

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

**POST-EFFECTIVE AMENDMENT NO. 1 ON FORM S-3
TO REGISTRATION STATEMENTS ON FORM S-4
UNDER
THE SECURITIES ACT OF 1933**

(This Post-Effective Amendment continues under Registration Statement No. 333-176673 the registration that was previously under Registration Statement No. 333-170865. Pursuant to Rule 429 of the Commission, the Prospectuses contained in both previous registration statements have been combined in the Prospectus contained in this Post-Effective Amendment.)

NeoStem, Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

22-2343568

(I.R.S. Employer
Identification Number)

**420 Lexington Avenue
Suite 450
New York, New York 10170
(212) 584-4180**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**Catherine M. Vaczy, Esq.
Vice President and General Counsel
NeoStem, Inc.**

**420 Lexington Avenue, Suite 450, New York, New York 10170
(212) 584-4180**

(Name, address, including zip code, and telephone number, including area code, of agent for service)

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Approximate date of proposed sale to the public: From time to time after this Registration Statement becomes effective.

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: x

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 (Do not check if a smaller reporting company)

Smaller reporting company x

The Registrant hereby amends this Post-Effective Amendment No. 1 on Form S-3 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 Post-Effective Amendment No. 1 on Form S-3 shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Post-Effective Amendment No. 1 on Form S-3 shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

EXPLANATORY NOTE

This Post-Effective Amendment No. 1 on Form S-3 contains an updated prospectus relating to the offering and sale of an aggregate of 4,881,008 shares of our common stock issuable upon the exercise of warrants. These securities were originally registered by us on two registration statements as follows: (A) (i) 1,000,000 shares of our common stock issuable upon exercise of \$3.00 warrants issued in connection with our acquisition of Progenitor Cell Therapy, LLC (the "PCT Merger"), (ii) 1,000,000 shares of our common stock issuable upon exercise of \$5.00 warrants issued in connection with the PCT Merger, and (iii) 1,000,000 shares of our common stock issuable upon exercise of \$7.00 warrants issued in connection with the PCT Merger, in each case pursuant to a Registration Statement on Form S-4 (Reg. No. 333-170865), which became effective on December 16, 2010; and (B) 1,881,008 shares of our common stock issuable upon exercise of \$1.466 warrants issued in connection with our acquisition of Amorcyte, LLC pursuant to a Registration Statement on Form S-4 (Reg. No. 333-176673), which became effective on September 15, 2011. This Post-Effective Amendment No. 1 on Form S-3 is being filed to convert such Registration Statements on Form S-4 into a Registration Statement on Form S-3. Pursuant to Rule 416 under the Securities Act of 1933, as amended, this Post-Effective Amendment No. 1 on Form S-3 also covers an indeterminate amount of additional shares of our common stock that may hereafter be offered or issued with respect to the shares registered hereby resulting from stock splits, stock dividends, recapitalizations or certain other capital adjustments. All filing fees payable in connection with the registration of these securities were previously paid in connection with the filing of the original registration statements.

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

PROSPECTUS

NEOSTEM, INC.

4,881,008 Shares of Common Stock Underlying Warrants Previously Issued

We are offering 4,881,008 shares of our common stock, par value \$0.001 per share (the “Common Stock”), which are issuable upon the exercise of warrants originally issued by us in our recent acquisitions as follows:

- in connection with our January 19, 2011 acquisition of Progenitor Cell Therapy, LLC (the “PCT Merger”), (i) warrants to purchase 1,000,000 shares of our Common Stock, exercisable over a seven year period at an exercise price of \$7.00 per share (the “\$7.00 Warrants”), and which will vest only if a specified business milestone is accomplished within three (3) years of the closing date of the PCT Merger; (ii) warrants to purchase 1,000,000 shares of our Common Stock exercisable over a seven year term at an exercise price of \$3.00 per share (the “\$3.00 Warrants”); and (iii) warrants to purchase 1,000,000 shares of our Common Stock exercisable over a seven year period at an exercise price of \$5.00 per share (the “\$5.00 Warrants” and, collectively with the \$7.00 Warrants and the \$3.00 Warrants, the “PCT Merger Warrants”); and
- in connection with our October 17, 2011 acquisition of Amorcyte, LLC (the “Amorcyte Merger”), warrants to purchase 1,881,008 shares of our Common Stock exercisable over a seven (7) year period at an exercise price of \$1.466 per share (the “Series AMO Warrants”) (pursuant to the terms of the Series AMO Warrants, transfer of any shares of our Common Stock issued upon exercise thereof is restricted until the one year anniversary of the closing of the Amorcyte Merger).

In order to obtain the shares of Common Stock to which this prospectus relates, the holders of the warrants must pay the applicable exercise price. We will receive proceeds from any exercises of the warrants, but not from the sale of the underlying Common Stock. Please see the section titled “Plan of Distribution” on page 12 for more information regarding the offering. The PCT Merger Warrants and the Series AMO Warrants are callable by us in certain circumstances as described under the captions “Description of Securities - PCT Merger Warrants” and “Description of Securities - Series AMO Warrants”, beginning on page 26 and 30, respectively.

Our Common Stock is listed on the NYSE MKT and traded under the symbol “NBS.” On August 23, 2012, the last reported sales price of our Common Stock on the NYSE MKT was \$0.60 per share. There were 152,610,253 shares of our Common Stock outstanding as of August 17, 2012.

Investing in our Common Stock is speculative and involves a high degree of risk. See “Risk Factors” beginning on page 5.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2012.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

Certain statements in this prospectus or the documents incorporated by reference herein constitute “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. These forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of NeoStem, Inc. to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Such factors include, among others, those set forth under the caption “Risk Factors.” The words “believe,” “expect,” “anticipate,” “intend,” and “plan” and similar expressions identify forward-looking statements. Readers are cautioned not to place undue reliance on any of these forward-looking statements, which speak only as of the date the statement was made. NeoStem, Inc. undertakes no obligation to update any forward-looking statement.

ABOUT THIS PROSPECTUS

This updated prospectus is part of a registration statement that we have filed with the Securities and Exchange Commission (the “SEC” or the “Commission”) relating to the offering and sale of an aggregate of 4,881,008 shares of our common stock issuable upon the exercise of the PCT Merger Warrants and the Series AMO Warrants originally registered by us pursuant to a Registration Statement on Form S-4 (Reg. No. 333-170865), which became effective on December 16, 2010, and pursuant to a Registration Statement on Form S-4 (Reg. No. 333-176673), which became effective on September 15, 2011.

It is important for you to read and consider all of the information contained in this prospectus and any applicable prospectus supplement before making any decision whether to invest in the common stock. You should also read and consider the information contained in the documents that we have incorporated by reference as described in “Where You Can Find More Information, and “Incorporation of Certain Information by Reference” in this prospectus.

We have not authorized anyone to give any information or to make any representations different from that which is contained or incorporated by reference in this prospectus or any applicable prospectus supplement in connection with the offer made by this prospectus and, if given or made, such information or representations must not be relied upon as having been authorized by NeoStem, Inc. or any such person. Neither the delivery of this prospectus or any applicable prospectus supplement nor any sale made hereunder and thereunder shall under any circumstances create an implication that there has been no change in the affairs of NeoStem, Inc. since the date hereof. This prospectus or any applicable prospectus supplement does not constitute an offer or solicitation by anyone in any state in which such offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make such offer or solicitation.

PROSPECTUS SUMMARY

Investing in our securities involves a high degree of risk. This summary highlights some information contained or incorporated by reference in this prospectus. It may not contain all of the information that is important to you. Important information is incorporated by reference into this prospectus. To understand this offering fully, you should read carefully the entire prospectus, including “Risk Factors”, and the other financial statements and documents incorporated by reference in this prospectus.

About NeoStem

Overview

NeoStem, Inc. (“we,” “NeoStem” or the “Company”) continues to develop and build on its core capabilities in cell therapy to capitalize on the paradigm shift that we see occurring in medicine. In particular, we anticipate that cell therapy will have a large role in the fight against chronic disease and in lessening the economic burden that these diseases pose to modern society.

We are emerging as a technology and market leading company in this fast developing cell therapy market. Our multi-faceted business strategy combines a state-of-the-art contract development and manufacturing organization (CDMO) with a medically important cell therapy product development program enabling near and long-term revenue growth opportunities. Our service business and pipeline of proprietary cell therapy products work in concert, giving us a competitive advantage that we believe is unique to the biotechnology and pharmaceutical industries. Supported by an experienced scientific and business management team and a patent and patent pending (IP) portfolio, we believe we are well positioned to succeed.

Cell therapy, which now represents approximately a \$50 billion worldwide market opportunity in the burgeoning regenerative medicine industry, describes the process of introducing new cells into the body (tissue) in order to treat a disease, and comprises a separate therapeutic platform technology to that of the current three pillars of healthcare: pharmaceuticals, biologics and medical devices. It is widely considered a disruptive technology, e.g. “medicine from you for you.” Cell therapy has its origins rooted in blood transfusion, bone marrow and organ transplantation, tissue banking and reproductive *in vitro* fertilization. This 200-year journey, based initially on clinical trial and error and more recently on meaningful laboratory science, has culminated in the necessary critical mass to justify being a distinct industry in its own right. Thus, today cell therapy is considered the fourth and most recent therapeutic pillar of global healthcare. The first cell therapy approved by the U.S. Food and Drug Administration (FDA) in 2010 was PROVENGE®, (Dendreon Corporation) an autologous cellular immunotherapy for the treatment of asymptomatic or minimally symptomatic metastatic castrate resistant (hormone refractory) prostate cancer. The second approved therapy was Osiris’ Prochymal® approved in Canada in May 2012 for ‘graft vs. host disease’ (“GVHD”). The growth rate of the cell therapy market is projected to be 15% compounded annually reaching an estimated \$88 billion by 2014 (MDB Capital Group report, 2011).

NeoStem’s mission is to introduce the first cardiovascular cell therapy product to treat acute myocardial infarction. To that end through our wholly-owned subsidiary Amorcyte, LLC (“Amorcyte”), we are enrolling patients into the PreSERVE Phase 2 clinical trial in the U.S. for post AMI (acute myocardial infarction) patients and anticipate completing enrolment in 2013 with 6 months initial data readout near the end of 2013.

Supporting the regenerative medicine market, including NeoStem’s Amorcyte product development pipeline, is Progenitor Cell Therapy, LLC (“PCT”), a wholly owned subsidiary of NeoStem. PCT is a leading CDMO, which is akin to the pharmaceutical industry’s Contract Research Organization (CRO). This subsidiary generates approximately 14% of our current revenue and is continuing to grow.

PCT prides itself on being a problem solver (consultant), implementation expert and cGMP manufacturing service provider from product discovery to commercialization for product developers. PCT has manufactured clinical products for over 5,000 patients (14,000 products shipped), participated in over 100 peer reviewed publications, collaborated in more than 50 FDA and EU regulatory filings and has passed each and every customer and regulatory agency audit to which it has been subject.

By the end of 2012 with the merging and closing of its Boston, MA facility, PCT will have consolidated its US operations to two facilities in the U.S.: Allendale, NJ (30,000 sq. ft.) and Mountain View, CA (25,000 sq. ft.), which enables the company to more efficiently and cost effectively service the U.S. and Canadian markets with timely and responsive services. Expansion into the growing European and Asian market is also being evaluated. We anticipate that newly identified and on-going clinical trial programs combined with FDA and EU approved products will continue to expand the CDMO outsourcing market.

Other significant programs include Athelos Corporation (“Athelos”), which is approximately 80%-owned by our

subsidiary, PCT. Athelos is engaged in a collaboration with Becton-Dickinson that is exploring the earlier stage clinical development of a T-cell therapy for autoimmune conditions. In addition, our pre-clinical assets include our VSEL™ Technology platform as well as our MSC (mesenchymal stem cells) product candidate for regenerative medicine. NeoStem's origins are in adult stem cell research and the collection and storage of adult stem cells.

Recent NeoStem Developments

Honing our Focus - Sale of NeoStem's 51% Interest in Erye

In October 2009, NeoStem acquired its interest in Suzhou Erye Pharmaceutical Co. Limited ("Erye") which was considered at the time to be an innovative business move into the emerging Chinese pharmaceutical industry. In 2011, the Chinese government imposed new policies affecting price and volume controls of certain pharmaceutical products, including generic antibiotics, which reduced the division's profitability and positive cash flows. The dampening of Erye's operating results was the catalyst for the Company's interest in monetizing its investment. Accordingly, on June 18, 2012, we entered into an Equity Purchase Agreement to sell our 51% interest in Erye to Suzhou Erye Economy & Trading Co., Ltd. ("EET"), the 49% owner, and its affiliate. The divestiture will bolster NeoStem's cash position through the receipt of the cash purchase price of \$12,280,000 and eliminate over \$37 million in short and long-term debt obligations. The sale of Erye will also return approximately 1,040,000 shares of the Company's Common Stock and cancels 1,170,000 Common Stock options and 640,000 Common Stock warrants. The transaction is expected to close during the 4th quarter of 2012, subject to the satisfaction of various closing conditions including Chinese regulatory approvals.

Summary of the Erye Divestiture Transaction

Pursuant to the Equity Purchase Agreement, the Total Cash Purchase Price is payable in the following manner:

- (i) the initial down payment of \$1,228,000, being 10% of the Total Cash Purchase Price, was received by us in July 2012;
- (ii) \$4,912,000, being 40% of the Total Cash Purchase Price, was paid by the Purchasers into escrow in August 2012 (the "Second Purchase Price Payment"), as follows: (x) \$2,456,000 (the "Offshore Second Purchase Price Payment") was deposited by the Purchasers into a U.S.-based escrow account (the "Offshore Escrow Account") (the Equity Purchase Agreement providing that the Offshore Second Purchase Price Payment shall be released to our subsidiary CBH upon the receipt of approval of the Erye Sale by the PRC Ministry of Commerce and/or its local counterparts as applicable ("MOFCOM Transfer Approval")) and (y) the RMB equivalent of \$2,456,000 (the "Onshore Second Purchase Price Payment") was deposited by the Purchasers into an escrow account inside the PRC (the "Onshore Escrow Account");
- (iii) also in August 2012, pursuant to an amendment to the Equity Purchase Agreement, the RMB equivalent of \$1,228,000, representing an additional 10% of the Total Cash Purchase Price, was paid by the Purchasers into the Onshore Escrow Account; and
- (iv) the RMB equivalent of \$4,912,000, being the remaining 40% of the Total Cash Purchase Price, shall be paid by the Purchasers into the Onshore Escrow Account no later than the day prior to the date on which Erye submits the application seeking approval of the Erye Sale to the MOFCOM provincial counterpart.

Closing of the Erye Sale is expected to occur by the fourth quarter of 2012, subject to the receipt of PRC regulatory approvals and the satisfaction of various closing conditions. Erye has informed us that it has completed the "Capital Increase Procedures" involving an increase to Erye's registered capital which will permit Erye to repay to EET portions of certain outstanding shareholder loans that EET had made to Erye, the Equity Purchase Agreement contemplating that the Purchasers will use the proceeds of these repayments to pay 90% of the total cash purchase price for the Erye Sale. PRC regulatory approvals that remain to be received include MOFCOM Transfer Approval (at each of the district, city and provincial levels), registration with the applicable PRC State Administration of Industry and Commerce and/or its local counterparts with respect to the Erye Sale ("SAIC Transfer Registration"), and approval of the PRC State Administration of Foreign Exchange and/or its local counterparts for the currency exchange in connection with the Erye Sale ("SAFE Transfer Approval"). Pursuant to the Equity Purchase Agreement, Erye has agreed to use its commercially reasonable best efforts to make regulatory filings and submit information necessary for the purpose of obtaining these approvals. No assurances can be given that all closing conditions will be satisfied or waived, or that the foregoing PRC regulatory approvals will be obtained on a timely basis, or at

all. Furthermore, the portions of the Total Cash Purchase Price that will initially be deposited into escrow in RMB will require the approval of SAFE to be converted into U.S. dollars and repatriated into the United States. The Purchasers may terminate the Equity Purchase Agreement at any time prior to the earlier of September 30, 2012 and the MOFCOM Transfer Submission Date (that is, the date of the initial MOFCOM submission at the district level), in which case our sole right would be to retain the \$1,228,000 initial payment already received from the Purchasers.

Subject to the receipt of PRC regulatory approvals and the satisfaction of other closing conditions, we anticipate that the Erye Sale will close by fourth quarter 2012, at which time we will exit the Pharmaceutical Manufacturing - China segment. In consideration of ASC 205-20-45-1 and ASC 360-10-45-9, we have reported the financial position, results of operations and related cash flow for our Pharmaceutical Manufacturing - China segment as a discontinued operation in our Quarterly Report on Form 10-Q for the quarter ended June 30, 2012, which is incorporated by reference into this prospectus. In addition, our recast financial statements for the years ended December 31, 2010 and 2011, which reflect our Pharmaceutical Manufacturing - China and Regenerative Medicine- China segments as discontinued operations, are incorporated by reference into this prospectus from our Current Report on Form 8-K filed with the Securities and Exchange Commission on August 15, 2012.

Upon consummation of the sale transaction, we will continue as a public company focused on devoting all our time and resources to our cell therapy business, including the enrollment of patients in our PreSERVE Phase 2 clinical trial of AMR-001 for preserving heart function after a heart attack and expanding our cell therapeutic contract manufacturing business operated through our PCT subsidiary. Approximately 14% of our total revenue for fiscal year 2011 was attributable to our PCT CDMO business. Despite the fact that to date, the majority of our revenue has been generated by Erye we believe that focusing our attention and resources on cell therapy, a business that we believe is fundamentally changing the way medicine is administered, and becoming a leader in this field will be a much more rewarding direction for the Company

We intend to continue our emergence as a technology and market leading company in the fast developing cell therapy market. Our multifaceted business strategy combines a state-of-the-art CDMO with a medically important cell therapy product development program enabling near and long-term revenue growth opportunities. Our service business and pipeline of proprietary cell therapy products work in concert, giving us a competitive advantage that is unique to the biotechnology and pharmaceutical industries. Supported by an experienced scientific and business management team and a patent and patent pending (IP) portfolio, we believe we are well positioned to succeed.

NeoStem Corporate Information

Our principal executive offices are located at 420 Lexington Avenue, New York, New York 10170, and our telephone number is (212) 584-4180. We are currently located in Suite 450 and will be relocating to larger space in Suite 347 in September 2012. Our Common Stock is currently traded on the NYSE MKT under the symbol "NBS." We maintain a corporate website at www.neostem.com. The contents of our website are not incorporated by reference into this prospectus and should not be considered to be a part of this prospectus or relied upon in connection herewith.

NeoStem, Inc. was incorporated under the laws of the State of Delaware in September 1980 under the name Fidelity Medical Services, Inc. and commenced operations in the adult stem cell collection, processing and storage services business in January 2006. Unless otherwise stated, all references to "us," "our," "NeoStem," "we," the "Company" and similar designations refer to NeoStem, Inc.

This prospectus and the information incorporated by reference includes trademarks, service marks and trade names owned by us or other companies. All trademarks, service marks and trade names included or incorporated by reference into this prospectus are the property of their respective owners.

The Offering

We are offering 4,881,008 shares of Common Stock issuable upon the exercise of warrants originally issued by us in our recent acquisitions as follows:

- in connection with the PCT Merger consummated on January 19, 2011, (i) \$7.00 Warrants covering an aggregate of 1,000,000 shares of our Common Stock, exercisable over a seven year period at an exercise price of \$7.00 per share, which will vest only if a specified business milestone is accomplished within three (3) years of the closing date of the PCT Merger; (ii) \$3.00 warrants covering an aggregate of 1,000,000

shares of our Common Stock exercisable over a seven year term at an exercise price of \$3.00 per share; and (iii) \$5.00 warrants covering an aggregate of 1,000,000 shares of our Common Stock exercisable over a seven year period at an exercise price of \$5.00 per share; and

- in connection with the Amorcyte Merger consummated on October 17, 2011, Series AMO Warrants covering an aggregate of 1,881,008 shares of our Common Stock exercisable over a seven (7) year period at an exercise price of \$1.466 per share (pursuant to the terms of the Series AMO Warrants, transfer of any shares of our Common Stock issued upon exercise thereof is restricted until the one year anniversary of the closing of the Amorcyte Merger).

In order to obtain the shares of Common Stock underlying the warrants, the holders thereof must pay the applicable exercise price. We will receive proceeds from any exercises of the warrants, but not from the sale of the underlying Common Stock. Please see the section titled "Plan of Distribution" on page 12 for more information regarding the offering. The PCT Merger Warrants and the Series AMO Warrants are callable by us in certain circumstances as described under the captions "Description of Securities - PCT Merger Warrants" and "Description of Securities - Series AMO Warrants", beginning on page 26 and 30, respectively.

