

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

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. (Check one):

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

(Do not check if a smaller reporting company)

CALCULATION OF REGISTRATION FEE

Title of each class of securities to be registered	Amount to be registered	Proposed maximum offering price per share (1)	Proposed maximum aggregate offering price (1)	Amount of registration fee
Common Stock, \$.01 par value per share	2,650,000 shares	\$1.65	\$4,372,500	\$244

(1) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(c) of the Securities Act of 1933, based on the average of the

high and low prices as reported on the Nasdaq Global Market on May 28, 2009.

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 Securities and Exchange Commission, acting pursuant to said section 8(a), may determine.

Information contained in this prospectus is not complete and may be changed. These securities may not be sold until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and is not soliciting an offer to buy these securities in any jurisdiction in which the offer or sale is not permitted.

PROSPECTUS

SUBJECT TO COMPLETION
May 29, 2009

STEMCELLS, INC.

2,650,000 Shares of Common Stock

The stockholder listed on page 4 of this prospectus or in an accompanying supplement to this prospectus is offering to sell up to 2,650,000 shares of our common stock.

We will not receive any proceeds from any such sale of these shares.

You should read this prospectus carefully before you invest in our securities. You should read this prospectus together with additional information described under the heading "Where You Can Find More Information" before you make your investment decision.

Our common stock is traded on the Nasdaq Global Market under the symbol "STEM." On May 28, 2009, the closing price per share of our common stock was \$1.63.

Investing in our securities involves risks. See "Risk Factors" beginning on page 3.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is May 29, 2009

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This prospectus is a part of a registration statement that we filed with the Securities and Exchange Commission, or the SEC. The selling stockholder listed on page 4 of this prospectus may offer to sell up to 2,650,000 shares of common stock. You should read both this prospectus, including all documents incorporated herein by reference, together with additional information described under “Where You Can Find More Information.”

You should rely only on the information contained in this prospectus. We have not authorized anyone to give you information different from that contained in this prospectus. We are not making an offer to sell these securities in any jurisdiction where the offer is not permitted. The information contained in this prospectus is accurate only as of the date on the front cover of this prospectus, regardless of when this prospectus is delivered or when any sale of our securities occurs. Our business, financial condition, results of operations and prospects may have changed since that date.

OUR COMPANY

StemCells, Inc. is engaged in the discovery and development of cell-based therapeutics to treat damage to, or degeneration of, major organ systems. Our research and development (R&D) programs are primarily focused on identifying and developing potential cell-based therapeutics which can either restore or support organ function. In particular, since we relocated our corporate headquarters and research laboratories to California in 1999, our R&D efforts have been directed at refining our methods for identifying, isolating, culturing, and purifying the human neural stem cell and human liver engrafting cells (hLEC) and developing these as potential cell-based therapeutics for the central nervous system (CNS) and the liver, respectively. In our CNS Program, our HuCNS-SC[®] product candidate (purified human neural stem cells) is in clinical development for two indications. In January 2009, we completed a six patient Phase I clinical trial to evaluate the safety and preliminary efficacy of HuCNS-SC cells as a treatment for infantile and late infantile neuronal ceroid lipofuscinosis (NCL), two forms of a group of disorders often referred to as Batten disease. In December 2008, the FDA approved our IND to initiate a Phase I clinical trial of HuCNS-SC cells in a second indication, Pelizeaus-Merzbacher Disease (PMD), a fatal myelination disorder in the brain. We expect the PMD trial to begin enrolling patients in 2009 and that the trial will take 12-18 months to complete. In addition, our HuCNS-SC cells are in preclinical development for spinal cord injury and retinal disorders. In our Liver Program, we are in preclinical development with our human liver engrafting cells and we plan to seek the necessary approvals to initiate a clinical experiment to evaluate hLEC as a potential cellular therapy, with the initial indication likely to be liver-based metabolic disorders. For a brief description of our significant therapeutic research and development programs see Overview “Research and Development Programs” in the Business Section of Part I, Item 1 included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2008. We have also conducted research on several other cell types and in other areas, which could lead to other possible product candidates, process improvements or further research activities.

On April 1, 2009, we acquired substantially all of the operating assets and liabilities of Stem Cell Sciences Plc. The acquired business includes proprietary cell technologies relating to embryonic stem cells, induced pluripotent stem (iPS) cells, and tissue-derived (adult) stem cells; expertise and infrastructure for providing cell-based assays for drug discovery; a media formulation and reagent business; and an intellectual property portfolio with claims relevant to cell processing, reprogramming and manipulation, as well as to gene targeting and insertion. This acquisition positions us to pursue applications of our cell technologies to develop cell-based research tools, which we believe represent nearer-term commercial opportunities.

