed.

10.7 Amendment and Waiver. This Agreement may be amended, supplemented, or otherwise modified only by means of a written instrument signed by both Parties. Any waiver of any rights or failure to act in a specific instance shall relate only to such instance and shall not be construed as an agreement to waive any rights or fail to act in any other instance, whether or not similar.

10.8 Headings. All headings used in this Agreement are inserted for convenience only and are not intended to affect the meaning or interpretation of this Agreement or any Article or Section hereof.

10.9 Severability. In the event any provision of this Agreement should be held invalid, illegal or unenforceable, the remaining provisions shall not be affected or impaired and the Parties will use all reasonable efforts to replace the applicable provision with a valid, legal and enforceable provision which insofar as practical implements the purposes hereof, provided, however, that if the Parties fail to reach such agreement within [**] days, a Party whose rights or obligations are materially affected as a result of a provision being held invalid, illegal or unenforceable may terminate this Agreement.

10.10 Entire Agreement. This Agreement constitutes the entire agreement between the Parties with respect to the subject matter hereof and supersedes any term sheets and all prior agreements or understandings between the Parties relating to the subject matter hereof.

10.11 Bankruptcy. All rights and licenses granted under or pursuant to this Agreement by Dyax to Merrimack are, and shall irrevocably be deemed to be, “intellectual property” as defined in Section 101(56) of the Bankruptcy Code. In the event of the commencement of a case by or against either Party under any Chapter of the Bankruptcy Code, this Agreement shall be deemed an executory contract and all rights and obligations hereunder shall be determined in accordance with Section 365(n) thereof. Unless a Party rejects this Agreement and the other Party decides not to retain its rights hereunder, the other Party shall be entitled to a complete duplicate of (or complete access to, as appropriate) all intellectual property and all embodiments of such intellectual property held by the Party and the Party shall not

interfere with the rights of the other Party, which are expressly granted hereunder, to such intellectual property and all embodiments of such intellectual property from another entity.

10.12 Counterparts. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original agreement.

10.13 Amends and Restates. This Agreement amends, restates and replaces in its entirety the Original Agreement.

IN WITNESS WHEREOF, the undersigned have duly executed and delivered this Agreement as a sealed instrument effective as of the date first above written.

DYAX CORP.		**MERRIMACK PHARMACEUTICALS, INC**.	
By:	/s/ Henry E. Blair	By:	/s/ Robert J. Mulroy
Title:	Chief Executive Officer	Title:	President and Chief Executive Officer
Date:	January 24, 2007	Date:	January 25, 2007

APPENDIX A

RESEARCH PLAN
FOR
CAMPAIGN I

Workplan Overview

The aim of the project is to identify [**] from Dyax's antibody library against [**] targets provided by Merrimack Pharmaceuticals, Inc. (Merrimack). For [**] of the targets, [**] are available and will be used in the selection plan. A schematic showing the overall workplan is presented in **Scheme 1**. Dyax will perform [**] using the Dyax [**]. Selection output [**] will be tested using a [**] against the [**], and at [**] selection [**] per target showing a [**]. The [**] will be subjected to [**] target to screen approximately [**] per target. Confirmed [**] will be [**], and the [**] data will be used to identify up to [**] per target that will be [**]. The resulting [**] will be used to [**] based either on [**]. Based on the results from the [**] will be selected for [**]) to Merrimack for more extensive evaluation.

Deliverables to Merrimack for each of [**] targets

[**]

Reagent And Data Delivery To Dyax

Merrimack will supply Dyax with the following materials with respect to [**] targets for selections and screening:

[**]

Scheme 1, Plan Overview

[**]

Target Validation, Selections, Screening, And Sequencing

The selection plan for soluble protein targets is dependent on the target format, and [**].

[**].

Scheme 2, Representative Selection Strategies:

[**]

Final Lead Selection And [**] Production

[**].

Key Dates And Timeline

A project timeline with a start date of Dec 2nd, 2005 has the following key dates:

[**]

APPENDIX B
CAT GATEKEEPING PROCEDURE

For each Nominated Target (which must be accompanied by a GenBank® accession number or similar information which uniquely identifies that Nominated Target) submitted by Dyax under Clause 4.1, CAT will, on a Nominated -Target-by-Nominated -Target basis, not grant a Product License to Dyax, if:

1. CAT is, at the date of submission of the Target Option Notice by Dyax, contractually obligated on an exclusive basis in respect of the Nominated Target with a Third Party pursuant to an agreement with that Third Party which was entered into prior to the Commencement Date of this Agreement; or

2. CAT is, at the date of submission of the Target Option Notice by Dyax, engaged in internal research and/or development with respect to the Nominated Target (as can be measured by reliable or verifiable means).

NOTES

1. For the avoidance of doubt, CAT will not subject any Nominated Target to the CAT Gatekeeping Procedure unless and until Dyax supplies CAT with a GenBank® accession number or similar information which uniquely identifies that Nominated Target.

2. If Dyax supplies CAT with an incorrect GenBank® accession number for a Nominated Target or otherwise incorrectly identifies a Nominated Target which is then subjected to the CAT Gatekeeping Procedure, the result of the CAT Gatekeeping Procedure in respect of such Nominated Target shall prevail even if it is subsequently discovered that such incorrect GenBank® accession number or identifying information had been provided by Dyax.

3. Within one (1) month after notice is given to Dyax of a refusal by CAT to grant a Product License in respect of any Nominated Target, Dyax may notify CAT that it wishes to appoint an Expert to make such enquiries of CAT as may be reasonably necessary for the Expert to be able to confirm to Dyax that the CAT Gatekeeping Procedure had been correctly applied by CAT in respect of such Nominated Target. CAT shall provide such information to the Expert as the Expert may reasonably determine is required in order to make such confirmation. For the avoidance of doubt the Expert shall not be entitled (unless CAT consents) to enter CAT premises in order to carry out its enquiries, shall only provide the confirmation to Dyax on a "Yes/No" basis and shall not give or be obliged to give to Dyax any other information obtained from CAT in respect of the CAT Gatekeeping Procedure or the relevant Nominated Target. The Expert shall, prior to making any enquiries of CAT, enter into a confidential disclosure agreement with CAT. Notwithstanding the foregoing, CAT shall not be obliged to respond to the enquiries of the Expert if to do so would, or would reasonably be expected to, cause a breach in terms of any agreement CAT may have with any other Third parties; provided, however, that such disclosure subject to the confidential disclosure agreement shall be treated by CAT in the same manner as disclosure in its normal business operations. The Expert shall complete its investigations and provide the confirmation to Dyax (with a copy to CAT) within thirty (30) days after appointment by Dyax, and payment of the Expert's fee shall be conditioned on such delivery being timely

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made. If such written confirmation is not made within such thirty (30) days period, then a replacement Expert shall be appointed within 10 days thereafter, subject to same terms and conditions stated above. If an Expert provides notice that he or she cannot complete the analysis because CAT has failed without good reason to provide any information requested as provided above, then CAT shall have no more than 30 days to provide the information and the Expert shall then have no more than 15 days after the information is provided to the Expert to evaluate the information and make a determination. Failure of the second Expert to provide such written confirmation to Dyax on a "Yes/No" basis within thirty (30) days after appointment shall be irrevocably deemed to be confirmation that CAT correctly applied the CAT Gatekeeping Procedure to the Nominated Target in question, provided, however that until (i) CAT provides all information that it is required to provide in accordance with this Schedule 2 and (ii) the expiration of any extension required for the Expert to evaluate such information, there shall not be deemed to be any such confirmation that CAT correctly applied the CAT Gatekeeping Procedure to the Nominated Target in question.

If the Expert appointed by Dyax hereunder decides that CAT correctly applied, or is deemed to have correctly applied, the CAT Gatekeeping Procedure, Dyax shall be responsible for the Expert's fees and CAT shall thereafter have no obligations to Dyax in respect of such Nominated Target. If the Expert decides that CAT did not correctly apply the CAT Gatekeeping Procedure Dyax shall be granted a Product License in relation to the Nominated Target in question (provided that CAT is not restricted by obligations to any Third Party in relation to the Nominated Target in question in which case the Product License will be subject to those restrictions) and CAT shall be responsible for the Expert's fees. The procedure described in this paragraph 3 will not apply to any determination by CAT that the Primary Application of a Nominated Target is in the Excluded Field, where CAT's decision will be final if made in good faith.