RISK FACTORS

Investing in our securities involves risk. Please see the risk factors set forth under the heading "Risk Factors" beginning on page 38 of our Annual Report on Form 10-K for the year ended December 31, 2011, as well as those set forth under the headings "Risk Factors" and "Risks Associated With the Erye Sale and the Equity Purchase Agreement" beginning on page 37 of our Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 2012, each of which documents is on file with the Securities and Exchange Commission and is incorporated by reference into this prospectus. Before making an investment decision, you should carefully consider these risks as well as other information we include or incorporate by reference in this prospectus and any prospectus supplement. The risks and uncertainties we have described are not the only ones facing our Company. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our business operations.

RISKS RELATED TO THIS OFFERING AND OUR SECURITIES

Even if the Erye Sale is completed and we are able to invest the net proceeds thereof in our business, we anticipate that we will need substantial additional financing in the future to continue our operations. If we are unable to raise additional capital as needed, we may be forced to delay, reduce or eliminate one or more of our product development programs, cell therapy initiatives or commercialization efforts.

There can be no assurances that all closing conditions to the Erye Sale will be satisfied. Even if we assume that the Erye Sale is completed and that we will be able to invest the net proceeds thereof in our business, we anticipate that we will require additional capital to fund our current operating plan, including our existing U.S.-based cell therapy operations (such as clinical trials of AMR-001, development of our VSEL™ technology and a T-cell therapeutic, our stem cell collection and storage business, and our cell manufacturing and processing operations).

Our research and development expenses have increased with the addition to our Company of our Amorcyte subsidiary, particularly as the Phase 2 clinical trial enrolls with respect to AMR-001. AMR-001 is in the development stage and will require significant investment before it can be commercialized. We anticipate that AMR-001 will not be commercially available for a number of years, if ever. Even if we raise additional capital in the event that Amorcyte's Phase 2 clinical trial of AMR-001 produces positive results, it is anticipated that it will be necessary to enter into one or more collaboration agreements with one or more third parties to conduct and fund additional clinical trials, including larger, potentially pivotal Phase 3 clinical trials. If we are not able to enter into collaboration agreements on terms that are acceptable to us, we will need to raise additional capital to fund these trials or otherwise delay or abandon the trials. In addition, subject to obtaining regulatory approval of any present or future Amorcyte product candidate, we expect to incur significant commercialization expenses for product sales and marketing.

Our future capital requirements will depend on many factors, including:

- The scope, progress and results of our historic cell therapy research, development, processing and manufacturing programs (including any revenues generated by our subsidiary PCT) and our adult and cord blood stem cell

collection and storage business;

- the scope, progress, results, costs, timing and outcomes of the clinical trials of AMR-001 and any other product candidates;
- the scope, progress and results of other development programs being conducted by our Amorcyte subsidiary;
- the timing of entering into, and the terms of, any collaboration agreements with one or more third parties for one or more product candidates;
- the timing of and the costs involved in obtaining regulatory approvals for our product candidates, a process which could be particularly lengthy or complex given the FDA's limited experience with marketing approval for cell therapy products;
- the costs of operating, expanding and enhancing our manufacturing facilities and capabilities to support our clinical activities and, if any product candidates are approved, our commercialization activities;
- the costs of maintaining, expanding and protecting our intellectual property portfolio, including potential litigation costs and liabilities;
- revenues received from sales of our product candidates, if approved by the FDA; and
- satisfaction of conditions to closing the Erye Sale (including without limitation requisite PRC approvals), and successful completion of the Erye Sale.

We would likely seek such funding through public or private financings or some combination of the two. To meet our short and long term liquidity needs, we may use a variety of other means that could include, but not be limited to, use of our equity line with Aspire Capital, as described below, potential additional warrant exercises, option exercises, issuances of other debt or equity securities in public or private financings, and/or sale of assets. We may also seek funding through collaborative arrangements if we determine them to be necessary or appropriate. Additional funding may not be available to us on acceptable terms, or at all. If we obtain capital through collaborative arrangements, these arrangements could require us to relinquish rights to the combined company's technology or product candidates and could result in our receiving only a portion of the revenues associated with the partnered product. If we raise capital through the sale of equity, or securities convertible into equity, it would result in dilution to our then existing stockholders. Issuances of our securities in connection with any future capital raise may additionally cause antidilution adjustments to our outstanding Series E 7% Senior Convertible Preferred Stock (the "Series E Preferred Stock" or the "Series E Preferred Shares") and to the warrants issued in connection therewith. If we raise additional capital through the incurrence of indebtedness, the documents governing the terms of such debt would likely contain terms restricting our business activities, and holders of debt instruments would have rights and privileges senior to those of our equity investors. In addition, servicing the interest and principal repayment obligations under debt facilities could divert funds that would otherwise be available to support research and development, clinical or commercialization activities.

Our cash requirements may vary materially from those now planned because of expenses relating to marketing, advertising, sales, distribution, research and development and regulatory affairs (including the expenses related to clinical trials), as well as the costs of maintaining, expanding and protecting our intellectual property portfolio, including potential litigation costs and liabilities. Additional financing may not be available when needed or may not be available on terms acceptable to us. Our inability to obtain necessary capital or financing to fund these needs could adversely affect our business, results of operations and financial condition.

The market price and trading volume of our Common Stock has been and may continue to be volatile and issuances of large amounts of shares of our Common Stock could cause the market price of our Common Stock to decline.

As of August 17, 2012, there were 152,610,253 shares of our Common Stock outstanding. From January 1 through August 15, 2012 our Common stock traded as low as \$0.30 and as high as \$0.90. In 2011, our Common Stock traded as low as \$0.43 and as high as \$2.10, and in 2010 traded as low as \$1.10 and as high as \$3.50. In addition to our low stock trading volume, some of the other factors which may contribute to our stock's price volatility include the issuance of a significant number of shares of our Common Stock or securities convertible into Common Stock in a short period of time, announcements of government regulation, new products or services introduced by us or by our competition, the status of our clinical trials, healthcare legislation, trends in health insurance, litigation, fluctuations in operating results, our success in commercializing our business, market conditions for cell therapy stocks or healthcare stocks in general as well as economic recession. We cannot

assure you that the market price of our shares of Common Stock will not fluctuate or decline significantly in the future. Some of the factors that could negatively affect our share price or result in fluctuations in the price or trading volume of our shares of Common Stock include those set forth under “Risk Factors” and “Special Note Regarding Forward-Looking Statements” and in the information incorporated and deemed to be incorporated by reference herein.

Any adverse development relating to any of our product candidates, such as a significant clinical trial failure, could substantially depress our stock price and prevent us from raising additional capital.

Of particular note, our Company's development will be significantly dependent on our product candidates, and on the status and results of our clinical trials. Any clinical, regulatory or other development that significantly delays or prevents us from completing any of our trials, any material safety issue or adverse side effect to any study participant in any of these trials, or the failure of these trials to show the results expected would likely depress our stock price significantly and could prevent us from raising the substantial additional capital our Company will need to further develop our product candidates and technologies. Moreover, any material adverse occurrence in early-phase clinical trials could substantially impair our ability to initiate additional clinical trials to test our product candidates, whether for new indications or otherwise. This, in turn, could adversely impact our ability to raise additional capital and pursue our planned research and development efforts.

The nature of the business of our Amorcyte subsidiary could subject the trading prices of our Common Stock to additional volatility.

The stock market in general and the market for biotechnology companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. While the market price of our Common Stock has been historically volatile, the clinical trials and additional development activities being undertaken through our Amorcyte subsidiary may contribute to additional volatility of the market price of our Common Stock, as investors react to the results of these clinical trials of product candidates and those of our competitors. In addition to the foregoing, factors that could contribute to enhanced volatility of our stock price include:

- regulatory or legal developments in the United States and foreign countries;
- variations in our financial results or those of companies that are perceived to be similar to us;
- changes in the structure of healthcare payment systems;
- announcements by our Company of significant acquisitions, strategic partnerships, joint ventures or capital commitments;
- market conditions in the pharmaceutical and biotechnology sectors and issuance of securities analysts' reports or recommendations;
- sales of substantial amounts of our Common Stock by current stockholders;
- sales of our securities by insiders and large stockholders;
- additions or departures of key personnel;
- intellectual property, product liability or other litigation against us;
- expiration or termination of our potential relationships with collaborators; and
- the other factors described or incorporated by reference into this “Risk Factors” section.

In addition, in the past stockholders have initiated class action lawsuits against biotechnology and pharmaceutical companies following periods of volatility in the market prices of these companies' stock. Such litigation, if instituted against our Company, could cause us to incur substantial costs and divert management's attention and resources.

Management will have broad discretion as to the use of the proceeds from our recent capital raises and, if consummated, from the Erye Sale, and we may not use the proceeds effectively.

Our management will have broad discretion in the application of the net proceeds from our recent March 2012

underwritten offering of Common Stock and warrants, our February 2012 private placement of Common Stock, our May-July 2012 Private Placement of Common Stock and warrants, our August 2012 private placement of Common Stock and warrants, and, if consummated, the Erye Sale, and could spend the proceeds in ways that do not improve our results of operations or enhance the value of our Common Stock. Our failure to apply these funds effectively could have a material adverse effect on our business, delay the development of our product candidates and cause the price of our Common Stock to decline.

Holders of our Common Stock will experience dilution upon the issuance of Common Stock upon the conversion or in connection with redemption or dividend payments under our Series E Preferred Shares, if we issue additional equity securities in future fundraising transactions and if shares of our Common Stock underlying our significant number of outstanding warrants are purchased by the holders thereof.

The issuance of Common Stock as mandatory redemption payments, dividend payments or upon conversion of some or all of our Series E Preferred Shares issued in November 2010 will dilute the ownership interests of our existing holders of our shares of Common Stock (as of August 17, 2012, 3,919,263 Series E Preferred Shares were outstanding, convertible into an aggregate of 3,266,053 shares of our Common Stock, subject to weighted average antidilution adjustment). We are permitted to make each monthly mandatory redemption payment in shares of our Common Stock (at a discounted formula price), cash, or a combination of the two, subject to the terms governing our Series E Preferred Shares. In the past, we have elected to pay a portion (if not all) of each mandatory redemption payment in shares of our Common Stock, and may continue to do so, and/or we may apply a portion of the net proceeds of the Erye Sale, if consummated, to redeem all or a portion of the Series E Preferred Shares. Although the dollar amount of such redemption payments are known, to the extent paid in shares of our Common Stock, the number of shares to be issued in connection with such redemption payments fluctuates based on our stock price. Any sales or perceived sales in the public market of our shares of Common Stock issuable upon such mandatory redemption payments or upon conversion could adversely affect prevailing market prices of our shares of Common Stock. The issuance of Common Stock upon conversion of the Series E Preferred Shares or upon such redemption payments may also have the effect of reducing our net income per share. In addition, the existence of the Series E Preferred Shares may encourage short selling by market participants because the conversion of the Series E Preferred Shares or the existence of the redemption payments could depress the market price of our shares of Common Stock. The number of shares issuable upon conversion of the Series E Preferred Shares is subject to weighted average antidilution adjustment.

If in the future we issue additional Common Stock, or securities convertible into or exchangeable or exercisable for Common Stock, our stockholders, including investors who purchase shares of Common Stock issuable under this prospectus, will experience additional dilution, and any such issuances may result in downward pressure on the price of our Common Stock.

In addition, we have a significant number of outstanding securities convertible into, or allowing the purchase of our Common Stock.

Investors will be subject to increased dilution upon conversion of our outstanding Series B preferred stock and upon the exercise of outstanding stock options and warrants. There were 152,610,253 shares of our Common Stock outstanding as of August 17, 2012. As of that date, Series B preferred stock outstanding could be converted into 10,000 shares of our Common Stock and stock options and warrants outstanding represented an additional 78,010,383 shares of our Common Stock that could be issued in the future. The number of shares issuable upon exercise of warrants issued with the Series E Preferred Stock are subject to weighted average antidilution adjustment. Most of the outstanding shares of our Common Stock, as well as the vast majority of the shares of our Common Stock that may be issued under our outstanding options and warrants, are not restricted from trading or have the contractual right to be registered. Also, the issuance of additional shares as a result of such conversion or purchase, or their subsequent sale, could adversely affect the price of our Common Stock.

Any significant increase in the number of shares offered for sale could cause the supply of our Common Stock available for purchase in the market to exceed the purchase demand for our Common Stock. Such supply in excess of demand could cause the market price of our Common Stock to decline.

Any sales of our Common Stock to Aspire Capital pursuant to our Purchase Agreement may cause substantial dilution to our existing stockholders and the sale of the shares of Common Stock acquired by Aspire Capital could cause the price of our Common Stock to decline.

On September 28, 2011, we entered into a Common Stock Purchase Agreement (the "Purchase Agreement") with Aspire Capital Fund, LLC ("Aspire Capital"). Pursuant to the Purchase Agreement, we have a right to sell to Aspire Capital up to a maximum of 100,000 shares of our Common Stock per day, which total may be increased by mutual agreement up to an additional 1,000,000 shares per day. In addition, under certain circumstances we also have the right to sell to Aspire Capital an

amount of stock equal to up to 30% of the aggregate shares of our Common Stock traded on the NYSE MKT on the next business day, subject to a maximum number of shares determined by us. However, we may only effect sales of shares of our Common Stock to Aspire Capital pursuant to the Purchase Agreement (up to a maximum of \$20 million in the aggregate) on a business day on which the closing sale price of our Common Stock is not less than 75% of the closing sale price of our Common Stock (rounded down to the nearest penny) on the business day immediately preceding the date the Purchase Agreement was executed. The extent to which we rely on Aspire Capital as a source of funding will depend on a number of factors, including the prevailing market price of our Common Stock and the extent to which we are able and desire to secure working capital from other sources. The aggregate number of shares that we can sell to Aspire Capital under the Purchase Agreement may in no case exceed 15,282,502 shares of our Common Stock (plus the 990,099 Commitment Shares previously issued), unless shareholder approval is obtained to issue more, and we intend to seek such approval at our next annual meeting of shareholders. The number of shares ultimately offered for sale to Aspire Capital under the Purchase Agreement is dependent upon the number of shares we elect to sell to Aspire Capital, if any, under the Purchase Agreement. Depending upon market liquidity at the time, sales of shares of our Common Stock under the Purchase Agreement may cause the trading price of our Common Stock to decline.

Aspire Capital may ultimately purchase all, some or none of the \$20.0 million of Common Stock that we may sell to Aspire Capital pursuant to the Purchase Agreement. After Aspire Capital acquires any shares under the Purchase Agreement, it may sell all, some or none of those shares. Sales to Aspire Capital by us pursuant to the Purchase Agreement may result in substantial dilution to the interests of other holders of our Common Stock. The sale of a substantial number of shares of our Common Stock to Aspire Capital, or anticipation of such sales, could make it more difficult for us to sell equity or equity-related securities in the future at a time and at a price that we might otherwise wish to effect sales. However, we have the right to control the timing and amount of any sales of our shares to Aspire Capital and the Purchase Agreement may be terminated by us at any time at our discretion without any cost to us.

Future sales of a significant number of our shares of Common Stock in the public markets, or the perception that such sales could occur, could depress the market price of our shares of Common Stock.

Sales of a substantial number of our shares of Common Stock in the public markets, or the perception that such sales could occur, could depress the market price of our shares of Common Stock and impair our ability to raise capital through the sale of additional equity securities. It is anticipated that the holders of our Series E Preferred Shares will be selling any shares of Common Stock issued to them as mandatory redemption shares on each mandatory redemption date. A substantial number of shares of Common Stock are issuable under this prospectus upon exercise of the PCT Merger Warrants and the Series AMO Warrants and we cannot predict if and when any exercising warrant holders may sell such shares of Common Stock in the public markets. In addition, a substantial number of shares of Common Stock are being offered by the selling stockholders named in our effective Registration Statement on Form S-3 (File No. 333-173853) and we cannot predict if and when those selling stockholders may sell such shares of Common Stock in the public markets. As of January 20, 2012, one-half of the base stock consideration issued in connection with the PCT Merger had been released from escrow and these shares are now freely tradable (an aggregate of 5,300,000 shares of our Common Stock), with the remaining one-half of the base stock consideration scheduled to be released from escrow on January 20, 2013. We cannot predict if and when following this escrow release the recipients of the PCT Merger consideration may sell such shares of Common Stock in the public markets. Additionally, a substantial number of shares of Common Stock may come into the public markets as a result of the Amorcyte Merger: (i) at the closing, 5,843,483 shares of Common Stock were placed in escrow as the "Base Stock Consideration", for eventual distribution to the former stockholders of Amorcyte (with the first release from escrow, consisting of 20% of the Base Stock Consideration which are now freely tradeable, effected in April 2012), and (ii) up to 4,092,768 shares of our Common Stock may become issuable to the former Amorcyte stockholders as "Contingent Shares" if certain business milestones are achieved. We cannot predict if and when (following, as applicable, release of the Base Stock Consideration from escrow, or issuance of Contingent Shares if the relevant milestones are achieved) the recipients of the Amorcyte Merger consideration may sell such shares of Common Stock in the public markets. We cannot predict the number of the above-described shares that might be sold nor the effect that future sales of our shares of Common Stock would have on the market price of our shares of Common Stock.

Our outstanding options and warrants may negatively affect our ability to raise additional capital.

At August 17, 2012, we had approximately 78,010,383 stock options and warrants outstanding. Holders of our outstanding options and warrants are given the opportunity to profit from a rise in the market price of our Common Stock. As long as these options and warrants are outstanding, the terms on which we could obtain additional capital may be adversely affected. The holders of these options and warrants might be expected to exercise them at a time when we would, in all likelihood, be able to obtain any needed capital by a new offering of securities on terms more favorable than those provided by these options and warrants.

Failure to maintain effective internal control over financial reporting in accordance with Section 404 of the Sarbanes-Oxley Act could have a material adverse effect on our business and stock price.

We have concluded that as of December 31, 2011 we have a material weakness in our internal control relating to our financial reporting of Erye, which as of June 30, 2012 we have concluded has not been fully remediated. Specifically, the Company has determined the accounting staff at Erye does not have sufficient qualified accounting and finance personnel. If we fail to (1) fully remediate the material weakness identified, or (2) we fail to maintain the adequacy of internal control over our financial reporting, we may not be able to ensure that we can conclude on an ongoing basis that we have effective internal control over financial reporting in accordance with Section 404 of the Sarbanes-Oxley Act, as such standards are modified, supplemented or amended from time to time. As disclosed in our Current Report on Form 8-K filed with the SEC on June 18, 2012, we have entered into an Equity Purchase Agreement to sell our 51% interest in Erye.

As private companies, PCT and Amorcyte were not subject to the requirements of Section 404 of the Sarbanes-Oxley Act. Now that the PCT Merger and the Amorcyte Merger have been consummated, we expect to continue to devote management time and other resources to ensure that the combined company complies with the requirements of Section 404. During the course of testing our disclosure controls and procedures and internal control over financial reporting, we may identify and disclose material weaknesses or significant deficiencies in internal control over financial reporting (which may or may not be related to PCT or Amorcyte) that will have to be remedied. Implementing any appropriate changes to our internal control may require specific compliance training of our directors, officers and employees, entail substantial costs in order to modify our existing accounting systems, and take a significant period of time to complete. Such changes may not, however, be effective in maintaining the adequacy of our internal control over financial reporting, and any failure to maintain that adequacy or inability to produce accurate financial statements on a timely basis could result in our financial statements being unreliable, increase our operating costs and materially impair our ability to operate our business.

Failure to achieve and maintain effective internal control over financial reporting could result in a loss of investor confidence in our financial reports and could have a material adverse effect on our stock price. Additionally, failure to maintain effective internal control over our financial reporting could result in government investigation or sanctions by regulatory authorities.

Actual and beneficial ownership of large quantities of our Common Stock by our executive officers and directors may substantially reduce the influence of other stockholders.

As of August 17, 2012, our executive officers and directors collectively owned 34,180,554 shares of our Common Stock, representing approximately 22.4% of our outstanding Common Stock. As of such date, our executive officers and directors collectively beneficially owned 49,510,083 shares of our Common Stock. These beneficial holdings represent approximately 29.5% of our Common Stock. As a result, such persons may have the ability to exercise enhanced control over the approval process for actions that require stockholder approval, including: the election of our directors and the approval of mergers, sales of assets or other significant corporate transactions or other matters submitted for stockholder approval. Because of the beneficial ownership position of these persons, other stockholders may have less influence over matters submitted for stockholder approval. Furthermore, at certain times the interests of our substantial stockholders may conflict with the interests of our other stockholders.

Some of our directors and officers have positions of responsibility with other entities, and therefore have loyalties and fiduciary obligations to both our company and such other entities. These dual positions subject such persons to conflicts of interest in related party transactions which may cause such related party transactions to have consequences to our company that are less favorable than those which we could have attained in comparable transactions with unaffiliated entities.

