Table of Contents

Filed Pursuant to Rule 424(b)(3)
Registration No. 333-153233

PROSPECTUS

4,238,275 Shares

CYTORI THERAPEUTICS, INC.

Common Stock

This prospectus relates to the resale from time to time of up to 4,238,275 shares of our common stock, which includes 1,412,758 shares of our common stock issuable upon the exercise of warrants, by the selling stockholders named in this prospectus. We are not selling any securities under this prospectus and will not receive any of the proceeds from the sale of shares by the selling stockholders.

The selling stockholders may sell the shares of common stock being offered by this prospectus from time to time on terms to be determined at the time of sale through ordinary brokerage transactions or through any other means described in this prospectus under "Plan of Distribution." The selling stockholders may sell the shares in negotiated transactions or otherwise, at the prevailing market price for the shares or at negotiated prices. We will not be paying any underwriting discounts or commissions in this offering.

Our common stock is listed on The NASDAQ Global Market under the symbol "CYTX." On September 11, 2008, the last reported sale price of our common stock on The NASDAQ Global Market was $6.12 per share.

Investing in our common stock involves a high degree of risk. You are urged to read the section entitled "Risk Factors" beginning on page 2 of this prospectus, which describes specific risks and other information that should be considered before you make an investment decision.

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 September 12, 2008.

Table of Contents

TABLE OF CONTENTS

You should rely only on the information contained in or incorporated by reference into this prospectus or any applicable prospectus supplement. We have not, and the selling stockholders have not, authorized anyone to provide you with different information. Neither we nor the selling stockholders are making an offer to sell or seeking an offer to buy shares of our common stock under this prospectus or any applicable prospectus supplement in any jurisdiction where the offer or sale is not permitted. The information contained in this prospectus, any applicable prospectus supplement and the documents incorporated by reference herein and therein are accurate only as of their respective dates, regardless of the time of delivery of this prospectus or any sale of a security. Our business, financial condition, results of operations and prospects may have changed since that date.

Table of Contents

SUMMARY

This summary highlights information contained elsewhere or incorporated by reference into this prospectus. Because it is a summary, it does not contain all of the information that you should consider before investing in our securities. You should read this entire prospectus carefully, including the section entitled "Risk Factors" and the documents that we incorporate by reference into this prospectus, before making an investment decision. References to "we," "us," "our," "our company," "the Company," and "CYTX" refers to Cytori Therapeutics, Inc. and its subsidiaries, unless the context requires otherwise.

About Cytori Therapeutics, Inc.

Cytori Therapeutics, Inc., develops, manufactures, and sells medical technologies to enable the practice of regenerative medicine. Regenerative medicine describes the emerging field that aims to repair or restore lost or damaged organ and cell function. Our commercial activities are currently focused on reconstructive surgery in Europe and Asia-Pacific and stem and regenerative cell banking (cell preservation). In addition, we are seeking to bring our products to market in the United States as well as other countries. Our product pipeline includes the development of potential new treatments for cardiovascular disease, orthopedic damage, gastrointestinal disorders, and pelvic health conditions.

The foundation of our business is the Celution™ System family of products (600, 700, 800, 900/MB & next generation Celution™ device), which processes patients' cells at the bedside in real time. Each member of the Celution™ System family of products consists of a central device, a related single-use consumable used for each patient procedure, and supportive procedural components. Our commercialization model is based on the sale of Celution™ Systems and on generating recurring revenues from the single-use consumable sets.

Our Celution™ 800/CRS System was introduced during 2008 into the European reconstructive surgery market through a network of medical distributors. The Celution™ 900/MB is being marketed in Japan through our commercialization partner, Green Hospital Supply, Inc. (Green Hospital Supply) as part of the comprehensive StemSource™ Cell Bank, which prepares cells for cryopreservation in the event they may be used in the future.

The most advanced therapeutic application in our product development pipeline is cardiovascular disease. Currently, two clinical trials are being conducted on adipose-derived stem and regenerative cells, processed with the Celution™ 600 System, an earlier version of the Celution™ 800/CV. One is in patients suffering from chronic myocardial ischemia, a severe form of chronic heart disease, and the other in heart attack patients. Future cardiovascular disease studies in Europe will use the Celution™ 800 or next generation Celution™ device.

In the United States, we will seek regulatory and marketing approval on the Celution™ 700 System for a variety of applications, starting with reconstructive surgery to enhance autologous soft tissue transplantations. U.S. approval is estimated to be achieved at the earliest in 2009, pending positive outcome of planned regulatory submissions and/or clinical trials. In the future, we expect to begin clinical studies around the world on our own or through potential corporate partners in the areas of spinal disc repair, gastrointestinal disorders, and pelvic health conditions.

We were initially formed as a California general partnership in July 1996, and incorporated in the State of Delaware in May 1997. We were formerly known as MacroPore Biosurgery, Inc., and before that as MacroPore, Inc. Our corporate offices are located at 3020 Callan Road, San Diego, CA 92121. Our telephone number is (858) 458-0900. Our website address is www.cytoritx.com. We make available free of charge through our Internet website our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. Information contained on our website does not constitute part of this prospectus or any prospectus supplement.

Table of Contents

RISK FACTORS

You should carefully consider the following information about risks and uncertainties that may affect us or our business, together with the other information appearing elsewhere in this prospectus. If any of the following events, described as risks, actually occur, our business, financial condition, results of operations and future growth prospects would likely be materially and adversely affected. In these circumstances, the market price of our common stock could decline, and you may lose all or part of your investment in our securities. An investment in our securities is speculative and involves a high degree of risk. You should not invest in our securities if you cannot bear the economic risk of your investment for an indefinite period of time and cannot afford to lose your entire investment.

We will need to raise more cash in the near future

We have almost always had negative cash flows from operations. Our business will continue to result in a substantial requirement for research and development expenses for several years, during which we may not be able to bring in sufficient cash and/or revenues to offset these expenses. We will be required to raise capital from one or more sources in the near term to continue our operations as previously conducted. We believe that without additional capital from accessible sources of financing, as well as an increase in capital from our operations, we do not currently have adequate funding to complete the development, pre-clinical activities, clinical trials and marketing efforts required to successfully bring our current and future products to market. Therefore significant additional funding will be required. There is no guarantee that adequate funds will be available when needed from additional debt or equity financing, arrangements with distribution partners, increased results of operations, or from other sources, or on terms attractive to us. The inability to obtain sufficient funds would require us to delay, scale back, or eliminate some or all of our research or product development, manufacturing operations, clinical or regulatory activities, or to out-license commercial rights to products or technologies thus having a substantial negative effect on our results of operations and financial condition.

We have never been profitable on an operational basis and expect significant operating losses for the next few years

We have incurred net operating losses in each year since we started business. As our focus on the Celution® System platform and development of therapeutic applications for its cellular output has increased, losses have resulted primarily from expenses associated with research and development activities and general and administrative expenses. While we are implementing cost reduction measures where possible, we nonetheless expect to continue operating in a loss position on a consolidated basis and that recurring operating expenses will be at high levels for the next several years, in order to perform clinical trials, additional pre-clinical research, product development, and marketing. As a result of our historic losses, we have historically been, and continue to be, reliant on raising outside capital to fund our operations as discussed in the prior risk factor.

