February 29, 2008

VIA EDGAR

U.S. Securities and Exchange Commission
Mail Stop 6010
Division of Corporation Finance
100 F Street, NE
Washington, D.C. 20549

Attention: Jim B. Rosenberg, Senior Assistant
Chief Accountant

Re: SEC Comment Letter, dated December 21, 2007
StemCells, Inc.
Form 10-K for the Year Ended December 30, 2006
File No. 000-19871

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 letter dated December 21, 2007 (the "December 21 Letter") regarding the Company's 10-K for the year ended December 31, 2006 filed on March 15, 2007 (the "2006 10-K").

For reference purposes, the comments as reflected in the December 21 Letter are reproduced in bold in this letter, and the corresponding responses of the Company are shown below each comment.

Accordingly, we supplementally advise you as follows:

General

1. **We note that you have included certain license agreements as exhibits to the Form 10-K and not others. For example, you do not include as exhibits your agreements with the California Institute of Technology and the Oregon Health & Science University. Please provide us with an analysis supporting your determination as to how you have determined which of your license agreements are material contracts required to be filed as exhibits.**

Company Response:

We do not believe all our license agreements are material to our business. Most were entered into in the ordinary course of business. They are customary for businesses such as ours and our business is not substantially dependent on them. Factors we consider in determining whether a particular license agreement is material include whether the licensed patents have claims that cover our existing or contemplated therapeutic products, whether the license is likely to generate significant revenue for the Company, and whether the license is likely to cost the Company significant expense.

Under these standards, the Company does not consider the license agreements with either the California Institute of Technology (Cal Tech) or the Oregon Health & Science University (OHSU) as material to our business. The Cal Tech agreement covers patents that claim inventions that are not being pursued by the Company at this time, such as neural crest cells and neurogenin, but which may be relevant in the future or which may cover competitor products. However, even if the Company were to develop a product covered by the Cal Tech licensed patents, the total license fees owed by the Company to Cal Tech would be immaterial to our business, with a royalty rate of 1% or less on net sales and capped. Since entering into the Cal Tech license agreement, the Company has stopped the prosecution of some of these patents. Given the ancillary nature of these technologies, the Company recently decided to terminate the agreement with respect to patent applications outside the United States. Meanwhile, the OHSU license relates to an animal mouse model that we do not currently use and to U.S. Patent No. 6,132,708, which discloses the use of pancreatic cells for liver regeneration, a technology we are not presently developing. The Company plans to take steps to terminate this agreement in 2008. In contrast, we consider the ReNeuron agreement to be material based on the substantial proceeds we received as partial consideration under the agreement, which included a payment to us in the form of shares of ReNeuron stock, the sale of some of which has already generated in excess of $3 million in proceeds. Similarly, we consider the NeuroSpheres license agreement to be material because many of the patents and patent applications licensed from NeuroSpheres are foundational to our neural stem cell program. Collectively these patents account for at least two thirds of our issued patents worldwide. Moreover, this license includes patents that we have, in turn, licensed to others and used as the basis for our patent infringement litigation against Neuralstem.

2. **On page 20 of the Form 10-K you refer to consulting agreements with SAB members. Only one of these agreements has been included as an exhibit to the Form 10-K, that with Dr. Weissman. In addition, a consulting agreement with Judi R. Lum is included as an exhibit but not described or referred to in the Form 10-K discussion. Please provide us with an analysis supporting your determination as to how you have determined which consulting agreements are material contracts. In addition, you refer to various "research collaborations" in the Form 10-K, with organizations such as the Reeve-Irvine Center at the University of California, Oregon Health & Science University, the Yale University School of Medicine and NIH. We note that you have not included any collaboration agreements as exhibits to the Form 10-K. Please provide us with an analysis supporting your determination as to how you have determined that these collaboration agreements are not material contracts required to be filed as exhibits.**

Company Response:

We believe all of our consulting agreements and collaboration agreements were made in the ordinary course of our business. We also believe, based upon the judgment and experiences of our management team, that all of these agreements contain terms and conditions that are customary for the biotechnology industry. Our business is not substantially dependent on any of our consulting or collaboration agreements. However, we have disclosed the identity of our collaborators as well as the basic scope of these collaborations insofar as this helps illustrate the direction of our research and development efforts as well as the quality of our collaborators.