Eric H.C. Wei, a member of our Board of Directors, is also the Managing Partner of RimAsia Capital Partners, L.P., or RimAsia. RimAsia, a substantial stockholder of our company, beneficially owns approximately 17.0% of our Common Stock as of August 17, 2012. Mr. Shi Mingsheng (the Chairman of the Board of Erye, and who became a director of our company in March 2010) and Madam Zhang Jian (the General Manager of Erye, and formerly our Vice President of Pharmaceutical Operations), together with certain other persons, have shared voting and dispositive power over the shares of our Common Stock held by Fullbright Finance Limited, or Fullbright. Fullbright, together with Mr. Shi, and Madam Zhang, beneficially owns approximately 3.2% of our Common Stock as of August 17, 2012. On June 18, 2012, we entered into the Equity Purchase Agreement, providing for the sale of our Erye interest to EET, the holder of the 49% interest in Erye and its affiliate. EET is a party along with our subsidiary CBH to the Joint Venture Agreement which governs the ownership of the respective equity interests in Erye. Mr. Shi and Madam Zhang own 37% and 35%, respectively, of the equity interests of each of Fullbright and EET. These relationships create, or, at a minimum, appear to create potential conflicts of interest when members of our company's senior management are faced with decisions that could have different implications for our company and the other

entities with which our directors or officers are associated.

Although our company has established procedures designed to ensure that material related party transactions are fair to the company, no assurance can be given as to how potentially conflicted board members or officers will evaluate their fiduciary duties to our company and to other entities that they may owe fiduciary duties, respectively, or how such individuals will act in such circumstances. Furthermore, the appearance of conflicts, even if such conflicts ultimately do not harm our company, might adversely affect the public's perception of our business, as well as its relationship with its existing customers, licensors, licensees and service providers and its ability to enter into new relationships in the future.

We may not have the cash necessary to redeem the Series E Preferred Shares.

We have the obligation to make monthly redemption payments on the Series E Preferred Shares, which mandatory redemption payments may be made at our option in cash or in shares of our Common Stock at a discounted formula price, except that our right to make payment in shares of Common Stock is dependent upon our satisfying certain Equity Conditions (defined in the certificate of designations for the Series E Preferred Stock) and is also subject to certain Dollar Volume Limitations (as defined). If we cannot satisfy the Equity Conditions, or if our trading prices and volume are such that we do not meet the Dollar Volume Limitations necessary for us to be able to make all or such portion of the monthly mandatory redemption payments as we desire in stock, we may be forced to make all (or a greater portion than we desire) of such monthly payments in cash. We may not have sufficient cash resources at the applicable time to make those cash payments, or to make such cash payments in full. Further, any failure to pay any amounts due to the holders of the Series E Preferred Shares, as well as certain other Trigger Events (as defined in the certificate of designations), including without limitation certain change in control transactions, our failure to timely deliver shares, our suspension of trading, and breaches of certain representations, warranties and covenants that are not timely cured, where a cure period is permitted, would permit the holders of our Preferred Shares to compel repurchase of such Series E Preferred Shares at a price per share equal to the sum of the liquidation preference plus accrued dividends plus the 10% prepayment premium. If we are required to repurchase the Series E Preferred Shares in cash prior to maturity, no assurance can be given that we would have the cash or financial resources available to us to make such a payment, and such an acceleration could have a material adverse effect on our business and financial condition and may impair our ability to continue in business as a going concern. A 10% prepayment premium would also be due in the event we elected to early redeem the Series E Preferred Shares (such as by using a portion of the proceeds of the Erye Sale, if consummated).

The Series E Preferred Shares are senior obligations of ours, and rank prior to our Common Stock with respect to dividends, distributions and payments upon liquidation.

The rights of the holders of the Series E Preferred Shares rank senior to the obligations to holders of our Common Stock. Upon our liquidation, the holders of Series E Preferred Shares are entitled to receive a liquidation preference of \$1.00 per share, plus all accrued but unpaid dividends at the rate of 7% per annum prior and in preference to any distribution to the holders of any other class of our equity securities. Further, no dividends can be paid without the consent of the holders of a majority of the outstanding Series E Preferred Shares, and the holders of Series E Preferred Shares, as well as the holders of the warrants which were issued to the purchasers of Series E Preferred Shares, have the right to participate in any payment of dividends or other distributions made to the holders of our Common Stock to the same extent as if they had converted the Series E Preferred Shares or exercised the warrants. The existence of such a senior security could have an adverse effect on the value of our Common Stock.

Holders of the Series E Preferred Shares have rights that may restrict our ability to operate our business.

Under the securities purchase agreement pursuant to which the Series E Preferred Shares were sold, we are subject to certain covenants that limit our ability to create new series of preferred stock, other than series junior to the Series E Preferred Shares. We are also limited, with certain exceptions, in our ability and the ability of our subsidiaries (other than Erye, our interest in which we now plan to sell pursuant to the Equity Purchase Agreement) to incur debt and to pledge our assets. Such restrictions may have an adverse effect on our ability to operate our business while the Series E Preferred Shares are outstanding.

USE OF PROCEEDS

Assuming the exercise of all of the PCT Merger Warrants and Series AMO Warrants, we may receive estimated gross proceeds of approximately \$17.8 million. We intend to use any proceeds received from the exercise of the warrants for working capital and general corporate purposes. We will incur all costs associated with this registration statement and prospectus, which we anticipate to be approximately \$40,000. There is no assurance that the holders of the warrants will elect to exercise any or all of the warrants.

PLAN OF DISTRIBUTION

We are offering 4,881,008 shares of Common Stock issuable upon the exercise of (i) 3,000,000 PCT Merger Warrants (consisting of 1,000,000 each of \$3.00, \$5.00 Warrants and \$7.00 Warrants) issued in connection with the PCT Merger consummated on January 19, 2011 and (ii) 1,881,008 Series AMO Warrants issued in connection with the Amorcyte Merger consummated on October 17, 2011.

The Common Stock issuable upon the exercise of the warrants will not be offered through underwriters, or brokers or dealers. We will not pay any compensation in connection with the offering of the shares upon exercise of the warrants. Pursuant to the terms of the applicable PCT Merger Warrant or Series AMO Warrant, the shares of Common Stock will be distributed to those warrant holders who exercise their warrants by delivering to us care of our warrant agent Continental Stock Transfer & Trust Company a duly executed exercise form and payment of the respective aggregate exercise price, in accordance with the terms of the respective warrant. We may call the warrants under certain circumstances as described under the captions "Description of Securities - PCT Merger Warrants" and "Description of Securities - Series AMO Warrants", beginning on pages 26 and 30, respectively

DESCRIPTION OF SECURITIES

We are offering 4,881,008 shares of Common Stock issuable upon the exercise of warrants originally issued by us in our recent acquisitions as follows:

- in connection with the PCT Merger consummated on January 19, 2011, (i) \$7.00 Warrants covering an aggregate of 1,000,000 shares of our Common Stock, exercisable over a seven year period at an exercise price of \$7.00 per share, which will vest only if a specified business milestone is accomplished within three (3) years of the closing date of the PCT Merger; (ii) \$3.00 warrants covering an aggregate of 1,000,000 shares of our Common Stock exercisable over a seven year term at an exercise price of \$3.00 per share; and (iii) \$5.00 warrants covering an aggregate of 1,000,000 shares of our Common Stock exercisable over a seven year period at an exercise price of \$5.00 per share; and
- in connection with the Amorcyte Merger consummated on October 17, 2011, Series AMO Warrants covering an aggregate of 1,881,008 shares of our Common Stock exercisable over a seven (7) year period at an exercise price of \$1.466 per share (pursuant to the terms of the Series AMO Warrants, transfer of any shares of our Common Stock issued upon exercise thereof is restricted until the one year anniversary of the closing of the Amorcyte Merger).

For a description of the terms of the PCT Merger Warrants and the Series AMO Warrants, please see the discussions set forth below under the captions "PCT Merger Warrants" and "Series AMO Warrants", beginning on pages 26 and 30, respectively.

The following is a summary of all material characteristics of our capital stock as set forth in our certificate of incorporation and bylaws, and our outstanding warrants. The summary does not purport to be complete and is qualified in its entirety by reference to our certificate of incorporation and bylaws and the Class D warrants, the warrants issued in our November 2010 Common Stock Offering and in our November 2010 Preferred Stock Offering, the PCT Merger Warrants, the Series AMO Warrants, the Series NA Warrants, the warrants issued in our March 2012 underwritten offering, the warrants issued in our May-July 2012 Private Placement, the July 2012 New Warrants issued upon exercise of certain of our May-July 2012 Private Placement Warrants, the warrants issued in our August 2012 private placement, and the Certificate of Designations relating to our Series E 7% Senior Convertible Preferred Stock themselves, all of which are incorporated by reference as exhibits to the registration statement of which this prospectus is a part, and to the provisions of the General Corporation Law of the State of Delaware, as amended.

Common Stock

We are authorized to issue 500,000,000 shares of common stock, par value \$0.001 per share ("Common Stock"). Holders of our Common Stock are entitled to one vote per share in the election of directors and on all other matter on which stockholders are entitled or permitted to vote. Holders of our Common Stock are not entitled to cumulative voting rights. Therefore, holders of a majority of the shares voting for the election of directors can elect all of the directors. Subject to the terms of any outstanding series of preferred stock, the holders of our Common Stock are entitled to dividends in the amounts and at times as may be declared by the Board of Directors out of funds legally available. Upon liquidation or dissolution, holders of our

Common Stock are entitled to share ratably in all net assets available for distribution to stockholders after payment of any liquidation preferences to holders of our preferred stock. Holders of our Common Stock have no redemption, conversion or preemptive rights.

As of August 17, 2012, we had 152,610,253 shares of Common Stock issued and outstanding, exclusive of existing convertible preferred stock, options and warrants and the shares and warrants to be issued in this offering.

Preferred Stock

We are authorized to issue up to 20,000,000 shares of preferred stock, par value \$0.01 per share, with such designations, rights, and preferences as may be determined from time to time by our Board of Directors. Accordingly, our Board of Directors is empowered, without stockholder approval, to issue preferred stock with dividend, liquidation, conversion, voting, or other rights that could adversely affect the voting power or other rights of the holders of our Common Stock. The issuance of preferred stock could have the effect of restricting dividends on our Common Stock, diluting the voting power of our Common Stock, impairing the liquidation rights of our Common Stock, or delaying or preventing a change in control of our company, all without further action by our stockholders.

As of August 17, 2012, there were:

- 10,000 shares of our Series B Convertible Redeemable Preferred Stock, \$0.01 par value per share (“Series B Preferred Stock”), issued and outstanding; and
- 3,919,263 shares of our Series E 7% Senior Convertible Preferred Stock, \$0.01 par value per share (the “Series E Preferred Stock,” or the “Series E Preferred Shares”), issued and outstanding.

Series B Preferred Stock

The Series B Preferred Stock ranks *pari passu* with our Common Stock with respect to the payment of dividends and to the distribution of assets upon liquidation, dissolution or winding up.

So long as any shares of the Series B Preferred Stock are outstanding, no dividend shall be declared or paid or set aside for payment or other distribution declared or made upon our Common Stock or upon any other stock ranking junior to, or on a parity with, the Series B Preferred Stock as to dividends or upon liquidation, dissolution or winding up, unless, in the case of our preferred stock, the same dividend is declared, paid or set aside for payment on all outstanding shares of the Series B Preferred Stock or in the case of our Common Stock, ten times such dividend per share is declared, paid or set aside for payment on each outstanding share of the Series B Preferred Stock.

Except as otherwise provided by law, each share of the Series B Preferred Stock has the same voting rights as ten shares of our Common Stock and the holders of the Series B Preferred Stock and the Common Stock shall vote together as one class on all matters.

The holder of any share of Series B Preferred Stock has the right, at such holder's option, to convert such share into one fully paid and non-assessable share of our Common Stock, subject to adjustment.

In the event of any voluntary or involuntary dissolution, liquidation or winding up of our Company, after any distribution of assets is made to the holders of any other class or series of stock that ranks prior to the Series B Preferred Stock in respect of distributions upon the liquidation of our company, the holder of each share of Series B Preferred Stock then outstanding shall be entitled to be paid out of our assets available for distribution to our stockholders, an amount on a *pari passu* basis equal to ten times the amount per share distributed to the holders of our Common Stock. After payment of the full amount of the distribution to which they are entitled, the holders of shares of the Series B Preferred Stock will not be entitled to any further participation in any distribution of assets by the corporation.

Shares of Series B Preferred Stock issued and reacquired by us shall have the status of authorized and unissued shares of preferred stock, undesignated as to series, subject to later issuance.

Holders of shares of Series B Preferred Stock are not entitled to any preemptive or subscription rights in respect of any securities of the corporation.

Series E 7% Senior Convertible Preferred Stock

General. We are authorized to issue up to 20,000,000 shares of preferred stock, par value \$0.01 per share, with such designations, rights and preferences as may be determined from time to time by our Board of Directors, without further stockholder approval. Accordingly, our Board of Directors has created out of the authorized and unissued shares of our preferred stock a series of preferred stock designated as the Series E 7% Senior Convertible Preferred Stock. As of August 17, 2012, there were 3,919,263 shares of Series E 7% Senior Convertible Preferred Stock, par value \$0.01 per share (the “Series E Preferred Stock,” or the “Series E Preferred Shares”) issued and outstanding.

The following is a brief description of the terms of our Series E Preferred Stock. The description of the Series E Preferred Stock contained herein does not purport to be complete and is qualified in its entirety by reference to the Certificate of Designations for the Series E Preferred Stock.

Dividends. Holders of Series E Preferred Stock shall be entitled to receive dividends payable in cash (or, at our option, in shares of our Common Stock if the Equity Conditions are satisfied) on the Liquidation Preference (as defined below) of such Series E Preferred Share at the per share rate of seven percent (7%) per annum, which shall be cumulative. Dividends on the Series E Preferred Shares shall commence accruing on the Initial Issuance Date and shall be computed on the basis of a 360-day year of twelve 30-day months. Dividends shall be payable in arrears on each Mandatory Redemption Date. “Mandatory Redemption Date” is defined in the certificate of designations as March 19, 2011, and the 19th day of each calendar month thereafter (or the next trading day thereafter) and ending on and including May 20, 2013 (the “Maturity Date”). The Maturity Date will be deemed to be a Mandatory Redemption Date.

Liquidation Preference. In the event of any liquidation, dissolution or winding up of our company, either voluntary or involuntary (a “Liquidation Event”), the holders of the Series E Preferred Shares shall be entitled to receive, out of our assets available for distribution to stockholders (“Liquidation Funds”), prior and in preference to any distribution of any of our assets to the holders of any other class or series of equity securities, the amount of one dollar (\$1.00) per share plus all accrued but unpaid dividends (the “Liquidation Preference”). After payment of the full amount of the Liquidation Preference, in the case of a Liquidation Event, the holders will not be entitled to any further participation in any distribution of our assets; provided that the foregoing shall not affect any rights which holders may have with respect to any requirement that our company repurchase the Series E Preferred Shares or for any right to monetary damages. All the preferential amounts to be paid to the holders of the Series E Preferred Shares shall be paid or set apart for payment before the payment or setting apart for payment of any amount for, or the distribution of any Liquidation Funds of our company to the holders of shares of other classes or series of our preferred stock junior in rank to the Series E Preferred Shares in connection with a Liquidation Event.

Mandatory Monthly Redemption.

The certificate of designations provides that “Mandatory Redemption Shares” means, with respect to (a) any Mandatory Redemption Date (other than the Maturity Date) an amount equal to 1/27th of the Series E Preferred Shares initially issued pursuant to the stock purchase agreement (regardless of whether any holder has converted any Series E Preferred Shares or we have optionally redeemed any Series E Preferred Shares) and (b) the Maturity Date, all outstanding Series E Preferred Shares. On each applicable Mandatory Redemption Date, we shall redeem the Mandatory Redemption Shares at an aggregate redemption price equal to the sum of (x) the product of (A) the Liquidation Preference and (B) the number of Mandatory Redemption Shares required to be redeemed on such Mandatory Redemption Date plus (y) any and all accrued but unpaid dividends on all of the outstanding Series E Preferred Shares (the “Mandatory Redemption Price”). The Mandatory Redemption Price shall be payable, at our option, in cash or shares of our Common Stock or any combination of cash and shares of our Common Stock, provided, however, that no portion of the Mandatory Redemption Price may be paid in shares of our Common Stock unless the Equity Conditions are satisfied or waived by the holders of a majority of the Series E Preferred Shares (the “Required Holders”) in writing prior to delivery of the applicable Mandatory Redemption Notice (as defined below); provided, further, however, that the portion of the applicable Mandatory Redemption Price that we elect to pay in shares of our Common Stock (if any) shall not exceed the Dollar Volume Limitation (unless waived by the Required Holders in writing).

On a date not less than twenty-two (22) trading days, but in no event more than twenty-five (25) trading days, prior to each Mandatory Redemption Date (the “Mandatory Redemption Notice Date”), we shall deliver a written notice (a “Mandatory Redemption Notice”) to the holders, which shall either: (i) confirm that the entire applicable Mandatory Redemption Price shall be paid in cash; or (ii) (A) state that we elect to pay all or a portion of the Mandatory Redemption Price in shares of our Common Stock, (B) specify the portion that we elect to pay in cash (expressed in dollars) (such amount, the “Cash Payment Amount”) and the portion that we elect to pay in shares of our Common Stock (expressed in dollars) (such portion a “Stock Payment Amount”), which amounts when added together must equal the applicable Mandatory Redemption Price, (C) certify that the Equity Conditions (as defined below) are then satisfied (or waived by the Required Holders), (D) state the Dollar

Volume Limitation (expressed in dollars) and certify that the Stock Payment Amount does not exceed such Dollar Volume Limitation and (E) certify that the Maximum Share Amount (as defined below) has not been exceeded. If (x) we do not timely deliver a Mandatory Redemption Notice or (y) the Equity Conditions are not satisfied (unless waived by the Required Holders), then we shall be deemed to have delivered, a Mandatory Redemption Notice electing to pay the entire Mandatory Redemption Price in cash. The certificate of designations provides that “Dollar Volume Limitation” means fifteen percent (15%) of the aggregate dollar trading volume of our Common Stock on the NYSE MKT (or other applicable trading market) over the twenty-two (22) consecutive trading day period ending on the trading day immediately preceding the date of the Mandatory Redemption Notice or Optional Redemption Notice, as applicable. The term “dollar trading volume” for any trading day shall be determined by multiplying the Daily VWAP by the volume as reported on Bloomberg for such trading day.

The term “Equity Conditions” means each of the following: (i) on each day during the Equity Conditions Measuring Period, all shares of our Common Stock to be issued on the applicable Mandatory Redemption Date (or such other date on or event for which the Equity Conditions are required to be satisfied) shall be eligible for resale by the holder without restriction and without need for additional registration under any applicable federal or state securities laws, and we shall have no knowledge of any fact that would cause any shares of Common Stock not to be so eligible for resale by the holder without restriction and without need for additional registration under any applicable federal or state securities laws; (ii) on each day during the Equity Conditions Measuring Period, the shares of Common Stock are designated for listing on a trading market and shall not have been suspended from trading on such trading market nor shall delisting or suspension by such exchange or market have been threatened or pending in writing by such exchange nor shall there be any Securities and Exchange Commission or judicial stop trade order or trading suspension stop order; (iii) any shares of our Common Stock to be issued in connection with the applicable Mandatory Redemption Date (or such other date on or event for which the Equity Conditions are required to be satisfied) may be issued in full without violating the rules or regulations of the trading market or any applicable laws; (iv) on each day during the Equity Conditions Measuring Period, there shall not have occurred and be continuing, unless waived by the holder, either (A) a Trigger Event (as defined below) or (B) an event that with the passage of time or giving of notice would constitute a Trigger Event; (v) on each day during the Equity Conditions Measuring Period, we have not provided any holder with any non-public information; (vi) on each day during the Equity Conditions Measuring Period, neither the registration statement of which the prospectus supplement pertaining to our senior convertible preferred stock offering is a part nor the prospectus nor such prospectus supplement contains any untrue statement of a material fact or omits to state a material fact necessary in order to make the statements made therein, in the light of the circumstances under which they were made, not misleading and such registration statement, prospectus and such prospectus supplement comply with all applicable securities laws as to form and substance (unless the issuable shares of Common Stock may be sold without restriction); (vii) our transfer agent for the shares of our Common Stock is participating in the Depository Trust Company (“DTC”) Fast Automated Securities Transfer Program; and (viii) all shares of our Common Stock to be issued in connection with the applicable Mandatory Redemption Date (or such other date on or event for which the Equity Conditions are required to be satisfied) are duly authorized and will be validly issued, fully paid and non-assessable upon issuance, free and clear of all liens, claims or encumbrances, and the issuance thereof will not require any further approvals of our board of directors or stockholders. “Equity Conditions Measuring Period” means the period beginning twenty (20) trading days prior to the applicable Mandatory Redemption Date (or such other date on or event for which the Equity Conditions are required to be satisfied) and ending on and including such Mandatory Redemption Date.