Our business strategy is high-risk

We are focusing our resources and efforts primarily on development of the Celution® System family of products and the therapeutic applications of its cellular output, which requires extensive cash needs for research and development activities. This is a high-risk strategy because there is no assurance that our products will ever become commercially viable (commercial risk), that we will prevent other companies from depriving us of market share and profit margins by selling products based on our inventions and developments (legal risk), that we will successfully manage a company in a new area of business (regenerative medicine) and on a different scale than we have operated in the past (operational risk), that we will be able to achieve the desired therapeutic results using stem and regenerative cells (scientific risk), or that our cash resources will be adequate to develop our products until we become profitable, if

ever (financial risk). We are using our cash in one of the riskiest industries in the economy (strategic risk). This may make our stock an unsuitable investment for many investors.

Table of Contents

We must keep our joint venture with Olympus operating smoothly

Our business cannot succeed on the currently anticipated timelines unless our Joint Venture collaboration with Olympus goes well. We have given Olympus-Cytori, Inc. an exclusive license to manufacture future generation Celution® System devices. If Olympus-Cytori, Inc. does not successfully develop and manufacture these devices, we may not be able to commercialize any device or any therapeutic products successfully into the market. In addition, future disruption or breakup of our relationship would be extremely costly to our reputation, in addition to causing many serious practical problems.

We and Olympus must overcome contractual and cultural barriers. Our relationship is formally measured by a set of complex contracts, which have not yet been tested in practice. In addition, many aspects of the relationship will be non-contractual and must be worked out between the parties and the responsible individuals. The Joint Venture is intended to have a long life, and it is difficult to maintain cooperative relationships over a long period of time in the face of various kinds of change. Cultural differences, including language barrier to some degree, may affect the efficiency of the relationship.

Olympus-Cytori, Inc. is 50% owned by us and 50% owned by Olympus. By contract, each side must consent before any of a wide variety of important business actions can occur. This situation possesses a risk of potentially time-consuming and difficult negotiations which could at some point delay the Joint Venture from pursuing its business strategies.

Olympus is entitled to designate the Joint Venture's chief executive officer and a majority of its board of directors, which means that day-to-day decisions which are not subject to a contractual veto will essentially be controlled by Olympus. In addition, Olympus-Cytori, Inc. will continue to require more money than its initial capitalization in order to complete development and production of future generation devices. If we are unable to help provide future financing for Olympus-Cytori, Inc., our relative equity interest in Olympus-Cytori, Inc. may decrease.

Furthermore, under a License/Joint Development Agreement among Olympus-Cytori, Inc., Olympus, and us, Olympus will have a primary role in the development of Olympus-Cytori, Inc.'s next generation devices. Although Olympus has extensive experience in developing medical devices, this arrangement will result in a reduction of our control over the development and manufacturing of the next generation devices.

We have a limited operating history; operating results and stock price can be volatile like many life science companies

Our prospects must be evaluated in light of the risks and difficulties frequently encountered by emerging companies and particularly by such companies in rapidly evolving and technologically advanced biotech and medical device fields. Due to limited operating history and the transition from the MacroPore biomaterials to the regenerative medicine business, comparisons of our year-to-year operating results are not necessarily meaningful and the results for any periods should not necessarily be relied upon as an indication of future performance. All 2007 product revenues came from our spine and orthopedics implant product line, which we sold in May 2007.

From time to time, we have tried to update our investors' expectations as to our operating results by periodically announcing financial guidance. However, we have in the past been forced to revise or withdraw such guidance due to lack of visibility and predictability of product demand.

Table of Contents

We are vulnerable to competition and technological change, and also to physicians' inertia

We compete with many domestic and foreign companies in developing our technology and products, including biotechnology, medical device, and pharmaceutical companies. Many current and potential competitors have substantially greater financial, technological, research and development, marketing, and personnel resources. There is no assurance that our competitors will not succeed in developing alternative products that are more effective, easier to use, or more economical than those which we have developed or are in the process of developing, or that would render our products obsolete and non-competitive. In general, we may not be able to prevent others from developing and marketing competitive products similar to ours or which perform similar functions.

Competitors may have greater experience in developing therapies or devices, conducting clinical trials, obtaining regulatory clearances or approvals, manufacturing and commercialization. It is possible that competitors may obtain patent protection, approval, or clearance from the FDA or achieve commercialization earlier than we can, any of which could have a substantial negative effect on our business. Finally, Olympus and our other partners might pursue parallel development of other technologies or products, which may result in a partner developing additional products competitive with ours.

We compete against cell-based therapies derived from alternate sources, such as bone marrow, umbilical cord blood and potentially embryos. Doctors historically are slow to adopt new technologies like ours, whatever the merits, when older technologies continue to be supported by established providers. Overcoming such inertia often requires very significant marketing expenditures or definitive product performance and/or pricing superiority.

We expect physicians' inertia and skepticism to also be a significant barrier as we attempt to gain market penetration with our future products. We believe we will need to finance lengthy time-consuming clinical studies (so as to provide convincing evidence of the medical benefit) in order to overcome this inertia and skepticism particularly in reconstructive surgery, cell preservation, the cardiovascular area and many other indications.

Most products are pre-commercialization, which subjects us to development and marketing risks

We are in a relatively early stage of the path to commercialization with many of our products. We believe that our long-term viability and growth will depend in large part on our ability to develop commercial quality cell processing devices and useful procedure-specific consumables, and to establish the safety and efficacy of our therapies through clinical trials and studies. With our Celution® platform, we are pursuing new approaches for reconstructive

surgery, preservation of stem and regenerative cells for potential future use, therapies for cardiovascular disease, gastrointestinal disorders and spine and orthopedic conditions. There is no assurance that our development programs will be successfully completed or that required regulatory clearances or approvals will be obtained on a timely basis, if at all.

There is no proven path for commercializing the Celution® System platform in a way to earn a durable profit commensurate with the medical benefit. Although we intend to commercialize our reconstructive surgery products in Europe and certain Asian markets, and our cell banking products in Japan, Europe, and certain Asian markets in 2008, additional market opportunities for our products and/or services are likely to be another two to five years away.

Table of Contents

Successful development and market acceptance of our products is subject to developmental risks, including failure of inventive imagination, ineffectiveness, lack of safety, unreliability, failure to receive necessary regulatory clearances or approvals, high commercial cost, preclusion or obsolescence resulting from third parties' proprietary rights or superior or equivalent products, competition from copycat products, and general economic conditions affecting purchasing patterns. There is no assurance that we or our partners will successfully develop and commercialize our products, or that our competitors will not develop competing technologies that are less expensive or superior. Failure to successfully develop and market our products would have a substantial negative effect on our results of operations and financial condition.

The timing and amount of Thin Film revenues from Senko are uncertain

The sole remaining product line in our MacroPore Biosurgery segment is our Japan Thin Film business. Our right to receive royalties from Senko, and to recognize certain deferred revenues, depends on the timing of MHLW approval for commercialization of the product in Japan. We have no control over this timing and our previous expectations have not been met. Also, even after commercialization, we will be dependent on Senko, our exclusive distributor, to drive product sales in Japan.

There is a risk that we could experience with Senko some of the same problems we experienced in our previous relationship with Medtronic, which was the exclusive distributor for our former bioresorbable spine and orthopedic implant product line.

We have limited manufacturing experience

We have limited experience in manufacturing the Celution® System platform or its consumables at a commercial level. With respect to our Joint Venture, although Olympus is a highly capable and experienced manufacturer of medical devices, there can be no guarantee that the Olympus-Cytori Joint Venture will be able to successfully develop and manufacture the next generation Celution® device in a manner that is cost-effective or commercially viable, or that development and manufacturing capabilities might not take much longer than currently anticipated to be ready for the market.

