

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

PRE-EFFECTIVE AMENDMENT No. 1

FORM S-3

REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

STEMCELLS, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction
of incorporation or organization)

94-3078125
(I.R.S. Employer
Identification Number)

3155 Porter Drive
Palo Alto, CA 94304
(650) 475-3100
(Address, including zip code, and telephone number, including area code of principal executive offices)

Kenneth B. Stratton, Esq.
General Counsel
StemCells, Inc.
3155 Porter Drive
Palo Alto, CA 94304
(650) 475-3100
(Name, address, including zip code, and telephone
number, including area code, of agent for service)

Please send copies of all communications to:

Geoffrey Davis, Esq.
Ropes & Gray LLP
One International Place
Boston, Massachusetts 02110
(617) 951-7000

Approximate date of commencement of proposed sale to the public: From time to time after the effectiveness of the Registration Statement.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box:

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box:

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company)

Smaller reporting company

The Registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with section 8(a) of the Securities Act of 1933 or until the registration statement shall become effective on such date as the Security and Exchange Commission, acting pursuant to said section 8(a), may determine.



Explanatory Note

StemCells, Inc. hereby amends Item 16 of Part II of the Registration Statement solely to file certain exhibits to the Registration Statement. This Pre-effective Amendment No. 1 to the Registration Statement does not modify any provision of Part I of the Registration Statement or Items 14, 15 or 17 of Part II of the Registration Statement.

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 16. Exhibits.

See Exhibit Index on page II-3 of this registration statement.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Pre-effective Amendment No. 1 to the registration statement on Form S-3 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Palo Alto, State of California, on the 18th day of July, 2008.

STEMCELLS, INC.

By: /s/ Martin M. McGlynn
Name: Martin M. McGlynn
Title: President and Chief Executive Officer

* * * *

Pursuant to the requirements of the Securities Act of 1933, as amended, this Pre-effective Amendment No. 1 to the Registration Statement has been signed by the following persons in the capacities and on the dates indicated:

<u>/s/ Martin M. McGlynn</u> Martin M. McGlynn	President and Chief Executive Officer and Director (principal executive officer)	July 18, 2008
<u>/s/ Rodney K.B. Young</u> Rodney K.B. Young	Chief Financial Officer (principal financial officer)	July 18, 2008
<u>/s/ George Koshy</u> George Koshy	Chief Accounting Officer (principal accounting officer)	July 18, 2008
<u>*</u> Eric Bjerkholt	Director	July 18, 2008
<u>*</u> Ricardo B. Levy, Ph.D.	Director	July 18, 2008
<u>*</u> Desmond H. O'Connell, Jr.	Director	July 18, 2008
<u>*</u> Roger M. Perlmutter, M.D.	Director	July 18, 2008
<u>*</u> John J. Schwartz, Ph.D.	Director, Chairman of the Board	July 18, 2008
<u>*</u> Irving L. Weissman, M.D.	Director	July 18, 2008

*By: /s/Rodney K.B. Young
Rodney K.B. Young
Attorney-in-fact

EXHIBIT INDEX

The following is a list of exhibits filed as part of this registration statement.

Exhibit	Description
1.1(1)	Controlled Equity Offering Sales Agreement between StemCells, Inc. and Cantor Fitzgerald & Co. dated December 26, 2006
1.2(2)	Amendment No. 1 dated July 18, 2008 to the Controlled Equity Offering Sales Agreement between StemCells, Inc. and Cantor Fitzgerald & Co. dated December 26, 2006
4.1(3)	Form of Common Stock Warrant Agreement and Warrant Certificate
4.2(3)	Form of Preferred Stock Warrant Agreement and Warrant Certificate
4.3(3)	Form of Debt Securities Warrant Agreement and Warrant Certificate
4.4(4)	Form of Indenture
5.1(4)	Opinion of Ropes & Gray, LLP
5.2(2)	Opinion of Ropes & Gray, LLP
12.1(4)	Statement re: Computation of Ratios
23.1	Consent of Ropes & Gray LLP (included in Exhibits 5.1 and 5.2)
23.2(4)	Consent of Grant Thornton LLP
24.1(4)	Power of attorney
25.1(5)	Statement of Eligibility of Trustee Under Debt Indenture

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- (1) Filed as Exhibit 10.1 to the Current Report on Form 8-K filed by the registrant on December 29, 2006 and incorporated by reference herein.
 - (2) Filed herewith.
 - (3) To be filed, if necessary, subsequent to the effectiveness of this registration statement by an amendment to this registration statement or incorporated by reference pursuant to a Current Report on Form 8-K in connection with an offering of securities.
 - (4) Previously filed.
 - (5) To be filed separately pursuant to Section 305(b)(2) of the Trust Indenture Act of 1939.

AMENDMENT NO. 1
TO
STEMCELLS, INC.

10,000,000 SHARES

CONTROLLED EQUITY OFFERINGsm

SALES AGREEMENT

This Amendment No. 1 to the Controlled Equity Offering Sales Agreement (the "Amendment") entered into as of July 18, 2008 amends the Controlled Equity Offeringssm Sales Agreement (the "Agreement") dated as of December 26, 2006 by and between STEMCELLS, INC., a Delaware corporation (the "Company") and Cantor Fitzgerald & Co. ("Cantor").

WHEREAS, the Company has filed a new registration statement that supersedes the registration statement contemplated in the Agreement and the Company and Cantor desire to amend the Agreement to allow for the continued issuance and sale of Shares (as defined in the Agreement), pursuant to the new registration statement that has been filed by the Company and any comparable successor registration statement.