"Expert" means a patent agent who is independent of CAT and all of the other parties with an interest in the outcome of a determination regarding a Nominated Target, who has suitable knowledge and experience in the reasonable opinion of Dyax to perform the above activities, subject to CAT's consent, which consent shall not be unreasonably withheld or delayed.

APPENDIX C
CAT PATENT RIGHTS

[**].

EXHIBIT D
CAT PRODUCT LICENSE

Private & Confidential

CAMBRIDGE ANTIBODY TECHNOLOGY LIMITED (1)

AND

DYAX CORP. (2)

PRODUCT LICENSE FOR

Appendix D

THIS AGREEMENT is made:

BETWEEN:

(1) **CAMBRIDGE ANTIBODY TECHNOLOGY LIMITED** (Registered in England No. 2451177) whose registered office is at The Milstein Building, Granta Park, Cambridge, Cambridgeshire, CB1 6GH, UK ("**CAT**").

(2) **DYAX CORP.** a corporation organised and existing under the laws of the State of Delaware having its principal place of business at 300 Technology Square, Cambridge, Massachusetts 02139 USA ("**Dyax**").

BACKGROUND:

(a) By the terms of the Amendment Agreement (as defined below), CAT granted Dyax certain options to be granted Product Licences under the Antibody Phage Display Patents and CAT Know How (all as defined below).

(b) Dyax has nominated the Target (which was identified prior to the execution of the Amendment Agreement), and this Target has passed the CAT Gatekeeping Procedure (each as defined below).

(c) By this Agreement CAT wishes to grant to Dyax a Product Licence in respect of Diagnostic Antibody Products and Therapeutic Antibody Products against the Target.

In consideration of the mutual covenants and undertakings set out below, **THE PARTIES AGREE** as follows:

1. Definitions

1.1 In this Agreement, the terms defined in this Clause shall have the meanings specified below:

"**Acceptance Fee**" means Dollars (US $).

[**]

"**Affiliate**" means any company, partnership or other entity which directly or indirectly Controls, is Controlled by or is under common Control with any other entity.

"**Agreement**" means this product licence and any and all Schedules, appendices and other addenda to it as may be amended from time to time in accordance with the provisions of this agreement.

"**Amendment Agreement**" means the agreement executed by Dyax and CAT on 3 January 2003, as amended.

"**Antibody**" means a molecule or a gene encoding such a molecule comprising or containing one or more immunoglobulin variable domains or parts of such domains or any existing or future fragments, variants, modifications or derivatives thereof.

"**Antibody Library**" means any Antibody library constructed using processes which are covered by a claim of an issued and unexpired patent included within the Antibody Phage Display Patents which has not been held permanently revoked, unenforceable or invalid by a decision of a court or other governmental agency of competent jurisdiction unappealed within the time allowed for appeal, and which has not been admitted to be invalid or unenforceable through reissue or disclaimer or otherwise.

"**Antibody Phage Display Patents**" means: (a) the patents and patent applications listed in Schedule 1 and any patents issuing from such patent applications, together with any divisions, registrations, confirmations, reissues, extensions, renewals, continuations, continuations-in-part, revalidations, additions, substitutions, renewals or supplementary protection certificates thereof throughout the world; and (b) any Patent Rights which claim or cover any invention or discovery which is developed by CAT or its Affiliates at any time during the term of this Agreement directly related to Antibody phage display or Antibody Services; *provided, however*, that Antibody Phage Display Patents shall always exclude (i) CAT Diabodies Patent Rights, (ii) any Patent Rights owned or

controlled by CAT which claim or cover Catalytic Antibodies, (iii) any Patent Rights owned or controlled by CAT which claim ribosome display technology, (iv) any Patent Rights which claim Single Domain Antibodies, and (v) any Patent Rights acquired by CAT after the Commencement Date from any Third Party for consideration or as a result of CAT's acquisition of or merger with such Third Party.

"**Antibody Services**" means the provision of research and/or development services for the identification, generation, derivation or development of one or more Antibody Libraries or Antibodies derived therefrom.

"**Business Day**" means a day (other than a Saturday or Sunday) on which the banks are ordinarily open for business in the City of London and the Commonwealth of Massachusetts.

"**CAT Diabodies Patent Rights**" means (a) the Patent Rights entitled "Diabodies — multivalent and multispecific binding proteins, their manufacture and use", PCT/GB93/02492 and (b) the Patent Rights entitled "Retargeting antibodies and diabodies", PCT/GB94/02019.

"**CAT Gatekeeping Procedure**" means the procedure set out in Schedule 2 of the Amendment Agreement which CAT has carried out in respect of the Target prior to the grant of this Product Licence.

"**CAT Know-How**" means any Confidential Information of CAT which constitutes unpatented know-how, technical and other information related to the subject matter of the

Antibody Phage Display Patents as identified in Schedule 2 and as amended from time to time in accordance with Schedule 2.

"**CAT Licensable Antibody**" means any Antibody to the Target (a) where such Antibody has been identified, generated, developed, produced or derived by Dyax or a Dyax Sublicensee or its sublicensees and (b) the identification, generation, development, production or derivation of such Antibody uses any of the processes claimed or covered by a claim of an issued and unexpired patent included within the Antibody Phage Display Patents (which has not been held permanently revoked, unenforceable or invalid by a decision of a court or other governmental agency of competent jurisdiction unappealed within the time allowed for appeal, and which has not been admitted to be invalid or unenforceable through reissue or disclaimer or otherwise) or uses the CAT Know-How and (c) which is potentially useful for the development of any Diagnostic Antibody Product and/or any Therapeutic Antibody Product.

"**Catalytic Antibodies**" means solely those Antibodies which bind to and catalyze the chemical transformation of a substrate and in which an Antibody binding region is involved in said catalysis.

"**Commencement Date**" means the date of this Agreement first written above.

"**Competent Authority**" means any national or local agency, authority, department, inspectorate, minister, ministry official, parliament or public or statutory person (whether autonomous or not) of any government of any country having jurisdiction over either any of the activities contemplated by this Agreement or the Parties including the European Commission, the Court of First Instance and the European Court of Justice.

"**Controls**" means the ownership, directly or indirectly, of more than fifty percent (50%) of the outstanding equity securities of a corporation which are entitled to vote in the election of directors or a more than fifty percent (50%) interest in the net assets or profits of an entity which is not a corporation.

"**Diagnostic Antibody Product**" means any preparation in the form of a device, compound, kit or service with utility in the diagnosis, prognosis, prediction or disease management of a disorder for any indication which contains, comprises or the process of development or manufacture of which utilises a CAT Licensable Antibody. The term "**Diagnostic Antibody Product**" shall not include any Research Product.

"**Dyax Therapeutic Antibody Product**" means any Therapeutic Antibody Product identified, generated or derived by Dyax for itself or its Affiliates but not a Therapeutic Antibody Product identified, generated or derived by Dyax for, or on behalf of, a Third Party.

"**Dyax Sublicensee**" means any sublicensee of Dyax under this Agreement.

"**Exploit**" means to make, have made, use, sell or import.

"**FDA**" means the United States Food and Drug Administration, the equivalent Competent Authority in any country of the Territory or any successor bodies thereto.

"**First Commercial Sale**" means the first commercial sale of any Product by Dyax or a Dyax Sublicensee (or its sublicensee) in any country after grant of a Marketing Authorisation.

"**Force Majeure**" means any event outside the reasonable control of either Party affecting its ability to perform any of its obligations (other than payment) under this Agreement, including Act of God, fire, flood, lightning, war, revolution, act of terrorism, riot or civil commotion, but excluding strikes, lock-outs or other industrial action, whether of the affected Party's own employees or others, failure of supplies of power, fuel, transport, equipment, raw materials or other goods or services.

"**GAAP**" means United States generally accepted accounting principles, consistently applied.

"**IDE**" means an Investigational Device Exemption application, as defined in Title 21 of the United States Code of Federal Regulations, filed with the FDA or an equivalent foreign filing.

"**IND**" means an Investigational New Drug Application, as defined in Title 21 of the United States Code of Federal Regulations, that is required to be filed with the FDA before beginning Phase I Clinical Trials of any Therapeutic Antibody Product in human subjects, or an equivalent foreign filing.

"**Major Mark**et" means any one of the following: (i) the United States of America, (ii) any country in Europe which is subject to the Marketing Authorisation procedure of the European Medicines Evaluation Agency, or (iii) Japan.