To the extent that we elect (or are required) to pay all or any portion of the applicable Mandatory Redemption Price in shares of our Common Stock, the applicable Stock Payment Amount will be paid as follows:

- (A) twenty-one (21) trading days prior to the applicable Mandatory Redemption Date (the “First Advance Date”), we shall deliver to the holders a number of shares of our Common Stock determined by dividing (x) the Stock Payment Amount for such Mandatory Redemption Date by (y) ninety-two percent (92%) of the Daily VWAP on the trading day immediately preceding such Advance Date (the “First Advance Shares”);
- (B) eleven (11) trading days prior to the applicable Mandatory Redemption Date (the “Second Advance Date” and together with the First Advance Date, the “Advance Dates” and each, an “Advance Date”), we shall deliver to the holders a number of shares of our Common Stock equal to the positive difference (if any) between (x) the quotient of (1) the Stock Payment Amount and (2) the average of the five lowest Daily VWAPs during the first (10) ten trading days of the applicable Stock Payment Pricing Period and (y) the number of First Advance Shares delivered to the holders in connection with such Mandatory Redemption Date (the “Second Advance Shares” and together with the First Advance Shares, the “Advance Shares”); and
- (C) not later than three (3) trading days after the applicable Mandatory Redemption Date, we shall deliver an additional number of shares of our Common Stock (the “True-Up Shares”), if any, to the holders equal to the positive difference between (a) the Stock Payment Amount divided by the Stock Payment Price for such Mandatory Redemption Date and

(b) the Advance Shares; provided; however, that if clause (b) exceeds clause (a), then each holder shall return its pro rata portion of such excess number of shares of our Common Stock to us, and such excess shares shall immediately be deemed cancelled effective as of the True Up.

“Daily VWAP” means, for any date, (i) the daily volume weighted average price of our Common Stock for such date on the NYSE MKT as reported by Bloomberg; (ii) if our Common Stock is not then listed on the NYSE MKT, the daily volume weighted average price of our Common Stock for such date on such other trading market where our Common Stock is then listed as reported by Bloomberg; (iii) if the foregoing do not apply, the volume weighted average price of our Common Stock in the over-the-counter market on the electronic bulletin board for our Common Stock as reported by Bloomberg, or, if no volume weighted average price is reported for such security by Bloomberg, the highest bid as reported on the “pink sheets” at the close of trading; or (iv) in all other cases, the fair market value of a share of our Common Stock as determined by an independent appraiser selected in good faith by the Required Holders and reasonably acceptable to us.

To the extent that we elect to pay all or any portion of the applicable Mandatory Redemption Price in shares of our Common Stock:

- (A) to the extent that the aggregate number of Advance Shares or True-Up Shares to be delivered to a holder in respect of any individual Stock Payment Amount would cause such holder to exceed the Beneficial Ownership Limitation (as defined below under “Ownership Cap”), then, (I) the holder shall provide written notice to us that such delivery of all or a portion of the Advance Shares or True-Up Shares would cause such holder to exceed the Beneficial Ownership Limitation, and (II) in addition to delivery of the number of Advance Shares or True-Up Shares that would not cause such holder to exceed the Beneficial Ownership Limitation, we shall pay to such holder in lieu of such number of Advance Shares or True-Up Shares that would cause such holder to exceed the Beneficial Ownership Limitation (such excess number of shares, the “Excess Shares”), not more than the later of three (3) trading days after the Mandatory Redemption Date or ten (10) trading days after the date of such holder's written notice, an amount in cash equal to the portion of the Stock Payment Amount that would otherwise be payable in respect of the Excess Shares;
- (B) to the extent that such Stock Payment Amount, when aggregated with any shares of our Common Stock already issued in respect of all of the Series E Preferred Shares, would cause the Maximum Share Amount to be exceeded, then that portion of such Stock Payment Amount that would not exceed the Maximum Share Amount shall be delivered to the holders hereunder in shares of our Common Stock as provided above, ratably based on the holders' relative ownership of the outstanding Series E Preferred Shares, and we shall pay to the holders, not more than three (3) trading days after the Mandatory Redemption Date, an amount in cash equal to the Stock Replacement Payment in lieu of any portion of such Stock Payment Amount that would cause the Maximum Share Amount to be exceeded;
- (C) if the Equity Conditions are neither (x) satisfied nor (y) waived, on the trading day immediately preceding the First Advance Date and/or on the First Advance Date, or if the Daily VWAP cannot be determined on the trading day immediately preceding the First Advance Date, or if we fail to deliver the First Advance Shares to the holders on the First Advance Date, then the holder may, at its options upon written notice to us, require us to pay to such holder, not later than three (3) trading days after the Mandatory Redemption Date, an amount of cash equal to the Stock Replacement Payment in lieu of such Stock Payment Amount; or
- (D) if subsequent to the delivery of the First Advance Shares (A) the Equity Conditions are neither (x) satisfied nor (y) waived in accordance with the terms hereof, as applicable, on any day of the Stock Payment Pricing Period or (B) if the Daily VWAP cannot be determined on any day of the Stock Payment Pricing Period, then each holder may, at its option, elect in a written notice to us to redeliver all or any portion of the Advance Shares to us and we will pay to such holder, not later than three (3) trading days after the Mandatory Redemption Date, an amount of cash equal to the Stock Replacement Payment in lieu of such portion of the Stock Payment Amount for which such holder has elected in writing to redeliver Advance Shares to us.

The “Stock Replacement Payment” shall be determined according to the following formula:

$$SRP = (X/Y) * S$$

For the purposes of the foregoing formula:

$$SRP = \text{Stock Replacement Payment}$$

X = the average Daily VWAP of the shares of our Common Stock for the applicable Stock Payment Pricing Period

Y = the Stock Payment Price for the applicable Stock Payment Pricing Period

S = the Stock Payment Amount (or, (A) in the case that either or both of Maximum Share Amount and/or Beneficial Ownership Limitation is exceeded as provided above, only that portion of such Stock Payment Amount that would exceed the Maximum Share Amount and/or Beneficial Ownership Limitation, as applicable, and/or (B) that portion of the Stock Payment Amount for which the holder has elected in its written notice to redeliver Advance Shares to us).

Any shares of our Common Stock required to be delivered by us to a holder shall be credited to such holder's or its designee's balance account with DTC through its Deposit/Withdrawal at Custodian system ("DWAC").

Each mandatory redemption (and the related payment of the Mandatory Redemption Price) shall be made pro rata among the holders based on each holder's relative percentage ownership of the outstanding Series E Preferred Shares.

Notwithstanding the delivery of a Mandatory Redemption Notice, the holder may deliver a Conversion Notice with respect to all or any portion of the specific Mandatory Redemption Shares to be redeemed on the applicable Mandatory Redemption Date at any time prior to such Mandatory Redemption Date. Any Advance Shares delivered to such holder in connection with such Mandatory Redemption Date shall count towards the number of shares of our Common Stock that we will be obligated to deliver on the applicable Share Delivery Date (as defined below), and to the extent that the Advance Shares exceeds the number of shares of our Common Stock that we would be required to deliver on the applicable Share Delivery Date, the holder shall return such excess to us.

Each and every time that we sell any shares of our Common Stock pursuant to any Equity Line, we shall immediately deliver a written notice to each holder (an "Equity Line Draw Notice"), which Equity Line Draw Notice shall state the aggregate purchase price for such shares of our Common Stock (the "Equity Line Aggregate Purchase Price"). Each holder may, at its option, by delivering a written notice to us, require us to pay the Mandatory Redemption Price (or the appropriate portion thereof) on the next succeeding Mandatory Redemption Date (or to the extent that the date of such Equity Line Draw notice is subsequent to the date of the Mandatory Redemption Notice for such Mandatory Redemption Date, then the next succeeding Mandatory Redemption Date) in shares of our Common Stock in an amount equal to its pro rata portion of the Equity Line Aggregate Purchase Price. To the extent that the Equity Line Aggregate Purchase Price exceeds the aggregate amount of the entire Mandatory Redemption Price for such Mandatory Redemption Date, then on each succeeding Mandatory Redemption Date the holder may, at its option, by delivering a written notice to us, require us to pay its pro rata portion of the applicable Mandatory Redemption Price in shares of our Common Stock until we have made aggregate payments in shares of our Common Stock equal to its pro rata portion of the entire Equity Line Aggregate Purchase Price. Notwithstanding anything to the contrary, all payments of Mandatory Redemption Price made in shares of our Common Stock shall be subject the requirement to make the appropriate Stock Replacement Payment if applicable. Pro rata portion for a holder is the number of Series E Preferred Shares then held by such holder divided by the aggregate number of outstanding Series E Preferred Shares.

Optional Redemption. We may, at our option, redeem the Series E Preferred Shares, at any time and from time to time, in whole or in part (but not less than 1,000,000 Series E Preferred Shares at any one time) for an amount equal to (a) the liquidation preference per Series E Preferred Share plus any accrued and unpaid dividends through the optional redemption date (the "Base Redemption Price") plus (b) (i) if such prepayment occurs on or before the twelve month anniversary of the closing, an amount equal to 15% of the Base Redemption Price or (ii) if such prepayment occurs at any time after the twelve month anniversary of the closing date, an amount equal to 10% of the Base Redemption Price (the additional amount under clause (b) being referred to as the "Additional Redemption Price"). The Base Redemption Price will be paid in cash and the Additional Redemption Price will be paid in cash or, at our option and provided (w) the Equity Conditions are satisfied (unless waived by the Required Holders), (x) the portion of the Additional Redemption Price to be paid in shares of our Common Stock does not exceed the Dollar Volume Limitation (unless waived by the Required Holders), (y) the Maximum Share Amount is not exceeded and (z) the Daily VWAP is available on the trading day immediately preceding the First Optional Redemption Advance Date and on each day of the Stock Payment Pricing Period, in shares of our Common Stock.

We will deliver written notice of optional redemption to the holders 30 trading days prior to the date we set for such optional redemption, which may not be a Mandatory Redemption Date or any day of a Stock Payment Pricing Period with respect to any mandatory redemption date. Each holder may submit a conversion notice for the specific Series E Preferred Shares to be redeemed at any time prior to the optional redemption date. The optional redemption notice will specify the number of Series E Preferred Shares to be redeemed and what portion of the Additional Redemption Price will be paid in shares of our Common Stock (expressed in dollars), what portion of the Additional Redemption Price will be paid in cash (expressed in dollars) and (A) certify that the Equity Conditions are satisfied, (B) state the Dollar Volume Limitation (expressed in dollars) and certify that the portion of the Additional Redemption Price to be paid in shares of our Common Stock does not exceed

such Dollar Volume Limitation and (C) certify that the Maximum Share Amount has not been exceeded. The optional redemption notice will be irrevocable.

To the extent that any portion of the Additional Redemption Price will be paid in shares of our Common Stock, 21 trading days prior to the optional redemption date (the "First Optional Redemption Advance Date"), we will advance to the holders a number of shares of our Common Stock determined by dividing (x) that portion of the Additional Redemption Price to be paid in shares of our Common Stock by (y) 92% of the Daily VWAP on the trading day immediately preceding the First Optional Redemption Advance Date (the "First Optional Redemption Advance Shares"). In addition, 11 trading days prior to the applicable optional redemption date (the "Second Optional Redemption Advance Date" and together with the First Optional Redemption Advance Date, the "Optional Redemption Advance Dates" and each, an "Optional Redemption Advance Date"), we will advance to the holders an additional number of shares of our Common Stock equal to the positive difference (if any) between (x) the quotient of (1) the portion of the Additional Redemption Price to be paid in shares of our Common Stock and (2) the average of the five lowest Daily VWAPs during the first 10 trading days of the applicable Stock Payment Pricing Period and (y) the number of First Optional Redemption Advance Shares delivered to the holders in connection with such optional redemption date (the "Second Optional Redemption Advance Shares" and together with the First Optional Redemption Advance Shares, the "Optional Redemption Advance Shares"). Not later than three trading days after the optional redemption date, we will deliver an additional number of shares of our Common Stock, if any, to the holder equal to the positive difference between (1) that portion of the Additional Redemption Price to be paid in shares of our Common Stock divided by the Stock Payment Price and (2) the Optional Redemption Advance Shares. If clause (2) of the immediately preceding sentence exceeds clause (1) of the immediately preceding sentence, then each holder shall return to us its pro rata portion of such excess number of shares of our Common Stock. No holder shall have any liability to us to the extent that any Optional Redemption Advance Shares that are returned to us pursuant to the immediately preceding sentence decrease in value following the applicable Optional Redemption Advance Date.

Optional Conversion by the Holders. Each holder of the Series E Preferred Shares shall have the right at any time and from time to time, at the option of such holder, to convert all or any portion of the Series E Preferred Shares held by such holder, for such number shares of our Common Stock, free and clear of any liens, claims or encumbrances, as is determined by dividing (i) the Liquidation Preference times the number of Series E Preferred Shares being converted, by (ii) the Conversion Price (as defined below) in effect on the Conversion Date (as defined below). Immediately following such conversion, the persons entitled to receive the shares of our Common Stock upon the conversion of Series E Preferred Shares shall be treated for all purposes as having become the owners of such shares of our Common Stock, subject to the rights provided herein to holders. Pursuant to the certificate of designations, the initial "Conversion Price" was \$2.0004, subject to adjustment as provided therein. As of August 17, 2012, the adjusted Conversion Price was \$1.20. The Conversion Price is subject to further adjustment in accordance with the terms of the certificate of designations.

The Conversion Price is subject to adjustment under the following circumstances:

- (i) in the event we effect a stock split or combination of our outstanding Common Stock, then the conversion price then in effect will be proportionately decreased or increased, as applicable.
- (ii) in the event we make, issue or set a record date for the determination of holders of our Common Stock entitled to receive a dividend or other distribution payable in shares of our Common Stock, then the conversion price shall be decreased by multiplying the conversion price then in effect by a fraction equal to: (a) the total number of shares of our Common Stock issued and outstanding immediately prior to such issuance or the close of business on such record date divided by (b) the total number of shares our Common Stock issued and outstanding immediately prior to such issuance or the close of business on such record date plus the number of shares of our Common Stock issuable in payment of such dividend or distribution.
- (iii) in the event we make, issue or set a record date for the determination of holders of our Common Stock entitled to receive a dividend or other distribution payable in securities or property other than shares of our Common Stock, then an appropriate revision shall be made to conversion price then in effect such that the holders of the Series E Preferred Shares shall receive upon conversion thereof, in addition to the shares of our Common Stock to which the holders would be entitled, the number of securities or other property that they would have received had such holders converted their Series E Preferred Shares into shares of our Common Stock on the date of such event.
- (iv) in the event we issue or sell shares of our Common Stock (other than as provided above in connection with a stock split or combination or the payment of certain dividends and distributions) at a price per share less than the Conversion Price, or without consideration, the Conversion Price then in effect upon each such issuance shall be adjusted by multiplying the Conversion Price by a fraction equal to: (a) the total number of shares of our Common

Stock issued and outstanding immediately prior to such issuance plus the number of shares of our Common Stock which the aggregate consideration for the total number of such additional shares of our Common Stock so issued would purchase at a price per share equal to the Conversion Price then in effect divided by (b) the number of shares of our Common Stock outstanding immediately after the issuance of such additional shares.

- (v) in the event we shall issue or sell any rights, warrants or options to purchase or other securities convertible into or exchangeable or exercisable for, directly or indirectly, any shares of our Common Stock or securities convertible into or exchangeable or exercisable for, directly or indirectly, shares of our Common Stock or common stock equivalents and the price per share at which such additional shares of our Common Stock may be issued pursuant to any such common stock equivalent shall be less than the Conversion Price then in effect, or if after the issuance of any common stock equivalents, the price per share at for which such additional shares of our Common Stock may be issued pursuant to any such common stock equivalent is thereafter amended or adjusted such that the price as so amended or adjusted shall be less than the Conversion Price then in effect, then the conversion price then in effect upon each such issuance or adjustment shall be adjusted by multiplying the conversion price by a fraction equal to: (a) the total number of shares of our Common Stock issued and outstanding immediately prior to such issuance plus the number of shares of our Common Stock which the aggregate consideration for the total number of such additional shares of our Common Stock so issued would purchase at a price per share equal to the conversion price then in effect divided by (b) the number of shares of our Common Stock outstanding immediately after the issuance of such additional shares.

Notwithstanding the foregoing, the Conversion Price will not be adjusted for the sale or issuance of “Excluded Securities,” which are defined in the certificate of designations as the following: (a) shares of our Common Stock or common stock equivalents issued pursuant to a stock option plan that has been approved by our Board of Directors and our stockholders, pursuant to which our securities may be issued only to a person eligible for award under such plan, (b) shares of our Common Stock or common stock equivalents issued to employees or consultants (including in connection with investor relations activities) for compensatory purposes, (c) shares of our Common Stock or common stock equivalents issued upon the exercise or conversion of common stock equivalents outstanding on the closing date for the offering of the Series E Preferred Stock, (d) shares of our Common Stock or common stock equivalents issued to investors in our common stock offering that was conducted concurrently with the offering of Series E Preferred Stock, (e) shares of our Common Stock or common stock equivalents issued in the PCT Merger, (f) shares of our Common Stock or common stock equivalents issued in the offering of the Series E Preferred Stock, including pursuant to the certificate of designations or upon exercise of the warrants offered in connection with the Series E Preferred Stock, and (g) shares of our Common Stock or common stock equivalents issued or deemed to be issued in connection with any acquisition by our company, whether through a merger, an acquisition of stock or an acquisition of assets, or a license, of any business, product, assets or technologies, or any strategic partnership, strategic investment or joint venture involving any technology or product, or any other transaction the primary purpose of which is not to raise capital; provided however, that the number of shares of our Common Stock which may be issued pursuant to this clause (g) in any transaction or series of related transactions shall not exceed 33% of the number of shares of our Common Stock outstanding immediately prior to any such transaction.

In case of any reorganization or any reclassification of our capital stock or any consolidation or merger of our company with or into any other corporation or corporations or a sale or transfer of all or substantially all of our assets to any other person or a “going private” transaction under Rule 13e-3 promulgated pursuant to the Securities Exchange Act of 1934 (the “Exchange Act”), as amended, then, as part of such reorganization, consolidation, merger, or transfer if the holders of shares of our Common Stock receive any publicly traded securities as part or all of the consideration for such reorganization, reclassification, consolidation, merger or sale, then it shall be a condition precedent of any such event or transaction that provision shall be made such that each Series E Preferred Share shall thereafter be convertible into such new securities at a conversion price and pricing formula which places the holders of Series E Preferred Shares in an economically equivalent position as they would have been if not for such event. The foregoing does not limit the right that holders of the Series E Preferred Shares have to require us to repurchase the Series E Preferred Shares. See “Mandatory Repurchase By Us” below.

Reservation of Shares Issuable Upon Conversion. We shall at all times reserve and keep available out of our authorized but unissued shares of our Common Stock, solely for the purposes of effecting the conversion and/or redemption of the Series E Preferred Shares, an number of shares of our Common Stock equal to 200% of the number of shares issuable upon conversion of the Series E Preferred Shares at the conversion price then in effect. If at any time while any of the Series E Preferred Shares remain outstanding we do not have a sufficient number of authorized and unreserved shares of our Common Stock to satisfy such obligation to reserve for issuance upon conversion and/or redemption of the Series E Preferred Shares, then we shall promptly take all action necessary to increase the number of authorized shares of our Common Stock to an amount sufficient to allow us to satisfy such obligation to reserve for issuance upon conversion and/or redemption of the Series E Preferred Shares. Without limiting the generality of the foregoing sentence, as soon as practicable after the date on which we fail to have a sufficient number of authorized but unissued shares of our Common Stock available to satisfy such obligation, but in no event

later than sixty (60) days (or the lesser of (i) ninety (90) days if the proxy statement is reviewed by the staff of the Securities and Exchange Commission or (ii) ten (10) days after the staff of the SEC indicated that it has no further comments to such proxy statement) after the occurrence of such failure, we shall hold a meeting of our stockholders for the approval of an increase in the number of authorized shares of our Common Stock. In connection with such meeting, we shall provide each stockholder with a proxy statement and shall use our reasonable best efforts to solicit our stockholders' approval of such increase in authorized shares of our Common Stock and to cause our board of directors to recommend to the stockholders that they approve such proposal.

