



DIVISION OF
CORPORATION FINANCE

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

September 15, 2010

Mr. Martin McGlynn
President and Chief Executive Officer
StemCells, Inc.
3155 Porter Drive
Palo Alto, CA 94304

**Re: StemCells, Inc.
Form 10-K for the Fiscal Year Ended December 31, 2009
Definitive Proxy Statement filed April 13, 2010
File No. 000-19871**

Dear Mr. McGlynn:

We have reviewed your July 6, 2010 response to our June 7, 2010 letter and have the following comments. In our comments, we ask you to provide us with information to better understand your disclosure.

Please respond to this letter within ten business days by providing us the requested information or by advising us when you will provide the requested response. Where a comment requests you to revise disclosure, the information you provide should show us what the revised disclosure will look like and identify the annual or quarterly filing, in which you intend to first include it. If you do not believe a comment applies to your facts and circumstances, please tell us why in your response. Please furnish us a letter on EDGAR under the form type label CORRESP that keys your responses to our comments.

After reviewing the information provided, we may raise additional comments and/or request that you amend your filing.

Item 1. Business

Licenses with Research Institutions, page 14

1. We note your responses to prior comments five and seven directing us to your requests for confidential treatment with respect to certain terms of the Edinburgh License Agreement and the License Agreement with NeuroSpheres Holdings Ltd. each granted by the Commission. The confidential treatment request was granted without the benefit of a review. In the letter informing you of the grant of your confidential treatment request, we informed you that we maintain the authority to reconsider the grant of confidential treatment. While we generally believe the royalty rate is a material term of a license agreement, we are willing to grant confidential treatment for the royalty rate when the

royalty range is disclosed. Accordingly, please revise your disclosure regarding these agreements to include a reasonable range within which the royalty rate falls, for example “single digits,” teens,” “twenties,” etc. Additionally, in lieu of any minimum annual payments owed, please provide the aggregate potential milestone payments due under the Edinburgh License Agreement.

Management’s Discussion and Analysis of Financial Condition and Results of Operations

Liquidity and Capital Resources, page 49

Indemnification Agreement

2. Please refer to prior comment ten. You have concluded that as of December 31, 2009, prepaid royalties of \$750,000 are realizable against future milestone and royalty payments to NeuroSpheres. Please tell us why this assumed realization against future milestone payments does not represent recognition of a contingent gain, which is prohibited by ASC 450-30-25.

Notes to Consolidated Financial Statements

Note 5. Acquisition of SCS, page 70

3. Please refer to prior comment 13. Confirm to us that you will disclose the information provided in your response in future filings.

Note 12. Commitments and Contingencies, page 77

4. Please refer to prior comment 16. You assert that these arrangements are not material to your business. However, the future success of your research and development appears to depend significantly on these licensed agreements and research collaborations. Also, you disclose a potential \$15 million maximum royalty obligation to Cal Tech. Accordingly, please disclose the principal terms of your license arrangements and collaborations with research institutions and commercial entities.

Definitive Proxy Statement filed April 13, 2010

Executive Compensation

Compensation Discussion and Analysis

Compensation of Named Executive Officers

Bonus Compensation, page 13

5. We note your response to comment 18 and disagree with your conclusion that a more detailed description of your corporate goals is not necessary. A more detailed description of the goals is material to understanding how you incentivize and reward your executive

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officers. Please confirm that you will provide a more detailed description of these goals in your 2011 proxy statement.

Please contact Frank Wyman, Staff Accountant, at (202) 551-3660 or Lisa Vanjoske, Assistant Chief Accountant, at (202) 551-3614, if you have any questions regarding the processing of your response as well as any questions regarding comments on the financial statements and related matters. You may contact Karen Ubell, Staff Attorney, at (202) 551-3873 or Suzanne Hayes, Legal Branch Chief, at (202) 551-3675 with questions on any of the other comments. In this regard, do not hesitate to contact me at (202) 551-3679.

Sincerely,

Jim B. Rosenberg
Senior Assistant Chief Accountant