"**Marketing Authorisation**" means any approval (including all applicable pricing and governmental reimbursement approvals) required from the FDA or relevant Competent Authority to market and sell a Product in a particular country.

"**Net Sales**" means, with respect to a Product sold by Dyax or a Dyax Sublicensee (or its sublicensees) sold by Dyax or its sublicensee, the price invoiced by that party to the relevant purchaser (or in the case of a sale or other disposal otherwise than at arm's length, the price which would have been invoiced in a bona fide arm's length contract or sale) but deducting the costs of packing, transport and insurance, customs duties, any credits actually given for returned or defective Products, normal trade discounts actually given, and sales taxes, VAT or other similar tax charged on and included in the invoice price to the purchaser.

"**Party**" means CAT or Dyax.

"**Patent Rights**" means any patent applications and any patents issuing from such patent applications, author certificates, inventor certificates, utility certificates, improvement

patents and models, and certificates of addition and all counterparts of them throughout the Territory, including any divisional applications and patents, filings, renewals, continuations, continuations-in-part, patents of addition, extensions, reissues, substitutions, confirmations, registrations, revalidation and additions of or to any of them, as well as any supplementary protection certificates and equivalent protection rights in respect of any of them.

"**Pharmacia Agreement**" means the agreement between CAT and Pharmacia P-L Biochemicals Inc. dated 11 September 1991.

"**Pharmacia P-L Biochemicals Inc.**" means Pharmacia P-L Biochemicals Inc (now known as Amersham Biosciences).

"**Phase I Clinical Trial**" means a human clinical trial in any country that is intended to initially evaluate the safety of an investigational Product in volunteer subjects or patients that would satisfy the requirements of 21 CFR 312.21(a), or its foreign equivalent and may evaluate the Product's therapeutic or antigenic effects.

"**Phase III Clinical Trial**" means a pivotal human clinical trial in any country the results of which could be used to establish safety and efficacy of a Product as a basis for a marketing application that would satisfy the requirements of 21 CFR 312.21(c).

"**Primary Application**" means a major application of an Antibody against the Target as ascertained at the time of assessment using objective and reasonable scientific and/or commercial criteria, data and/or information. Primary Application shall not mean any minor or incidental application.

"**Product**" means a Diagnostic Antibody Product or a Therapeutic Antibody Product.

"**Product Licence**" means the licence granted to Dyax pursuant to Clause 2 of this Agreement.

"**Quarter**" means each period of three (3) months ending on March 31, June 30, September 30, or December 31 and "**Quarterly**" shall be construed accordingly.

"**Research Products**" means any product in relation to which Pharmacia P-L has an exclusive licence from CAT pursuant to the Pharmacia Agreement.

"**Single Domain Antibodies**" means an Antibody containing only a single domain (heavy or light).

"**Status Report**" has the meaning set forth in Clause 4.1.

"**Target**" means , as set out in Schedule 3.

"**Territory**" means all countries of the world.

"**Therapeutic Antibody Product**" means any preparation for the treatment or prevention of disease, infection or other condition in humans for any indication which contains, comprises, or the process of development or manufacture of which utilises, a CAT Licensable Antibody. The term "**Therapeutic Antibody Product**" shall not include any Research Product.

"**Third Party**" means any entity or person other than Dyax, CAT or their respective Affiliates.

"**Valid Claim**" means a claim of an issued and unexpired patent included within the Antibody Phage Display Patents which have been licensed to CAT by the MRC which has not been held permanently revoked, unenforceable or invalid by a decision of a court or other governmental agency of competent jurisdiction unappealed within the time allowed for appeal, and which has not been admitted to be invalid or unenforceable through reissue or disclaimer or otherwise.

"**Year**" means initially the period from the Commencement Date to the end of that calendar year, and subsequently a calendar year.

1.2 The headings to clauses are inserted for convenience only and shall not affect the interpretation or construction of this Agreement.

1.3 Words imparting the singular shall include the plural and vice versa. References to persons include an individual, company, corporation, firm or partnership.

1.4 The words and phrases "other", "including" and "in particular" shall not limit the generality of any preceding words or be construed as being limited to the same class as any preceding words where a wider construction is possible.

1.5 References to any statute or statutory provisions of the United Kingdom shall include (i) any subordinate legislation made under it, (ii) any provision which it has superseded or re-enacted (whether with or without modification), and (iii) any provision which subsequently supersedes it or re-enacts it (whether with or without modification. References to any statute or regulation of the United States of America means that statute or regulation as it may be amended, supplemented or otherwise modified from time to time, and any successor statute or regulation.

2. Grant of Product Licence

2.1 Subject to Clause 2.4 below, CAT hereby grants to Dyax and its Affiliates a non-exclusive, royalty-bearing licence (on the terms of this Agreement) with the right to sublicense (on the terms of Clause 3) under the Antibody Phage Display Patents and CAT Know-How to Exploit Products against the Target in the Territory.

2.2 The Product Licence granted under this Agreement is pursuant to Dyax's exercise of one (1) option under the Amendment Agreement.

2.3 For the avoidance of doubt, no rights are granted by CAT under this Agreement to any CAT Diabodies Patent Rights, and any Patent Rights owned or controlled by CAT which claim Catalytic Antibodies, ribosome display technology, any Patent Rights which claim Single Domain Antibodies and no rights are granted by CAT in this Agreement under the Antibody Phage Display Patents to Exploit Research Products.

2.4 This Product Licence shall come into effect upon the date that the Acceptance Fee is received by CAT. The Acceptance Fee shall not be refundable or creditable against any other sums which may be payable by Dyax or a Dyax Sublicensee to CAT pursuant to this Agreement.

3. Sub-Licensing

3.1 Dyax will, if requested by CAT, inform CAT of the identity of all Dyax Sublicensees (and their sublicensees) in relation to this Agreement.

3.2 Dyax (and where relevant each Dyax Sublicensee) will ensure that any sublicensee (to which it sublicences its rights in accordance with the terms of this Agreement) executes a written agreement which requires the sublicensee to abide by the terms of this Agreement.

3.3 Dyax (and where relevant each Dyax Sublicensee) will be liable for any breach of the sublicences granted in accordance with Clause 3.2; provided, however, that Dyax's liability for such breach by a sublicensee shall be limited to the amount that has been received or is thereafter received by Dyax directly or indirectly from such sublicensee pursuant to the sublicense agreement; and provided, further, that any written agreement with a sublicensee shall contain a provision pursuant to which CAT shall be a third party beneficiary of such sublicence agreement and shall have the right to enforce (including claim damages as a result of any breach) such sublicence agreement. If at any time CAT does have to enforce its rights under a sublicence agreement Dyax will, if requested by CAT, supply to CAT a copy of the relevant sublicence as soon as possible. For the avoidance of doubt, sublicensing by Dyax to a Dyax Sublicensee is permitted as is sublicensing by a Dyax Sublicensee to a sublicensee. No further sublicensing of the rights and obligations under this Agreement is permitted.

4. Status Report

4.1 Dyax will provide to CAT a brief summary of the status of each Product against the Target that Dyax or Dyax Sublicensees desire to Exploit under this Agreement ("Status Report"). During the Term, Dyax will submit such Status Report to CAT for a particular Product prior to the time Dyax or Dyax Sublicensees begin the first human clinical trial with respect to such Product. [**].

5. Gatekeeping

5.1 The Parties acknowledge that, as of the Commencement Date, the Target has passed CAT's Gatekeeping Procedure under the Amendment Agreement.

6. Consideration

6.1 Therapeutic Antibody Products

6.1.1 With respect to Therapeutic Antibody Products, Dyax shall pay to CAT the following payments upon achievement of the specified milestones by Dyax or a Dyax Sublicensee (or its sublicensee) for the first Therapeutic Antibody Product to achieve the relevant milestone:

Initiation of first Phase I Clinical Trial	US $
Initiation of first Phase III Clinical Trial	US $
First filing for Marketing Authorisation in one Major Market country	US $
Marketing Authorisation granted in the United States	US $

6.1.2 With respect to Therapeutic Antibody Products, Dyax shall pay CAT royalties in an amount equal to percent (%) of Net Sales of the Therapeutic Antibody Product sold by or on behalf of Dyax or the Dyax Sublicensee.