Fractional Shares. No fractional shares shall be issued upon the conversion of any Series E Preferred Shares. All shares of our Common Stock (including fractions thereof) issuable upon conversion of more than one Series E Preferred Share by a holder thereof and all Series E Preferred Shares issuable upon the purchase thereof shall be aggregated for purposes of determining whether the conversion and/or purchase would result in the issuance of any fractional share. If, after the aforementioned aggregation, the conversion and/or purchase would result in the issuance of a fraction of a share of our Common Stock, we shall, in lieu of issuing any fractional share, either round up the number of shares to the next highest whole number or, at our option, pay the holder otherwise entitled to such fraction a sum in cash equal to the fair market value of such fraction on the conversion date (as determined in good faith by our Board of Directors).

Failure to Redeliver. If any holder fails to re-deliver shares of our Common Stock to us within ten (10) trading days of being required to do so in connection with a Mandatory Redemption or an optional redemption by us, then, unless such shares of Common Stock have been called by us, we may, at our option, redeem a number of Series E Preferred Shares having a Liquidation Preference equal in value to the product of (x) such number of shares of our Common Stock and (y) the Stock Payment Price for such Mandatory Redemption Date or Optional Redemption Date, the case may be, in lieu of requiring such holder to return such shares of Common Stock.

Mandatory Repurchase by Us. Each holder of Series E Preferred Shares shall have the unilateral option and right to compel us to repurchase for cash any or all of such holder's Series E Preferred Shares within three days of a written notice requiring such repurchase (provided that no written notice shall be required for if any of the events described in clauses (v) and (vi) below occur and demand for repurchase shall be deemed automatically made upon the occurrence of any of those events), at a price per Series E Preferred Share equal to the sum of (a) the liquidation preference plus (b) any and all accrued and unpaid dividends on the Series E Preferred Shares (the sum of (a) and (b), the "Base Mandatory Repurchase Price") plus (c) (i) if such demand for repurchase occurs on or before the twelve month anniversary of the closing date, an amount equal to 15% of the Base Mandatory Repurchase Price, or (ii) if such demand for repurchase occurs at any time after the twelve month anniversary of the closing date, an amount equal to 10% of the Base Mandatory Repurchase Price, if any of the following events shall have occurred or are continuing:

- (i) A Change in Control Transaction (as defined below);
- (ii) A "going private" transaction under SEC rules;
- (iii) A tender offer by our company under SEC Rule 13e-4;
- (iv) the suspension from trading or the failure of our Common Stock to be listed on a trading market for a period of five consecutive trading days or for more than an aggregate of 10 trading days in any 365-day period;
- (v) the entry by a competent court of (i) a decree or order for relief pertaining to our company or any of our subsidiaries under any applicable federal or state bankruptcy, insolvency, reorganization or other similar law or (ii) a decree or order adjudging our company or any of our subsidiaries as bankrupt or insolvent or (iii) appointing a custodian, receiver, trustee or other similar official for our company or any of our subsidiaries or of any substantial part of our property, or ordering the liquidation of our company's affairs, and the continuance of any such decree or order for a period of 60 consecutive days;

- (vi) the commencement by our company or any of our subsidiaries of a voluntary case or proceeding under any applicable federal or state bankruptcy, insolvency, reorganization or other similar law, or the consent by us to the entry of a decree or order for relief in an involuntary case or proceeding under any applicable federal or state bankruptcy, insolvency, reorganization or other similar law or to the commencement of any bankruptcy or insolvency case or proceeding against our company, or the consent by us to the appointment of or taking possession by a custodian, receiver, trustee or other similar official of our company or of any substantial part of our property, or the making by us of an assignment for the benefit of creditors, or the admission by our company in writing of its inability to pay its debts generally as they become due;
- (vii) following an Authorized Share Failure (as defined), our failure to receive stockholder approval to approve the required increase in the number of shares of our Common Stock within five days after the Meeting Outside Date (as defined); or
- (viii) our failure to deliver shares of our Common Stock on any Share Delivery Date, Advance Date, mandatory redemption date or optional redemption date, if such failure continues for two (2) trading days after the date that delivery of shares of Common Stock is due;
- (ix) our failure to pay any amounts when and as due pursuant to the certificate of designations or any other document relating to the issuance of the Series E Preferred Shares, if such failure continues for two (2) trading days after the date that such payment is due;
- (x) our breach of certain covenants contained in the certificate of designations and the stock purchase agreement;
- (xi) our company or any of its subsidiaries shall (A) default in any payment of any amount or amounts of principal of or interest on any indebtedness the aggregate principal amount of which indebtedness is in excess of \$1,000,000 or (B) default in the observance or performance of any other agreement or condition relating to any such indebtedness, or any other event shall occur or condition exist, as a result of which the holder or holders or beneficiary or beneficiaries of such indebtedness or a trustee on their behalf have declared such indebtedness to be due prior to its stated maturity;
- (xii) the effectiveness of the registration statement pertaining to the Series E Preferred Shares or the ability to use the applicable prospectus supplement and the prospectus lapses for any reason and continues for a period of 10 consecutive days or for more than an aggregate of 20 days in any 365-day period;
- (xiii) we breach any representation, warranty, covenant or other term or condition of the certificate of designations, the stock purchase agreement or the warrant to be issued with the Series E Preferred Shares, except to the extent that such breach would not have a material adverse effect (as defined in the stock purchase agreement), and except in the case of a breach of a covenant which is curable, only if such breach remains uncured for a period of at least 10 calendar days (the events described in clauses (v), (vi), (viii), (ix), (x), (xi), (xii) and (xiii) are collectively referred to as the “Trigger Events” and each, as a “Trigger Event”).

A “Change in Control Transaction” will be deemed to exist if (i) there occurs any consolidation or merger of our company with or into any other corporation or other entity or person (whether or not our company is the surviving corporation), or any other corporate reorganization or transaction or series of related transactions in which in excess of 50% of the voting power in our company is transferred through a merger, consolidation, tender offer or similar transaction, (ii) any person, together with its affiliates and associates, beneficially owns or is deemed to beneficially own (as described in Rule 13d-3 under the Exchange Act without regard to the 60-day exercise period) in excess of 50% of the voting power in our company (provided, however, that if any person is immediately prior to the closing date a beneficial owner of 40% or more of our Common Stock, it shall not be deemed to be a Change of Control Transaction if such person increases its beneficial ownership percentage by not more than 10 percentage points), (iii) there is a replacement of more than one-half of the members of our board of directors which is not approved by those individuals who are members of our board on the date thereof, in one or a series of related transactions or (iv) a sale or transfer of all or substantially all of our assets, determined on a consolidated basis; provided, however, that a Change in Control Transaction will not be deemed to have occurred pursuant to clause (iv) if such sale or transfer is the sale or transfer of not more than one business segment during the period from the closing of the offering of the Series E Preferred

Shares (November 19, 2010) through the Maturity Date and we remain a publicly traded corporation and if, on the effective date of the sale or transfer described therein, we deposit funds in the escrow account (as defined in the stock purchase agreement) such that the balance in the escrow account after such deposit is the lesser of \$5 million or 100% of the aggregate liquidation preference of the outstanding Series E Preferred Shares.

Ownership Cap. Notwithstanding anything to the contrary set forth herein, at no time may we issue to a holder, shares of our Common Stock if the number of shares of our Common Stock to be issued pursuant to such issuance would exceed, when aggregated with all other shares of our Common Stock beneficially owned by such holder at such time (as determined in accordance with relevant Exchange Act rules), the number of shares of our Common Stock that would result in the holder beneficially owning (as determined in accordance with relevant Exchange Act rules) more than 4.9% (the "Beneficial Ownership Limitation") of our then issued and outstanding Common Stock. Each holder shall have the right (with respect to itself only) to waive such ownership cap upon not less than sixty-five (65) days' prior notice to us. Notwithstanding the foregoing, the holder shall have the right to: (A) at any time and from time to time immediately reduce the Beneficial Ownership Limitation and (B) (subject to waiver) at any time and from time to time, increase the Beneficial Ownership Limitation immediately in the event of the announcement as pending or planned of a Change in Control Transaction.

Participation. The holders of the Series E Preferred Shares shall be entitled to such dividends paid and distributions made to the holders of shares of our Common Stock to the same extent as if such holders of the Series E Preferred Shares had converted the Series E Preferred Shares into shares of our Common Stock (without regard to any limitations on conversion herein or elsewhere) and had held such shares of Common Stock on the record date for such dividends and distributions.

Voting Rights. Except as expressly provided in the certificate of designations, holders of the Series E Preferred Shares shall not have any voting rights. So long as any Series E Preferred Shares are outstanding, in addition to any other vote or consent of our stockholders required by law or by our amended and restated certificate of incorporation and except where the vote or written consent of holders of a greater than number of shares is required by law or by another provision of our amended and restated certificate of incorporation, the affirmative vote, at a meeting duly called for such purpose or the written consent without a meeting, of the holders of at least a majority of the Series E Preferred Shares then outstanding, voting together as a single class, shall be required before we may: (a) amend or repeal any provision of, or add any provision to, the certificate of designations governing the Series E Preferred Shares, our amended and restated certificate of incorporation or bylaws, or file any articles of amendment, certificate of designations, preferences, limitations and relative rights of any series of preferred stock, if any such action would adversely alter or change the preferences, rights, privileges or powers of, or restrictions provided for the benefit of the Series E Preferred Shares, regardless of whether any such action shall be by means of amendment to our certificate of incorporation or by merger, consolidation or otherwise; (b) increase or decrease (other than by conversion) the authorized number of Series E Preferred Shares (we may increase or decrease our number of authorized shares of undesignated "blank check" preferred stock); (c) create or authorize (by reclassification or otherwise) any new class or series of shares that has a preference over or is on a parity with the Series E Preferred Shares with respect to dividends or the distribution of assets on a Liquidation Event; (d) purchase, repurchase or redeem any shares of our Common Stock or other shares of our capital stock; (e) pay dividends or make any other distribution on our Common Stock or other capital stock; (f) whether or not prohibited by the terms of the Series E Preferred Shares, circumvent a right of the Series E Preferred Shares.

Ranking. The Series E Preferred Shares shall rank senior to our Common Stock and any other class or series of our stock now existing or hereinafter authorized over which the Series E Preferred Shares has preference or priority in the payment of dividends or in the distribution of assets on any voluntary or involuntary dissolution or winding up of our affairs. Without the prior written consent of the Required Holders, we may not authorize or issue additional or other capital stock that is of senior or pari-passu rank to the Series E Preferred Shares in respect of preferences as to dividends and other distributions, amortization and redemption payments and payments upon a liquidation event without the prior express written consent of the holders of a majority of the Series E Preferred Shares. We may issue preferred stock that is junior in rank to the Series E Preferred Shares in respect of the preferences as to dividends and other distributions, amortization and redemption payments and payments upon a liquidation event, provided, that the maturity date (or any other date requiring redemption, repayment or any other payment, including without limitation, dividends) of any such junior preferred shares is not on or before ninety-one (91) days after the maturity date for the Series E Preferred Shares.

Options

As of August 17, 2012, we had outstanding options to purchase an aggregate of 22,481,892 shares of our Common Stock with exercise prices ranging from \$0.35 to \$15.00 per share, with an approximate weighted average exercise price of \$1.35 per share. The shares of our Common Stock underlying all such options are registered with the SEC.

Warrants

As of August 17, 2012, we had outstanding warrants to purchase an aggregate of 55,528,491 shares of our Common Stock with exercise prices ranging from \$0.36 to \$7.00, with an approximate weighted average exercise price of \$1.58 per share. The shares of Common Stock underlying the vast majority of such warrants have been registered for resale.

Class D Warrants

Each Class D warrant entitles the holder to purchase one share of our Common Stock at an exercise price per share of \$2.50. The exercise price per share of each Class D warrant is subject to adjustment upon the occurrence of certain events as provided in the Class D warrant certificate and summarized below. The Class D warrants may be exercised at any time during their five year term, or eight year term in the case of a Class D warrant to purchase an aggregate of 4,000,000 shares held by RimAsia Capital Partners, L.P., a Cayman Islands exempted limited partnership and an affiliate of NeoStem (“RimAsia”), unless redeemed. The Class D warrants which have not been previously exercised will expire at the expiration date. A Class D warrant holder will not be deemed to be a holder of the underlying Common Stock for any purpose until the Class D warrant is exercised.

In the event our Common Stock is trading at a per share price equal to or exceeding the redemption threshold of \$3.50, or \$5.00 in the case of the Class D warrant held by RimAsia, for twenty consecutive trading days, we have the option to call the Class D warrants. If the holders of Class D warrants have not exercised the Class D Warrants within 30 days of the written notice to call, we may redeem the Class D warrants at \$0.001 per warrant. We will send the written notice of call by first class mail to Class D warrant holders at their last known addresses appearing on the registration records maintained by the transfer agent of the Class D warrants. No other form of notice by publication or otherwise will be required. If we call any Class D Warrants for redemption, they will be exercisable until close of business on the business day next preceding the specified redemption date.

The exercise price and redemption price of the Class D warrants are subject to adjustment in specified circumstances, including in the event we declare any stock dividend to stockholders or effect any split or reverse split with respect to our Common Stock after the issuance thereof. Therefore, if we effect any stock split or reverse split with respect to our Common Stock, the exercise price in effect immediately prior to such stock split or reverse split will be proportionately reduced or increased, respectively. Any adjustment of the exercise price will also result in an adjustment of the number of shares purchasable upon exercise of a Class D warrant or, if we elect, an adjustment of the number of Class D warrants outstanding. The Class D warrants do not contain provisions protecting against dilution resulting from the sale of additional shares of our Common Stock for less than the exercise price of the Class D warrants or the current market price of our Common Stock.

Until exercised, the Class D warrants will have no voting, dividend or other stockholder rights.

Warrants Issued in Our November 2010 Common Stock Offering

On November 19, 2010, in connection with a public offering of our Common Stock and certain warrants, we issued (i) 6,337,980 shares of our Common Stock and (ii) warrants to purchase up to 3,168,993 shares of our Common Stock (the “November 2010 Common Stock Offering”). The material terms and provisions of the warrants issued in connection with our November 2010 Common Stock Offering are summarized below.

Term; Exercise Price and Exercisability. In our November 2010 Common Stock Offering we issued warrants representing the rights to purchase up to an aggregate of 3,168,990 shares of our Common Stock (with 2,824,165 of such warrants remaining outstanding as of August 17, 2012). Each warrant has exercise price of \$1.85 per share, becoming exercisable six months after issuance and expiring five years from the date of issuance. The number of warrant shares that may be acquired by any holder upon any exercise of the warrant will be limited to the extent necessary to insure that, following such exercise (or other issuance), the total number of shares of our Common Stock then beneficially owned by such holder and its affiliates and any other persons whose beneficial ownership of common stock would be aggregated with the holder's for purposes of Section 13(d) of the Securities Exchange Act of 1934, as amended, does not exceed 4.99% of the total number of issued and outstanding shares of our Common Stock (including for such purpose the shares of our Common Stock issuable upon such exercise), which is referred to as the “beneficial ownership limitation.” The holder may elect to change this beneficial ownership limitation from 4.99% to 9.99% of the total number of issued and outstanding shares of our Common Stock (including for such purpose the shares of our Common Stock issuable upon such exercise) upon providing us with not less than 61 days' prior written notice.

Call Provision. Subject to certain exceptions, while the warrants are outstanding, if the volume weighted average price of a share of our Common Stock for each of 20 consecutive Trading Days (the “Measurement Period,” which 20 consecutive

Trading Day period shall not have commenced until after the Initial Exercise Date) exceeds \$3.70 (subject to adjustment), (i) the average daily volume for such Measurement Period exceeds \$100,000 per Trading Day (subject to adjustment) and (ii) the holder is not in possession of any information that constitutes, or might constitute, material non-public information which was provided by us, then we may, within 1 Trading Day of the end of such Measurement Period, upon notice, call for cancellation of all or any portion of the warrants (a "Call") for consideration equal to \$0.001 per share. Our right to Call the warrants shall be exercised ratably among the holders based on each holder's initial purchase of warrants from us.

Fundamental Transaction. If, at any time while the warrants are outstanding, (1) we consolidate or merge with or into another corporation, (2) we sell, lease, license, assign, transfer, convey or otherwise dispose of all or substantially all of our assets, (3) any purchase offer, tender offer or exchange offer (whether by us or another individual or entity) is completed pursuant to which holders of our Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of our outstanding Common Stock or (4) we effect any reclassification or recapitalization of our Common Stock or any compulsory share exchange pursuant to which our Common Stock is converted into or exchanged for other securities, cash or property (each, a "Fundamental Transaction"), then upon any subsequent exercise of the warrants, each holder thereof will have the right to receive the same amount and kind of securities, as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of warrant shares then issuable upon exercise of the warrant, and any additional consideration payable as part of the Fundamental Transaction; *provided, however*, that in the event of a change of control transaction (as defined in the warrant) other than one in which the successor entity is a publicly traded corporation whose stock is listed or quoted for trading on the New York Stock Exchange, NASDAQ markets or the NYSE MKT and results in the warrants being exercisable for publicly traded common stock of such successor entity, at the request of a holder of a warrant delivered before the 90th calendar day after consummation of such change of control transaction, we (or the successor entity) will purchase the warrant by paying to the holder, cash in an amount equal to the Black Scholes value, as described in the warrant, of the remaining unexercised portion of the warrant on the date of consummation of such change of control transaction.

Certain Adjustments. The exercise price and the number of shares of our Common Stock purchasable upon the exercise of the warrants are subject to adjustment upon the occurrence of specific events, including stock dividends, stock splits, combinations and reclassifications of our Common Stock. Additionally, the exercise price of the warrants issued to the investors is subject to certain adjustments if we (i) issue rights, options or warrants to all holders of our Common Stock (and not to the warrant holder) entitling them to subscribe for or purchase shares of our Common Stock at a price per share less than the volume weighted average price (the "VWAP") of our Common Stock on the record date for the determination of stockholders entitled to receive such rights, options or warrants, or (ii) distribute to all holders of our Common Stock (and not to the warrant holder) evidences of our indebtedness or assets (including cash and cash dividends) or rights or warrants to purchase any security.

Fractional Shares. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of the warrants. As to any fraction of a share which the holder would otherwise be entitled to purchase upon such exercise, we will, at our election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the exercise price or round up to the next whole share.

Exchange Listing. We do not plan on making an application to list the warrants on the NYSE MKT or any other national securities exchange or recognized trading system. Our Common Stock underlying the warrants is listed on the NYSE MKT.

The description of the warrants contained herein does not purport to be complete and is qualified in its entirety by reference to the form of warrant, which was filed as Exhibit 4.1 to our Current Report on Form 8-K filed with the SEC on November 16, 2010 in connection with the November 2010 Common Stock Offering.

Warrants Issued in Our November 2010 Preferred Stock Offering

On November 19, 2010, in connection with a registered direct placement of certain preferred stock, warrants and Common Stock, we issued (i) 10,582,011 shares of our Series E Preferred Stock, (ii) warrants to purchase up to 1,322,486 shares of our Common Stock (subject to adjustment) and (iii) 164,418 shares of our Common Stock (the "November 2010 Preferred Stock Offering"). The material terms and provisions of the warrants issued in connection with our November 2010 Preferred Stock Offering are summarized below.

Term; Exercise Price and Exercisability. As of August 17, 2012, the warrants issued in our November 2010 Preferred Stock Offering represent the rights to purchase up to an aggregate of 1,747,188 shares of our Common Stock (as adjusted). Each warrant has an exercise price of \$1.58 per share (as adjusted), and will expire three years from the date of issuance. The number

of warrant shares that may be acquired by any holder upon any exercise of the warrant will be limited to the extent necessary to insure that, following such exercise, the total number of shares of our Common Stock then beneficially owned by such holder and its affiliates and any other persons whose beneficial ownership of our Common Stock would be aggregated with the holder's for purposes of Section 13(d) of the Securities Exchange Act of 1934, as amended, does not exceed 4.9% of the then issued and outstanding shares of our Common Stock (including for such purpose the shares of our Common Stock issuable upon such exercise), which is referred to as the "beneficial ownership limitation." However, in the event of the announcement of a Change in Control Transaction (as defined in the certificate of designations with respect to the Series E Preferred Stock), the holder will have the right to (A) at any time and from time to time immediately reduce the beneficial ownership limitation and (B) (subject to waiver) at any time and from time to time, increase the beneficial ownership limitation immediately.

