WILMERHALE

Brian A. Johnson

+1 212 937 7206(t)
+1 212 230 8888(f)
brian.johnson@wilmerhale.com

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VIA EDGAR SUBMISSION

Securities and Exchange Commission
Division of Corporation Finance
100 F Street, NE
Washington, DC 20549

Attention: Karen Ubell, Esq.

Re: Merrimack Pharmaceuticals, Inc.
Registration Statement on Form S-1
File Number 333-175427

Ladies and Gentlemen:

On behalf of Merrimack Pharmaceuticals, Inc. (the "Company"), submitted herewith for filing is Amendment No. 1 ("Amendment No. 1") to the Registration Statement referenced above (the "Registration Statement").

Amendment No. 1 is being filed in response to comments contained in the letter dated August 3, 2011 from Jeffrey Riedler of the Staff (the "Staff") of the Securities and Exchange Commission (the "Commission") to Robert J. Mulroy, the Company's President and Chief Executive Officer. The responses set forth below are based upon information provided to Wilmer Cutler Pickering Hale and Dorr LLP by the Company. The responses are keyed to the numbering of the comments and the headings used in the Staff's letter. Where appropriate, the Company has responded to the Staff's comments by making changes to the disclosure in the Registration Statement as set forth in Amendment No. 1.

On behalf of the Company, we advise you as follows:

General

1. *Please file all exhibits as soon as practicable. We may have further comments upon examination of these exhibits.*

   Response: The Company will file all exhibits as soon as practicable and acknowledges that the Staff may have further comments upon examination of these exhibits.

2. *Comments on your confidential treatment request will be delivered under separate cover.*

   Response: The Company acknowledges the Staff's comment.

3. *Please note that when you file a pre-effective amendment containing pricing-related information, we may have additional comments. As you are likely aware, you must file this amendment prior to circulating the prospectus. Please note that when you file a pre-effective amendment that includes your price range, it must be bone fide. We interpret this to mean that your range may not exceed $2 if you price below $20 and 10% if you price above $20.*

   Response: The Company acknowledges that the Staff may have additional comments when the Company files a pre-effective amendment containing pricing-related information. The Company is aware that it must file this amendment prior to circulating the prospectus. The Company further acknowledges the Staff's interpretation regarding the parameters of a bona fide price range. When the Company files a pre-effective amendment containing a price range, the range will satisfy these parameters.

4. *Please provide us proofs of all graphic, visual or photographic information you will provide in the printed prospectus prior to its use, for example in a preliminary prospectus. Please note that we may have comments regarding this material.*

   Response: The Company does not currently intend to include any graphic, visual or photographic information in the printed prospectus. If the Company determines to include any visual information in the prospectus, the Company will promptly provide such material to the Staff on a supplemental basis. The Company acknowledges that the Staff may have additional comments regarding this material.

Management's Discussion and Analysis of Financial Condition and Results of Operations, page 57

Strategic Partnerships, Licenses and Collaborations, page 58

5. *In your discussion of the July 2009 license agreement with GTC Biotherapeutics on page 59, please disclose the aggregate potential development and sales milestones you are eligible to receive, as well as the range of royalty payments to which you are entitled for net sales of MM-093.*

   Response: In response to the Staff's comment, the Company has revised the disclosure on page 61 of Amendment No. 1.

Critical accounting policies and significant judgments and estimates
Accrued Expenses, page 66

6. *Please revise your disclosure to clarify whether changes in estimates have been material for each period presented, quantifying any material changes in estimate.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 68 of Amendment No. 1.

Stock Based Compensation, page 67

7. *We have reviewed your disclosures and have the following comments:*

- *Once you can reasonably estimate the IPO price, qualitatively and quantitatively discuss each significant factor contributing to the difference between each valuation and the estimated IPO price. See paragraph 182(b) of the AICPA Practice Aid.*

- *Please update your schedule of stock options granted to the date of your response to these comments. Include a similar table in the filing for any other equity issuances during the period.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 70, 78 and 79 to reflect stock options granted on August 2, 2011 and to include a discussion of the determination by the board of directors of the fair value of the Company's common stock as of such date. The Company further advises the Staff that the discussion of the determination by the board of directors of the fair value of the Company's common stock as of each stock option grant date includes a list of the significant factors that contributed to the change in the fair value of the common stock from the prior grant date. Once the estimated price range for this offering has been determined, the Company will reflect in a subsequent amendment to the Registration Statement an additional list of significant factors contributing to any difference between the most recent common stock valuation and the midpoint of the estimated price range for this offering. The Company believes that, collectively, this disclosure will appropriately provide a discussion of each significant factor contributing to the difference between each valuation and the estimated price range for this offering.