Even so, we consider certain consulting agreements to be material contracts under Item 601(b)(10)(ii)(A) of Regulation S-K if they involve officers, directors or other affiliates. Our agreement with Judi Lum was filed because she had been, before her entering into her consulting agreement with us, our Chief Financial Officer. Similarly, we consider our agreement with Dr. Weissman to be material because he is a director of the Company.

3. **In the description of legal proceedings in the Form 10-K you describe an action by Geron Corporation in which the result is that two patents being maintained by the company would be in altered form. In addition, you described a dispute with Neuralstem over four patents. Please revise your disclosure to briefly describe these patents in the section titled "Patents, Proprietary Rights and Licenses" to the extent you have not already done so and to disclose the patent description or number in "Item 3. Legal Proceedings." In addition, please revise your disclosure in "Item 3. Legal Proceedings" to explain what it means to be in "somewhat altered form."**

Company Response:

In future filings, beginning with the Company's Form 10-K for the period ending December 31, 2007 (our "2007 10-K"), the Company will provide enhanced disclosure about its patent disputes consistent with this request. Our 2007 10-K will read substantially as follows:

> In July 2006, we filed suit against Neuralstem, Inc., in the Federal District Court for the District of Maryland, alleging that Neuralstem's activities violate claims in four of the patents we exclusively licensed from NeuroSpheres. Neuralstem has filed a motion for dismissal or summary judgment in the alternative, citing Title 35, Section 271(e)(1) of the United States Code, which says that it is not an act of patent infringement to make, use or sell a patented invention "solely for uses reasonably related to the development and submission of information" to the FDA. Neuralstem argues that because it does not have any therapeutic products on the market yet, the activities complained of fall within the protection of Section 271(e)(1) — that is, basically, that the suit is premature. This issue will be decided after discovery is complete. Subsequent to filing its motion to dismiss, in December 2006, Neuralstem petitioned the U.S. Patent and Trademark Office (PTO) to reexamine two of the patents in our infringement action against Neuralstem, namely U.S. Patent No. 6,294,346 (claiming the use of human neural stem cells for drug screening) and U.S. Patent No. 7,101,709 (claiming the use of human neural stem cells for screening biological agents). In April 2007, Neuralstem petitioned the PTO to reexamine the remaining two patents in the suit, namely U.S. Patent No. 5,851,832 (claiming methods for proliferating human neural

stem cells) and U.S. Patent No. 6.,497,982 872 (claiming methods for transplanting human neural stem cells). These requests were granted by the PTO and, in June 2007, the parties voluntarily agreed to stay the pending litigation while the PTO considers them reexamination requests. In October 2007, Neuralstem petitioned the PTO to reexamine a fifth patent, namely U.S. Patent No. 6,103,530, which claims a culture medium for proliferating mammalian neural stem cells. In September 2007, the PTO issued first office actions in each of the first four reexaminations. The Company has since filed its first responses in to each of these, and expects all four patents to re-issue in 2008.

In 2003, Geron Corporation filed an opposition to two of our issued European patent cases, namely EP0594669 (claiming, among other things, methods for proliferating and using human neural stem cells as therapeutic and drug screening agents) and EP0669973 (claiming, among other things, methods for proliferating and differentiating human neural stem cells). Both oppositions were heard in 2005, and the patents were maintained in somewhat altered form by the Opposition Division of the European Patent Office. In essence the scope of each patent was limited to proliferation using specific growth factors and each had to disclaim derivation of human neural stem cells from human embryonic tissue in order to comply with the European law which precludes the patenting of embryonic stem cells. The time for appeal has run in each case. U.S. counterparts to these patents are part of our issued patent portfolio; they are not subject to opposition, because that procedure does not exist under U.S. patent law, although other types of proceedings may be available to third parties to contest our U.S. patents.