Exercise Elected by Us. Subject to certain exceptions, while the warrants are outstanding, if the daily volume weighted average price (the "Daily VWAP") of a share of our Common Stock for each of 20 trading days out of 30 consecutive trading days (the "Trigger Period") has remained at least 100% above the exercise price, then we may, subject to certain conditions, require the holder to exercise the warrant in full upon not less than 10 business days prior written notice (the "Mandatory Notice Period"). Notwithstanding such a notice, the holder may exercise the warrant at any time during the Mandatory Notice Period. Our right to require the exercise of the warrants is subject to the following additional conditions: (i) during each trading day of the Trigger Period and during each trading day of the Mandatory Notice Period, the Equity Conditions (as defined below) shall be satisfied; and (ii) the Daily VWAP of our Common Stock has remained at or above 100% of the exercise price during all trading days in the Mandatory Notice Period.

"Equity Conditions" means each of the following: (i) on each day of the Trigger Period and on each day of the Mandatory Notice Period, all warrant shares shall be eligible for resale by the holder without restriction and without need for additional registration under any applicable federal or state securities laws and we shall have no knowledge of any fact that would cause any warrant shares not to be so eligible for resale by the holder without restriction and without the need for additional registration under any applicable federal or state securities laws; (ii) on each day during the Trigger Period and the Mandatory Notice Period, our Common Stock is designated for listing on a Trading Market (as defined in the certificate of designations with respect to the Series E Preferred Stock) and shall not have been suspended from trading on such Trading Market nor shall delisting or suspension by such exchange or market have been threatened or pending in writing by such Trading Market nor shall there be any Securities and Exchange Commission or judicial stop trade order or trading suspension stop order; (iii) any warrant shares may be issued in full without violating the rules or regulations of the Trading Market or any applicable laws; (iv) on each day during the Trigger Period and the Mandatory Notice Period, there shall not have occurred and be continuing, unless waived by the holder, either (A) a Trigger Event (as defined in the certificate of designations with respect to the Series E Preferred Stock) or (B) an event that with the passage of time or giving of notice would constitute a Trigger Event; (v) on each day during the Trigger Period and the Mandatory Notice Period, we have not provided the holder with any non-public information; (vi) on each day during the Trigger Period and the Mandatory Notice Period, neither the registration statement, the prospectus supplement nor the prospectus applicable to the November 2010 Preferred Stock Offering contains any untrue statement of a material fact or omits to state a material fact necessary in order to make the statements made therein, in light of the circumstances under which they were made not misleading, and the prospectus supplement and the prospectus comply with all applicable securities laws as to form and substance, (vii) the transfer agent for our Common Stock is participating in the Depository Trust Company ("DTC") Fast Automated Securities Transfer Program; and (viii) all warrant shares are duly authorized and will be validly issued, fully paid and non-assessable upon issuance, free and clear of all liens, claims or encumbrances, and the issuance of the warrant shares will not require any further approvals of our Board of Directors or stockholders.

Certain Adjustments. The exercise price and the number of shares of Common Stock purchasable upon the exercise of the warrants are subject to adjustment upon the occurrence of specific events, including stock dividends, stock splits, combinations and reclassifications of our Common Stock. Additionally, the exercise price of the warrants is subject to certain weighted average adjustments if NeoStem issues or sells any additional shares of Common Stock or common stock equivalents at a price per share less than the exercise price then in effect, or without consideration, the exercise price then in effect will be adjusted. Notwithstanding the foregoing, there will be no adjustment to the exercise price with respect to the sale or issuance of certain Excluded Securities, as defined in the certificate of designations with respect to the Series E Preferred Stock. See "Series E 7% Senior Convertible Preferred Stock - Optional Conversion by the Holders." As of August 17, 2012, (i) the exercise price of the warrants had been adjusted to \$1.58, and (ii) the number of shares of Common Stock purchasable upon the exercise of the warrants had been adjusted (in the aggregate) to 1,747,188 shares of Common Stock.

Fractional Shares. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of the warrants. As to any fraction of a share which the holder would otherwise be entitled to purchase upon such exercise, we will, at our election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the exercise price or round up to the next whole share.

Exchange Listing. We do not plan on making an application to list the warrants on the NYSE MKT or any other national securities exchange or recognized trading system. Our Common Stock underlying the warrants is listed on the NYSE MKT.

The description of the warrants contained herein does not purport to be complete and is qualified in its entirety by reference to the form of warrant, which was filed as Exhibit 4.2 to our Current Report on Form 8-K filed with the SEC on November 16, 2010 in connection with our November 2010 Preferred Stock Offering.

PCT Merger Warrants

In connection with the closing of the PCT Merger on January 19, 2011 (and in addition to the Common Stock consideration for the PCT Merger which we deposited into an escrow account at such time), we issued seven-year warrants to purchase an aggregate 3,000,000 shares of our Common Stock (collectively, the "PCT Merger Warrants"). The PCT Merger Warrants were delivered in book entry form to the former members of PCT after receipt by us of an appropriate letter of transmittal from the respective former member. The PCT Merger Warrants are divided into three series as follows: (i) warrants to purchase an aggregate 1,000,000 shares of our Common Stock at an exercise price of \$3.00 per share (the "\$3.00 Warrants"); (ii) warrants to purchase an aggregate 1,000,000 shares of our Common Stock at an exercise price of \$5.00 per share (the "\$5.00 Warrants"); and (iii) warrants to purchase an aggregate 1,000,000 shares of our Common Stock at an exercise price of \$7.00 per share, and which will vest only if the \$7.00 Warrant Condition (as defined below) is accomplished within three years of the closing of the PCT Merger (the "\$7.00 Warrants"). The material terms and provisions of the PCT Merger Warrants are summarized below.

\$3.00 Warrants and \$5.00 Warrants

General. Each \$3.00 Warrant and \$5.00 Warrant entitles the holder to purchase one share of Common Stock at an exercise price per share of \$3.00 and \$5.00, respectively. The exercise price per share of each \$3.00 Warrant and \$5.00 Warrant is subject to adjustment upon the occurrence of certain events as provided in the applicable warrant certificate and summarized below. The \$3.00 Warrants and \$5.00 Warrants may be exercised at any time during their seven year term, unless redeemed. The \$3.00 Warrants and \$5.00 Warrants which have not been previously exercised will expire at the expiration date. Holders of the warrants will not be deemed to be a holder of the underlying Common Stock for any purpose until such warrant is exercised. As described below, the Warrants are redeemable in certain circumstances. Transfer of the shares issuable upon exercise of the Warrants had been restricted until the one year anniversary of the Closing Date.

Redemption. In the event Common Stock is trading at a per share price equal to or exceeding the redemption threshold of \$5.00 with respect to the \$3.00 Warrant or \$7.00 with respect to the \$5.00 Warrant for twenty (20) out of thirty (30) consecutive trading days, NeoStem has the option to call the applicable warrant. If the warrant holders have not exercised the warrants within 14 days of the redemption notice, NeoStem may redeem the warrants at \$0.001 per warrant. NeoStem will send the redemption notice by first class mail to warrant holders at their last known addresses appearing on the registration records maintained by the transfer agent of the warrants. No other form of notice by publication or otherwise will be required. If NeoStem calls any warrants for redemption, they will be exercisable until close of business on the business day next preceding the specified redemption date. Notwithstanding the foregoing, NeoStem may not redeem the Warrants unless (i) NeoStem waives the lock-up provisions in the applicable Warrant and (ii) the issuance of the shares underlying the Warrants is covered by an effective registration statement or there is an effective resale registration statement available to the holders of the Warrants with respect to the shares underlying the Warrants.

Adjustments of Exercise Price. The exercise price and redemption price of the warrants are subject to adjustment in specified circumstances, including in the event (i) there is a merger or consolidation and NeoStem is not the surviving corporation; (ii) there is subdivision, combination or reclassification of securities, recapitalization, automatic conversion, or other similar event affecting the number or character of outstanding shares of Common Stock; or (iii) NeoStem declares any stock dividend to stockholders or effects any split or reverse split with respect to the Common Stock after the issuance thereof. The warrants do not contain provisions protecting against dilution resulting from the sale of additional shares of Common Stock for less than the exercise price of the warrants or the current market price of the Common Stock.

No Voting and Dividend Rights. Until exercised, the holders of the warrants will have no voting, dividend or other stockholder rights.

Registration Rights. NeoStem has agreed to use its commercially reasonable efforts to maintain the effectiveness of a registration statement covering the shares underlying the Warrants at any time that both (a) the Warrants are exercisable and (b) the exercise price of the Warrants is less than 105% of the price at which the Common Stock is trading on the NYSE MKT (or, such other stock exchange on which the Common Stock trades). Under certain limited circumstances, if a registration statement

is not effective or a prospectus supplement is not available during the last 20 business days prior to the expiration date of the Warrants, the exercise period of the Warrants would be extended for a period of 20 business days following such effectiveness or availability.

\$7.00 Warrants

General. Each \$7.00 Warrant entitles the holder to purchase one share of Common Stock at an exercise price per share of \$7.00. The exercise price per share of each \$7.00 Warrant is subject to adjustment upon the occurrence of certain events as provided in the \$7.00 Warrant certificate and summarized below. The \$7.00 Warrants may be exercised only if the \$7.00 Warrant Condition (as defined below) is satisfied and at any time thereafter during their seven year term, unless redeemed. The \$7.00 Warrants which have not been previously exercised will expire at the expiration date. A \$7.00 Warrant holder will not be deemed to be a holder of the underlying Common Stock for any purpose until the \$7.00 Warrant is exercised.

Performance Condition. The \$7.00 Warrant Condition is a performance condition that provides that the \$7.00 Warrants will not vest and will not become exercisable unless PCT secures, prior to the third annual anniversary of the Closing Date, one or more material binding commercial manufacturing contracts with one or more third parties, each on an arm's length basis, which commercial manufacturing contracts result in aggregate revenues to PCT in excess of \$5 million per year over a period of at least 3 years and in the reasonable judgment of NeoStem's Board of Directors the manufacturing contracts will be profitable each year during the term of such contracts in accordance with GAAP.

Redemption. In the event Common Stock is trading at a per share price equal to or exceeding the redemption threshold of \$9.00 for twenty (20) out of thirty (30) consecutive trading days, NeoStem has the option to call the \$7.00 Warrants. If the holders of \$7.00 Warrants have not exercised the \$7.00 Warrants within 14 days of the redemption notice, NeoStem may redeem the \$7.00 Warrants at \$0.001 per warrant. NeoStem will send the redemption notice by first class mail to \$7.00 Warrant holders at their last known addresses appearing on the registration records maintained by the transfer agent of the \$7.00 Warrants. No other form of notice by publication or otherwise will be required. If NeoStem calls any \$7.00 Warrants for redemption, they will be exercisable until close of business on the business day next preceding the specified redemption date. Notwithstanding the foregoing, NeoStem may not redeem the \$7.00 Warrants unless (i) NeoStem waives the lock-up provisions in the applicable Warrant, (ii) the issuance of the shares of Common Stock underlying the \$7.00 Warrants is covered by an effective registration statement or there is an effective resale registration statement available to the holders of the \$7.00 Warrants with respect to such shares and (iii) the \$7.00 Warrant Condition has been achieved or NeoStem waives the \$7.00 Warrant Condition concurrently with its provision of the redemption notice.

Adjustments of Exercise Price. The exercise price and redemption price of the \$7.00 Warrants are subject to adjustment in specified circumstances, including in the event (i) there is a merger or consolidation and NeoStem is not the surviving corporation; (ii) there is subdivision, combination or reclassification of securities, recapitalization, automatic conversion, or other similar event affecting the number or character of outstanding shares of Common Stock; or (iii) NeoStem declares any stock dividend to stockholders or effect any split or reverse split with respect to the Common Stock after the issuance thereof. The \$7.00 Warrants do not contain provisions protecting against dilution resulting from the sale of additional shares of Common Stock for less than the exercise price of the \$7.00 Warrants or the current market price of the Common Stock.

No Voting and Dividend Rights. Until exercised, the \$7.00 Warrants will have no voting, dividend or other stockholder rights.

Registration Rights. NeoStem has agreed to use its commercially reasonable efforts to maintain the effectiveness of a registration statement covering the shares underlying the Warrants at any time that both (a) the Warrants are exercisable and (b) the exercise price of the Warrants is less than 105% of the price at which the Common Stock is trading on the NYSE MKT (or, such other stock exchange on which the Common Stock trades). Under certain limited circumstances, if a registration statement is not effective or a prospectus supplement is not available during the last 20 business days prior to the expiration date of the Warrants, the exercise period of the Warrants would be extended for a period of 20 business days following such effectiveness or availability.

The above description of the PCT Merger Warrants does not purport to be complete and is qualified in its entirety by reference to the Warrant Agreement (with the forms of \$3.00 Warrant, \$5.00 Warrant and \$7.00 Warrant attached thereto), which was filed as Exhibit 4.1 to our Current Report on Form 8-K dated January 18, 2011 and filed with the SEC on January 24, 2011 in connection with the closing of the PCT Merger.

Series NA Warrants

Background. On July 22, 2011, we completed an underwritten offering of 13,750,000 units, with each unit consisting of one share of our Common Stock and a warrant to purchase 0.75 of a share of our Common Stock (each, a “Series NA Warrant”). The Series NA Warrants issued in connection with the July 2011 underwritten offering covered, in the aggregate, up to 10,312,500 shares of our Common Stock (with Series NA Warrants covering 10,012,500 shares of our Common Stock remaining outstanding as of August 17, 2012). The material terms and provisions of the Series NA Warrants are summarized below.

Warrant Agreement. Pursuant to the terms of the underwriting entered into in connection with the July 2011 offering, the Series NA Warrants may be issued through DTC and evidenced by a “Global Warrant” or may be delivered in physical or other appropriate form. The Series NA Warrants are governed by a warrant agreement (the “Warrant Agreement”), dated as of July 22, 2011, between us and Continental Stock Transfer & Trust Company, as our agent in respect of the Series NA Warrants. Book-entry form Series NA Warrants may be exercised by notifying a broker who is a DTC participant prior to the expiry of such warrants and providing payment of the exercise price for the number of shares of our Common Stock for which such warrants are being exercised. The following description of the terms of the Warrant Agreement is subject to the detailed provisions of such Warrant Agreement, the form of which is filed as Exhibit 2.1 to our Current Report on Form 8-K dated July 19, 2011.

Term; Exercise Price and Exercisability. Series NA Warrants representing the rights to purchase up to an aggregate of 10,012,500 shares of our Common Stock remain outstanding as of August 17, 2012. Each warrant has an exercise price of \$1.45 per share, was immediately exercisable upon issuance, and will expire on July 18, 2016. The number of warrant shares that may be acquired by any holder upon any exercise of the warrant will be limited to the extent necessary to insure that, following such exercise (or other issuance), the total number of shares of our Common Stock then beneficially owned by such holder and its affiliates and any other persons whose beneficial ownership of our Common Stock would be aggregated with the holder's for purposes of Section 13(d) of the Securities Exchange Act of 1934, as amended, does not exceed 4.99% of the total number of issued and outstanding shares of our Common Stock (including for such purpose the shares of our Common Stock issuable upon such exercise), or beneficial ownership limitation. The holder may elect to change this beneficial ownership limitation from 4.99% to 9.99% of the total number of issued and outstanding shares of our Common Stock (including for such purpose the shares of our Common Stock issuable upon such exercise) upon providing us with not less than 61 days' prior written notice.

Manner of Exercise. Holders of the Series NA Warrants may exercise their Series NA Warrants to purchase shares of our Common Stock on or before the expiration date by delivering (i) notice of exercise, appropriately completed and duly signed, and (ii) if such holder is not utilizing the cashless exercise provisions with respect to the warrants, payment of the exercise price by wire transfer or cashier's check drawn on a United States bank, for the number of shares with respect to which the warrant is being exercised. Series NA Warrants may be exercised in whole or in part, but only for full shares of our Common Stock. We provide certain buy-in rights to a holder if we fail to deliver the shares of our Common Stock underlying the Series NA Warrants by the second trading day after the date on which delivery of the stock certificate is required by the Series NA Warrant. The buy-in rights apply if after the second trading day on which delivery of the stock is required by the Series NA Warrant, the holder purchases (in an open market transaction or otherwise) shares of our Common Stock to deliver in satisfaction of a sale by the holder of the warrant shares that the holder anticipated receiving from us upon exercise of the Series NA Warrant. In such event, we will:

- pay in cash to the holder the amount equal to the excess (if any) of the buy-in price (including brokerage commissions, if any) over the product of (A) the number of warrant shares that we were required to deliver to the holder in connection with the exercise at issue, times (B) the price at which the sell order giving rise to holder's purchase obligation was executed; and
- at the election of holder, either (A) reinstate the portion of the Series NA Warrant as to such number of shares of our Common Stock for which such exercise was not honored, or (B) deliver to the holder such number of shares of our Common Stock that would have been exercised had we timely complied with our exercise and delivery obligations.

If the holder of a Series NA Warrant desires to exercise its warrant and sell the shares issuable upon exercise of its warrant and there is no effective registration statement registering, or no current prospectus available for, the issuance or resale of the shares of our Common Stock underlying such warrants, in lieu of exercising its warrant by payment of a wire transfer or cashier's check, the holder may elect to receive shares equal to the value of such holder's warrant by surrender of the warrant to us, together with a properly endorsed notice of exercise. The number of shares to be issued would be determined by a formula based on the total number of shares with respect to which the warrant is being exercised, the volume weighted average price for

the shares of our Common Stock on the trading day immediately prior to the date of exercise and the applicable exercise price of the Series NA Warrants.

The shares of our Common Stock issuable on exercise of the Series NA warrants will be, when issued and paid for in accordance with the Series NA Warrants, duly authorized, validly issued and fully paid and non-assessable. We have authorized and reserved at least that number of shares of our Common Stock equal to the number of shares of our Common Stock issuable upon exercise of all outstanding Series NA Warrants.

Fundamental Transaction. If, at any time while the Series NA Warrants are outstanding, (1) we consolidate or merge with or into another corporation, (2) we sell, lease, license, assign, transfer, convey or otherwise dispose of all or substantially all of our assets, (3) any purchase offer, tender offer or exchange offer (whether by us or another individual or entity) is completed pursuant to which holders of our Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of our outstanding Common Stock or (4) we effect any reclassification or recapitalization of our Common Stock or any compulsory share exchange pursuant to which our Common Stock is converted into or exchanged for other securities, cash or property (or the occurrence of any analogous proceeding) affecting us (each, a “Fundamental Transaction”), then upon any subsequent exercise of the Series NA Warrants, the holders thereof will have the right to receive the same amount and kind of securities, as they would have been entitled to receive upon the occurrence of such Fundamental Transaction if they had been, immediately prior to such Fundamental Transaction, the holder of the number of warrant shares then issuable upon exercise of the Series NA Warrant, and any additional consideration payable as part of the Fundamental Transaction; *provided, however*, that in the event of a change of control transaction (as defined in the warrant) other than one in which the successor entity is a publicly traded corporation whose stock is listed or quoted for trading on the New York Stock Exchange, NASDAQ markets or the NYSE MKT and results in the Series NA Warrants being exercisable for publicly traded common stock of such successor entity, at the request of a holder of a warrant delivered before the 90th calendar day after consummation of such change of control transaction, we (or the successor entity) will purchase the warrant by paying to the holder, cash in an amount equal to the Black Scholes value, as described in the warrant, of the remaining unexercised portion of the warrant on the date of consummation of such change of control transaction.

Certain Adjustments. The exercise price and the number of shares of our Common Stock purchasable upon the exercise of the Series NA Warrants are subject to adjustment upon the occurrence of specific events, including stock dividends (excluding payments in respect of our Series E Preferred Stock), stock splits, combinations and reclassifications of our Common Stock. Additionally, the exercise price of the Series NA Warrants is subject to certain adjustments if we (i) issue rights, options or warrants to all holders of our Common Stock (and not to the warrant holder) entitling them to subscribe for or purchase shares of our Common Stock at a price per share less than the volume weighted average price (the “VWAP”) of our Common Stock on the record date for the determination of stockholders entitled to receive such rights, options or warrants, or (ii) distribute to all holders of our Common Stock (and not to the warrant holder) evidences of our indebtedness or assets (including cash and cash dividends) or rights or warrants to purchase any security.

Delivery of Certificates. Upon the holder's exercise of a Series NA Warrant, we will promptly, but in no event later than three business days after the exercise date (referred to as the “warrant share delivery date”), issue and deliver, or cause to be issued and delivered, a certificate for the shares of our Common Stock issuable upon exercise of the Series NA Warrant. In addition, we will, if the holder provides the necessary information to us, issue and deliver the shares electronically through The Depository Trust Corporation through its Deposit Withdrawal Agent Commission System (DWAC) or another established clearing corporation performing similar functions.