To provide additional context for this response and further information for the Staff's consideration, the Company supplementally advises the Staff that the Company currently anticipates that the price range for this offering will be within the range of $7.00 to $10.00 per share (before

giving effect to a reverse stock split that the Company plans to implement prior to effectiveness of the Registration Statement). This indicative price range is based on a number of factors, including existing conditions in the public capital markets, the Company's prospects and the prospects and history for the Company's industry, the market prices of comparable publicly traded companies and preliminary discussions with the underwriters regarding potential valuations of the Company. The actual price range to be included in a subsequent amendment to the Registration Statement (which will comply with the Staff's interpretation regarding the parameters of a bona fide price range) has not yet been determined and remains subject to adjustment based on factors outside of the Company's control. However, the Company believes that the foregoing indicative price range will not be subject to significant change.

Results of Operations
Comparison of the years ended December 31, 2009 and 2010
General and Administrative Expenses, page 79

8. *Please tell us why you are classifying MM-121 consulting and legal expenses as general and administrative expenses for the periods presented in this filing.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 82 and 84 of Amendment No. 1. The Company paid approximately $2.0 million to JP Morgan Chase as a consulting and banking fee in exchange for its assistance in brokering and negotiating the Company's MM-121 license and collaboration agreement with Sanofi. The Company believes this consulting and banking fee is most appropriately classified as a general and administrative expense. The Company also incurred legal costs associated with the drafting and execution of the MM-121 license and collaboration agreement with Sanofi, which the Company also believes are most appropriately classified as general and administrative expenses. Research and development expense consist of the costs associated with the Company's research and discovery activities, conducting preclinical studies and clinical trials, manufacturing development efforts and activities related to regulatory filing. The JP Morgan Chase consulting and banking fee did not meet this definition.

Business, page 89

9. *Please revise to provide an explanation of the following terms the first time you use them in the Business section and, if applicable, the prospectus summary:*

- *high-throughput (page 89);*

- *nanotherapeutic encapsulation (page 89);*
- *monoclonal antibody (page 89);*
- *cell surface receptor (page 89);*
- *bispecific antibody (page 90);*
- *oligoclonal therapeutic (page 90); and*
- *kinase domain (page 93)*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 1 through 3 and pages 92, 93 and 98 of Amendment No. 1 to provide an explanation of these terms.

Network Biology, page 91

10. *You disclose that Network Biology is a core element of your product development process and your strategy. Your disclosure, however, focuses on the potential benefits that Network Biology may yield in the product development process without fully or clearly describing the technology upon which Network Biology relies to realize such benefits. More concrete details are needed about the tools and processes you use to understand cell signaling networks and how network dysfunction leads to and perpetuates disease. Furthermore, you indicate that Network Biology has certain advantages over traditional research and development without describing either approach in such a way as to demonstrate this advantageous differentiation. You make a point of stating that you focus on analyzing cell signal transmission and communication rather than the traditional focus on characterizing the activity of individual molecular components, but investors may have difficulty understanding this distinction without an illustrative example.*

Accordingly, as it currently reads, your disclosure may leave a reader unable to fully understand the implementation and application of Network Biology in your business and evaluate the potential benefits you describe. Please revise to more clearly and prominently describe Network Biology and differentiate Network Biology from traditional research and development approaches. Please make any corresponding changes to your prospectus summary.

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 95 through 101 of Amendment No. 1.

11. *Please disclose any technology or databases upon which Network Biology relies. Your disclosure should indicate whether you have compiled such information or databases independently or identify their respective source.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 96 of Amendment No. 1 to reflect that the Company uses internally generated and proprietary data sets and does not rely on outside databases.