Our principal executive offices are located at StemCells, Inc., 3155 Porter Drive, Palo Alto, CA 94304 and our phone number is (650) 475-3100.

RISK FACTORS

You should consider the “Risk Factors” included under Part II, Item 1A of our most recent Quarterly Report on Form 10-Q and our other reports filed with the SEC, which are incorporated by reference in this prospectus. The risks and uncertainties we describe are not the only ones we face. Additional risks not presently known to us, or that we currently deem immaterial, may also impair our business operations. If any of these risks were to occur, our business, financial condition, and results of operations could be severely harmed. This could cause the trading price of our common stock to decline, and you could lose all or part of your investment.

FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated in this prospectus by reference may contain “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended (the “Securities Act”), and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). These statements may be identified by the use of forward-looking words or phrases such as “anticipate,” “believe,” “could,” “expect,” “intend,” “look forward,” “may,” “planned,” “potential,” “should,” “will,” and “would.” These forward-looking statements reflect our current expectations and are based upon currently available data. The Private Securities Litigation Reform Act of 1995 provides a “safe harbor” for such forward-looking statements. In order to comply with the terms of the safe harbor, we note that a variety of factors could cause actual results and experience to differ materially from the anticipated results or other expectations expressed in the forward-looking statements.

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Such statements include, without limitation, all statements as to expectation or belief and statements as to our future results of operations; the progress of our research, product development and clinical programs; the need for, and timing of, additional capital and capital expenditures; partnering prospects; costs of manufacture of products; the protection of, and the need for, additional intellectual property rights; effects of regulations; the need for additional facilities; and potential market opportunities. Our actual results may vary materially from those contained in such forward-looking statements because of risks to which we are subject, including uncertainty as to whether the U.S. Food and Drug Administration (FDA) or other regulatory authorities will permit us to proceed with clinical testing of proposed products despite the novel and unproven nature of our technologies; the risk that our initial clinical trial and any other clinical trials or studies could be substantially delayed beyond their expected dates or cause us to incur substantial unanticipated costs; uncertainties in our ability to obtain the capital resources needed to continue our current research and development operations and to conduct the research, preclinical development and clinical trials necessary for regulatory approvals; the uncertainty regarding our ability to obtain a corporate partner or partners, if needed, to support the development and commercialization of our potential cell-based therapeutics products; the uncertainty regarding the outcome of our Phase I clinical trial in NCL and any other clinical trials or studies we may conduct in the future; the uncertainty regarding the validity and enforceability of our issued patents; the uncertainty whether any products that may be generated in our cell-based therapeutics programs will prove clinically safe and effective; the uncertainty whether we will achieve revenue from product sales or become profitable; uncertainties regarding our obligations with respect to our former encapsulated cell therapy facilities in Rhode Island; obsolescence of our technologies; competition from third parties; intellectual property rights of third parties; litigation risks; and other risks to which we are subject. All forward-looking statements attributable to us or to persons acting on our behalf are expressly qualified in their entirety by the cautionary statements and risk factors set forth in “Risk Factors” in this prospectus.

The forward-looking statements included in this prospectus represent our estimates as of the date of this prospectus. We specifically disclaim any obligation to update these forward-looking statements in the future. These forward-looking statements should not be relied upon as representing our estimates or views as of any date subsequent to the date of this prospectus.

USE OF PROCEEDS

The net proceeds from any disposition of the shares covered hereby would be received by the selling stockholder. We will not receive any of the proceeds from any such sale of the common stock offered by this prospectus.

SELLING STOCKHOLDER

We have prepared this prospectus to allow Asset Realisation Company Plc (formerly Stem Cell Sciences Plc), or the selling stockholder, to sell, from time to time, up to 2,650,000 shares of our common stock that we issued to it in exchange for our acquisition of substantially all of its operating assets and liabilities on April 1, 2009. All of the common stock offered by this prospectus may be offered by the selling stockholder for its own account. We will receive no proceeds from any such sale of these shares by the selling stockholder.

The Acquisition

On April 1, 2009, we completed the acquisition of substantially all of the operating assets and liabilities of Stem Cell Sciences Plc (“SCS”), the selling stockholder (which subsequently changed its name to Asset Realisation Company Plc). As consideration for the acquisition, we issued 2,650,000 shares of our common stock to the selling stockholder, which shares may be sold by the selling stockholder pursuant to this prospectus. In addition, we had previously made two secured loans to SCS in connection with our acquisition negotiations with SCS, and in connection with the acquisition we waived the obligation of SCS to repay the principal and accrued interest of these two loans. The principal and accrued interest for the two loans together totaled approximately \$709,000 as of March 31, 2009.