6.2 Diagnostic Products

6.2.1 With respect to Diagnostic Antibody Products, Dyax shall pay to CAT the following payments upon achievement by Dyax or a Dyax Sublicensee (or its sublicensee) of the milestones set out below. For the avoidance of doubt the milestone payments shall be payable in respect of the first Diagnostic Antibody Product to achieve the relevant milestone:

First filing for Marketing Authorisation in one Major Market country	US $
Marketing Authorisation granted in each Major Market Country	US $

6.2.2 With respect to Diagnostic Antibody Products, Dyax shall pay CAT royalties on a country-by-country basis in an amount equal to percent (%) of Net Sales of Diagnostic Antibody Products sold by or on behalf of Dyax or any Dyax Sublicensee.

6.3 All royalties due to CAT pursuant to Clauses 6.1.2 and 6.2.2 shall be payable on a country-by-country basis until the last Valid Claim expires or ten (10) years from the date of First Commercial Sale of such Product, whichever occurs later.

7. Provisions Relating to Payment of Consideration

7.1 All milestone payments shall be paid by Dyax within [**] days of the applicable milestone being achieved and no milestone payments shall be refundable or creditable against any other sum payable by Dyax hereunder for any reason.

7.2 Dyax shall make the payments due to CAT under Clause 6 above in United States dollars (if Dyax in turn receives payment in dollars) or in pounds sterling (if Dyax in turn receives payment in pound sterling), or Euros (if Dyax in turn receives payment in Euros). Where Dyax receives payment in a currency other than United States dollars, pounds sterling or Euros, Dyax will convert the relevant sum into pounds sterling (or Euros if Euros have replaced pounds sterling at the time of payment). Dyax will use the conversion rate reported in the Financial Times two (2) Business Days before the day on which Dyax pays CAT. Such payment will be made without deduction of exchange, collection or other charges. All payments will be made at Quarterly intervals. Within [**] days of the end of each Quarter after the First Commercial Sale of each Product in any country, Dyax shall prepare a statement which shall show on a country-by-country basis for the previous Quarter Net Sales of each Product by Dyax or its Affiliates and all monies due to CAT based on such Net Sales. That statement shall include details of Net Sales broken down to show the country of the sales and the total Net Sales by Dyax or its Affiliates in such country and shall be submitted to CAT within such [**] day period together with remittance of the monies due. With respect to Net Sales of a Product by a Dyax Sublicensee (or its sublicensee) Dyax shall prepare a statement which will include the same information and remit that statement and any monies due within the same period except with regard to any Dyax Sublicensee with which Dyax has a licence agreement relating to the technology of Antibody phage display as of the Commencement Date where the remittance will be made at Quarterly intervals within [**] days of the date royalties are due to Dyax from such existing Dyax Sublicensees.

7.3 All payments shall be made free and clear of and without deduction or deferment in respect of any disputes or claims whatsoever and/or as far as is legally possible in respect of any taxes imposed by or under the authority of any government or public authority. [**].

7.4 Dyax shall keep and shall procure that its Affiliates and Dyax Sublicensees keep true and accurate records and books of account containing all data necessary for the calculation of the amounts payable by it to CAT pursuant to this Agreement. Those records and books of account shall be kept for seven (7) years following the end of the Year to which they relate. Upon CAT's written request, a firm of accountants appointed by agreement between the Parties or, failing such agreement within ten (10) Business Days of the initiation of discussions between them on this point CAT shall have the right to cause an international firm of independent certified public accountants that has not performed auditing or other services for either Party or their Affiliates (or, if applicable, any Dyax Sublicensee with rights to the Product in question) acceptable to Dyax or the Dyax Sublicensee such acceptance not to be unreasonably withheld to inspect such records and books of account. In particular such firm:

7.4.1 shall be given access to and shall be permitted to examine and copy such books and records of Dyax and its Affiliates and Dyax Sublicensees upon twenty (20) Business Days notice having been given by CAT and at all reasonable times on Business Days for the purpose of certifying that the Net Sales or other relevant sums calculated by Dyax and its Affiliates and Dyax Sublicensees during any

Year were reasonably calculated, true and accurate or, if this is not their opinion, certify the Net Sales figure or other relevant sums for such period which in their judgment is true and correct;

7.4.2 prior to any such examination taking place, such firm of accountants shall undertake to Dyax that they shall keep all information and data contained in such books and records, strictly confidential and shall not disclose such information or copies of such books and records to any third person including CAT, but shall only use the same for the purpose of calculations which they need to perform in order to issue the certificate to which this Clause envisages;

7.4.3 any such access examination and certification shall occur no more than once per Year and will not go back over records more than two (2) years old;

7.4.4 Dyax and its Affiliates and Dyax Sublicensees shall make available personnel to answer queries on all books and records required for the purpose of that certification; and

7.4.5 the cost of the accountant shall be the responsibility of Dyax if the certification shows it to have underpaid monies to CAT by more than [**] and the responsibility of CAT otherwise.

7.5 All payments due to CAT under the terms of this Agreement are expressed to be exclusive of value added tax (VAT) howsoever arising. [**].

7.6 All payments made to CAT under this Agreement shall be made to the bank account of CAT as notified by CAT to Dyax from time to time.

7.7 If Dyax fails to make any payment to CAT hereunder on the due date for payment, without prejudice to any other right or remedy available to CAT it shall be entitled to charge Dyax interest (both before and after judgment) of the amount unpaid at the annual rate of LIBOR (London Interbank Offering Rate) plus [**] calculated on a daily basis until payment in full is made without prejudice to CAT's right to receive payment on the due date.

8. Confidentiality

8.1 With respect to any confidential information received from the other Party ("Confidential Information**"**), each Party undertakes and agrees to:

(a) only use the Confidential Information for the purposes envisaged under this Agreement and not to use the same for any other purpose whatsoever;

(b) ensure that only those of its officers and employees who are directly concerned with the carrying of this Agreement have access to the Confidential Information on a strictly "need to know" basis and are informed of the secret and confidential nature of it;

(c) keep the Confidential Information secret, confidential, safe and secure and shall not directly or indirectly disclose or permit to be disclosed the same to any Third Party, including any consultants or other advisors, without the prior written consent of the disclosing Party except to the extent disclosure is necessary in connection with its use as envisaged under this Agreement;

(d) ensure that the Confidential Information will not be covered by any lien or other encumbrance in any way, and

(e) not copy, reproduce or otherwise replicate for any purpose or in any manner whatsoever any documents containing the Confidential Information except to the extent necessary in connection with its use as envisaged under this Agreement.

For the avoidance of doubt, the Parties agree that the identity of the Target, any information related to the Target provided to CAT by Dyax, and the Status Report is the Confidential Information of Dyax.

8.2 The obligations referred to in Clause 8.1 above shall not extent to any Confidential Information which:

(a) is or becomes generally available to the public otherwise than be reason of breach by a recipient Party of the provision of Clause 8.1;

(b) is known to the recipient Party and is at its free disposal (having been generated independently by the recipient Party or a Third Party in circumstances where it has not been derived directly or indirectly from the disclosing Party's Confidential Information prior to its receipt from the disclosing Party), provided that evidence of such knowledge is furnished by the recipient Party to the disclosing Party within twenty-eight (28) days of recipient of that Confidential Information;

(c) is subsequently disclosed to the recipient Party without obligations of confidence by a Third Party owing no such obligations to the disclosing Party in respect of that Confidential Information;

(d) is required by law to be disclosed (including as part of any regulatory submission or approval process) and then only when prompt written notice of this requirement has been given to the disclosing Party so that it may, if so advised, seek appropriate relief to prevent such disclosure, provided always that in such circumstances such disclosure shall be only to the extent so required and shall be subject to prior consultation with the disclosing Party with a view to agreeing on the timing and content of such disclosure.

8.3 No public announcement or other disclosures to Third Parties concerning the terms of this Agreement shall be made, whether directly or indirectly, by either Party (except confidential disclosures to professional advisors) without first obtaining the approval of

the other Party and agreement upon the nature and text of such announcement or disclosure with the exceptions that:

(a) a Party may disclose those terms which it is required by regulation or law to disclose, provided that it takes advantage of all provisions to keep confidential as many terms of this Agreement as possible; and

(b) the Party desiring to make any such public announcement or other disclosure shall inform the other Party of the proposed announcement or disclosure in reasonably sufficient time prior to public release, and shall provide the other Party with a written copy thereof in order to allow such Party to comment upon such announcement or disclosure. Each Party agrees that it shall cooperate fully with the other with respect to all disclosures regarding this Agreement to the U.S. Securities Exchange Commission, the UK Stock Exchange and any other comparable body including requests for confidential information or proprietary information of either Party included in any such disclosure.