Research and Development Programs, Page 5

Overview, Page 5

4. **We believe that your disclosures about historical research and development expenses and estimated future expenses related to your major research and development projects could be enhanced for investors. Please refer to the Division of Corporation Finance "Current Issues and Rulemaking Projects Quarterly Update" under section VIII – Industry Specific Issues – Accounting and Disclosure by Companies Engaged in Research and Development Activities. You can find it at the following website address: http://www.sec.gov/divisions/corpfin/cfcrq032001.htm. Please revise your MD&A to disclose the following information for each of your major research and development projects.**

    a. **The current status of the project;**

    b. **The costs incurred during each period presented and to date on each project;**

    c. **The nature, timing and estimated costs of the efforts necessary to complete each project;**

    d. **The anticipated completion dates of each project;**

e. The risks and uncertainties associated with completing development on schedule, and the consequences to operations, financial position and liquidity if each project is not completed timely; and finally

f. The period in which material net cash inflows from significant projects are expected to commence for each project.

Regarding b., if you do not maintain any research and development costs by project, disclose that fact and explain why management does not maintain and evaluate research and development costs by project. Provide other quantitative or qualitative disclosure that indicates the amount of the company's resources are being used on the project.

Regarding c. and d., disclose the amount or range of estimated costs and timing to complete the phase in process and each future phase. To the extent that information is not estimable, disclose those facts and circumstances indicating the uncertainties that preclude you from making a reasonable estimate.

Company Response:

We evaluate research and development (R&D) costs by type of cost incurred rather than by project, primarily because our R&D personnel work across multiple programs and multiple projects rather than dedicated to any single project. Our R&D personnel work across programs and projects because our technology is such that improvements and discoveries that benefit one project or program are likely to substantively improve other projects and potentially other programs. Moreover, because of the early stage of our R&D efforts, much of our work is basic research, which is very difficult to meaningfully categorize or relate to specific development projects or programs. However, per the Staff's request, and in order to disclose to investors how the Company manages its R&D expenses, we will expand our disclosure in Management's Discussion and Analysis in our future filings, beginning with our 2007 10-K, substantially as follows:

Before we can derive revenue or cash inflows from the commercialization of any of our product candidates, we will need to: (i) conduct substantial *in vitro* testing and characterization of our proprietary cell types, (ii) undertake preclinical and clinical testing for specific disease indications; (iii) develop, validate and scale-up manufacturing processes to produce these cell-based therapeutics, and (iv) pursue required regulatory approvals. These steps are risky, expensive and time consuming.

Overall, we expect our R&D expenses to be substantial and to increase for the foreseeable future as we continue the development and clinical investigation of our current and future product candidates. However, expenditures on R&D programs are subject to many uncertainties, including whether we develop our product candidates with a partner or independently. We cannot forecast with any degree of certainty which of our current product candidates will be subject to future collaboration, when such collaboration agreements will be secured, if at all, and to what degree such arrangements would affect our development plans and capital requirements. In addition, there are numerous factors associated with the successful commercialization of any of our cell-based therapeutics, including future trial design and regulatory requirements, many of which cannot be

determined with accuracy at this time given the stage of our development and the novel nature of stem cell technologies. The regulatory pathways, both in the United States and internationally, are complex and fluid given the novel and, in general, clinically unproven nature of stem cell technologies. At this time, due to such uncertainties and inherent risks, we cannot estimate in a meaningful way the duration of, or the costs to complete, our R&D programs or whether, when or to what extent we will generate revenues or cash inflows from the commercialization and sale of any of our product candidates. While we are currently focused on advancing each of our product development programs, our future R&D expenses will depend on the determinations we make as to the scientific and clinical prospects of each product candidate, as well as our ongoing assessment of the regulatory requirements and each product candidate's commercial potential.