The shares were issued to the selling stockholder in a transaction exempt from registration under the Securities Act in reliance on Rule 903 of Regulation S thereunder (“Regulation S”). The selling stockholder represented that, at the time of the closing of the Acquisition, it was not a “U.S. Person,” was not acquiring the shares for the account or benefit of any “U.S. Person” and that the issuance of the shares was an “offshore transaction” (all within the meaning of Rule 902 of Regulation S).

The following table sets forth information with respect to our common stock known to us to be beneficially owned by the selling stockholder as of May 28, 2009. To our knowledge, the selling stockholder has sole voting and investment power over the common stock listed in the table below. Except as otherwise disclosed herein, the selling stockholder, to our knowledge, has not had a material relationship with us during the three years immediately preceding the consummation of the acquisition.

<u>Name of Selling Stockholder</u>	<u>Beneficial Ownership of Common Stock Prior to the Offering (1)</u>		<u>Common Stock Saleable Pursuant to This Prospectus</u>	<u>Beneficial Ownership of Common Stock After the Offering (1)</u>	
	<u>Number of Shares</u>	<u>Percent of Class</u>		<u>Number of Shares</u>	<u>Percent of Class</u>
Asset Realisation Company Plc	2,650,000(2)	2(3)%	2,650,000(2)	—	—

- (1) Assumes that all of the shares held by the selling stockholder covered by this prospectus are sold and that the selling stockholder acquires no additional shares of common stock before the completion of this offering. However, as the selling stockholder can offer all, some, or none of its common stock, no definitive estimate can be given as to the number of shares that the selling stockholder will ultimately offer or sell under this prospectus.
- (2) 530,000 of the shares of our common stock subject to this registration statement are held in escrow for the satisfaction of any claims arising out of our acquisition of substantially all of the operating assets and liabilities of Stem Cell Sciences Plc. Such shares will become saleable, if at all, only at the time of their release from escrow.
- (3) Calculated based on 106,270,526 shares of common stock outstanding as of May 28, 2009.

PLAN OF DISTRIBUTION

The selling stockholder may, from time to time, sell, transfer, or otherwise dispose of any or all of its shares of common stock on any stock exchange, market, or trading facility on which the shares are traded or in private transactions. These dispositions may be at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices.

The selling stockholder may use any one or more of the following methods when disposing of shares or interests therein:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- broker-dealers may agree with the selling stockholder to sell a specified number of such shares at a stipulated price per share; or
- a combination of any such methods of sale.

The aggregate proceeds to the selling stockholder from any sale of the common stock offered by it will be the purchase price of the common stock less discounts or commissions, if any. The selling stockholder reserves the right to accept and, together with its agents from time to time, to reject, in whole or in part, any proposed purchase of common stock to be made directly or through agents. We would not receive any of the proceeds from any such sale.

The selling stockholder also may resell all or a portion of the shares in open market transactions in reliance upon Rule 144 promulgated under the Securities Act, provided that it meets the criteria and conform to the requirements of that rule.

The selling stockholder and any broker-dealers or agents that participate in the sale of the common stock may be deemed to be “underwriters” within the meaning of Section 2(11) of the Securities Act. Any discounts, commissions, concessions or profit they earn on any resale of the shares may be underwriting discounts and commissions under the Securities Act. The selling stockholder is subject to the prospectus delivery requirements of the Securities Act.

We have agreed with the selling stockholder to keep the registration statement, of which this prospectus constitutes a part, effective until the earliest of (1) such time as all of the shares covered by this prospectus have been disposed of pursuant to and in accordance with the registration statement or (2) the date on which the shares can be sold pursuant to Rule 144 promulgated under the Securities Act (as such rule may be amended from time to time) without any limitations under clauses (c), (e), (f) and (h) of Rule 144.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Computershare Trust Company, N.A.

Nasdaq Global Market

Our common stock is listed for quotation on the Nasdaq Global Market under the symbol “STEM.”

WHERE YOU CAN FIND MORE INFORMATION

We have filed a registration statement on Form S-3 with the SEC for the stock we are offering by this prospectus. This prospectus does not include all of the information contained in the registration statement. You should refer to the registration statement and its exhibits for additional information.

We are required to file annual and quarterly reports, special reports, proxy statements, and other information with the SEC. We make these documents publicly available, free of charge, on our website at www.stemcellsinc.com as soon as reasonably practicable after filing such documents with the SEC. You can read our SEC filings, including the registration statement, on the SEC’s website at <http://www.sec.gov>. You also may read and copy any document we file with the SEC at its public reference facility at:

Public Reference Room
100 F Street N.E.
Washington, DC 20549.