Although we have begun introduction of the Celution® 800 and have just begun launching the Celution® 900-based StemSource® Cell Bank in 2008, we cannot assure that we will be able to manufacture sufficient numbers of such products to meet the demand, or that we will be able to overcome unforeseen manufacturing difficulties for these sophisticated medical devices, as we await the availability of the Joint Venture next generation Celution® device.

In the event that the Olympus-Cytori Joint Venture is not successful, Cytori may not have the resources or ability to self-manufacture sufficient numbers of devices and consumables to meet market demand, and this failure may substantially extend the time it would take for us to bring a more advanced commercial device to market. This makes us significantly dependant on the continued dedication and skill of Olympus for the successful development of the next generation Celution® device.

We may not be able to protect our proprietary rights

Our success depends in part on whether we can obtain additional patents, maintain trade secret protection, and operate without infringing on the proprietary rights of third parties.

Table of Contents

Our recently amended regenerative cell technology license agreement with the Regents of the University of California, or the UC, contains certain developmental milestones, which if not achieved could result in the loss of exclusivity or loss of the license rights. The loss of such rights could impact our ability to develop certain regenerative cell technology products. Also, our power as licensee to successfully use these rights to exclude competitors from the market is untested. In addition, further legal risk arises from a lawsuit filed by the University of Pittsburgh in the United States District Court, or the Court, naming all of the inventors who had not assigned their ownership interest in Patent 6,777,231, which we refer to as the 231 Patent, to the University of Pittsburgh, seeking a determination that its assignors, rather than UC's assignors, are the true inventors of 231 Patent. On June 12, 2008, we received the Court's final order concluding that the University of Pittsburgh's assignors were the sole inventors of the 231 Patent, which terminates UC's rights to this patent unless the decision of the Court is overturned. The UC assignors are appealing the Court's decision and a Notice of Appeal was filed on July 9, 2008. We are the exclusive, worldwide licensee of the UC's rights under this patent in humans, which relates to adult stem cells isolated from adipose tissue that can differentiate into two or more of a variety of cell types. If the UC assignors do not prevail on appeal, our license rights to this patent will be permanently lost.

There can be no assurance that any of our pending patent applications will be approved or that we will develop additional proprietary products that are patentable. There is also no assurance that any patents issued to us will provide us with competitive advantages, will not be challenged by any third parties, or that the patents of others will not prevent the commercialization of products incorporating our technology. Furthermore, there can be no guarantee that others will not independently develop similar products, duplicate any of our products, or design around our patents.

Our commercial success will also depend, in part, on our ability to avoid infringing on patents issued to others. If we were judicially determined to be infringing on any third-party patent, we could be required to pay damages, alter our products or processes, obtain licenses, or cease certain activities. If we

are required in the future to obtain any licenses from third parties for some of our products, there can be no guarantee that we would be able to do so on commercially favorable terms, if at all. U.S. patent applications are not immediately made public, so we might be surprised by the grant to someone else of a patent on a technology we are actively using. As noted above as to the University of Pittsburgh lawsuit, even patents issued to us or our licensors might be judicially determined to belong in full or in part to third parties.

Litigation, which would result in substantial costs to us and diversion of effort on our part, may be necessary to enforce or confirm the ownership of any patents issued or licensed to us, or to determine the scope and validity of third-party proprietary rights. If our competitors claim technology also claimed by us and prepare and file patent applications in the United States of America, we may have to participate in interference proceedings declared by the U.S. Patent and Trademark Office or a foreign patent office to determine priority of invention, which could result in substantial costs to and diversion of effort, even if the eventual outcome is favorable to us.

Any such litigation or interference proceeding, regardless of outcome, could be expensive and time-consuming. We have been incurring substantial legal costs as a result of the University of Pittsburgh lawsuit, and our president, Marc Hedrick, is a named individual defendant in that lawsuit because he is one of the inventors identified on the patent. As a named inventor on the patent, Marc Hedrick is entitled to receive from the UC up to 7% of royalty payments made by a licensee (us) to UC. This agreement was in place prior to his employment with us.

In addition to patents, which alone may not be able to protect the fundamentals of our regenerative cell business, we also rely on unpatented trade secrets and proprietary technological expertise. Our intended future cell-related therapeutic products, such as consumables, are likely to fall largely into this category. We rely, in part, on confidentiality agreements with our partners, employees, advisors, vendors,

Table of Contents

and consultants to protect our trade secrets and proprietary technological expertise. There can be no guarantee that these agreements will not be breached, or that we will have adequate remedies for any breach, or that our unpatented trade secrets and proprietary technological expertise will not otherwise become known or be independently discovered by competitors.

Failure to obtain or maintain patent protection, or protect trade secrets, for any reason (or third-party claims against our patents, trade secrets, or proprietary rights, or our involvement in disputes over our patents, trade secrets, or proprietary rights, including involvement in litigation), could have a substantial negative effect on our results of operations and financial condition.

We may not be able to protect our intellectual property in countries outside the United States

Intellectual property law outside the United States is uncertain and in many countries is currently undergoing review and revisions. The laws of some countries do not protect our patent and other intellectual property rights to the same extent as United States laws. This is particularly relevant to us as we currently conduct most of our clinical trials outside of the United States. Third parties may attempt to oppose the issuance of patents to us in foreign countries by initiating opposition proceedings. Opposition proceedings against any of our patent filings in a foreign country could have an adverse effect on our corresponding patents that are issued or pending in the U.S. It may be necessary or useful for us to participate in proceedings to determine the validity of our patents or our competitors' patents that have been issued in countries other than the U.S. This could result in substantial costs, divert our efforts and attention from other aspects of our business, and could have a material adverse effect on our results of operations and financial condition. We currently have pending patent applications in Europe, Australia, Japan, Canada, China, Korea, and Singapore, among others.

We and Olympus-Cytori, Inc. are subject to intensive FDA regulation

As newly developed medical devices, the Celution® System family of products must receive regulatory clearances or approvals from the FDA and, in many instances, from non-U.S. and state governments prior to their sale. The Celution® System family of products is subject to stringent government regulation in the United States by the FDA under the Federal Food, Drug and Cosmetic Act. The FDA regulates the design/development process, clinical testing, manufacture, safety, labeling, sale, distribution, and promotion of medical devices and drugs. Included among these regulations are pre-market clearance and pre-market approval requirements, design control requirements, and the Quality System Regulations/Good Manufacturing Practices. Other statutory and regulatory requirements govern, among other things, establishment registration and inspection, medical device listing, prohibitions against misbranding and adulteration, labeling and post-market reporting.

The regulatory process can be lengthy, expensive, and uncertain. Before any new medical device may be introduced to the United States of America market, the manufacturer generally must obtain FDA clearance or approval through either the 510(k) pre-market notification process or the lengthier pre-market approval application, or PMA, process. It generally takes from three to 12 months from submission to obtain 510(k) pre-market clearance, although it may take longer. Approval of a PMA could take four or more years from the time the process is initiated. The 510(k) and PMA processes can be expensive, uncertain, and lengthy, and there is no guarantee of ultimate clearance or approval. We expect that some of our future products under development as well as Olympus-Cytori's will be subject to the lengthier PMA process. Securing FDA clearances and approvals may require the submission of extensive clinical data and supporting information to the FDA, and there can be no guarantee of ultimate clearance or approval. Failure to comply with applicable requirements can result in application integrity proceedings, fines, recalls or seizures of products, injunctions, civil penalties, total or partial suspensions of production, withdrawals of existing product approvals or clearances, refusals to approve or clear new applications or notifications, and criminal prosecution.