Our Most Advanced Product Candidates, page 96

12. *We note your disclosure on pages 35 in the risk factor titled "If we pursue development of companion diagnostics…" Please expand your disclosure generally and, as applicable, for each product candidate to disclose whether approval of a companion diagnostic may be required for approval and subsequent commercialization of your therapeutic products. As applicable, please indicate whether you may rely upon any currently available diagnostics such that a therapeutic product may proceed despite a delay in or failure of production of a companion diagnostic.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 35 through 36, 40 through 41 and 151 of Amendment No. 1.

Clinical Development of MM-398, page 101

13. *Please expand your disclosure to indicate why you will be required to conduct all new clinical trials of MM-398 despite prior trials conducted by PharmaEngine.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 107 of Amendment No. 1 to clarify that as a result of its May 2011 agreement with PharmaEngine, Inc. through which the Company now holds exclusive development and commercialization rights to MM-398 worldwide, other than in Taiwan, the Company expects that it or third party investigator sponsors will conduct all future clinical trials of MM-398. The Company further advises the Staff that additional and more detailed disclosure with respect to the Company's arrangements with PharmaEngine, Inc. is set forth on pages 133 and 134 of Amendment No. 1.

Collaboration and License Agreements
Sanofi, page 126

14. *We note your disclosure here and on page 58 that the escalating royalties begin in the "low double digits." Please revise your disclosure to indicate a range not to exceed ten percent.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 60 and 132 of Amendment No. 1.

University of California, page 130

15. *With respect to each of the 2000 and 2005 agreements, please disclose the annual license maintenance fee.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 136 and 137 of Amendment No. 1.

Intellectual Property, page 132

16. *For your each of the licensed patents in your portfolio that you discuss on page 133, please indicate from whom the patent is licensed.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 139 and 140 of Amendment No. 1.

Management, page 153

17. *Please disclose Dr. Gay's principal employment from 2004 to 2008.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 162 of Amendment No. 1.

Severance and Change in Control Benefits, page 172

18. *Your disclosure references a discussion of employment agreements and potential payments upon termination or change in control but discussion of such items has not been included. We note also that you have included placeholders for amended and restated employment agreements with each of your named executive officers. Please confirm that you will update your disclosure and file each agreement upon execution of such agreements.*

Response: In response to the Staff's comment, the Company has added the applicable disclosure on pages 184 through 186 of Amendment No. 1.

Description of Capital Stock, page 196

19. *We note that you will file by amendment as Exhibits 3.3 and 3.4 the Restated Certificate of Incorporation and Amendment and Restated Bylaws of the registrant, respectively. Please provide us with copies of the form of Restated Certificate of Incorporation and Amendment and Restated Bylaws you intend to file for our examination with your next amendment.*

Response: Under separate cover, the Company has supplementally provided the Staff with copies of the intended forms of the Restated Certificate of Incorporation and Amended and Restated Bylaws that will be effective

upon the closing of the offering and that the Company intends to file in a subsequent amendment to the Registration Statement.

Common Stock, page 197

20. *In addition to the threshold for election of directors, please expand your disclosure to include the voting threshold for all matters that may be voted on by stockholders.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page 209 of Amendment No. 1.

Notes to Consolidated Financial Statements, page F-7

4. License and collaboration agreements
Sanofi, page F-16

21. *With respect to your agreement with Sanofi, please revise your disclosure here to include a description of your performance obligations under this agreement, including the joint committees and all deliverables. Clarify that you are recognizing revenue for this agreement over the period of all your performance obligations or explain to us why your accounting is appropriate.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page F-16 of Amendment No. 1. The Company is recognizing revenue from development services as incurred. The Company determined that development services are considered a separate unit of accounting as they are (i) set at the Company's option, (ii) have stand-alone value as these services could be performed by third parties and (iii) the full time equivalent rate paid for the services rendered is considered to be fair value. The Company determined that the license, the right to future technology, back-up compounds, participation on steering committees and manufacturing services represented a single unit of accounting. The Company is recognizing revenue from the license, including the upfront and milestone payments, the right to future technology, back-up compounds, participation on steering committees and manufacturing services over the estimated period of the development term of the license and collaboration agreement, which is currently estimated to be 12 years from the date of the agreement.