9. Indemnification

9.1 Dyax and hereby indemnifies CAT and its Affiliates and their directors, officers, employees and agents and their respective successors, heirs and assigns (the "CAT Indemnitees") against any liability, damage, loss or expense (including attorneys fees and expenses of litigation) incurred by or imposed upon the CAT Indemnitees or any one of them in connection with any claims, suits, actions, demands or judgments by or in favour of any Third Party concerning any manufacture, use or sale of any Product by Dyax or any Dyax Sublicensee (or their sublicensee). In addition, each Dyax Sublicensee (or their sublicensee) shall indemnify the CAT Indemnitees against any liability, damage, loss or expense (including attorneys fees and expenses of litigation) incurred by or imposed upon the CAT Indemnitees or any one of them in connection with any claims, suits, actions, demands or judgments by or in favour of any Third Party concerning any manufacture, use or sale of any Product by such Dyax Sublicensee (or their sublicensee).

9.2 CAT shall not be liable to Dyax and Dyax Sublicensee (or its sublicensee) in respect of any liability, loss, damage or expense (including attorneys fees and expenses of litigation) incurred or suffered by Dyax and Dyax Sublicensees (or its sublicensee) in connection with the manufacture, use or sale of any Products by Dyax and Dyax Sublicensees (or its sublicensee).

9.3 CAT gives no warranty or representation that the Antibody Phage Display Patents are, or will be, valid or that the exercise of the rights granted under this Agreement will not result in the infringement of patents of Third Parties.

10. Infringement and Patent Prosecution

10.1 Dyax shall notify CAT promptly of any proceedings or applications for revocation of any of the Antibody Phage Display Patents emanating from a Third Party that comes to its notice or if a Third Party takes or threatens to take any proceedings for infringement of

any patents of that Third Party by reason of Dyax's use or operation of the Antibody Phage Display Patents or manufacture, use or sale of the Products. Dyax shall notify CAT promptly of any infringement of the Antibody Phage Display Patents by a Third Party which may come to its attention during the term of the Product Licence, except Dyax shall have no obligation to so notify CAT with respect to any infringement by an academic or not-for-profit entity which occurs by reason of such entity carrying out research activities provided such activities are, as far as Dyax is aware, not being carried out with a view to commercialising a product or otherwise for profit.

10.2 CAT shall have the sole right and responsibility, at its sole discretion and cost and with reasonable assistance from Dyax, to file, prosecute and maintain the Antibody Phage Display Patents and for the conduct of any lawsuits, claims or proceedings challenging the validity or enforceability thereof including, without limitation, any interference or opposition proceeding relating thereto in all countries. For the avoidance of doubt, Dyax and Dyax Sublicensees will have the right to conduct any proceedings relating to its Product including any proceedings relating to product liability.

11. Termination

11.1 Unless terminated under this Clause 11, this Agreement shall commence on the Commencement Date and shall terminate, on a country-by-country and Product-by-Product basis upon the last to expire of claims of an issued and unexpired patent within the Antibody Phage Display Patents (which has not been held permanently revoked, unenforceable or invalid by a decision of a court or other governmental agency of competent jurisdiction unappealed within the time allowed for appeal, and which has not been admitted to be invalid or unenforceable through reissue or disclaimer or otherwise) or (b) the date upon which no payments are due to CAT under Clause 6 of this Agreement, whichever occurs later.

11.2 CAT shall have the right to terminate this Agreement in the event that:

11.2.1 Dyax or a Dyax Sublicensee (or its sublicensee) has not filed an IND for a Therapeutic Antibody Product, or a 510(k) or IDE for a Diagnostic Antibody Product within [**] after the Commencement Date; or

11.2.2 Dyax or a Dyax Sublicensee (or its sublicensee) directly or indirectly opposes or assists any Third Party to oppose the grant of letters patent or any patent application within the Antibody Phage Display Patents, or disputes or directly or indirectly assists any Third Party to dispute the validity of any patent within the Antibody Phage Display Patents or any of the claims thereof.

11.3 In the event that either Party commits a material breach of any of its material obligations with respect to this Agreement, and such Party fails to remedy that breach within ninety (90) days after receiving written notice thereof from the other Party, that other Party may immediately terminate this Agreement upon written notice to the breaching Party.

11.4 Either Party may terminate this Agreement in its entirety by giving notice in writing to the other Party if any one or more of the following events happens:

(a) the other Party has any distress or execution levied on the major portion of its assets (as determined by its balance sheet in accordance with GAAP) which is not paid out within thirty (30) days of its being levied;

(b) the other Party calls a meeting for the purpose of passing a resolution to wind it up, or such a resolution is passed, or the other Party presents, or has presented, a petition for a winding up order, or presents, or has presented, a petition to appoint an administrator, or has an administrative receiver, or receiver, liquidator or other insolvency practitioner appointed over all or any substantial part of its business, undertaking, property or assets;

(c) the other Party stops or suspends making payments (whether of principal or interest) with respect to substantially all of its debts or announces an intention to do so or the other Party suspends or ceases to carry on its business;

(d) a secured lender to the other Party holding a security interest over the major portion of the tangible assets (as determined by its balance sheet in accordance with GAAP) of such other Party takes any steps to obtain possession of the property on which it has security or otherwise to enforce its security;

(e) the other Party suffers or undergoes any procedure analogous to any of those specified in Clause 11.4(a)-(d) above or any other procedure available in the country in which the other Party is constituted, established or domiciled against or to an insolvent debtor or available to the creditors of such a debtor.

12. Consequences of Termination

12.1 Upon termination of this Agreement for any reason whatsoever:

(a) the relationship of the Parties hereunder shall cease save as (and to the extent) expressly provided for in this Clause 12;

(b) any sublicenses granted by Dyax in accordance with the terms of this Agreement will continue in force provided that such sublicensees are not in breach of the relevant sublicense and that each sublicensee agrees to enter into a direct agreement with CAT upon the terms of this Agreement;

(c) Dyax shall immediately return or procure to be returned to CAT at such place as it directs and at the expense of Dyax (or if CAT so requires by notice to Dyax in writing, destroy) all CAT Know-How together with all copies of such CAT Know-How in its possession or under its control;

(d) The following provisions shall survive expiration or termination of this Agreement: Clauses 7 (in relation to any accrued payment obligations of Dyax prior to termination or expiry), 8, 9, 12, 13 and 15; and

(e) Expiry or termination of this Agreement shall not affect the rights and obligations of the Parties accrued prior to such expiry or termination including any accrued obligation for Dyax to make any payments under Clause 6.

13. Dispute Resolution

13.1 Any dispute arising between the Parties relating to, arising out of or in any way connected with this Agreement or any term or condition thereof, or the performance by either Party of its obligations hereunder, whether before or after termination of this Agreement, shall be referred to the Chief Executive Officers of each of the Parties. The Chief Executive Officers shall meet to resolve such deadlock within thirty (30) days of the date that the dispute is referred to them, at a time and place mutually acceptable to them. Any dispute that has not been resolved following good faith negotiations of the Chief Executive Officers for a period of thirty (30) days shall be referred to and finally settled by binding arbitration in accordance with the then current Commercial Arbitration Rules of the American Arbitration Association. There shall be three (3) arbitrators, each Party to designate one arbitrator and the two Party-designated arbitrators to select the third arbitrator. The Party initiating recourse to arbitration shall include in its notice of arbitration its appointment of an arbitrator. The appointing authority, in the event a Party does not or the Parties do not appoint arbitrator(s), shall be the American Arbitration Association in [**]. The place of arbitration shall be [**]. The language to be used in the arbitration shall be English. Any determination by the arbitration panel shall be final and conclusively binding. Judgement on any arbitration award may be entered in any court having jurisdiction thereof. Each Party shall bear its own costs and expenses incurred in the arbitration; provided that the arbitration panel may assess the costs and expenses of the prevailing Party, including reasonable attorneys fees, against the non-prevailing Party.

14. Notices

14.1 All notices, requests, demands and other communications required or permitted to be given pursuant to this Agreement shall be in writing and shall be deemed to have been duly given upon the date of receipt if delivered by hand, recognized international overnight courier, confirmed facsimile transmission, or registered or certified mail, return receipt requested, postage prepaid to the following addresses or facsimile numbers:

If to Dyax:
Dyax Corp
300 Technology Square
Cambridge, MA 02139
Attention: Chief Executive Officer

If to CAT:
Cambridge Antibody Technology Limited
The Milstein Building
Granta Park, Cambridge
Cambridgeshire CB1 6GH

Facsimile: (617) 225-2501

United Kingdom
Attention: Company Secretary

Facsimile: 011-44-(0)1223 471472

Either party may change its designated address and facsimile number by notice to the other party in the manner provided in this Clause.