Table of Contents

Medical devices are also subject to post-market reporting requirements for deaths or serious injuries when the device may have caused or contributed to the death or serious injury, and for certain device malfunctions that would be likely to cause or contribute to a death or serious injury if the malfunction were to recur. If safety or effectiveness problems occur after the product reaches the market, the FDA may take steps to prevent or limit further marketing of the product. Additionally, the FDA actively enforces regulations prohibiting marketing and promotion of devices for indications or uses that have not been cleared or approved by the FDA.

There can be no guarantee that we will be able to obtain the necessary 510(k) clearances or PMA approvals to market and manufacture our other products in the United States of America for their intended use on a timely basis, if at all. Delays in receipt of or failure to receive such clearances or approvals, the loss of previously received clearances or approvals, or failure to comply with existing or future regulatory requirements could have a substantial negative effect on our results of operations and financial condition.

To sell in international markets, we will be subject to intensive regulation in foreign countries

In cooperation with our distribution partners, we intend to market our current and future products both domestically and in many foreign markets. A number of risks are inherent in international transactions. In order for us to market our products in Europe, Canada, Japan and certain other non-U.S. jurisdictions, we need to obtain and maintain required regulatory approvals or clearances and must comply with extensive regulations regarding safety, manufacturing processes and quality. For example, we still have not obtained regulatory approval for our Thin Film products in Japan. These regulations, including the requirements for approvals or clearances to market, may differ from the FDA regulatory scheme. International sales also may be limited or disrupted by political instability, price controls, trade restrictions and changes in tariffs. Additionally, fluctuations in currency exchange rates may adversely affect demand for our products by increasing the price of our products in the currency of the countries in which the products are sold.

There can be no assurance that we will obtain regulatory approvals or clearances in all of the countries where we intend to market our products, or that we will not incur significant costs in obtaining or maintaining foreign regulatory approvals or clearances, or that we will be able to successfully commercialize current or future products in various foreign markets. Delays in receipt of approvals or clearances to market our products in foreign countries, failure to receive such approvals or clearances or the future loss of previously received approvals or clearances could have a substantial negative effect on our results of operations and financial condition.

Changing, New and/or Emerging Government Regulations

Government regulations can change without notice. Given that fact that Cytori operates in various international markets, our access to such markets could change with little to no warning due to a change in government regulations that suddenly up-regulate our product(s) and create greater regulatory burden for our cell therapy and cell banking technology products.

Due to the fact that there are new and emerging cell therapy and cell banking regulations that have recently been drafted and/or implemented in various countries around the world, the application and subsequent implementation of these new and emerging regulations have little to no precedence. Therefore, the level of complexity and stringency is not known and may vary from country to country, creating greater uncertainty for the international regulatory process.

Table of Contents

Health Insurance Reimbursement Risks

New and emerging cell therapy and cell banking technologies, such as those provided by the Celution® System family of products, may have difficulty or encounter significant delays in obtaining health care reimbursement in some or all countries around the world due to the novelty of our cell therapy and cell banking technology and subsequent lack of existing reimbursement schemes / pathways. Therefore, the creation of new reimbursement pathways may be complex and lengthy with no assurances that such reimbursements will be successful. The lack of health insurance reimbursement or reduced or minimal reimbursement pricing may have a significant impact on our ability to successfully sell our cell therapy and cell banking technology product(s) into a county or region.

Market Acceptance of New Technology

New and emerging cell therapy and cell banking technologies, such as those provided by the Celution® System family of products, may have difficulty or encounter significant delays in obtaining market acceptance in some or all countries around the world due to the novelty of our cell therapy and cell banking technologies. Therefore, the market adoption of our cell therapy and cell banking technologies may be slow and lengthy with no assurances that significant market adoption will be successful. The lack of market adoption or reduced or minimal market adoption of our cell therapy and cell banking technologies may have a significant impact on our ability to successfully sell our product(s) into a country or region.

We and/or the Joint Venture have to maintain quality assurance certification and manufacturing approvals

The manufacture of our Celution® System is, and the manufacture of any future cell-related therapeutic products would be, subject to periodic inspection by regulatory authorities and distribution partners. The manufacture of devices and products for human use is subject to regulation and inspection from time to time by the FDA for compliance with the FDA's Quality System Regulation, or QSR, requirements, as well as equivalent requirements and inspections by state and non-U.S. regulatory authorities. There can be no guarantee that the FDA or other authorities will not, during the course of an inspection of existing or new facilities, identify what they consider to be deficiencies in our compliance with QSRs or other requirements and request, or seek remedial action.

Failure to comply with such regulations or a potential delay in attaining compliance may adversely affect our manufacturing activities and could result in, among other things, injunctions, civil penalties, FDA refusal to grant pre-market approvals or clearances of future or pending product submissions, fines, recalls or seizures of products, total or partial suspensions of production, and criminal prosecution. There can be no assurance after such occurrences that we will be able to obtain additional necessary regulatory approvals or clearances on a timely basis, if at all. Delays in receipt of or failure to receive such approvals or clearances, or the loss of previously received approvals or clearances could have a substantial negative effect on our results of operations and financial condition.

We depend on a few key officers

Our performance is substantially dependent on the performance of our executive officers and other key scientific staff, including Christopher J. Calhoun, our Chief Executive Officer, and Marc Hedrick, MD, our President. We rely upon them for strategic business decisions and guidance. We believe that our future success in developing marketable products and achieving a competitive position will depend in large part upon whether we can attract and retain additional qualified management and scientific personnel. Competition for such personnel is intense, and there can be no assurance that we will be able to

continue to attract and retain such personnel. The loss of the services of one or more of our executive officers or key scientific staff or the inability to attract and retain additional personnel and develop expertise as needed could have a substantial negative effect on our results of operations and financial condition.

Table of Contents

We may not have enough product liability insurance

The testing, manufacturing, marketing, and sale of our regenerative cell products involve an inherent risk that product liability claims will be asserted against us, our distribution partners, or licensees. There can be no guarantee that our clinical trial and commercial product liability insurance is adequate or will continue to be available in sufficient amounts or at an acceptable cost, if at all. A product liability claim, product recall, or other claim, as well as any claims for uninsured liabilities or in excess of insured liabilities, could have a substantial negative effect on our results of operations and financial condition. Also, well-publicized claims could cause our stock to fall sharply, even before the merits of the claims are decided by a court.

Our charter documents contain anti-takeover provisions and we have adopted a Stockholder Rights Plan to prevent hostile takeovers

Our Amended and Restated Certificate of Incorporation and Bylaws contain certain provisions that could prevent or delay the acquisition of the Company by means of a tender offer, proxy contest, or otherwise. They could discourage a third party from attempting to acquire control of Cytori, even if such events would be beneficial to the interests of our stockholders. Such provisions may have the effect of delaying, deferring, or preventing a change of control of Cytori and consequently could adversely affect the market price of our shares. Also, in 2003 we adopted a Stockholder Rights Plan of the kind often referred to as a poison pill. The purpose of the Stockholder Rights Plan is to prevent coercive takeover tactics that may otherwise be utilized in takeover attempts. The existence of such a rights plan may also prevent or delay a change in control of Cytori, and this prevention or delay adversely affect the market price of our shares.

