



DIVISION OF
CORPORATION FINANCE

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

July 2, 2012

Via E-mail

Ivan Bergstein, M.D.
Chairman, President and Chief Executive Officer
Stemline Therapeutics, Inc.
750 Lexington Avenue, Sixth Floor
New York, New York 10022

**Re: Stemline Therapeutics, Inc.
Amendment # 2 to Registration Statement on Form S-1
Filed June 20, 2012
File No. 333-180515**

Dear Dr. Bergstein:

We have reviewed your amended registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

Management's Discussion and Analysis of Financial Condition and Results of Operations
Critical Accounting Policies and Estimates
Significant Factors, Assumptions, and Methodologies Used in Estimating Fair Value of Common Stock, page 60

1. We acknowledge your correspondence dated June 22, 2012 which discusses the mid-point of your proposed price range for the offering. Please revise your proposed disclosure to be added to page 63 to address the following comments:
 - Please clarify how each of the identified milestones achieved is demonstrative of an increase in enterprise, and therefore, stock value. In this regard, for example, in the first bullet the mere confirmation of an understanding with FDA on the conduct of your development program does not appear to increase value absent the previous uncertainty regarding whether additional trials or steps would need to be included in the program. Also, in the third bullet, the presentation of information at a conference

- would not appear to increase value in a privately held company. Please clarify whether the presented information was known at March 9, 2012.
- Please discuss separately the factors attributing to the increase in value through your May 24, 2012 GAAP measurement date for option grants and from that date through your IPO date.
 - Please disclose and discuss separately the probability assigned to completing your IPO from March 9, 2012 to May 24, 2012 and your IPO date.

Notes to Unaudited Financial Statements

Note 9: Subsequent Events, page F-41

2. Please revise your disclosure about your June 15, 2012 Assignment Agreement with Dr. Bergstein to disclose, here and in MD&A, your anticipated accounting for the transaction and provide the additional details as requested below. Separately reference for us the authoritative literature you rely upon to support your anticipated accounting.
 - Please clarify what portion of the consideration to be conveyed will be paid in cash versus common stock and how the form of payment will be decided consistent with your disclosure on page 138.
 - Please clarify how you intend to account for the patent rights and related technology. Clarify whether you intend to record intangible assets or a charge for in-process research and development. Separately tell us whether any of the related technologies are not patented technologies. If you intend to capitalize intangible assets, separately tell us how they have alternative future uses in research and development or otherwise, as stipulated in ASC 730-10-25-2c.
 - Please clarify how you intend to account for the common stock to be issued. In your response, separately tell us whether and how the fact that Dr. Bergstein appears to be a controlling shareholder at the time of the Assignment Agreement impacts your accounting.
 - Please clarify whether there are any vesting or rescission/refund provisions in the agreement.
 - Please tell us separately your consideration for including the impact of this transaction in your capitalization and dilution disclosures.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes the information the Securities Act of 1933 and all applicable Securities Act rules require. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Notwithstanding our comments, in the event you request acceleration of the effective date of the pending registration statement please provide a written statement from the company acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Please refer to Rules 460 and 461 regarding requests for acceleration. We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

You may contact Dana Hartz at 202-551-3648 or Mark Brunhofer at 202-551-3638 if you have questions regarding comments on the financial statements and related matters. Please contact Michael Rosenthal at 202-551-3674 or me at 202-551-3715 with any other questions.

Sincerely,

/s/ Jeffrey P. Riedler

Jeffrey P. Riedler
Assistant Director

cc: James Barrett
Edwards Wildman Palmer LLP

Matthew Gardella
Edwards Wildman Palmer LLP