15. Governing Law

15.1 This Agreement shall be governed by and construed in accordance with the laws of the [**].

15.2 Save as provided in this Clause, the United Kingdom Legislation entitled the Contracts (Rights of Third Parties) Act 1999 will not apply to this Agreement. No person, other than a CAT Indemnitee (as defined in Clause 9.1), who is not a Party to this Agreement (including any employee, officer, agent, representative or subcontractor of either Party) will have the right (whether under the Contracts (Rights of Third Parties) Act 1999 or otherwise) to enforce any term of this Agreement which expressly or by implication confers a benefit on that person without the express prior agreement in writing of the Parties which agreement must refer to this Clause, except that any Dyax Sublicensee shall have the right to enforce the provisions of Clause 12.1(b) of this Agreement and shall be a third party beneficiary for that purpose only.

16. Specific Performance

16.1 The parties agree that irreparable damage will occur in the event that the provisions of Clause 8 are not specifically enforced. In the event of a breach or threatened breach of any such provisions, each Party agrees that the other Party shall, in addition to all other remedies, be entitled to temporary or permanent injunction, without showing any actual damage or that monetary damages would not provide an adequate remedy and without the necessity of posting any bond, and/or a decree for specific performance, in accordance with the provisions hereof.

17. Assignment

17.1 This Agreement may not be assigned by either party without the prior written consent of the other party, except that either Party may assign the benefit and/or burden of this Agreement to any Affiliate of it or any Third Party, provided that such Affiliate or Third Party undertakes to the other Party to be bound by the terms of this Agreement. This Agreement shall inure to the benefit of and be binding upon the parties and their respective lawful successors and assigns.

18. Compliance With Law

18.1 Nothing in this Agreement shall be construed so as to require the commission of any act contrary to law, and wherever there is any conflict between any provision of this Agreement and any statute, law, ordinance, or treaty, the latter shall prevail, but in, such event the affected provisions of the Agreement shall be conformed and limited only to the extent necessary to bring it within the applicable legal requirements.

19. Amendment and Waiver

19.1 This Agreement may be amended, supplemented, or otherwise modified only by means of a written instrument signed by both parties. Any waiver of any rights or failure to act in a specific instance shall relate only to such instance and shall not be construed as an agreement to waive any rights or fail to act in any other instance, whether or not similar.

20. Severability

20.1 In the event that any provision of this Agreement shall, for any reason, be held to be invalid or unenforceable in any respect, such invalidity or unenforceability shall not affect any other provision hereof and the parties shall negotiate in good faith to modify the Agreement to preserve (to the extent possible) their original intent.

21. Entire Agreement

21.1 This Agreement and the Amendment Agreement constitute the entire agreement between the parties with respect to the subject matter hereof and supersede all prior agreements or understandings between the parties relating to the subject matter hereof.

IN WITNESS OF THE ABOVE the Parties have signed this Agreement on the date written at the head of this Agreement.

SIGNED by)
)
)
for and on behalf of) General Counsel & Authorised
CAMBRIDGE ANTIBODY) Signatory
TECHNOLOGY LIMITED)

SIGNED by)
)
)
for and on behalf of) Senior Vice President &
DYAX CORP.) Authorised Signatory
)

APPENDIX E

DYAX PATENT RIGHTS

PHAGE DISPLAY PATENT RIGHTS — [**]

Country	Application/ Publication No.	Filing Date	Patent No.	Issue Date
[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]	[**]	[**]		[**]
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]		
[**]	[**]	[**]	[**]	[**]
[**]	[**]	[**]		
[**]	[**]	[**]		[**]
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]	[**]	[**]		

Novel [**] Fragments - [**] et al.

Country	Application/ Publication No.	Filing Date	Patent No.	Issue Date
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]		[**]		
[**]	[**]	[**]		
[**]	[**]	[**]		

CJ Library — [**] et al.

Country	Application/ Publication No.	Filing Date	Patent No.	Issue Date
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]	[**]	[**]		
[**]	[**]	[**]		

Antibody Reformatting Patents

Country	Application/ Publication No.	Filing Date	Patent No.	Issue Date
[**]	[**]	[**]		
[**]	[**]	[**]		

APPENDIX F

[**] PATENT RIGHTS

[**]

A total of three pages were omitted and filed separately with the Securities and Exchange Commission pursuant to a request for confidential treatment.

APPENDIX G

XOMA NOTICE

XOMA owns a number of patents covering various aspects of bacterial antibody expression and phage display.

XOMA has licensed these patents on a non-exclusive basis to Dyax.

Under the license agreement with XOMA:

· Dyax cannot provide phage display services or transfer phage display materials, products or information to you without first showing you a redacted copy of its license from XOMA and this notice.

· If you and Dyax enter into a written agreement by which you become a "Dyax Collaborator," then you will be permitted to use Dyax phage display services, Dyax phage display materials, products and information to research, develop and commercialize antibody products.

· Collaborators do not, however, have the right to produce commercial quantities of such antibodies using XOMA's patented technology. Rather, collaborators only have the right to make research and development quantities of antibodies using the XOMA patent rights. Thereafter, unless the collaborator obtains a commercial production license from XOMA (which may be available), the collaborator must produce commercial quantities of antibodies using a method that does not infringe XOMA patent rights.

Therefore, if you and Dyax enter into a written agreement, that agreement must contain certain provisions specified in the license agreement with XOMA, including:[**]Terms pursuant to which you, as the recipient of any transferred materials, would agree to abide by each of the limitations, restrictions and other obligations provided for by the license agreement with XOMA, including, without limitation, the restrictions on use of such transferred materials for purposes other than research and development.

A covenant not to use transferred materials for any purpose other than for research and development purposes otherwise authorized by the license agreement with XOMA.

A provision that the "first sale" doctrine does not apply to any disposition of transferred materials.

An agreement by you to further dispose of transferred materials only to a third party who otherwise meets the definition of a "Dyax Collaborator" set forth in the license agreement with XOMA and who executes a written agreement in which it undertakes all of the obligations applied to the transferring party.

APPENDIX H

SUBLICENSE AGREEMENT

This SUBLICENSE AGREEMENT ("Sublicense"), dated effective as of , 20 (the "Effective Date"), is entered into between **DYAX CORP.**, a Delaware corporation, of 300 Technology Square, Cambridge, Massachusetts 02139 ("Dyax"), and of ("Sublicensee").

WHEREAS, under the terms of that certain Amendment Agreement by and between Dyax and Cambridge Antibody Technologies Limited ("CAT"), dated January 3, 2003, as amended to date (the "Amended Agreement") Dyax has the right to obtain product licenses, on a target-by-target basis, to develop and commercialize therapeutic and diagnostic antibody products identified using CAT's proprietary technology and know-how;

WHEREAS, Dyax and CAT have executed one such product license, under which CAT granted Dyax rights to develop and commercialize therapeutic and diagnostic antibody products to the target described on Attachment A (the "Product License");

WHEREAS, a redacted version of the Product License is attached hereto as Attachment B;

WHEREAS, pursuant to a Collaboration Agreement by and between Dyax and Sublicensee, dated effective , 20 , (the "Collaboration Agreement"), Sublicensee has the right to obtain through Dyax a sublicense of the Product License; and

WHEREAS, Sublicensee desires to obtain through Dyax a sublicense of the Product License.

NOW THEREFORE, in consideration of the premises and the mutual covenants contained herein, and for other good and valuable consideration, the receipt of which is hereby acknowledged, the parties agree as follows:

1. GRANT OF SUBLICENSE.

Subject to the terms and conditions set forth in Section 2 of this Sublicense, Dyax hereby grants to Sublicensee a world-wide, non-exclusive license of the rights granted to it under Clause 2.1 of the Product License. Sublicensee is permitted to sublicense its rights under this Sublicense in accordance with the terms and conditions set forth in Clauses 3.2 and 3.3 of the Product License.