6. Consolidated subsidiaries Hermes
BioSciences, Inc., page F-19

22. *With respect to the in-process research and development acquired, please disclose the significant appraisal assumptions, such as:*

- *the period in which material net cash inflows from significant projects are expected to commence;*
- *material anticipated changes from historical pricing, margins and expense levels; and*
- *the risk adjusted discount rate applied to the project's cash flows.*

Response: In response to the Staff's comment, the Company has revised the disclosure on page F-21 of Amendment No. 1.

14. Stock Warrants, page F-29

23. *Please clarify how you determined that the common warrants should be classified as equity. In this regard, please tell us whether the warrants are subject to adjustment if you subsequently issue equity at a price lower than the exercise price of these warrants. If so, please explain to us why you have not reclassified these warrants to liabilities effective January 1, 2009 under FASB ASC 815-40-15 with transition guidance at FASB ASC 815-10-65-3.*

Response: The Company's management evaluated the accounting and classification of the common stock warrants using the guidance in FASB Codification ASC 480 and ASC 815. As described in FASB Codification 815-10-74a, contracts issued or held by a reporting entity that are both (i) indexed to its own stock and (ii) classified as stockholders' equity in its statement of financial position shall not be considered derivative instruments. In determining whether the common stock warrants were indexed to the Company's stock, the Company's management evaluated and concluded that there were no contingent exercise provisions or settlement provisions that would preclude the common stock warrants from being indexed to the Company's stock. The evaluation of the settlement provisions included considering that the common stock warrants contain no provision that allow for adjustments to the common stock warrant exercise price upon subsequently issuing equity at a lower price. In addition, management evaluated the criteria in FASB Codification ASC 815-40-25 and ASC 815-40-55-2 through 55-6 and concluded that the common stock warrants should be classified in stockholders' equity.

24. *Please clarify that the modification of the stock warrant resulted in additional compensation expense in accordance with ASC 718-20-35-3 or explain why not.*

Response: FASB Codification ASC 718-10-15-4 requires transactions that have characteristics similar to compensatory plans adopted by a reporting entity, but that are established or financed by a principal stockholder,

related party or other holder of economic interest in an entity, to be accounted for as a stock-based compensation arrangement under ASC 718 unless the transaction is clearly for a purpose other than compensation for services to the reporting entity. The modification of the common stock warrants were not for services. At the time of the modification, the holders of the common stock warrants were investors and not employees, consultants or in any way providing services to the Company. As a result, the modification of the common stock warrants did not result in additional compensation expense under ASC 718. The Company continues to be in the capital raising mode. The modification to extend the life of the common stock warrants and at the same time increase the exercise price was the result of a negotiation with an investor that was beneficial to the Company. The proceeds from the potential exercise are approximately $7.8 million, which is not an insignificant amount. Management believes that the nature of the common stock warrant modification is a cost of capital transaction and should be accounted for within equity by increasing common stock warrants and decreasing additional paid in capital. To further clarify this accounting treatment, the Company has revised the disclosure on pages 90 and F-29 of Amendment No. 1.

20. Subsequent events, page F-37

25. *Please disclose the significant provisions of the Series G convertible preferred stock issued in April 2011. Please disclose any anticipated beneficial conversion feature and tell us how you determined the amount of any beneficial conversion feature.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages F-25 through F-28 of Amendment No. 1. There is no beneficial conversion feature associated with the Series G convertible preferred stock.

26. *Please disclose in MD&A the anticipated timing of the milestone payments associated with the PharmaEngine agreement.*

Response: In response to the Staff's comment, the Company has revised the disclosure on pages 62 and 88 of Amendment No. 1.

* * *

If you have any further questions or comments, or if you require any additional information, please contact the undersigned by telephone at (212) 937-7206 or facsimile at (212) 230-8888. Thank you for your assistance.

Very truly yours,

/s/ Brian A. Johnson

Brian A. Johnson