NOW THEREFORE, in consideration of the foregoing, and the respective agreements and covenants contained herein, the parties hereto agree, as follows:

1. Amendment to Section 1 the Agreement. The second paragraph of Section 1 of the Agreement is hereby amended and restated in its entirety as follows:

"The Company has filed, in accordance with the provisions of the Securities Act of 1933, as amended, and the rules and regulations thereunder (collectively, the "**Securities Act**"), with the Commission a registration statement on Form S-3 (File No. 333-151891), including a base prospectus, with respect to equity offerings, including the Shares, and which incorporates by reference documents that the Company has filed or will file in accordance with the provisions of the Securities Exchange Act of 1934, as amended, and the rules and regulations thereunder (collectively, the "**Exchange Act**"). The Company has prepared a prospectus supplement (the "**Prospectus Supplement**") to the base prospectus included as part of such registration statement. The Company will furnish to CF&Co, for use by CF&Co, copies of one or more prospectuses included as part of such registration statement, as supplemented by the Prospectus Supplement, relating to the Shares. Except where the context otherwise requires, such registration statement, as amended when it became effective, including all documents filed as part thereof or incorporated by reference therein, and including any information contained in a Prospectus (as defined below) subsequently filed with the Commission pursuant to Rule 424(b) under the Securities Act, as well as any comparable successor registration statement filed by the Company for the sale of shares of its Common Stock, including the Shares, collectively, are herein called the "**Registration Statement**," and the base prospectus, including all documents incorporated therein by reference, included in the Registration Statement, as it may be supplemented by the Prospectus Supplement, in the form filed by the Company with the Commission pursuant to Rule 424(b) under the Securities Act is herein called the "**Prospectus**."

Any reference herein to the Registration Statement, the Prospectus or any amendment or supplement thereto shall be deemed to refer to and include the documents incorporated by reference therein, and any reference herein to the terms “amend,” “amendment” or “supplement” with respect to the Registration Statement or the Prospectus shall be deemed to refer to and include the filing after the execution hereof of any document with the Commission deemed to be incorporated by reference therein. For purposes of this Agreement, all references to the Registration Statement, the Prospectus or to any amendment or supplement thereto shall be deemed to include any copy filed with the Commission pursuant to its Electronic Data Gathering Analysis and Retrieval System (“EDGAR”).”

2. Miscellaneous.

2.1. Full Force and Effect. Except to the extent specifically amended hereby, the provisions of the Agreement shall remain unmodified, and the Agreement shall continue in full force and effect.

2.2. Governing Law. This Amendment shall be governed by and construed in accordance with the internal laws of the State of New York (without reference to the conflicts of law provisions thereof).

2.3. Severability. Any provision of this Amendment that is prohibited or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such prohibition or unenforceability without invalidating the remaining provisions hereof, and any such prohibition or unenforceability in any jurisdiction shall not invalidate or render unenforceable such provision in any other jurisdiction.

2.4. Counterparts. This Amendment may be executed in any number of counterparts, and each such counterpart shall be deemed to be an original instrument, but all such counterparts together shall constitute but one agreement.

[Remainder of page intentionally left blank.]

IN WITNESS WHEREOF, the parties have caused this Amendment to be executed by their respective duly authorized representatives as a contract under seal as of the date first set forth above.

STEMCELLS, INC.

By: /s/ Kenneth Stratton

Name: Kenneth Stratton

Title: General Counsel

CANTOR FITZGERALD & CO.

By: /s/ Jeff Lumby

Name: Jeff Lumby

Title: Managing Director

July 18, 2008

StemCells, Inc.
3155 Porter Drive
Palo Alto, CA 94304

Re: Registration Statement on Form S-3 (Registration No. 333-151891)

Ladies and Gentlemen:

This opinion is furnished to you in connection with the above-referenced registration statement filed with the Securities and Exchange Commission (the "Commission") by StemCells, Inc., a Delaware corporation (the "Company"), on June 24, 2008, as amended (the "Registration Statement"), the base prospectus dated June 24, 2008 (the "Base Prospectus") and the prospectus supplement dated July 18, 2008 (together with the Base Prospectus, the "Prospectus") to be filed with the Commission by the Company on July 18, 2008, pursuant to Rule 424 promulgated under the Securities Act of 1933, as amended. The Prospectus relates to the proposed issuance and sale from time to time of up to 10,000,000 shares of the Company's common stock, par value \$0.01 per share (the "Shares"), in accordance with the terms of a Controlled Equity Offering Sales Agreement, dated December 26, 2006 and most recently amended on July 18, 2008, by and between the Company and Cantor Fitzgerald & Co. (the "Agreement").

We are familiar with the actions taken by the Company in connection with the proposed issuance of the Shares. For purposes of our opinion, we have examined and relied upon such documents, records, certificates, and other instruments as we have deemed necessary. The opinions expressed below are limited to the Delaware General Corporation Law, including the applicable provisions of the Delaware Constitution and the reported cases interpreting those laws.

Based on the foregoing, we are of the opinion that the Shares have been duly authorized and, when the Shares have been issued and sold in accordance with the terms of the Agreement and a Placement Notice issued and accepted in accordance with the Agreement, the Shares will be validly issued, fully paid, and nonassessable.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement. Our consent shall not be deemed an admission that we are experts whose consent is required under Section 7 of the Securities Act of 1933, as amended.

It is understood that this opinion is to be used only in connection with the offer and sale of Shares while the Registration Statement is in effect.

Very truly yours,

/s/ Ropes & Gray LLP

Ropes & Gray LLP