Notice of Corporate Action. We will provide prior notice to holders of the Series NA Warrants in advance of certain record or effective dates (as specified below) in connection with the following corporate events, to provide the holders of the Series NA Warrants with the opportunity to exercise their warrants and hold our Common Stock:

- if we declare a dividend (or any other distribution in whatever form) on our Common Stock;
- if we declare a special nonrecurring cash dividend on or a redemption of our Common Stock;
- if we authorize the granting to all holders of our Common Stock rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights;

- if the approval of any of our stockholders shall be required in connection with any reclassification of our Common Stock, any consolidation or merger to which we are a party, any sale or transfer of all or substantially all of our assets, or any compulsory share exchange whereby our Common Stock is converted into other securities, cash or property; or
- if we authorize the voluntary or involuntary liquidation or winding up of the affairs of our Company, then, in each case, we will mail to the holders of the Series NA Warrants a notice stating:
- the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of our Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined, or
- the date on which such reclassification, consolidation, merger, sale, transfer or share exchange is expected to become effective or close, and the date as of which it is expected that holders of record of our Common Stock will be entitled to exchange their shares of Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange.

Subject to applicable law, the holder will be provided a reasonable opportunity (which shall be not less than eight (8) calendar days notice) to exercise the Series NA Warrant prior to the effective date of the event triggering such notice. No holders of the Series NA Warrants will possess any rights as a stockholder under those warrants until the holder exercises those warrants.

Transferability. The Series NA Warrants may be transferred independent of the Common Stock they were issued with, on a form of assignment, subject to all applicable laws.

Fractional Shares. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of the Series NA Warrants. As to any fraction of a share which the holder would otherwise be entitled to purchase upon such exercise, we will, at our election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the exercise price or round up to the next whole share.

Exchange Listing. We do not plan on making an application to list the Series NA Warrants on the NYSE MKT or any other national securities exchange or recognized trading system. Our Common Stock underlying the Series NA Warrants is listed on the NYSE MKT.

The description of the Series NA Warrants contained herein does not purport to be complete and is qualified in its entirety by reference to the Warrant Agreement and the Form of Warrant Certificate, which are filed as Exhibit 4.1 to our Current Report on Form 8-K dated July 19, 2011.

Series AMO Warrants

General. Upon closing the Amorcyte Merger on October 17, 2011, as a portion of the merger consideration we issued Series AMO Warrants to purchase an aggregate of 1,881,008 shares of our Common Stock (the "Series AMO Warrants"). The Series AMO Warrants are evidenced by a "Global Warrant" and were delivered in book entry form to the former stockholders of Amorcyte. Each Series AMO Warrant entitles the holder to purchase one share of our Common Stock at an exercise price of \$1.466 per share. The exercise price per share of each Warrant will be subject to adjustment upon the occurrence of certain events as provided in the form of global warrant certificate and summarized below. The Series AMO Warrants may be exercised at any time during their seven year term, unless redeemed; provided, however, that transfer of any shares of our Common Stock issuable upon exercise of the Series AMO Warrants is restricted until the one year anniversary of the closing date of the Amorcyte Merger. The Series AMO Warrants which have not been previously exercised will expire at the expiration date. A Series AMO Warrant holder will not be deemed to be a holder of the underlying Common Stock for any purpose until the Series AMO Warrant is exercised.

Redemption. In the event our Common Stock is trading at a per share price equal to or exceeding the redemption threshold of \$3.466 per share for twenty (20) out of thirty (30) consecutive trading days, we have the option to call the Series AMO Warrants. If the holders of Series AMO Warrants have not exercised their warrants within 14 days of the redemption notice, we may redeem the Series AMO Warrants at \$0.0001 per warrant. We will send the redemption notice by first class mail to Series AMO Warrant holders at their last known addresses appearing on the registration records maintained by the transfer agent of

the Series AMO Warrants. No other form of notice by publication or otherwise will be required. If we call any Series AMO Warrants for redemption, they will be exercisable until close of business on the business day next preceding the specified redemption date.

Adjustments of Exercise Price. The exercise price and redemption price of the Series AMO Warrants is subject to adjustment in specified circumstances, including in the event (i) there is a merger or consolidation and we are not the surviving corporation; (ii) there is subdivision, combination or reclassification of securities, recapitalization, automatic conversion, or other similar event affecting the number or character of outstanding shares of our Common Stock; or (iii) we declare any stock dividend to stockholders or effect any split or reverse split with respect to our Common Stock. The Series AMO Warrants do not contain provisions protecting against dilution resulting from the sale of additional shares of our Common Stock for less than the exercise price of the Series AMO Warrants or the current market price of our Common Stock.

No Voting and Dividend Rights. Until exercised, the Series AMO Warrants have no voting, dividend or other stockholder rights.

Registration Rights. We shall use commercially reasonable efforts to maintain the effectiveness of the Registration Statement on Form S-4 which covers the shares of our Common Stock underlying the Series AMO Warrants or file and maintain the effectiveness of another registration statement covering the shares of our Common Stock issuable upon exercise of the Series AMO Warrants at any time that both (a) the Series AMO Warrants are exercisable and (b) the exercise price of the Series AMO Warrants is less than 105% of the price at which our Common Stock is trading on the NYSE MKT (or if our Common Stock is no longer trading on the NYSE MKT, such other stock exchange on which such shares trade). In no event will any holder of a Series AMO Warrant be entitled to receive a "net cash settlement" in lieu of physical settlement in shares of our Common Stock regardless of whether we comply with our obligation described in the preceding sentence.

The description of the Series AMO Warrants contained herein does not purport to be complete and is qualified in its entirety by reference to the Warrant Agreement and the Form of Global Series AMO Warrant attached thereto, which is filed as Exhibit 4.1 to our Current Report on Form 8-K dated October 17, 2011.

Warrants Issued in Our March 2012 Underwritten Offering

In connection with a public offering of our Common Stock and certain warrants which closed as to 15,000,000 units on March 30, 2012 (and which closed with respect to an exercise of the underwriter's over-allotment option to the extent of an additional 2,000,000 units on April 4, 2012) (the "March 2012 Underwritten Offering"), we issued warrants to purchase up to an aggregate of 17,000,000 shares of our Common Stock. The material terms and provisions of the warrants issued in connection with our March 2012 Underwritten Offering are summarized below.

Term; Exercise Price and Exercisability. The warrants issued in our March 2012 Underwritten Offering provided for the purchase of up to 17,000,000 shares of our Common Stock in the aggregate (with 13,919,656 of such warrants remaining outstanding as of August 17, 2012). Each warrant has an exercise price of \$0.51 per share, became exercisable in April 2012 (the Company having waived the six-month waiting period to exercise the warrants), and will expire five years from the date of issuance. The number of warrant shares that may be acquired by any holder upon any exercise of the warrant will be limited to the extent necessary to insure that, following such exercise (or other issuance), the total number of shares of Common Stock then beneficially owned by such holder and its affiliates and any other persons whose beneficial ownership of Common Stock would be aggregated with the holder's for purposes of Section 13(d) of the Securities Exchange Act of 1934, as amended, does not exceed 4.99% of the total number of issued and outstanding shares of Common Stock (including for such purpose the shares of Common Stock issuable upon such exercise), or beneficial ownership limitation. The holder may elect to change this beneficial ownership limitation from 4.99% to 9.99% of the total number of issued and outstanding shares of Common Stock (including for such purpose the shares of Common Stock issuable upon such exercise) upon providing us with not less than 61 days' prior written notice.

Manner of Exercise. Holders of the warrants may exercise their warrants to purchase shares of our Common Stock at any time on or after the Initial Exercise Date and on or before the expiration date by delivering (i) notice of exercise, appropriately completed and duly signed, and (ii) payment of the exercise price by wire transfer or cashier's check drawn on a United States bank, for the number of shares with respect to which the warrant is being exercised. Warrants may be exercised in whole or in part, but only for full shares of Common Stock. We provide certain buy-in rights to a holder if we fail to deliver the shares of Common Stock underlying the warrants by the date on which delivery of the warrant shares is required by the warrant. The buy-in rights apply if after the day on which delivery of the warrant shares is required by the warrant, the holder purchases (in an open market transaction or otherwise) shares of our Common Stock to deliver in satisfaction of a sale by the holder of the warrant shares that the holder anticipated receiving from us upon exercise of the warrant. In such event, we will:

- Ÿ pay in cash to the holder the amount equal to the excess (if any) of the buy-in price (including brokerage commissions, if any) over the product of (A) the number of warrant shares that we were required to deliver to the holder in connection with the exercise at issue, times (B) the price at which the sell order giving rise to holder's purchase obligation was executed; and
- Ÿ at the election of holder, either (A) reinstate the portion of the warrant as to such number of shares of Common Stock for which such exercise was not honored, or (B) deliver to the holder such number of shares of Common Stock that would have been issued had we timely complied with our exercise and delivery obligations.

If the holder of a warrant desires to exercise its warrant and there is no effective registration statement registering, or no current prospectus available for, the issuance of the shares of Common Stock underlying the warrants, in lieu of exercising its warrant by payment of a wire transfer or cashier's check, the holder may elect to receive shares equal to the value of such holder's warrant by surrender of the warrant to us, together with a properly endorsed notice of exercise. The number of shares to be issued would be determined by a formula based on the total number of shares with respect to which the warrant is being exercised, the volume weighted average price for the shares of our Common Stock on the trading day immediately prior to the date of exercise and the applicable exercise price of the warrants.

The shares of Common Stock issuable on exercise of the warrants will be, when issued and paid for in accordance with the warrants, duly authorized, validly issued and fully paid and non-assessable. We will authorize and reserve at least that number of shares of Common Stock equal to the number of shares of Common Stock issuable upon exercise of all outstanding warrants.

Call Provision. Subject to certain exceptions, while the warrants are outstanding and following the Initial Exercise Date, if the volume weighted average price of a share of our Common Stock for each of 10 consecutive Trading Days (the "Measurement Period," which 10 consecutive Trading Day period shall not have commenced until after the Initial Exercise Date) exceeds \$1.53 (subject to adjustment), then we may, within 1 Trading Day of the end of such Measurement Period, upon notice, call for cancellation of all or any portion of the warrants (a "Call") for consideration equal to \$0.001 per Share. Our right to Call the warrants shall be exercised ratably among the holders based on each holder's initial purchase of warrants from us.

Fundamental Transaction. If, at any time while the warrants are outstanding, (1) we consolidate or merge with or into another corporation, (2) we sell, lease, license, assign, transfer, convey or otherwise dispose of all or substantially all of our assets for consideration which is distributed to the holders of all our Common Stock, (3) any purchase offer, tender offer or exchange offer (whether by us or another individual or entity) is completed pursuant to which holders of our Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of our outstanding Common Stock, (4) we effect any reclassification or recapitalization of our Common Stock or any compulsory share exchange pursuant to which our Common Stock is converted into or exchanged for other securities, cash or property or (5) we consummate a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with another individual, entity or group whereby such other individual, entity or group acquires more than 50% of our outstanding stock (or the occurrence of any analogous proceeding) affecting our company (each, a "Fundamental Transaction"), then upon any subsequent exercise of the warrants, the holders thereof will have the right to receive the same amount and kind of securities, as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of warrant shares then issuable upon exercise of the warrant, and any additional consideration payable as part of the Fundamental Transaction; *provided, however*, that in the event of a Fundamental Transaction that is (1) an all cash transaction, (2) a "Rule 13e-3 transaction" as defined in Rule 13e-3 under the Exchange Act, or (3) a Fundamental Transaction (other than as described solely in clause (5) above) involving a person or entity not traded on a national securities exchange, including, but not limited to, the New York Stock Exchange, the NYSE MKT, the Nasdaq Global Select Market, the Nasdaq Global Market, or the Nasdaq Capital Market, we or any Successor Entity (as defined below) shall, at the holder's option, exercisable at any time concurrently with, or within 30 days after, the consummation of the Fundamental Transaction, purchase the warrant from the holder by paying to the holder an amount of cash equal to the Black Scholes Value (as defined in the warrant) of the remaining unexercised portion of the warrant on the date of the consummation of such Fundamental Transaction, and we shall cause any successor entity in a Fundamental Transaction in which we are not the survivor (the "Successor Entity") to assume in writing all of our obligations under the warrant prior to such Fundamental Transaction and shall, at the option of the holder, deliver to the holder in exchange for the warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to the warrants which is exercisable for a

corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon exercise of the warrants (without regard to any limitations on the exercise of the warrant) prior to such Fundamental Transaction, and with an exercise price which applies the exercise price under the warrant to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such exercise price being for the purpose of protecting the economic value of the warrant immediately prior to the consummation of such Fundamental Transaction), and which is reasonably satisfactory in form and substance to the holder.

Certain Adjustments. The exercise price and the number of shares of Common Stock purchasable upon the exercise of the warrants are subject to adjustment upon the occurrence of specific events, including stock dividends, stock splits, combinations and reclassifications of our Common Stock. Additionally, the exercise price of the warrants issued to the investors is subject to certain adjustments if we (i) issue rights, options or warrants to all holders of Common Stock (and not to the warrant holder) entitling them to subscribe for or purchase shares of Common Stock at a price per share less than the volume weighted average price (the "VWAP") of the Common Stock on the record date for the determination of stockholders entitled to receive such rights, options or warrants, or (ii) distribute to all holders of Common Stock (and not to the warrant holder) evidences of our indebtedness or assets (including cash and cash dividends) or rights or warrants to purchase any security.

Delivery of Warrant Shares. Upon the holder's exercise of a warrant, we will promptly, but in no event later than three business days after the exercise date (referred to as the "exercise share delivery date"), issue and deliver, or cause to be issued and delivered, the shares of Common Stock issuable upon exercise of the warrant. If the holder provides the necessary information to us, we will issue and deliver the shares electronically through The Depository Trust Corporation through its Deposit Withdrawal Agent Commission System (DWAC) or another established clearing corporation performing similar functions.

Notice of Corporate Action. We will provide prior notice to holders of the warrants in advance of certain record or effective dates (as specified below) in connection with the following corporate events, to provide the holders of the warrants with the opportunity to exercise their warrants and hold Common Stock:

- if we declare a dividend (or any other distribution in whatever form) on our Common Stock;
- if we declare a special nonrecurring cash dividend on or a redemption of Common Stock;
- if we authorize the granting to all holders of our Common Stock rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights;
- if the approval of any of our stockholders shall be required in connection with any reclassification of our Common Stock, any consolidation or merger to which our Company is a party, any sale or transfer of all or substantially all of our assets, or any compulsory share exchange whereby our Common Stock is converted into other securities, cash or property; or
- if we authorize the voluntary or involuntary liquidation or winding up of the affairs of the Company,

then, in each case, we will mail to the holders of the warrants a notice stating:

- the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of our Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined, or
- the date on which such reclassification, consolidation, merger, sale, transfer or share exchange is expected to become effective or close, and the date as of which it is expected that holders of record of our Common Stock will be entitled to exchange their shares of Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange.

Subject to applicable law, the holder will be provided a reasonable opportunity to exercise the warrant prior to the effective date of the event triggering such notice. No holders of the warrants will possess any rights as a stockholder under those warrants until the holder exercises those warrants.

Transferability. The warrants may be transferred independent of the Common Stock they were issued with, on a form of assignment, subject to all applicable laws.

Fractional Shares. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of the warrants. As to any fraction of a share which the holder would otherwise be entitled to purchase upon such exercise, we will, at our election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the exercise price or round up to the next whole share.

Exchange Listing. We do not plan on making an application to list the warrants on the NYSE MKT or any other national securities exchange or recognized trading system. The Common Stock underlying the warrants is listed on the NYSE MKT.

The above description of the warrants issued in our March 2012 Underwritten Offering does not purport to be complete and is qualified in its entirety by reference to the form of warrant, which was filed as Exhibit 4.1 to our Current Report on Form 8-K filed with the SEC on March 29, 2012 in connection with the March 2012 Underwritten Offering.

Warrants Issued in Connection With Our May-July 2012 Private Placement

May-July 2012 Private Placement Warrants. In closings occurring from May through August 2012, we issued in a private placement an aggregate of 5,345,834 units, with each unit consisting of (i) one share of our Common Stock and (ii) a warrant to purchase one share of our Common Stock at an exercise price of \$.51 per share, exercisable during the five-year period following the date of issuance (our board of directors having waived the six month waiting period provided for in the form of warrant) (each, a "May-July 2012 Private Placement Warrant"). As of August 17, 2012, May-July 2012 Private Placement Warrants covering an aggregate of 2,537,694 shares of our Common Stock remained outstanding. In the event the average closing price of our Common Stock equals or exceeds \$1.00 per share for 20 out of 30 consecutive trading days, we have the option to call the May-July 2012 Private Placement Warrants by mailing a notice to the registered holders thereof at least 10 business days prior to the date fixed by us for redemption (the "Redemption Date"). Any May-July 2012 Private Placement Warrants not exercised by 5:00 p.m. on the business day immediately preceding the Redemption Date shall terminate, with the holder of such terminated warrants having no further rights except to receive, upon surrender of the warrants, the redemption price of \$.0001 per warrant.

July 2012 New Warrants. In July 2012, an aggregate of 2,808,140 of the May-July 2012 Private Placement Warrants were exercised, and in consideration for such exercises, we issued to each exercising holder a new five-year warrant (each, a "July 2012 New Warrant") to purchase the identical number of shares of our Common Stock as had been covered by such portion of the old May-July 2012 Private Placement Warrant as had been exercised. Each July 2012 New Warrant is exercisable for five years and is subject to substantially the same terms as the old May-July 2012 Private Placement Warrants that were exercised, except that the per share exercise price of each July 2012 New Warrant is between \$.66 and \$.69, the closing price of our Common Stock on the date the old May-July 2012 Private Placement Warrant was exercised. We have issued July 2012 New Warrants covering an aggregate of 2,808,140 shares of our Common Stock.

Warrants Issued in Connection With Our August 2012 Private Placement

In an August 2012 private placement, we issued an aggregate of 2,954,385 units, with each Unit consisting of (a) one share of common stock and (b) a warrant (each, an "August 2012 Private Placement Warrant") to purchase one share of Common Stock at an exercise price equal to the greater of (i) \$.70 or (ii) a penny above the closing price of our Common stock on the date the subscription agreement was executed, expiring five years from the date of issuance and are exercisable immediately upon issuance.

Anti-Takeover Effects of Certain Provisions of Delaware Law and Our Certificate of Incorporation and Bylaws

Our Amended and Restated Certificate of Incorporation and bylaws contain some provisions that could make our acquisition by means of a tender or exchange offer, a proxy contest or otherwise more difficult. These provisions are summarized below.

Special Meetings. Our bylaws provide that special meetings of our stockholders may, unless otherwise prescribed by law, be called by our Chairman of the Board (if any), our Board of Directors or our Chief Executive Officer and shall be held at such place, on such date and at such time as shall be fixed by our Board of Directors or the person calling the meeting.

Business transacted at any special meeting shall be limited to matters relating to the purpose or purposes stated in the notice of the meeting.

Undesignated Preferred Stock. The ability to authorize undesignated preferred stock makes it possible for our Board of Directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to acquire us. The ability to issue preferred stock may have the effect of deferring hostile takeovers or delaying changes in control or management of our company.

Delaware Anti-Takeover Statute. We are subject to the provisions of Section 203 of the Delaware General Corporation Law regulating corporate takeovers. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a business combination with an interested stockholder for a period of three years following the date the person became an interested stockholder unless:

- prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the number of shares outstanding (1) shares owned by persons who are directors and also officers and (2) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; and
- on or subsequent to the date of the transaction, the business combination is approved by the board and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock which is not owned by the interested stockholder.

Generally, a business combination includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. An interested stockholder is a person who, together with affiliates and associates, owns or, within three years prior to the determination of interested stockholder status, owned 15% or more of a corporation's outstanding voting securities. We expect the existence of this provision to have an anti-takeover effect with respect to transactions our Board of Directors does not approve in advance. We also anticipate that Section 203 may discourage attempted acquisitions that might result in a premium over the market price for the shares of our Common Stock held by stockholders.

The provisions of Delaware law, our Amended and Restated Certificate of Incorporation and our bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the market price of our Common Stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

Potential Effects of Authorized but Unissued Stock

We have shares of Common Stock and preferred stock available for future issuance without stockholder approval. We may utilize these additional shares for a variety of corporate purposes, including future public offerings to raise additional capital, to facilitate corporate acquisitions or payment as a dividend on the capital stock.

The existence of unissued and unreserved Common Stock and preferred stock may enable our Board of Directors to issue shares to persons friendly to current management or to issue preferred stock with terms that could render more difficult or discourage a third-party attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise, thereby protecting the continuity of our management. In addition, the Board of Directors has the discretion to determine designations, rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences of each series of preferred stock, all to the fullest extent permissible under the Delaware General Corporation Law and subject to any limitations set forth in our certificate of incorporation. The purpose of authorizing the Board of Directors to issue preferred stock and to determine the rights and preferences applicable to such preferred stock is to eliminate delays associated with a stockholder vote on specific issuances. The issuance of preferred stock, while providing desirable flexibility in connection with possible financings, acquisitions and other corporate purposes, could have the effect of making it more difficult for a third party to acquire, or could discourage a third party from acquiring, a majority of our outstanding voting stock.