We pay no dividends

We have never paid in the past, and currently do not intend to pay any cash dividends in the foreseeable future.

Substantial sales of shares may impact the market price of our common stock

Approximately 9.7% of the shares of our common stock outstanding as of August 11, 2008 may be offered and sold pursuant to this prospectus by the selling stockholders. Beginning February 12, 2009, up to 1,412,758 additional shares of our common stock may be offered and sold pursuant to this prospectus by the selling stockholders upon exercise of warrants issued to them on August 11, 2008. In addition, a majority of the other outstanding shares of our common stock and substantially all of the shares of our common stock issuable upon exercise of outstanding stock options and other warrants are eligible for resale by the holders of those shares pursuant to other effective registration statements or in exempt private transactions. If our stockholders, including the selling stockholders listed in this prospectus, sell substantial amounts of our common stock, the market price of our common stock may decline. These sales also might make it more difficult for us to sell equity or equity-related securities in the future at a time and price that we deem appropriate. We are unable to predict the effect that sales of our common stock may have on the prevailing market price of our common stock.

Table of Contents

FORWARD-LOOKING STATEMENTS

This prospectus, including the documents that we incorporate by reference herein, contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Exchange Act. These statements include, but are not limited to, statements about our anticipated expenditures, including those related to clinical research studies and general and administrative expenses, the potential size of the market for our products, future development and/or expansion of our products and therapies in our markets, our ability to generate product revenues or effectively manage our gross profit margins, our ability to obtain regulatory clearance, expectations as to our future performance, the future impact and ongoing appeal with respect to our 231 patent litigation, our need for additional financing and the availability thereof, and the potential enhancement of our cash position through development, marketing, and licensing arrangements. Any statements about our expectations, beliefs, plans, objectives, assumptions or future events or performance are not historical facts and may be forward-looking. These statements are often, but not always, made through the use of terminology such as “anticipates,” “believes,” “continue” “estimates,” “expects,” “intends,” “may,” “plans,” “potential,” “predicts,” “should,” “will,” or the negative of these terms or other comparable terminology. These forward-looking statements may also use different phrases. Accordingly, these statements involve estimates, assumptions and uncertainties that could cause actual results to differ materially from those expressed in them. Any forward-looking statement is qualified in its entirety by reference to the factors discussed in this prospectus, including in the documents incorporated by reference herein.

Because the factors discussed in this prospectus, including in the documents incorporated by reference herein, and even factors of which we are not yet aware, could cause actual results or outcomes to differ materially from those expressed in any forward-looking statement made by or on behalf of us, you should not place undue reliance on any such forward-looking statement. These statements are subject to risks and uncertainties, known and unknown, which could cause actual results, performance and achievements to differ materially from those expressed or implied in such statements. We have included important factors in the cautionary statements included in this prospectus, particularly under the heading “Risk Factors,” and in our SEC filings that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. These and other risks are also detailed in our reports filed from time to time under the Securities Act and/or the Exchange Act. You are encouraged to read these filings as they are made.

Further, any forward-looking statement speaks only as of the date on which it is made, and we undertake no obligation to update any forward-looking statement to reflect events or circumstances after the date on which such statement is made or to reflect the occurrence of unanticipated events. New risk factors emerge from time to time, and it is not possible for us to predict which factors will arise. In addition, we cannot assess the impact of each factor on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements.

Table of Contents

USE OF PROCEEDS

We will not receive any proceeds from the sale of shares of our common stock by the selling stockholders. A portion of the shares covered by this prospectus are issuable upon exercise of warrants to purchase our common stock. Upon any exercise of the warrants for cash, the selling stockholders would pay us the exercise price of the warrants. The cash exercise price of the warrants is $8.50 per share of our common stock, subject to adjustment as set forth in the warrants. Under certain conditions set forth in the warrants, the warrants are exercisable on a cashless basis. If the warrants are exercised on a cashless basis, we would not receive any cash payment from the selling stockholders upon any exercise of the warrants. Instead, the selling stockholders would satisfy their obligation to pay the exercise price through a formula-based transfer of warrant shares to us.

The selling stockholders will pay any underwriting discounts and commissions and expenses incurred by the selling stockholders for brokerage, accounting, tax or legal services or any other expenses incurred by the selling stockholders in disposing of the shares. We will bear all other costs, fees and expenses incurred in effecting the registration of the shares covered by this prospectus, including, without limitation, all registration and filing fees and fees and expenses of our counsel and our accountants.

Table of Contents

SELLING STOCKHOLDERS

On August 7, 2008, we entered into a common stock purchase agreement with Olympus Corporation and a securities purchase agreement with the other selling stockholders named below, pursuant to which we sold an aggregate of 2,825,517 shares of common stock and warrants to purchase an additional 1,412,758 shares of common stock in private placement transactions otherwise referred to in this prospectus as the Private Placement. We received aggregate gross proceeds of approximately $16,953,102 in connection with the Private Placement before deduction of placement agent fees and other transaction expenses. This prospectus covers the offer and sale by the selling stockholders listed below of up to 4,238,275 shares, which is the total number of shares of common stock issued in the Private Placement and issuable upon exercise of the warrants issued in the Private Placement, in the manner contemplated under the “Plan of Distribution.”

Pursuant to the registration rights agreement related to this Private Placement, we agreed to file a registration statement of which this prospectus is a part with the Securities and Exchange Commission, or the SEC, to register the disposition of the shares of our common stock we issued and the shares of common stock we may issue in the future as a result of exercise of the warrants, and to use our commercially reasonable efforts to keep the registration statement effective until the earlier of (a) such time as all of the shares registered hereunder have been publicly sold by the selling stockholders, and (b) the date that all of the shares registered hereunder may be sold by non-affiliates without volume or manner of sale restrictions under Rule 144 under the Securities Act, without the requirement for the Company to be in compliance with the current public information requirements under Rule 144.

The selling stockholders may sell some, all or none of their shares. We do not know how long the selling stockholders will hold the shares offered hereunder before selling them. However, the warrants issued in the Private Placement are not exercisable until February 12, 2009. We currently have no agreements, arrangements or understandings with the selling stockholders regarding the sale of any of the shares by them other than the registration rights agreement referenced above. The shares offered by this prospectus may be offered from time to time by the selling stockholders. As used in this prospectus, the term “selling stockholder” includes each of the selling stockholders listed below, and any donee, pledgee, transferee or other successor in interest selling shares received after the date of this prospectus from a selling stockholder as a gift, pledge, or other non-sale related transfer. The selling stockholders may have sold or transferred, in transactions exempt from the registration requirements of the Securities Act, some or all of their shares since the date on which the information in the table is presented. Information about the selling stockholders may change over time.

The following table sets forth the name of each selling stockholder, the number of shares owned by such selling stockholder prior to this offering, the number of shares that may be offered under this prospectus by such selling stockholder, and the number of shares of our common stock and the percentage (if one percent or more) of our common stock to be owned by such selling stockholder after completion of this offering, assuming that all shares offered hereunder are sold as contemplated herein. The number of shares in the column “Number of Shares Being Offered” represents all of the shares that a selling stockholder may offer under this prospectus, which includes the shares issuable upon exercise of the warrants issued in the Private Placement. Except as otherwise disclosed in this prospectus (or as disclosed in any document incorporated by reference) including information incorporated, none of the selling stockholders has, or within the past three years has had, any position, office or other material relationship with us. The selling stockholders have advised us that they may enter into short sales in the ordinary course of their business of investing and trading securities. The selling stockholders have also advised us that no short sales in our securities were entered into by them during the period beginning when the selling stockholders obtained knowledge that we were contemplating a private placement and ending upon the public announcement of the Private Placement.