Please call the SEC at 1-800-732-0330 for further information on the operation of the public reference facilities.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to “incorporate by reference” into this prospectus the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus, and information in documents that we file later with the SEC will automatically update and supersede information in this prospectus. We incorporate by reference the documents listed below into this prospectus, and any future filings made by us with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act until we close this offering, including all filings made after the date of the initial registration statement and prior to the effectiveness of the registration statement. We hereby incorporate by reference the following documents:

- Our Annual Report on Form 10-K for the year ended December 31, 2008 (File No. 000-19871);
- Our Quarterly Report on Form 10-Q for the quarter ended March 31, 2009 (File No. 000-19871);
- Our Current Reports on Form 8-K filed on March 3, 2009, March 30, 2009 and April 1, 2009 (except the press release furnished therein) (File No. 000-19871);
- Our proxy statement on Schedule 14A filed with the SEC on April 30, 2009; and
- The description of our common stock contained in our registration statements on Form 8-A (File No. 000-19871) filed August 3, 1998, under the Exchange Act, including any amendment or report filed for the purpose of updating such description.

You may request a copy of these filings, at no cost, by writing or telephoning us at the following address:

StemCells, Inc.
3155 Porter Drive
Palo Alto, CA 94304
Attention: Investor Relations
Phone: (650) 475-3100
email: irpr@stemcellsinc.com

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Copies of these filings are also available, without charge, on our Internet website at www.stemcellsinc.com as soon as reasonably practicable after they are filed electronically with the SEC. The information contained on our website is not a part of this prospectus.

LEGAL MATTERS

The validity of the issuance of the securities offered hereby will be passed upon for us by Ropes & Gray LLP, Boston, Massachusetts.

EXPERTS

The consolidated balance sheets of StemCells, Inc. and its subsidiary as of December 31, 2008 and 2007, and the related consolidated statements of operations, changes in stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2008, and management's assessment of the effectiveness of internal control over financial reporting as of December 31, 2008, have been incorporated by reference herein and in the registration statement in reliance upon the reports of Grant Thornton LLP, independent registered public accountants, upon the authority of said firm as experts in accounting and auditing in giving said reports.

2,650,000 Shares of Common Stock

StemCells, Inc.

PROSPECTUS

May 29, 2009

We have not authorized any dealer, salesperson or other person to give any information or represent anything not contained in this prospectus. You should not rely on any unauthorized information. If anyone provides you with different or inconsistent information, you should not rely on it. This prospectus does not offer to sell any shares in any jurisdiction where it is unlawful. Neither the delivery of this prospectus, nor any sale made hereunder, shall create any implication that the information in this prospectus is correct after the date hereof.

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other expenses of Issuance and Distribution.

The following table sets forth the various expenses in connection with the sale and distribution of the securities being registered. All amounts shown are estimates, except the SEC registration fee. The registrant has agreed to pay these costs and expenses.

Securities and Exchange Commission registration fee	\$ 244
Printing and engraving expenses	\$ 1,000*
Legal fees and expenses	\$10,000*
Accounting fees and expenses	\$16,100*
Total	\$27,344*

* Estimated.

Item 15. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law (“DGCL”) provides that a corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal or investigative (other than an action by or in the right of the corporation) by reason of the fact that he is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorney’s fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by him in connection with such action, suit or proceeding if he acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe his conduct was unlawful. Section 145 further provides that a corporation similarly may indemnify any such person serving in any such capacity who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor, against expenses actually and reasonably incurred in connection with the defense or settlement of such action or suit if he acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the corporation and except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Delaware Court of Chancery or such other court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

Section 102(b)(7) of the DGCL permits a corporation to include in its certificate of incorporation a provision eliminating or limiting the personal liability of a director to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, provided that such provision shall not eliminate or limit the liability of a director (i) for any breach of the director’s duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) under Section 174 of the DGCL (relating to unlawful payment of dividends and unlawful stock purchase and redemption) or (iv) for any transaction from which the director derived an improper personal benefit.

The Company’s restated certificate of incorporation provides that the Company’s Directors shall not be liable to the Company or its stockholders for monetary damages for breach of fiduciary duty as a director except to the extent that exculpation from liabilities is not permitted under the DGCL as in effect at the time such liability is determined. The Company’s restated certificate of incorporation further provides that the Company shall indemnify its directors and officers to the fullest extent permitted by the DGCL.