Given the early stage of development of our product candidates, any estimates of when we may be able to commercialize one or more of these products would not be meaningful. Moreover, any estimate of the time and investment required to develop potential products based upon our proprietary HuCNS-SC and hLEC technologies will change depending on the ultimate approach or approaches we take to pursue them, the results of preclinical and clinical studies, and the content and timing of decisions made by the FDA and other regulatory authorities. There can be no assurance that we will be able to develop any product successfully, or that we will be able to recover our development costs, whether upon commercialization of a developed product or otherwise. We cannot provide assurance that any of these programs will result in products that can be marketed or marketed profitably. If certain of our development-stage programs do not result in commercially viable products, our results of operations could be materially adversely affected.

Our R&D expenses consist primarily of salaries and related personnel expenses, costs associated with clinical trials and regulatory submissions; costs associated with preclinical activities such as toxicology studies; certain patent-related costs such as licensing; facilities-related costs such as depreciation; lab equipment and supplies. Clinical trial expenses include payments to vendors such as clinical research organizations, contract manufacturers, clinical trial sites, laboratories for testing clinical samples and consultants. Cumulative R&D costs incurred since we refocused our activities on developing cell-based therapeutics (fiscal years 2000 through 2007) were approximately $XX million. Over this period, the majority of these cumulative costs were related to: (i) characterization of our proprietary HuCNS-SC cell, (ii) expenditures for toxicology and other preclinical studies, preparation and submission of our Investigational New Drug (IND) application for our Phase I trial for NCL to the FDA, and obtaining FDA clearance; and (iii) expenditures in connection with our HuCNS-SC Phase I clinical trial.

We use and manage our R&D resources, including our employees and facilities, across various projects rather than on a project-by-project basis for the following reasons. The allocations of time and resources change as the needs and priorities of individual projects and programs change, and many of our researchers are assigned to more than one project at any given time. Furthermore, we are exploring multiple possible uses for each of our proprietary cell types, so much of our R&D effort is complementary to and supportive of each of these projects. Lastly, much of our R&D effort is focused on manufacturing processes, which can result in process improvements useful across cell types. We also

use external service providers to assist in the conduct of our clinical trials, to manufacture certain of our product candidates and to provide various other R&D related products and services. Many of these costs and expenses are complementary to and supportive of each of our programs. Because we do not have a development collaborator for any of our product programs, we are currently responsible for all costs incurred with respect to our product candidates.

R&D expense totaled approximately $XXXX in 2007, as compared to $XXXX in 2006 and $XXXX in 2005. At December 31, 2007, we had XX full-time employees working in research and development and laboratory support services as compared to XX at December 31, 2006 and XX at December 31, 2005.

2007 versus 2006. The increase of approximately $XXXX, or XX%, from 2006 to 2007 was primarily attributable to the continued expansion of our operations in cell processing and clinical development, including an increase in external services and clinical study costs of approximately $XXXX, and an increase in personnel costs of approximately $XXXX, of which approximately $XXXX was attributable to stock-based compensation expense. The remainder of the increase in 2007 was due to increases in supplies, rent, and other operating expenses.

2006 versus 2005. The increase of approximately $XXXX, or XX%, from 2005 to 2006 was primarily attributable to expansion of our operations in cell processing and clinical development, which consisted of an increase in personnel costs of approximately $XXXX, an increase in external services of approximately $XXXX, an increase in supplies and other expenses of $XXXX and the cost of additional space leased in 2006 allocated to research and development. Of the approximately $XXXX increase in personnel costs, approximately $XXXX was attributable to stock-based compensation expense. The remaining increase was primarily attributable to increased head count.

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Please be advised that, in connection with the Staff's comments in the December 21 Letter and the Company's responses thereto, the Company hereby acknowledges the Staff's position 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) 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
General Counsel