Table of Contents

Ownership reflected in this table for each selling stockholder is based upon information provided to us by the selling stockholder and reflects holdings as of August 11, 2008. The percentages of common stock owned after the offering are based on 29,229,866 shares of our common stock outstanding as of August 11, 2008 after the closing of the Private Placement. In computing the number of shares owned by and the percentage ownership of a selling stockholder, shares of common stock that could be issued upon the exercise of outstanding options, warrants or other rights held by that selling stockholder that are currently exercisable or exercisable within 60 days of August 11, 2008 are considered outstanding. However, such shares are not included in the shares outstanding as of August 11, 2008 when computing the percentage ownership of each other selling stockholder.

Name	Shares of Common Stock Owned Prior to Offering(1)	Maximum Number of Shares Being Offered	Shares Owned After Offering(2)

			Number	Percent
Olympus Corporation (3)	4,513,043	1,500,000	3,013,043	10.31%
Gagnon Investment Fund Associates Master Fund (4)	808,767	157,500	651,267	2.23%
Neil J. Gagnon (5)(8)	578,607	125,250	453,357	1.55%
Lois E. Gagnon (6)(8)	371,181	63,375	307,806	1.05%
Gagnon Family Partnership (4)(8)	152,415	45,600	106,815	*
Gagnon 1999 Grandchildren's Trust STS 2/1/99, Maureen Drew, Trustee (4)(7)(8)	131,701	37,500	94,201	*
The Lois E. & Neil Gagnon Foundation Inc. (4)	94,096	40,650	53,446	*
Fallen Angel Partnership (4)	90,320	19,500	70,820	*
Darwin Partnership (4)	57,100	11,400	45,700	*
Brian W. Matthews (9)	622,221	150,000	472,221	1.62%
Hudson Bay Fund LP (10)	12,375	12,375	—	*
Hudson Bay Overseas Fund Ltd (10)	25,125	25,125	—	*
HK Partners L.P. (11)	365,000	150,000	215,000	*
UBS O'Connor LLC F/B/O: O'Connor Pipes Corporate Strategies Master Limited (12)	225,000	225,000	—	*
TRUK Opportunity Fund, LLC (13)	88,751	88,751	—	*
TRUK International Fund, LP (13)	36,250	36,250	—	*
Jennison Health Science Fund, a series of Jennison Sector Funds, Inc. (14)	1,349,700	667,500	682,200	2.33%
Pacific Select Fund, Health Sciences Portfolio (15)	184,275	82,500	101,775	*
Iroquois Master Fund Ltd. (16)	174,999	174,999	—	*
Superius Securities Group Profit Sharing Plan Inc. (17)	1,163,701	500,001	663,700	2.27%
Diamond Opportunity Fund, LLC (18)	151,249	124,999	26,250	*

* Indicates less than one percent ownership.

Table of Contents

(1) The number of shares presented in this table as owned prior to this offering includes all shares of common stock issuable upon exercise of the warrants issued in the Private Placement. These warrants are not exercisable until February 12, 2009.

(2) The selling stockholders identified in this table may sell some, all, or none of the shares owned by them that are registered under this registration statement. While we do not currently have knowledge of any agreements, arrangements, or understandings with respect to the sale of any of the shares registered hereunder (other than the registration rights agreement referenced above), as required for purposes of this table, we are assuming that the selling stockholders will sell all of the shares indicated in the table. Percent is based on 29,229,866 shares of common stock outstanding as of August 11, 2008.

(3) Olympus Corporation has been a principal stockholder of ours since 2005. In addition, we have been involved in a strategic development and manufacturing joint venture with Olympus since 2005. For additional information regarding our relationship with Olympus, see our reports filed with the SEC which are incorporated by reference herein.

(4) The selling stockholder has identified itself as an affiliate of Neil J. Gagnon, who is the managing member and principal owner of Gagnon Securities LLC, a registered broker-dealer. The selling stockholder has represented to us that it purchased the securities sold in the Private Placement in the ordinary course of its business and at the time of purchase had no agreement or understanding, directly or indirectly, with any person regarding distribution of the securities. Mr. Gagnon has voting and/or investment control over the securities held by the selling stockholder.

(5) Mr. Gagnon, together with certain individuals and entities affiliated with him, has been a principal stockholder of ours during the past three years. Mr. Gagnon expressly disclaims beneficial ownership of all securities held by Gagnon Investment Fund Associates Master Fund, Gagnon Family Partnership, Gagnon 1999 Grandchildren's Trust STS 2/1/99, Maureen Drew, Trustee, The Lois E. & Neil Gagnon Foundation Inc., Fallen Angel Partnership and Darwin Partnership.

(6) Lois E. Gagnon is the wife of Neil J. Gagnon. Mrs. Gagnon has represented to us that she purchased the securities sold in the Private Placement in the ordinary course of business and at the time of purchase had no agreement or understanding, directly or indirectly, with any person regarding distribution of the securities. Mr. Gagnon has shared voting and investment control over the securities held by Mrs. Gagnon.

Table of Contents

(7) Maureen Drew has sole voting and shared investment control over the securities held by the selling stockholder. Ms. Drew expressly disclaims beneficial ownership of the securities held by the selling stockholder.

(8) In addition to the shares issuable upon exercise of the warrants issued in the Private Placement, beneficial ownership includes: (i) for Mr. Gagnon, 42,250 shares issuable upon exercise of an outstanding and currently exercisable warrant; (ii) for Mrs. Gagnon, 28,500 shares issuable upon exercise of an outstanding and currently exercisable warrant; (iii) for the Gagnon Family Partnership, 11,000 shares issuable upon exercise of an outstanding and currently exercisable warrant; and (iv) for 1999 Grandchildren's Trust STS 2/1/99, Maureen Drew, Trustee, 9,250 shares issuable upon exercise of an outstanding and currently exercisable warrant.

(9) In addition to the shares issuable upon exercise of the warrant issued in the Private Placement, beneficial ownership includes 25,000 shares issuable upon exercise of an outstanding and currently exercisable warrant.

(10) Sander Gerber, Yoav Roth and Charles Winkler share voting and investment control over the securities held by Hudson Bay Fund LP and Hudson Bay Overseas Fund Ltd. Each of Messrs. Gerber, Roth and Winkler expressly disclaims beneficial ownership of the securities held by Hudson Bay Fund LP and Hudson Bay Overseas Fund Ltd.

(11) Ronald B. Haave is the managing partner of HK Partners L.P. and has voting and investment control over the securities held by HK Partners L.P. Mr. Haave expressly disclaims beneficial ownership of the securities held by HK Partners L.P.

(12) UBS O'Connor LLC is the investment manager of UBS O'Connor LLC F/B/O O'Connor Pipes Corporate Strategies Master Limited and has voting and investment control over the securities held by the selling stockholder. UBS O'Connor LLC is a wholly owned subsidiary of UBS AG, which is listed and traded on the New York Stock Exchange.

(13) Michael E. Fein and Stephen E. Saltzstein, as principals of Atoll Asset Management, LLC, the managing member of TRUK Opportunity Fund, LLC and the general partner of TRUK International Fund, LP, share voting and investment control over the securities held by the funds. Each of Messrs. Fein and Saltzstein expressly disclaims beneficial ownership of the securities held by TRUK Opportunity Fund, LLC and TRUK International Fund, LP.