Limitations of Director Liability and Indemnification of Directors, Officers and Employees

Section 145 of the Delaware General Corporation Law, permits indemnification of directors, officers, agents and controlling persons of a corporation under certain conditions and subject to certain limitations. Section 145 empowers a corporation to 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, administrative or investigative, by reason of the fact that he or she is or was a director, officer or agent of the corporation or another enterprise if serving at the request of the corporation. Depending on the character of the proceeding, a corporation may indemnify against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding if the person indemnified acted in good faith and in a manner he or she 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 or her conduct was unlawful. In the case of an action by or in the right of the corporation, no indemnification may be made with respect to 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 Court of Chancery or the court in which such action or suit was brought shall determine that despite the adjudication of liability such person is fairly and reasonably entitled to indemnity for such expenses which the court shall deem proper. Section 145 further provides that to the extent a present or former director or officer of a corporation has been successful in the defense of any action, suit or proceeding referred to above or in the defense of any claim, issue or matter therein, such person shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection therewith.

Indemnification Agreements

We have entered into indemnification agreements with each of our Chief Executive Officer, Chief Financial Officer, General Counsel, certain other employees and each of our directors pursuant to which we have agreed to indemnify such party to the full extent permitted by law, subject to certain exceptions, if such party becomes subject to an action because such party is our director, officer, employee, agent or fiduciary.

Transfer Agent

The transfer agent and registrar for our Common Stock is Continental Stock Transfer & Trust Company. Its address is 17 Battery Place, New York, New York, 10004 and its telephone number is (212) 509-4000.

NYSE MKT Listing

Our Common Stock is traded on the NYSE MKT under the symbol "NBS."

LEGAL MATTERS

The validity of the shares of Common Stock offered by this prospectus will be passed upon for us by Lowenstein Sandler PC, Roseland, New Jersey.

EXPERTS

The consolidated financial statements as of and for the year ended December 31, 2011, incorporated by reference in this prospectus and elsewhere in the registration statement have been so incorporated by reference in reliance upon the report of Grant Thornton LLP, independent registered public accountants, upon the authority of said firm as experts in accounting and auditing in giving said report.

The 2010 consolidated financial statements (before the effects of the retrospective adjustments to the financial statements and financial statement disclosures) (not incorporated by reference or separately presented herein) have been audited by Deloitte & Touche LLP, an independent registered public accounting firm, as stated in their report, which is incorporated herein by reference from NeoStem, Inc.'s Current Report on Form 8-K filed with the SEC on August 15, 2012 (which report expresses an unqualified opinion on the consolidated financial statements and includes an explanatory paragraph referring to the fact that Deloitte & Touche LLP was not engaged to audit, review or apply any procedures to (1) the adjustments to retrospectively apply the change in accounting related to the adoption of Financial Accounting Standards Board Accounting Standards Update 2011-05, "Comprehensive Income (Topic 220) - Presentation of Comprehensive Income" and (2) the retrospective adjustments for the discontinued operations discussed in Note 11 to the consolidated financial statements and, accordingly, does not express an opinion or any other form of assurance about whether such retrospective adjustments are

appropriate and have been properly applied). The retrospective adjustments to the 2010 consolidated financial statements have been audited by Grant Thornton LLP. The 2010 consolidated financial statements incorporated in this prospectus by reference from NeoStem, Inc.'s Current Report on Form 8-K filed with the SEC on August 15, 2012, have been so incorporated in reliance upon the reports of Deloitte & Touche LLP and Grant Thornton LLP given upon their authority as experts in accounting and auditing.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

We have elected to "incorporate by reference" certain information into this prospectus. By incorporating by reference, we can disclose important information to you by referring you to another document we have filed separately with the SEC. The information incorporated by reference is deemed to be part of this prospectus, except for information incorporated by reference that is superseded by information contained in this prospectus. This prospectus incorporates by reference the documents set forth below that we have previously filed with the SEC:

- (a) Our Annual Report on Form 10-K for the fiscal year ended December 31, 2011, filed with the SEC on March 20, 2012, portions of which have been updated by the Current Report on Form 8-K filed on August 15, 2012.
- (b) Amendment No. 1 on Form 10-K/A to our Annual Report on Form 10-K for the fiscal year ended December 31, 2011, filed with the SEC on April 30, 2012.
- (c) Our Preliminary Proxy Statement on Schedule 14A for our 2012 Annual Meeting of Stockholders, filed with the SEC on August 24, 2012.
- (d) Our Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2012 and June 30, 2012, filed with the SEC on May 11, 2012 and August 14, 2012, respectively.
- (e) Our Current Reports on Form 8-K and amendments thereto, filed with the SEC on January 6, 2012, January 11, 2012, January 12, 2012, January 26, 2012, March 29, 2012, April 5, 2012, June 18, 2012, July 9, 2012, August 15, 2012 and August 24, 2012 (excluding any information deemed furnished pursuant to Item 2.02 or Item 7.01 of any such Current Report on Form 8-K).
- (f) Description of our Common Stock contained in our Registration Statement on Form 8-A, declared effective on August 8, 2007 (including any amendment or report filed with the SEC for the purpose of updating such description).

All documents subsequently filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act between the date of this prospectus and the termination of the offering shall be deemed to be incorporated by reference into this prospectus.

We will provide to each person, including any beneficial owner, to whom this prospectus is delivered, a copy of any or all documents that are incorporated by reference into this prospectus but not delivered with this prospectus, excluding exhibits to such documents unless such exhibits have been specifically incorporated by reference into the documents that this prospectus incorporates. We will provide this information at not cost to the requester, upon written or oral request made to:

NeoStem, Inc.
420 Lexington Avenue, Suite 450
New York, NY 10170
(212) 584-4180
Attention: Catherine M. Vaczy, Esq., Vice President and General Counsel

The information relating to us contained in this prospectus does not purport to be comprehensive and should be read together with the information contained in the documents incorporated or deemed to be incorporated by reference in this prospectus.

You should rely only on the information contained in this prospectus or any supplement and in the documents incorporated by reference above. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus or any supplement or in the documents incorporated by reference is accurate on any date other than the date on the front of those documents. The information we incorporate by reference is an important

part of this prospectus, and any information that we file later with the SEC will automatically update and supersede this information.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the information requirements of the Exchange Act and we therefore file periodic reports, proxy statements and other information with the SEC relating to our business, financial statements and other matters. The reports, proxy statements and other information we file may be inspected and copied at prescribed rates at the SEC's Public Reference Room located at 100 F Street, N.E., Washington, D.C. 20549. You may obtain information on the operation of the SEC's Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC also maintains an Internet site that contains reports, proxy and information statements and other information regarding issuers like us that file electronically with the SEC. The address of the SEC's Internet site is www.sec.gov. You may also view our filings with the SEC on our Internet site at www.neostem.com.

This prospectus constitutes part of a registration statement on Form S-3 filed under the Securities Act with respect to the securities. As permitted by the SEC's rules, this prospectus omits some of the information, exhibits and undertakings included in the registration statement. You may read and copy the information omitted from this prospectus but contained in the registration statement, as well as the periodic reports and other information we file with the SEC, at the public reference facilities maintained by the SEC in Washington, D.C.

Statements contained in this prospectus as to the contents of any contract or other document are not necessarily complete, and in each instance we refer you to the copy of the contract or document filed or incorporated by reference as an exhibit to the registration statement or as an exhibit to our Exchange Act filings, each such statement being qualified in all respects by such reference.

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following table sets forth the various expenses to be incurred in connection with the registration of the securities being registered hereby, all of which will be borne by us. All amounts shown are estimates.

SEC registration fee	\$	—
Transfer agent's fees and expenses	\$	—
Legal fees and expenses	\$	25,000
Accounting fees and expenses	\$	15,000
Printing and engraving expenses	\$	—
Mailing and Miscellaneous	\$	—
	\$	40,000

*Previously paid. See Explanatory Note following cover page of this Post-Effective Amendment No. 1 on Form S-3 to Registration Statements on Form S-4.

Item 15. Indemnification of Directors and Officers.

We are incorporated under the laws of the State of Delaware. Under the General Corporation Law of the State of Delaware (the "DGCL"), 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, administrative or investigative (other than an action by or in the right of the corporation), by reason of the fact that he or she is or was our director, officer, employee or agent, or is or was serving at our request as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding if he or she acted in good faith and in a manner he or she reasonably believed to be in or not opposed to our best interests, and, with respect to any criminal action or proceeding, had no reasonable cause to believe his or her conduct was unlawful.

In addition, the DGCL also provides that we also 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 or suit by or in our right to procure a judgment in our favor by reason of the fact that he or she is or was our director, officer, employee or agent, or is or was serving at our request as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against expenses (including attorneys' fees) actually and reasonably incurred by him or her in connection with the defense or settlement of such action or suit if he or she acted in good faith and in a manner he or she reasonably believed to be in or not opposed to our best interests. However, in such an action by or on our behalf, no indemnification may be made in respect of any claim, issue or matter as to which the person is adjudged liable to us unless and only to the extent that the court determines that, despite the adjudication of liability but in view of all the circumstances, the person is fairly and reasonably entitled to indemnity for such expenses which the court shall deem proper.

Our certificate of incorporation is consistent with the DGCL. Each of our directors, officers, employees and agents will be indemnified to the extent permitted by the DGCL. We also maintain insurance on behalf of our directors and officers against liabilities asserted against such persons and incurred by such persons in such capacities, whether or not we would have the power to indemnify such persons under the DGCL.

We have entered into indemnification agreements with our Chief Executive Officer, Chief Financial Officer, General Counsel, certain other employees and each of our directors pursuant to which we have agreed to indemnify such party to the full extent permitted by law, subject to certain exceptions, if such party becomes subject to an action because such party is a our director, officer, employee, agent or fiduciary.

Item 16. Exhibits.

Exhibit	Description	Reference
2.1	Equity Purchase Agreement, dated as of June 18, 2012, by and among NeoStem, Inc., China Biopharmaceuticals Holdings, Inc., Fullbright Finance Limited, Suzhou Erye Economy & Trading Co., Ltd., and Suzhou Erye Pharmaceutical Co., Ltd. ⁽¹⁾	2.1
2.2	Amendment to Equity Purchase Agreement, dated as of August 14, 2012, by and among NeoStem, Inc., China Biopharmaceuticals Holdings, Inc., Highacheive Holdings Limited, Fullbright Finance Limited, Suzhou Erye Economy & Trading Co., Ltd. and Suzhou Erye Pharmaceutical Co., Ltd.	2.1
2.3	Agreement and Plan of Merger, dated as of July 13, 2011, by and among NeoStem, Inc., Amorceyte, Inc., Amo Acquisition Company I, Inc. and Amo Acquisition Company II, LLC ⁽²⁾	2.1
2.4	Agreement and Plan of Merger, dated as of September 23, 2010, by and among NeoStem, Inc., NBS Acquisition Company LLC, and Progenitor Cell Therapy, LLC ⁽³⁾	2.1
2.5	Agreement and Plan of Merger, dated as of November 2, 2008, by and among NeoStem, Inc., China Biopharmaceuticals Holdings, Inc., China Biopharmaceuticals Corp., and CBH Acquisition LLC, as amended by Amendment No. 1 dated as of July 1, 2009 and Amendment No. 2 dated as of August 27, 2009 ⁽⁴⁾	Annex A
3.1	Amended and Restated Certificate of Incorporation, as amended (as certified March 25, 2011) ⁽⁵⁾	3.1
3.2	Certificate of Amendment to Amended and Restated Certificate of Incorporation, filed with the Secretary of State of the State of Delaware on October 14, 2011 ⁽⁶⁾	3.2
3.3	Amended and Restated By-Laws dated August 31, 2006 ⁽⁵⁾	3.2
4.1	Specimen Certificate for Common Stock ⁽⁷⁾	4.1
4.2	Warrant Agreement, dated as of January 19, 2011, between NeoStem, Inc. and Continental Stock Transfer & Trust Company, with the forms of \$3.00 Warrant, \$5.00 Warrant and \$7.00 Warrant attached thereto ⁽⁸⁾	4.1
4.3	Warrant Agreement, dated as of October 17, 2011, between NeoStem, Inc. and Continental Stock Transfer & Trust Company, with the form of Global Series AMO Warrant attached thereto ⁽⁹⁾	4.1
5.1	Opinion of Lowenstein Sandler PC†	5.1
23.1	Consent of Grant Thornton LLP†	23.1
23.2	Consent of Deloitte & Touche LLP†	23.2
23.3	Consent of Lowenstein Sandler PC (contained in Exhibit 5.1)†	23.3
24.1	Power of Attorney (included on the signature page to this Registration Statement)†	24.1

† Filed herewith.

- (1) Filed with the SEC as an exhibit, numbered as indicated above, to our current report on Form 8-K, dated June 18, 2012, which exhibit is incorporated here by reference.
- (2) Filed with the SEC as an exhibit, numbered as indicated above, to our current report on Form 8-K dated July 11, 2011, which exhibit is incorporated here by reference.
- (3) Filed with the SEC as an exhibit, numbered as indicated above, to our current report on Form 8-K, dated September 23, 2010, which exhibit is incorporated here by reference.
- (4) Filed with the SEC as an exhibit, numbered as indicated above, to Pre-Effective Amendment No. 4 to our Registration Statement on Form S-4, File No. 333-160578, which exhibit is incorporated here by reference.
- (5) Filed with the SEC as an exhibit, numbered as indicated above, to our Annual Report on Form 10-K for the fiscal year ended December 31, 2010 (filed with the SEC on April 6, 2011), which exhibit is incorporated here by reference.
- (6) Filed with the SEC on October 17, 2011, as an exhibit, numbered as indicated above, to our current report on Form 8-K dated October 14, 2011, which exhibit is incorporated here by reference.
- (7) Filed with the SEC as an exhibit, numbered as indicated above, to our Registration Statement on Form S-3, File No. 333-145988, which exhibit is incorporated here by reference.

- (8) Filed with the SEC on January 24, 2011, as an exhibit, numbered as indicated above, to our current report on Form 8-K dated January 18, 2011, which exhibit is incorporated here by reference.
- (9) Filed with the SEC on October 17, 2011, as an exhibit, numbered as indicated above, to our current report on Form 8-K dated October 14, 2011, which exhibit is incorporated here by reference.

Item 17. Undertakings.

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 this 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 this registration statement. Notwithstanding the foregoing, any increase or decrease in the 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; and

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

provided, however, that paragraphs (i), (ii) and (iii) above do not apply if 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 statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is 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.

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

(i) If the registrant is relying on Rule 430B,

(A) 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

(B) 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 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; or

(ii) If the registrant is subject to Rule 430C, each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness; 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 first use, 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 date of first use.

(5) 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 registrant undertakes that in a primary offering of securities of the 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 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 an 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 an undersigned registrant to the purchaser.

(6) 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 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.

(7) To deliver or cause to be delivered with the prospectus, to each person to whom the prospectus is sent or given, the latest annual report to security holders that is incorporated by reference in the prospectus and furnished pursuant to and meeting the requirements of Rule 14a-3 or Rule 14c-3 under the Securities Exchange Act of 1934; and, where interim financial information required to be presented by Article 3 of Regulation S-X are not set forth in the prospectus, to deliver, or cause to be delivered to each person to whom the prospectus is sent or given, the latest quarterly report that is specifically incorporated by reference in the prospectus to provide such interim financial information.

(8) 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 Act 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 Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, 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 Post-Effective Amendment No. 1 to its registration statements on Form S-4 (Reg. Nos. 333-170865 and 333-176673) to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of New York, State of New York, on August 24, 2012.

NEOSTEM, INC.

By: /s/ Robin L. Smith, M.D.
Name: Robin L. Smith, M.D.
Title: Chief Executive Officer

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Robin L. Smith and Catherine M. Vaczy, and either of them, as his or her true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) and supplements to this registration statement (or any other registration statement for the same offering that is effective upon filing pursuant to Rule 462(b) under the Securities Act of 1933, as amended) and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact and agents, or his or her substitute or substitutes, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Robin L. Smith, M.D.</u> Robin L. Smith, M.D.	Director, Chief Executive Officer and Chairman of the Board (Principal Executive Officer)	August 24, 2012
<u>/s/ Larry A. May</u> Larry A. May	Chief Financial Officer (Principal Financial Officer)	August 24, 2012
<u>/s/ Joseph Talamo</u> Joseph Talamo	Vice President, Corporate Controller and Chief Accounting Officer (Principal Accounting Officer)	August 24, 2012
<u>/s/ Richard Berman</u> Richard Berman	Director	August 24, 2012
<u>/s/ Steven S. Myers</u> Steven S. Myers	Director	August 24, 2012
<u>/s/ Drew Bernstein</u> Drew Bernstein	Director	August 24, 2012
<u>/s/ Eric Wei</u> Eric Wei	Director	August 24, 2012
<u>/s/ Edward C. Geehr, M.D.</u> Edward C. Geehr, M.D.	Director	August 24, 2012
<u>/s/ Shi Mingsheng</u> Shi Mingsheng	Director	August 24, 2012
<u>/s/ Andrew L. Pecora, M.D.</u> Andrew L. Pecora, M.D.	Director	August 24, 2012
<u>/s/ Martyn D. Greenacre</u> Martyn D. Greenacre	Director	August 24, 2012

August 24, 2012

NeoStem, Inc.
420 Lexington Avenue, Suite 450
New York, New York 10170

Re: Post-Effective Amendment No. 1 on Form S-3 to Registration Statements on Form S-4

Ladies and Gentlemen:

We have served as special counsel in connection with the preparation of your Post-Effective Amendment No. 1 on Form S-3 to Registration Statements on Form S-4 (Reg. Nos. 333-170865 and 333-176673) (the "Registration Statement") filed with the Securities and Exchange Commission under the Securities Act of 1933, as amended (the "Act"), covering an aggregate of 4,881,008 shares of common stock, par value \$0.001 per share (the "Shares"), of NeoStem, Inc., a Delaware corporation (the "Company"), that are issuable upon exercise of warrants issued by the Company in connection with its January 19, 2011 acquisition of Progenitor Cell Therapy, LLC and its October 17, 2011 acquisition of Amorcyte, LLC.

We have examined such corporate records, certificates and other documents and such questions of law as we have considered necessary and appropriate for the purposes of this opinion.

Upon the basis of such examination, we advise you that, in our opinion, the Shares covered by the Registration Statement have been duly authorized and, when issued in accordance with the terms and conditions of the respective warrant (including the due payment of any exercise price therefor specified in the respective warrant), will be validly issued, fully paid and non-assessable.

Our opinion herein is expressed solely with respect to the federal laws of the United States and the General Corporation Law of the State of Delaware. Our opinion is based on these laws as in effect on the date hereof.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement and to the references to this firm in the Registration Statement. In giving such consent, we do not thereby admit that we are in the category of persons whose consent is required under Section 7 of the Act.

Very truly yours,

/s/ LOWENSTEIN SANDLER PC

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We have issued our report dated March 20, 2012 (except for Notes 3 and 11, as to which the date is August 14, 2012), with respect to the consolidated financial statements of NeoStem, Inc. and subsidiaries included in the Current Report on Form 8-K, dated August 14, 2012, which is incorporated by reference in this Registration Statement. We consent to the incorporation by reference in the Registration Statement of the aforementioned report, and to the use of our name as it appears under the caption "Experts."

/s/ GRANT THORNTON LLP

New York, New York
August 24, 2012

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in this Post-Effective Amendment No. 1 on Form S-3 to Registration Statement No. 333-176673 on Form S-4 of our report dated April 5, 2011, relating to the 2010 financial statements (before retrospective adjustments to the financial statements and financial statement disclosures) of NeoStem, Inc. and subsidiaries (not presented herein), (which report expresses an unqualified opinion and includes an explanatory paragraph relating to the fact that Deloitte & Touche LLP was not engaged to audit, review or apply any procedures to (1) the adjustments to retrospectively apply the change in accounting related to the adoption of Financial Accounting Standards Board Accounting Standards Update 2011-05, "Comprehensive Income (Topic 220) - Presentation of Comprehensive Income", and (2) the retrospective adjustments for the discontinued operations discussed in Note 11 to the consolidated financial statements and, accordingly, does not express an opinion or any other form of assurance about whether such retrospective adjustments are appropriate and have been properly applied), appearing in the Current Report on Form 8-K filed with the SEC on August 15, 2012, of NeoStem, Inc., and to the reference to us under the heading "Experts" in the Prospectus, which is part of such Registration Statement.

/s/ DELOITTE & TOUCHE LLP

Parsippany, New Jersey
August 24, 2012