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December 2, 2010

VIA EDGAR

Securities and Exchange Commission
Division of Corporation Finance
100 F Street, N.E.
Washington, D.C. 20549-7010

Attention: Jeffrey Riedler
Frank Wyman
Lisa Vanjoske
Karen Ubell
Suzanne Hayes
Jim B. Rosenberg

**Re: SEC Comment Letter dated November 17, 2010
StemCells, Inc.
Form 10-K for the fiscal year ended December 31, 2009
Definitive Proxy Statement on Schedule 14A filed April 13, 2010
File No. 001-19871**

Ladies and Gentlemen:

On behalf of StemCells, Inc. (the "Company"), this letter is being submitted to the Staff of the Securities and Exchange Commission (the "Commission") in response to the comments in the Staff's letters dated June 7, 2010 (the "June 7 Letter"), September 15, 2010 (the "September 15 Letter"), and November 17, 2010 (the "November 17 Letter") regarding the Company's 10-K for the year ended December 31, 2009 (the "2009 10-K") and definitive proxy statement filed on April 13, 2010 (our "2010 Proxy Statement").

For reference purposes, the Staff's comments in the November 17 Letter are reproduced in bold in this letter, and the Company's corresponding responses are shown below the Staff's comments. We also make occasional cross references to the Company's earlier written response letters to the Commission dated July 6, 2010 (our "July 6 Response") and September 28, 2010 (our "September 28 Response").

Accordingly, we supplementally advise you as follows:

Definitive Proxy Statement filed April 13, 2010

Executive Compensation, page 11

Bonus Compensation, pages 13-14

- 5. We note your response to prior comment 5 and reissue our comment. A detailed description of the specific corporate goals, though subjective and not linearly tied to the compensation committee's bonus determination, is material to understanding how you incentivize and reward your executive officers. Such detailed description has not been provided by your previous response on July 6, 2010. Please confirm that you will provide a detailed description on the specific corporate goals approved by the board for 2010 corporate performance in your 2011 proxy statement. To the extent that your goals are quantified, confirm that the description of your goals in your proxy statement will also be quantified.**
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Company Response:

We agree that a detailed description of our corporate goals, especially how they are set and how they are used, is important to an understanding of our compensation practices and how we incentivize our executive officers. As previously explained, achievement of one or more of each year's corporate goals is a factor, among many, that our Compensation Committee takes into consideration when determining whether to award a discretionary bonus to employees in any given year. Other factors include the Committee's subjective assessment of general market trends, the Company's future prospects and resources, and the Company's challenges and accomplishments during the preceding year.

None of our 2009 corporate goals were tied to our financial statements and so none were quantifiable goals like the ones used by large commercial companies to reward executives, such as bonuses tied to earnings per share, return on equity or other common financial metrics. Should we adopt any such quantified goals in the future, we will describe them in our future proxy statements if doing so would not result in competitive harm, as provided by Instruction 4 to Item 402(b) of Regulation S-K.

We refer the Staff to our responses to Comments 17 and 18 in our July 6 Response. We believe that the additional disclosures included in those responses, together with what we have disclosed in our public filings, disclose all material information necessary to allow investors and potential investors in the Company to understand the significant types of measures and considerations used by our Board to compensate our employees, including our executive officers.

While we did not fully describe our 2009 corporate goals in our July 6 Response, we refer the Commission to our 2010 Proxy Statement, as augmented by our July 6 Response. Together the disclosure would read:

Bonus compensation. We view periodic bonuses, whether paid in cash or equity, as an important element of compensation for several reasons. Bonuses help align individual employee efforts with overall corporate strategies and objectives. Bonuses also help us manage salary expense, while still allowing us to reward successes. By using discretionary bonuses as part of the compensation mix, we have greater flexibility in managing the timing and amounts of compensation.

Over the past few years, we have awarded bonuses on an annual basis after considering, among other things, the company's accomplishments against stated corporate goals adopted by the Board, the company's financial position, the status of its development programs, clinical progress and corporate development activities, and general economic factors. This has necessarily involved a subjective assessment by the Compensation Committee of corporate performance and market conditions each year.