2. SUBLICENSEE OBLIGATIONS.

2.1 Obligations Under Product License. Sublicensee agrees to abide by all of the terms and conditions applicable to Dyax and/or Sublicensee (as a Dyax Sublicensee) under the Product License and agrees that all obligations of Dyax to CAT under the Product License shall also be obligations of Sublicensee to Dyax, except for (i) any obligations of Dyax contained in Clause 6 (Consideration) and Clause 7 (Provisions Relating to the Payment of Consideration) of

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the Product License and (ii) any portion of the Product License that has been redacted by Dyax. Notwithstanding the foregoing, Sublicensee's obligations pursuant to this Section 2.1 are conditional upon (i) Sublicensee receiving timely notice (in the manner provided in Section 10.2 of the Collaboration Agreement) from Dyax relating to (a) any change in such terms and conditions, and (b) any notice, claim or demand made by CAT under the Product License; and (ii) the parallel performance of Dyax to the extent both parties are required to perform to satisfy the obligations of Dyax or Sublicensee (as a Dyax Sublicensee) under the Product License.

2.2 Obligations Under Collaboration Agreement. Sublicensee acknowledges and agrees that all of the terms and conditions contained in the Collaboration Agreement, as amended to date, remain in full force and effect, and Sublicensee agrees to abide by all of its obligations set forth thereunder.

2.3 Royalties. Notwithstanding anything to the contrary contained in the Product License, the sublicense granted to Sublicensee under Section 1 of this Sublicense shall be royalty bearing in accordance with the terms set forth in the Collaboration Agreement.

3. DYAX OBLIGATIONS.

3.1 Obligations Under Collaboration Agreement. Dyax acknowledges and agrees that all of the terms and conditions contained in the Collaboration Agreement, as amended to date, remain in full force and effect, and Dyax agrees to abide by all of its obligations set forth thereunder.

3.2 Amendment to Product License. Dyax agrees that it shall not amend the Product License in any way that materially and adversely affects or reduces the rights and licenses granted to Sublicensee under this Sublicense.

3.3 Indemnification for Dyax Breach. Dyax shall indemnify and hold Sublicensee and its officers, directors and agents ("Sublicensee Indemnified Parties") harmless from and against any liability or loss incurred by the Sublicensee Indemnified Parties to CAT under the Product License, to the extent that such liability was incurred by Sublicensee as a result of a breach of the Product License by Dyax.

4. TERM AND TERMINATION.

This Sublicense shall expire upon expiration of the Product License and shall terminate upon termination of the Product License; provided that, at Sublicensee's election, upon termination of the Product License, Sublicensee's rights hereunder will continue in force provided that Sublicensee is not in breach of this Sublicense and agrees to enter into a direct agreement with CAT upon the terms of the Product License.

5. MISCELLANEOUS.

CAT shall be a third party beneficiary of this Sublicense and shall have the right to enforce its terms (and claim damages as a result of any breach). This Sublicense shall be not be assignable by Sublicensee, except that Sublicensee may assign the benefit and/or burden of this Sublicense to any Affiliate of it or any Third Party ("Affiliate" and "Third Party" being defined

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in the Collaboration Agreement), provided that such Affiliate or Third Party undertakes to Dyax to be bound by the terms of this Sublicense. This Sublicense shall be binding upon, and shall inure to the benefit of, the parties hereto and their successors and assigns. This Sublicense may be not be amended except pursuant to a written instrument signed by parties hereto. No provisions of this Sublicense may be waived except by an instrument in writing signed by the party sought to be bound. Neither this Sublicense nor any part hereof, including this provision against oral modifications, may be modified, waived or discharged except pursuant to a written agreement signed by both parties.

IN WITNESS WHEREOF, the parties have caused this Sublicense to be executed by their respective duly authorized representatives as of the Effective Date.

DYAX CORP.	**SUBLICENSEE:**
By: _____	By: _____

AMENDMENT

This Amendment (this "Amendment"), effective as of July 31, 2008, amends the Amended and Restated Collaboration Agreement effective as of January 24, 2007 (the "Agreement"), between **DYAX CORP.**, a Delaware corporation ("Dyax"), and **MERRIMACK PHARMACEUTICALS, INC.**, a Massachusetts corporation ("Merrimack"). Capitalized terms used herein and not defined herein shall have the meanings ascribed to them in the Agreement.

WHEREAS, the Parties have agreed to amend the definition of Commercial Field;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby amend the Agreement as follows:

1. Section 1.8 of the Agreement is hereby amended and restated in its entirety to read as follows:

"1.8 "Commercial Field" means all human therapeutic and diagnostic uses, excluding (i) Research Products and (ii) Separations Applications."

2. As amended hereby, the Agreement remains in full force and effect.

IN WITNESS WHEREOF, the undersigned have duly executed and delivered this Amendment as a sealed instrument effective as of the date first above written.

DYAX CORP.	**MERRIMACK PHARMACEUTICALS, INC.**
By: /s/ Gustav Christensen	By: /s/ Edward J. Stewart
Title: EVP & Chief Business Officer	Title: Vice President, Bus. Dev.
Date: July 31, 2008	Date: July 17, 2008
	/s/ Lisa A. Evren
	SVP & CFO
	Lisa A. Evren
	7/17/08

AMENDMENT

This Amendment (this "Amendment"), effective as of November 6, 2009, further amends the Amended and Restated Collaboration Agreement, dated effective as of January 24, 2007 and previously amended on July 31, 2008 (the "Amended Agreement"), between **DYAX CORP.**, a Delaware corporation ("Dyax"), and **MERRIMACK PHARMACEUTICALS, INC.**, a Massachusetts corporation ("Merrimack"). Capitalized terms used herein and not defined herein shall have the meanings ascribed to them in the Amended Agreement.

WHEREAS, the Parties wish to amend the Amended Agreement to clarify certain intellectual property issues that have arisen in the course of the collaboration.

NOW, THEREFORE, in consideration of the foregoing and the covenants and premises contained in the Amended Agreement, the Parties hereby agree to the following amendments:

AMENDMENTS

1. Article 1.33 of the Amended Agreement is hereby amended and restated in its entirety to read as follows:

1.33 "Patent Rights" means patent applications or patents, author certificates, inventor certificates, utility certificates, improvement patents, and models and certificates of addition, and all foreign counterparts of them and includes, provisionals, divisionals, renewals, continuations, continuations-in-part, extensions, reissues, substitutions, confirmations, registrations, revalidations, or additions of or to them as well as any supplementary protection certificate or any other post patent expiration extension of patent protection in respect to them.

2. Article 5 of the Amended Agreement is hereby amended and restated in its entirety to read as follows:

ARTICLE V
INTELLECTUAL PROPERTY

5.1 Ownership.

(a) Dyax Antibodies and Dyax Antibody Information. Subject to the licenses granted to Merrimack in Section 3.1 and the rights granted in Section 5.3, Dyax is and shall remain the owner of all Dyax Antibodies that are identified, generated, developed, produced, optimized, or obtained by Dyax from the Dyax Libraries in connection with the Research Program, together with the Dyax Antibody Information applicable thereto.

(b) Dyax Libraries. Dyax is and shall remain the owner of the Dyax Libraries and all improvements thereon developed during the term of this Agreement.

(c) Dyax Research Materials and Dyax Research Know-How. Subject to the licenses granted to Merrimack in this Agreement, Dyax is and shall remain the owner of the Dyax Research Materials and Dyax Research Know-How generated or utilized during the conduct of the Research Program.

(d) Merrimack Targets and Merrimack Materials. Merrimack is and shall remain the owner of Merrimack Targets and Merrimack Materials.

5.2 Inventions.

(a) Inventorship. Inventorship will be determined in accordance with United States patent laws.

(b) Inventions. The Parties acknowledge and agree that, regardless of inventorship:

(i) Dyax shall hold title to:

(A) any invention or other subject matter directed to a composition of matter comprising the [**] that were delivered by Dyax to Merrimack

(B) any invention or other subject matter relating to [**], and

(C) any other invention or subject matter (including all intellectual property rights therein) that is conceived, reduced to practice or otherwise made solely by Dyax personnel in connection with this Agreement.

Collectively, the inventions referenced under this Section 5.2(b)(i) are referred to herein as the "Dyax Inventions".

(ii) Merrimack shall hold title to any invention or other subject matter (including all Intellectual property rights therein) conceived, reduced to practice or otherwise made solely by Merrimack personnel in connection with this Agreement; [**]. Collectively, the inventions referenced under this Section 5.2(b)(ii) are referred to herein as the "Merrimack Inventions".

