



DIVISION OF
CORPORATION FINANCE

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

November 6, 2012

Via E-mail

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

**Re: Stemline Therapeutics, Inc.
Registration Statement on Form S-1/A
Filed October 22, 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.

FORM S-1

General

1. In a Risk Factor on page 30 and in the Business section at page 91, you state that you plan to fund your pivotal Phase 2b clinical trial in pediatric patients with malignant glioma through government funding, if available. Please revise your disclosure in both the Risk Factor and Business section to address whether you have applied for government funding, what potential sources of government funding are available and approximately how much in funding you would require to complete this trial.

Capitalization, page 47

2. In footnote 1 to the table you indicate that certain bonuses and salary increases in the amount of approximately \$1.5 million will be paid upon the completion of your offering. However, the cash and cash equivalents balance in your pro forma column declined by almost \$1,666,000. Please revise your disclosure to quantify the other changes to your cash and cash equivalents balance.

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 62

3. In the last paragraph of your disclosure regarding fair value between May 24, 2012 and July 19, 2012 on page 67 you indicate that the aggregate fair value of your awards with a May 24, 2012 measurement date is approximately \$1.8 million. Based on the table of options granted on page 62 it appears that the aggregate fair value of awards with a May 24, 2012 measurement date is approximately \$3.6 million. Please explain this apparent discrepancy or revise your disclosure accordingly.
4. Your disclosure in the first paragraph regarding fair value between July 20, 2012 and October 22, 2012 appears to indicate that the midpoint of the price range for this offering was \$11.00 per share in July 2012. Please revise your disclosure to clarify why your price range changed from \$22.00 to \$26.00 in July to the current estimate. In addition, please revise your disclosure to explain your rationale for changing the estimated fair value of the options with a May 24, 2012 measurement date from the amounts disclosed in your previous amendment.

Liquidity and Capital Resources
Contractual Obligations and Commitments, page 72

5. In footnote 5 to your table you continue to indicate that you will record a liability at the present value of the payments required under your patent rights and related technology acquisition from Dr. Bergstein. Now that your revised agreement provides for contingencies to trigger payments to Dr. Bergstein, it appears that your disclosure regarding your anticipated accounting is no longer appropriate. Please revise your disclosure to indicate how you expect to record the liability associated with your contingent obligation and separately reference for us the authoritative literature you rely upon to support your position.

Business, page 75

6. We reference your disclosure under the headings “Completed Phase I/II Clinical Trial- Advanced AML” beginning on page 82, “Completed Phase I/II Clinical Trial – Pediatric Glioma” beginning on page 88 and “Completed Phase I/II Clinical Trial – Adult, Recurrent, High-Grade Glioma” beginning on page 89. Regarding each of the three completed Phase I/II studies for SL-401 and SL-701, please revise your disclosure to include primary and secondary endpoints and the extent to which the results achieved were or were not statistically significant. Please expand the disclosure to explain what a p-value measures and disclose the p-values obtained for each endpoint.

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.

Dr. Ivan Bergstein
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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 Nandini Acharya at (202) 551-3495 or me at (202) 551-3715 with any other questions.

Sincerely,

/s/ Jeffrey P. Riedler

Jeffrey P. Riedler
Assistant Director

cc: Via E-mail
James T. Barrett, Esq.
Matthew Gardella, Esq.
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