

Via Facsimile and U.S. Mail
Mail Stop 4720

June 7, 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 filings and have the following comments. In our comments, we ask you to provide us with information to better understand your disclosure. 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, as applicable, in which you intend to first include it. If you do not believe that revised disclosure is necessary, explain the reason in your response. After reviewing the information provided, we may raise additional comments and/or request that you amend your filing.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filings. We look forward to working with you in these respects. We welcome any questions you may have about our comments or on any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Form 10-K for the Fiscal Year Ended December 31, 2009

Item 1. Business

General

1. We note your disclosure in the risk factor titled “The manufacture of cell-based therapeutic products is novel, regulated, critical to our business and dependent upon specialized key materials.” Specifically, you state that some of your

material requirements are single sourced and the loss of a source may adversely affect your business. Please identify your products and product candidates that are dependent on sole source providers and identify the sole source providers. If you have agreements with these parties, file the agreements and describe the material terms. Alternatively, tell us why you believe you are not substantially dependent on such agreements.

Marketing, page 12

2. We note that you have distribution agreement with Millipore Corporation for the marketing and sale of certain cell culture products. If you are substantially dependent on an agreement with Millipore for the sale of your products, please file the agreement and describe the material terms of the agreement. If you believe you are not substantially dependent on an agreement with Millipore, please provide us with an analysis supporting your determination. Your analysis should address the percentage of product sales that are attributable to the agreement.

Patents, Property Rights and Licenses, page 12.

3. Please clarify which patents you own and which you license from other parties. Please also disclose when each patent identified expires.

Licenses with Research Institutions, page 14

4. We note your reference to a license agreement with Oregon Health & Science University on page 14. Additionally, we note the reference to your collaborators at OHSU Casey Eye Institute on page 40. Please provide a discussion of the material terms of your collaboration and license agreements with OHSU and either file the agreements or provide us with an analysis supporting your determination that you are not required to file them.
5. With respect to your license agreement with the University of Edinburgh, please also disclose the royalty range (single digits, twenties, thirties, etc.), the minimum annual payments and when the agreement expires.
6. Please include a description of your agreements with Cambridge University and RIKEN Institute. Your discussion should include:
 - the nature of the agreement;
 - products or product candidates dependent on the agreement;
 - each party's rights and obligations;
 - payment provisions, including payments made to date, aggregate potential milestone payments, minimum annual payments, royalty rates or a range of royalty rates; and term and termination provisions.

Additionally, please file the agreements or provide an analysis supporting your determination that you are not substantially dependent on each agreement.

Licenses with Commercial Entities, page 14

7. With respect to your agreement with NeuroSpheres, please disclose when the patents licensed to you are scheduled to expire and a range of royalty rates payable under the license agreement.
8. With respect to your agreement with Stem Cell Therapeutics, please disclose aggregate payments to date, aggregate potential milestone payments, applicable royalty range and term and termination provisions.
9. Please describe the terms of your license of your IRES technology to a “major international pharmaceutical company.” Your discussion should identify the licensor, quantify payments made to date and aggregate potential payments, and describe term and termination provisions. Please also file the agreement or provide us with an analysis supporting your determination that you are not required to file the agreement.

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

Liquidity and Capital Resources, page 49

Indemnification Agreement

10. You have capitalized \$750,000 of litigation cost reimbursements to NeuroSystems as “Other assets-non-current” due to your right of offset against future maintenance fees, milestones and royalties to be owed under the related license agreements with this commercial entity. Your assertion that this amount is a fair estimate of your future obligations to NeuroSystems appears to be premised on the future commercialization of the associated products and technologies. However, on page 23, you assert that these products and technologies are only in the early stages of discovery and development, are inherently risky and may not ever achieve commercialization. Please explain to us this apparent contradiction. Also, tell us why you believe that deferral of these litigation cost reimbursements complies with GAAP with reference to the authoritative literature upon which you based your conclusion.

Contractual Obligations, page 53

11. Please include the wind-down expense liability in this table, as well as estimated license fee and milestone payments under your arrangements with research institutions and commercial entities.

Statement of Operations, page 59

12. You report gross profit here and in MD&A which includes revenue from licensing agreements and grants. Please tell us why there are no costs associated with these revenues within the caption, gross profit.

Notes to Consolidated Financial Statements

Note 5. Acquisition of SCS, page 70

13. Disclose the nature of the in process research and development assets and tell us how you determined the useful lives of 13 – 19 years.

Note 6. Intangible Assets, page 71

14. It appears from Note 5 that the caption “In process development” in this note includes in process research and development, customer relationships and developed technology. Explain why you believe aggregating all those assets into a single asset class is appropriate.

Note 7. Other Assets, page 72

15. Please explain the nature of prepaid royalties and the contractual arrangements governing these payments. Refer us to the authoritative literature in GAAP upon which you have based your accounting for this activity.

Note 12. Commitments and Contingencies, page 77

16. Please disclose the terms of your arrangements with research institutions and commercial entities, particularly those described on pages 14-15.

Definitive Proxy Statement filed April 13, 2010

Executive Compensation

Compensation Discussion and Analysis, page 12

17. We note your statement that “We have concluded that our employee compensation programs are designed with the appropriate balance of risk and reward in relation to our company’s overall business strategy and do not incentivize executives or other employees to take unnecessary or excessive risks. As a result, we believe that risks arising from our employee compensation policies and practices are not reasonably likely to have a material adverse effect on the company.” Please provide us with an analysis supporting your determination that your compensation policies and practices do not present risks that are likely to have a material adverse effect on you or your business.

Compensation of Named Executive Officers

Bonus Compensation, page 13

18. We note your general description of the corporate goals on page 14. To the extent the corporate goals were quantified or more specifically defined, the discussion should be expanded to provide a similar level of detail. For example:

- Were there any specific activities aimed at initiating clinical trials of HuCNS-SC or any other items constituting progress in your CNS Program;
- Was progress in your Liver Program further defined; and
- Were any other corporate development activities identified?

Additionally, discuss the extent to which each goal was achieved and how the bonus award of 70% was determined.

Proposal Number 1, Election of Directors, page 25

19. In accordance with newly revised Item 401(e) of Regulation S-K, please provide disclosure discussing for each director and director nominee, on an individual basis, the particular experience, qualifications, attributes or skills that led the company's board to conclude that the person should serve as a director of the company.

* * * *

Please respond to these comments within 10 business days or tell us when you will provide us with a response. Please furnish a letter that keys your responses to our comments and provide the requested information. Detailed letters greatly facilitate our review. Please furnish your letter on EDGAR under the form type label CORRESP.

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 all information required under the Securities Exchange Act of 1934 and that they have provided all information investors require for an informed investment decision. 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.

In connection with responding to our comments, please provide, in your letter, a statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not

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- foreclose the Commission from taking any action with respect to the filing; and
- the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in our review of your filing or in response to our comment on your filing.

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