(iii) The Parties shall jointly hold title to all inventions and other subject matter (including all intellectual property rights therein) conceived, reduced to practice or otherwise made jointly by personnel of Dyax and Merrimack; [**]. Collectively, the inventions referenced under this Section 5.2(b)(iii) are referred to herein as the "Joint Inventions".

Except as expressly provided in this Agreement, it is understood that neither Party shall have any obligation to account to the other

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for profits, or to obtain any approval of the other Party to license or exploit a joint invention, by reason of joint ownership of any invention or other intellectual property and each Party hereby waives any right it may have under the laws of any country to require such accounting or approval. Dyax shall promptly notify Merrimack of all Dyax Antibodies identified against Merrimack Targets in accordance with the applicable Research Plan, together with all Dyax Antibody Information applicable thereto.

5.3 Patenting Antibody Inventions under the Research Program.

(a) Filing and Prosecution. Prior to the exercise of Merrimack's option to obtain a Commercial License as set forth in Section 3.1(b), Merrimack may wish to file or to have Dyax file (as set forth below) a provisional application. Prior to filing a provisional application, Merrimack shall provide a draft of each such proposed provisional application to Dyax for review and comment and discussion related to inventorship [**] days prior to filing. During the [**] day review period:

(i) Dyax may review and comment upon any such provisional patent application and Merrimack shall incorporate Dyax's reasonable comments; and

(ii) Merrimack and Dyax shall use reasonable and good faith efforts to reach a common understanding of inventorship of claims.

(A) If Merrimack and Dyax agree that the inventions claimed in the provisional application are Dyax Inventions as defined in Section 5.2(b)(i)(A) or Joint Inventions as defined in Section 5.2(b)(iii), then Dyax will, at Merrimack's request and expense, file and prosecute any Patent Rights in any country requested by Merrimack with a patent counsel reasonably acceptable to Merrimack. For clarity, this means that Dyax will also file and prosecute any nonprovisional Patent Rights based on such provisional applications prior to Merrimack exercising its right to obtain a Commercial License as set forth in Section 3.1(b). Thereafter, Dyax's Patent Rights in such Dyax Inventions or Joint Inventions shall be deemed to be included in the rights licensed to Merrimack under Section 3.1. Dyax shall (i) keep Merrimack fully informed as to the filing, prosecution and maintenance of such Patent Rights, (ii) furnish to Merrimack copies of all documents relevant to any such filing, prosecution and maintenance, and (iii) allow Merrimack [**] days to review and comment upon, and to incorporate Merrimack's reasonable comments into,

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any such document filed with any patent office with respect to such Patent Rights prior to filing such documents.

(B) If the inventions described in the provisional application are mutually agreed to be Merrimack Inventions or determined to be Merrimack Inventions pursuant to Section 5.3(a)(ii)(C) below, then Merrimack shall have the sole and exclusive right to file and prosecute any Patent Rights based on such provisional application in any country, at Merrimack's expense.

(C) If Merrimack and Dyax cannot, despite reasonable and good faith efforts, reach a common understanding of inventorship of claims of any such draft provisional application, then Dyax shall file the provisional patent application. Merrimack and Dyax [**] reasonably acceptable to both Parties prior to the [**], who shall make a final determination of inventorship (in accordance with [**]) as to the [**] which was [**] to such [**]. Such [**] shall be [**] upon the [**] and their respective [**]. If the [**] is [**] to be a [**] under Section [**] or a [**] under Section [**] then [**] shall continue to [**] in any country requested by [**] at [**] expense. Thereafter, such [**] in such [**] or [**] shall be deemed to be included in the rights licensed to Merrimack under Section 3.1. Dyax shall (i) keep Merrimack fully informed as to the filing, prosecution and maintenance of such Patent Rights, (ii) furnish to Merrimack copies of all documents relevant to any such filing, prosecution and maintenance, and (iii) allow Merrimack [**] days to review and comment upon, and to incorporate Merrimack's reasonable comments into, any such document filed with any patent office with respect to such Patent Rights prior to filing such documents.

(b) Upon exercise of Merrimack's option to obtain a Commercial License with respect to a Dyax Antibody, as set forth in Section 3.1(b), Dyax shall assign (and cause its inventors to assign) to Merrimack any of Dyax's Patent Rights in the Dyax Inventions as defined in Section 5.2(b)(i)(A) and any Joint Inventions as defined in Section 5.2(b)(iii) that are directed to or relating to such Dyax Antibody. Upon exercise of a Commercial License, Merrimack will also have the right to file and prosecute all pending and subsequent patent applications related to the Dyax Antibody(ies), the intellectual property rights for which are subject to an obligation of assignment to Merrimack hereunder, without providing Dyax with a draft application or other prosecution documents for review and comment prior to such filing. Dyax will use reasonable efforts to cooperate with Merrimack in such activities. For the avoidance of doubt,

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Dyax acknowledges and agrees that if, upon Merrimack's election to obtain a Commercial License with respect to a Dyax Antibody, Dyax is [**] with respect to the Target against which such Dyax Antibody is directed [**], Merrimack's rights under clauses of this paragraph above shall apply notwithstanding [**] and Merrimack may, at Merrimack's expense, require Dyax to assign (and cause its inventors to assign) to Merrimack Dyax's Patent Rights in any Dyax Inventions as defined in Section 5.2(b)(i)(A) and any Joint Inventions as defined in Section 5.2(b)(iii) that are directed to or relating to such Dyax Antibody.

For clarity, If Merrimack does not exercise its option to obtain a Commercial License with respect to a Dyax Antibody, Dyax's Patent Rights in any Dyax Inventions as defined in Section 5.2(b)(i)(A) directed to or relating to such Dyax Antibody shall remain owned by Dyax and Dyax's joint ownership rights to Joint Inventions as defined in Section 5.2(b)(iii) directed to or relating to such Dyax Antibody shall remain owned by Dyax.

(c) Enforcement. Merrimack shall have the right but not the obligation, at its expense, to enforce any Patent Rights which relate to any Antibody that is identified, generated, developed, produced, optimized, or obtained by Dyax from a Dyax Library that is delivered by Dyax to Merrimack in connection with the Research Program. Dyax shall cooperate with Merrimack, at Merrimack's expense, in pursuing any litigation or other enforcement action to enforce such Patent Rights, including allowing Merrimack to file suit in Dyax's name, making Dyax employees available to Merrimack, and promptly executing any documents which may be required to pursue such action. Merrimack shall control any such litigation or other enforcement action and shall enter into, or permit, the settlement of any such litigation or other enforcement action. All monies recovered upon the final judgment or settlement of any suit to enforce such Patent Rights shall first be paid to recover the respective actual out-of-pocket expenses of Merrimack and Dyax, or equitable portion thereof, associated with the enforcement. The remainder of any such monies shall be deemed to be Net Sales for purposes of determining the royalties owed by Merrimack to Dyax under Sections 4.6. and 4.7.

5.4 Further Assurances. Each Party has and will have appropriate agreements with its employees and contractors necessary to fully effect the provisions of Sections 5.1, 5.2 and 5.3. Each Party agrees to execute such assignments and other documents, to cause its employees and agents to execute such assignments and other documents, and to take such other actions, as may reasonably be requested by the other Party from time to time to give effect to the provisions of Sections 5.1, 5.2 and 5.3.

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3. From and after the date of this Amendment, the term "Agreement" as used in the Amended Agreement shall mean the Amended Agreement, as further amended by this Amendment. Except as expressly amended hereby, the terms of the Amended Agreement shall remain in full force and effect and all such terms are hereby ratified and confirmed.

4. This Amendment may be executed in one or more counterparts, each of which shall be deemed an original and all of which shall constitute one and the same instrument.

5. This Amendment shall be governed by the laws of the laws of the Commonwealth of Massachusetts.

IN WITNESS WHEREOF, the undersigned have duly executed and delivered this Agreement as a sealed instrument effective as of the date first above written.

DYAX CORP.

By: /s/ Ivana Magovcevic-Liebisch
Title: Executive Vice President, Corporate Development and General Counsel
Date 11/6/09

MERRIMACK PHARMACEUTICALS, INC.

By: /s/ Edward J. Stewart
Title: SVP, Business Development
Date: November 4, 2009

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the use in this Amendment No. 3 to the Registration Statement on Form S-1 of Merrimack Pharmaceuticals, Inc. of our report dated July 8, 2011 relating to the financial statements of Merrimack Pharmaceuticals, Inc. which appears in such Registration Statement. We also consent to the reference to us under the heading "Experts" in such Registration Statement.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
October 26, 2011