The process of establishing our corporate goals over the past few years has been a lengthy one. For each fiscal year, our executive officers have presented the Compensation Committee of the Board with approximately five to ten proposed corporate goals, each often consisting of multiple sub-parts. Management has usually presented its recommended corporate goals to the Compensation Committee concurrent with our proposed corporate budgets for the

following fiscal year. Goals have been designed to be challenging, so that one would not expect consistent achievement of all of them. Typically these goals have included some pre-clinical and clinical goals for our HuCNS-SC cell product candidate, financing and corporate development goals, goals related to advancement in cell manufacturing practices, and goals related to advancement of our Liver Program. While all these goals have been considered important, and we have used a cross-functional and balanced approach to setting them, we have typically prioritized our goals by assigning relative weightings to each of them, with all of them together adding up to 100%. However, by design, no one goal has ever accounted for a majority of the relative weightings.

After receiving management's recommended goals, members of the Compensation Committee would review them with our executive officers and oftentimes provide suggestions for additional goals or changes to the recommended goals. Typically, after our executive officers and directors have completed this iterative process, which has often taken several weeks, the Compensation Committee would adopt revised corporate goals consistent with the foregoing principles and recommend the updated corporate goals to the full Board for consideration and approval.

Thereafter, during each fiscal year, our executive officers have used the Board-approved corporate goals as a management tool, for example to coordinate activities, motivate personnel and help prioritize the use of Company resources. The executive officers have sometimes referred back to the corporate goals when providing business updates to the Board, similar to management's reference back to an approved annual budget.

Recently, at the end of each fiscal year, our Chief Executive Officer has presented the Compensation Committee with his assessments of corporate performance against the Board-approved corporate goals, together with a summary of any important factors that weighed in his assessments, which he has provided as context. Because our corporate goals have not been formulaic or quantitative in nature (we have not had a corporate goal tied to specific stock price, revenues or expenses, for example), our CEO's assessments have been largely qualitative in nature. Along with these assessments, our CEO has provided a percentage score for each goal reflecting the degree to which each goal was or was not, in his judgment, achieved during the year.

The Compensation Committee has usually considered these percentage scores as well as our Chief Executive Officer's commentary about corporate performance and more general assessments of the state of our business when determining whether to award employees a company-wide corporate bonus in any given year, and if so how much of the available bonus pool to award. However, the Compensation Committee members have used their own judgment to determine the size of any bonus award, if any. Therefore, there has been no direct correlation between the aggregate percentage score given to any year's corporate goals by our CEO and the ultimate bonus payout. In any given year, the Board may grant more than 100% of the bonus pool for the year. The Board may also grant less than 100% of the bonus pool even if all of the corporate goals have been achieved. While the Compensation Committee and the Board as a whole use the corporate goals as a measure of success, the amount of any bonus grant, as well as how and when it will be paid, is completely within the Board's sole discretion.

With these various principles in mind, we recently took the following actions with respect to corporate bonuses.

In January 2010, as part of its annual year-end review of performance, the Compensation Committee (with input from the Chief Executive Officer and other Board members) considered, among other things, significant company performance accomplishments in 2009, the company's successes measured against its 2009 corporate goals, the degree of difficulty in achieving these goals, as well as other events and circumstances that affected performance. The 2009 goals, as approved by our Board, consisted generally of the following:

(i) progress in our CNS Program, including activities aimed at initiating clinical trials of our HuCNS-SC proprietary cell-based product in multiple therapeutic indications; (ii) progress in our Liver Program; (iii) successful fundraising efforts; (iv) successful corporate development activities; and (v) advancement of our scientific development programs.

Highlights of the 2009 accomplishments taken into account by the Compensation Committee in determining the overall company performance included:

- In January 2009, we completed a Phase I clinical trial of our HuCNS-SC[®] product candidate (purified human neural stem cells) in infantile and late infantile neuronal ceroid lipofuscinosis (NCL, also often referred to as Batten disease), a fatal neurodegenerative disorder in children.*
- In June 2009, we announced positive results from our NCL trial. The Phase I data demonstrated that the HuCNS-SC cells, the transplantation procedure, and the immunosuppression regimen were well tolerated, and that the patients' medical, neurological and neuropsychological conditions, following transplantation, appeared consistent with the normal course of the disease. In addition to this favorable safety profile, we reported evidence of engraftment and long-term survival of the HuCNS-SC cells.*
- In November 2009, we initiated a Phase I clinical trial designed to test the safety and preliminary efficacy of our HuCNS-SC cells in Pelizaeus-Merzbacher Disease (PMD), a fatal myelination disorder that primarily afflicts infants and young children.*
- In September 2009, we received ethics committee approval at the Université Catholique de Louvain (UCL) in Belgium to initiate a clinical study evaluating our human liver engrafting cells (hLEC) as a potential cellular therapy for liver-based metabolic disorders.*
- In May 2009, our collaborators at Oregon Health & Science University (OHSU) Casey Eye Institute presented data showing that our human neural stem cells, when transplanted into an animal model of retinal degeneration, engraft long term and protect the retina from progressive degeneration.*
- In April 2009, we closed the acquisition of substantially all of the operating assets and liabilities of Stem Cell Sciences plc for 2,650,000 shares of our common stock and approximately \$700,000 in cash. As a result of this transaction, we added proprietary cell technologies relating to embryonic stem cells, induced pluripotent (iPS) stem cells, and tissue-derived (adult) stem cells; expertise and infrastructure for providing cell-based assays for drug discovery; a specialty cell culture products business; an intellectual property portfolio with claims relevant to cell processing, reprogramming and manipulation, as well as to gene targeting and insertion; and a European presence with operations in Cambridge, UK.*
- In November 2009, we raised \$12,500,000 in gross proceeds through the sale of 10,000,000 shares of common stock and warrants to purchase 4,000,000 shares of common stock at an exercise price of \$1.50 per share. We received total proceeds, net of offering expenses and placement agency fees, of approximately \$11,985,000.*

Following this review, the Compensation Committee awarded a discretionary bonus equal to 70% of the available bonus pool, based upon the committee members' assessments of market conditions, corporate risks, Company successes in 2009, employee compensation more

generally, and our market comparables, among other things, including the committee member's qualitative assessments of the Company's performance in 2009 measured against its 2009 corporate goals. The bonuses were calculated using each employee's annual base salary as of January 1, 2009, and paid in January 2010.

In Mr. McGlynn's case, because his base salary on January 1, 2009 was \$525,000 and because his target bonus was 55%, his 2009 bonus was \$202,125. In Dr. Tsukamoto's case, because her base salary on January 1, 2009 was \$300,000 and because her target bonus was 25%, her 2009 bonus was \$52,500. In Mr. Young's case, because his base salary on January 1, 2009 was \$275,000 and because his target bonus was 25%, his 2009 bonus was \$48,125. In Dr. Craig's case, because his base salary on January 1, 2009 was \$275,000 and his target bonus was 25%, his 2009 bonus was \$48,125. In Mr. Stratton's case, because his base salary on January 1, 2009 was \$250,000 and because his target bonus was 20%, his 2009 bonus was \$35,000.

We would anticipate providing similar disclosure in our 2011 proxy statement to describe our 2010 corporate goals because our bonus methodologies have not changed materially.

After a thorough discussion of these matters with our securities counsel, we believe the above disclosure to be appropriate, balanced and in compliance with our obligations under item 402(b), for the reasons given in our July 6 Response and our September 28 Response. We believe we fully disclose all material elements underlying the Company's policies and decisions concerning bonus compensation, including the most important factors relevant thereto.

If the Commission should have any remaining questions or concerns, however, we would welcome an opportunity to discuss these matters further by phone. We will also continue to assess the adequacy of our disclosure in this regard in connection with our future proxy filings and we agree that, in future filings, we will provide a detailed description of our corporate goals along the lines described above.

Please be advised that, in connection with the Staff's comments in the June 7 Letter, the September 15 Letter, and the November 17 Letter and the Company's responses thereto, the Company hereby acknowledges that (i) the Company is responsible for the adequacy and accuracy of the disclosure in the above-referenced filing; (ii) the Staff's comments or changes to disclosure in response to the Staff's comments do not foreclose the Commission from taking any action with respect to the filing; and (iii) it is the Staff's position that the Company may not assert the Staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

We hope that the foregoing has been responsive to the Staff's comments. If you should have any questions about this letter or require any further information, please call the undersigned at (650) 475-3122.

Very truly yours,

/s/ Kenneth B. Stratton

Kenneth B. Stratton
General Counsel