(14) Jennison Associates LLC is the sub-advisor to Jennison Health Sciences Fund, a series of Jennison Sector Funds, Inc. (the "Health Sciences Fund"), and has voting and investment control over the securities held by the Health Sciences Fund. The Health Sciences Fund is an investment company registered under the Investment Company Act of 1940. By virtue of their positions with Jennison Associates LLC, David Chan and Michael DelBalso, managing directors of Jennison Associates LLC and portfolio managers to the Health Sciences Fund, have voting and investment control over the securities held by the Health Sciences Fund. Each of Jennison Associates LLC and Messrs. Chan and DelBalso expressly disclaims beneficial ownership of the securities held by the Health Sciences Fund. Jennison Associates LLC is a wholly owned subsidiary of Prudential Financial, Inc., which is a publicly-traded financial services firm. The Health Sciences Fund's principal underwriter, Prudential Investment Management Services LLC, is a registered broker-dealer. Jennison Associates LLC has represented to us that it purchased the securities sold in the Private Placement in the ordinary course of its business and at the time of purchase had no agreement or understanding, directly or indirectly, with any person regarding distribution of the securities. In addition to the shares issuable upon exercise of the warrant issued in the Private Placement, beneficial ownership includes 227,400 shares issuable upon exercise of an outstanding and currently exercisable warrant.

Table of Contents

(15) Jennison Associates LLC is the sub-advisor to the Pacific Select Fund, Health Sciences Portfolio (the "Health Sciences Portfolio"), and has voting and investment control over the securities held by the Health Sciences Portfolio. The Health Sciences Portfolio is an investment company registered under the Investment Company Act of 1940. By virtue of their positions with Jennison Associates LLC, David Chan and Michael DelBalso, managing directors of Jennison Associates LLC and portfolio managers to the Health Sciences Portfolio, have voting and investment control over the securities held by the Health Sciences Portfolio. Each of Jennison Associates LLC and Messrs. Chan and DelBalso expressly disclaims beneficial ownership of the securities held by the Health Sciences Portfolio. Jennison Associates LLC is a wholly owned subsidiary of Prudential Financial, Inc., which is a publicly-traded financial services firm. The Health Sciences Portfolio's principal underwriter, Pacific Select Distribution, Inc., is a registered broker-dealer. Jennison Associates LLC has represented to us that it purchased the securities sold in the Private Placement in the ordinary course of its business and at the time of purchase had no agreement or understanding, directly or indirectly, with any person regarding distribution of the securities. In addition to the shares issuable upon exercise of the warrant issued in the Private Placement, beneficial ownership includes 33,925 shares upon exercise of an outstanding and currently exercisable warrant.

(16) Joshua Silverman has voting and investment control over the securities held by Iroquois Master Fund Ltd. Mr. Silverman expressly disclaims beneficial ownership of these securities.

(17) Alvin C. Hudgins, Jr. and James H. Hudgins have voting and investment control over the securities held by Superius Securities Group Profit Sharing Plan Inc. Each of Alvin C. Hudgins, Jr. and James H. Hudgins expressly disclaims beneficial ownership of these securities.

(18) Diamond Asset Management, LLC ("DAM") serves as the manager of Diamond Opportunity Fund, LLC, and, in such capacity, has sole voting and investment control over the securities held by the selling stockholder. David Hokin and Rob Rubin serve as managers and Richard Marks serves as the managing director of DAM and may be deemed to share voting and investment control over the securities held by the selling stockholder. Each of DAM and Messrs. Hokin, Rubin and Marks expressly disclaims beneficial ownership of these securities. In addition to the shares issuable upon exercise of the warrant issued in the Private Placement, beneficial ownership includes 26,250 shares issuable upon exercise of an outstanding and currently exercisable warrant.

Table of Contents

PLAN OF DISTRIBUTION

We are registering the shares of common stock issued to the selling stockholders and shares of common stock issuable upon exercise of warrants issued to the selling stockholders to permit the resale of these shares of common stock by the holders of the common stock from time to time after the date of this prospectus. We will not receive any of the proceeds from the sale by the selling stockholders of the common stock. We will bear all fees and expenses incident to our obligation to register theses shares of common stock.

The selling stockholders may sell all or a portion of the common stock beneficially owned by them and offered hereby from time to time directly or through one or more underwriters, broker-dealers or agents. If the common stock is sold through underwriters or broker-dealers, the selling stockholders will be responsible for underwriting discounts or commissions or agent's commissions. The common stock may be sold on any national securities exchange or quotation service on which the securities may be listed or quoted at the time of sale, in the over-the-counter market or in transactions otherwise than on these exchanges or systems or in the over-the-counter market and in one or more transactions at fixed prices, at prevailing market prices at the time of the sale, at varying prices determined at the time of sale, or at negotiated prices. These sales may be effected in transactions, which may involve crosses or block transactions. The selling stockholders may use any one or more of the following methods when selling shares:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales entered into after the effective date of the registration statement of which this prospectus is a part;
- broker-dealers may agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- through the writing or settlement of options or other hedging transactions, whether such options are listed on an options exchange or otherwise;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

The selling stockholders also may resell all or a portion of the shares in open market transactions in reliance upon Rule 144 under the Securities Act, as permitted by that rule, or Section 4(1) under the Securities Act, if available, rather than under this prospectus, provided that they meet the criteria and conform to the requirements of those provisions.

Table of Contents

Broker-dealers engaged by the selling stockholders may arrange for other broker-dealers to participate in sales. If the selling stockholders effect such transactions by selling common stock to or through underwriters, broker-dealers or agents, such underwriters, broker-dealers or agents may receive commissions in the form of discounts, concessions or commissions from the selling stockholders or commissions from purchasers of the common stock for whom they may act as agent or to whom they may sell as principal. Such commissions will be in amounts to be negotiated, but, except as set forth in a supplement to this prospectus, in the case of an agency transaction will not be in excess of a customary brokerage commission in compliance with NASD Rule 2440; and in the case of a principal transaction a markup or markdown in compliance with NASD IM-2440.

In connection with sales of the common stock or otherwise, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the common stock in the course of hedging in positions they assume. The selling stockholders may also sell common stock short and if such short sale shall take place after the date that this registration statement is declared effective by the SEC, the selling stockholders may deliver common stock covered by this prospectus to close out short positions and to return borrowed shares in connection with such short sales. The selling stockholders may also loan or pledge common stock to broker-dealers that in turn may sell such shares, to the extent permitted by applicable law. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction). Notwithstanding the foregoing, the selling stockholders have been advised that they may not use shares registered on this registration statement to cover short sales of our common stock made prior to the date the registration statement, of which this prospectus forms a part, has been declared effective by the SEC.

The selling stockholders may, from time to time, pledge or grant a security interest in some or all of the common stock owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the common stock from time to time pursuant to this prospectus or any amendment to this prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act of 1933, as amended, amending, if necessary, the list of selling stockholders to include the pledgee, transferee or other successors in interest as selling stockholders under this prospectus. The selling stockholders also may transfer and donate the common stock in other circumstances in which case the transferees, donees, pledgees or other successors in interest will be the selling beneficial owners for purposes of this prospectus.