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The Company has a liability insurance policy in effect which covers certain claims against any officer or director of the Company by reason of certain breaches of duty, neglect, errors or omissions committed by such person in his or her capacity as an officer or director.

Item 16. Exhibits.

See Exhibit Index beginning on page II-5 of this registration statement.

Item 17. Undertakings.

(a) The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement.

Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement;

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement.

Provided, however, that the undertakings set forth in paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) above do not apply if the registration statement is on Form S-3 or Form F-3 and the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statements or is contained in a form of prospectus filed pursuant to Rule 424(b) that is a part of the registration statement

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(b) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(1) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(2) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an

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underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof. *Provided, however*, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

(c) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser: (i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424; (ii) any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant; (iii) the portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and (iv) any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

(d) The undersigned registrant hereby undertakes that: (i) for purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of the registration statement in reliance upon Rule 430A and contained in the form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of the registration statement as of the time it was declared effective; and (ii) for the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(e) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(f) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act of 1933 and is therefore unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933, and will be governed by the final adjudication of such issue.

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 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 29th day of May, 2009.

STEMCELLS, INC.

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

POWER OF ATTORNEY

Each person whose signature appears below constitutes and appoints Martin M. McGlynn and Rodney K.B. Young, and each of them singly, his true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement on Form S-3 to be filed by StemCells, Inc., and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents full power and authority to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or their substitutes, may lawfully do or cause to be done by virtue hereof.

* * * *

Pursuant to the requirements of the Securities Act of 1933, as amended, this 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)	May 29, 2009
<u>/s/ Rodney K.B. Young</u> Rodney K.B. Young	Chief Financial Officer (principal financial officer)	May 29, 2009
<u>/s/ George Koshy</u> George Koshy	Chief Accounting Officer (principal accounting officer)	May 29, 2009
<u>/s/ Eric Bejrkholt</u> Eric Bjerkholt	Director	May 29, 2009
<u>/s/ Ricardo B. Levy</u> Ricardo B. Levy, Ph.D.	Director	May 29, 2009
<u>/s/ Roger M. Perlmutter</u> Roger M. Perlmutter, M.D.	Director	May 29, 2009
<u>/s/ John J. Schwartz</u> John J. Schwartz, Ph.D.	Director, Chairman of the Board	May 29, 2009
<u>/s/ Irving L. Weissman</u> Irving L. Weissman, M.D.	Director	May 29, 2009

EXHIBIT INDEX

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

<u>Exhibit</u>	<u>Description</u>
4.1	Specimen common stock Certificate (incorporated by reference to the registrant's Registration Statement on Form S-3, File No. 333-117360)
5.1*	Opinion of Ropes & Gray, LLP
23.1	Consent of Ropes & Gray LLP (included in Exhibit 5.1)
23.2*	Consent of Grant Thornton LLP
24.1	Power of attorney—included on the signature page

* Filed herewith.

May 29, 2009

StemCells, Inc.
3155 Porter Drive
Palo Alto, California 94394

Re: Registration Statement on Form S-3 filed on May 29, 2009 with the Securities and Exchange Commission (the "Commission")

Ladies and Gentlemen:

This opinion is furnished to you in connection with the above-referenced registration statement (the "Registration Statement"). The Registration Statement relates to the registration for resale by Asset Realisation Company Plc (the "Selling Stockholder") of 2,650,000 shares (the "Shares") of the common stock of StemCells, Inc. (the "Company"), par value \$0.01 per share (the "Common Stock"). We understand that the Shares are to be offered and sold in the manner described in the Registration Statement.

We have acted as counsel for the Company in connection with the preparation of the Registration Statement. For purposes of this 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 upon and subject to the foregoing, we are of the opinion that the Shares have been duly authorized and are validly issued, fully paid and non-assessable.

We hereby consent to your filing this opinion as an exhibit to the Registration Statement and to the use of our name under the caption "Legal Matters" contained therein. 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, or the rules and regulations of the Commission thereunder.

This opinion may be used only in connection with the offer and sale of the Shares while the Registration Statement remains effective.

Very truly yours,

/s/ Ropes & Gray LLP

Ropes & Gray LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We have issued our reports dated March 11, 2009 with respect to the consolidated financial statements and internal control over financial reporting of StemCells, Inc. (a Delaware corporation) and subsidiary included in the Annual Report on Form 10-K for the year ended December 31, 2008 which are incorporated by reference in this Registration Statement. We consent to the incorporation by reference in the Registration Statement of the aforementioned reports and to the use of our name as it appears under the caption "Experts."

/s/ GRANT THORNTON LLP

San Francisco, California

May 26, 2009