The selling stockholders and any broker-dealer or agents participating in the distribution of the common stock may be deemed to be "underwriters" within the meaning of Section 2(11) of the Securities Act in connection with such sales. In such event, any commissions paid, or any discounts or concessions allowed to, any such broker-dealer or agent and any profit on the resale of the shares purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. Selling Stockholders who are "underwriters" within the meaning of Section 2(11) of the Securities Act will be subject to the applicable prospectus delivery requirements of the Securities Act and may be subject to certain statutory liabilities of, including but not limited to, Sections 11, 12 and 17 of the Securities Act and Rule 10b-5 under the Securities Exchange Act of 1934, as amended, or the Exchange Act.

Each selling stockholder has informed the Company that it is not a registered broker-dealer and does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the common stock. Upon the Company being notified in writing by a selling stockholder that any material arrangement has been entered into with a broker-dealer for the sale of common stock through a block trade, special offering, exchange distribution or secondary distribution or a purchase by a broker or dealer, a supplement to this prospectus will be filed, if required, pursuant to Rule 424(b) under the Securities Act, disclosing (i) the name of each such selling stockholder and of the participating broker-dealer(s), (ii) the number of shares involved, (iii) the price at which such the common stock was sold, (iv) the commissions paid or discounts or concessions allowed to such broker-dealer(s), where applicable, (v) that such broker-dealer(s) did not conduct any investigation to verify the information set out or incorporated by reference in this prospectus, and (vi) other facts material to the transaction. In no event shall any broker-dealer receive fees, commissions and markups, which, in the aggregate, would exceed eight percent (8%).

Under the securities laws of some states, the common stock may be sold in such states only through registered or licensed brokers or dealers. In addition, in some states the common stock may not be sold unless such shares have been registered or qualified for sale in such state or an exemption from registration or qualification is available and is complied with.

There can be no assurance that any selling stockholder will sell any or all of the common stock registered pursuant to the shelf registration statement, of which this prospectus forms a part.

Each selling stockholder and any other person participating in such distribution will be subject to applicable provisions of the Securities Exchange Act of 1934, as amended, and the rules and regulations thereunder, including, without limitation, to the extent applicable, Regulation M of the Exchange Act, which may limit the timing of purchases and sales of any of the common stock by the selling stockholder and any other participating person. To the extent applicable, Regulation M may also restrict the ability of any person engaged in the distribution of the common stock to engage in market-making activities with respect to the common stock. All of the foregoing may affect the marketability of the common stock and the ability of any person or entity to engage in market-making activities with respect to the common stock.

We will pay all expenses of the registration of the common stock pursuant to the registration rights agreement, including, without limitation, SEC filing fees and expenses of compliance with state securities or “blue sky” laws; *provided*, *however*, that each selling stockholder will pay all underwriting discounts and selling commissions, if any and any related legal expenses incurred by it. We will indemnify the selling stockholders against certain liabilities, including some liabilities under the Securities Act, in accordance with the registration rights agreement, or the selling stockholders will be entitled to contribution. We may be indemnified by the selling stockholders against civil liabilities, including liabilities under the Securities Act, that may arise from any written information furnished to us by the selling stockholders specifically for use in this prospectus, in accordance with the related registration rights agreements, or we may be entitled to contribution.

LEGAL MATTERS

The validity of the issuance of the shares of our common stock offered by this prospectus will be passed upon for us by DLA Piper US LLP, San Diego, California.

EXPERTS

The consolidated financial statements and schedule of Cytori Therapeutics, Inc. as of December 31, 2007 and 2006, and for each of the years in the three-year period ended December 31, 2007, and management’s assessment of the effectiveness of internal control over financial reporting as of December 31, 2007, have been incorporated by reference herein and in the registration statement in reliance upon the reports of KPMG LLP, independent registered public accounting firm, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information electronically with the SEC. You may read and copy these reports, proxy statements and other information at the SEC’s public reference room at 100 F Street, N.E., Washington, D.C. 20549 or at the SEC’s other public reference facilities. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the public reference room. You can request copies of these documents by writing to the SEC and paying a fee for the copying costs. The SEC also maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, including us. The SEC’s Internet site can be found at http://www.sec.gov. In addition, we make available on or through our Internet site copies of these reports as soon as reasonably practicable after we electronically file or furnish them to the SEC. Our Internet site can be found at http://www.cytoritx.com.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

We are allowed to incorporate by reference information contained in documents that we file with the SEC. This means that we can disclose important information to you by referring you to those documents and that the information in this prospectus is not complete. You should read the information incorporated by reference for more detail. We incorporate by reference in two ways. First, we list below certain documents that we have already filed with the SEC. The information in these documents is considered part of this prospectus. Second, the information in documents that we file in the future will update and supersede the current information in, and incorporated by reference in, this prospectus.

We incorporate by reference into this prospectus the documents listed below and any filings we make with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act from the date of this prospectus until the termination of this offering (in each case, except for the information furnished under Item 2.02 or Item 7.01 in any current report on Form 8-K and Form 8-K/A):

- our annual report on Form 10-K for the year ended December 31, 2007 filed with the SEC on March 14, 2008 (File No. 000-32501-08688858);

- the information specifically incorporated by reference into our annual report on Form 10-K for the year ended December 31, 2007 from our definitive proxy statement on Schedule 14A filed with the SEC on April 29, 2008 (File No. 000-32501-08785770);

Table of Contents

- our quarterly report on Form 10-Q for the quarterly period ended March 31, 2008 filed with the SEC on May 9, 2008 (File No. 000-32501-08817088);
- our quarterly report on Form 10-Q for the quarterly period ended June 30, 2008 filed with the SEC on August 11, 2008 (File No. 000-32501-081006313);
- our current report on Form 8-K filed with the SEC on February 6, 2008 (File No. 000-32501-08581751);
- our current report on Form 8-K filed with the SEC on February 19, 2008 (File No. 000-32501-08624415);
- our current report on Form 8-K filed with the SEC on February 29, 2008 (File No. 000-32501-08656338);
- our current report on Form 8-K filed with the SEC on May 5, 2008 (File No. 000-32501-08800453);
- our current report on Form 8-K filed with the SEC on June 10, 2008 (File No. 000-32501-08890725);
- our current report on Form 8-K filed with the SEC on August 8, 2008 (File No. 000-32501-081000507);
- our current report on Form 8-K filed with the SEC on August 14, 2008 (File No. 000-32501-081020005);
- the description of our common stock contained in our registration statement on Form 10/A filed with the SEC on July 16, 2001 (File No. 000-32501-1682501); and
- the description of our Series RP Preferred Stock Purchase Rights contained in our registration statement on Form 8-A filed with the SEC on May 30, 2003 (File No. . 000-32501-03725608), including any amendments or reports filed for the purpose of updating the description.

We will provide each person, including any beneficial owner, to whom a prospectus is delivered, a copy of any or all of the information that has been incorporated by reference into this prospectus but not delivered with this prospectus upon written or oral request at no cost to the requester. Requests should be directed to: Cytori Therapeutics, Inc., 3020 Callan Road, San Diego, CA 92121, Attn: Investor Relations, telephone: (858) 458-0900.

This prospectus is part of a registration statement that we filed with the SEC. The registration statement contains more information than this prospectus regarding us and our common stock, including certain exhibits and schedules. You can obtain a copy of the registration statement from the SEC at the address listed above or from the SEC's Internet website.

You should rely only on the information provided in and incorporated by reference into this prospectus or any prospectus supplement. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus or any prospectus supplement is accurate as of any date other than the date on the front cover of these documents.