As filed with the Securities and Exchange Commission on June 11, 2009

Registration No. 333-

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

Form S-3

REGISTRATION STATEMENT
THE SECURITIES ACT OF 1933

CYTORI THERAPEUTICS, INC.

(Exact Name of Registrant as Specified in its Charter)

Delaware	**33-0827593**
(State or Other Jurisdiction of Incorporation or Organization)	*(I.R.S. Employer Identification No.)*

3020 Callan Road
San Diego, CA 92121
(858) 458-0900
(Address, Including Zip Code and Telephone Number, Including Area Code, of Registrant's Principal Executive Offices)

Christopher J. Calhoun
Chief Executive Officer
Cytori Therapeutics, Inc.
3020 Callan Road
San Diego, CA 92121
(858) 458-0900

(Name, Address, Including Zip Code and Telephone Number, Including Area Code, of Agent for Service)

With a Copy to:

Jeffrey T. Baglio
DLA Piper LLP (US)
4365 Executive Drive, Suite 1100
San Diego, CA 92121

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

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

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

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

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

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

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

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

Large accelerated filer ☐	Accelerated filer ☑
Non-accelerated filer ☐	Smaller reporting company ☐

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered(1)	Proposed Maximum Offering Price per Share(2)	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common Stock, $0.001 par value per share	5,128,163	$4.41	$22,615,199	$1,262

(1) Includes 3,263,380 shares of common stock that may be issued upon the exercise of warrants. Pursuant to Rule 416 under the Securities Act of 1933, as amended, this registration statement also covers such additional shares as may hereafter be offered or issued with respect to the shares registered hereby resulting from stock splits, stock dividends, recapitalizations or similar capital adjustments.

(2) Estimated solely for purposes of calculating the amount of the registration fee pursuant to Rule 457(c) of the Securities Act of 1933, as amended, based upon the average of the high and low sales prices of the registrant's common stock as reported on The NASDAQ Global Market on June 8, 2009.

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

The information 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 state where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED JUNE 11, 2009

PRELIMINARY PROSPECTUS

5,128,163 Shares

CYTORI THERAPEUTICS, INC.

Common Stock

This prospectus relates to the resale from time to time of up to 5,128,163 shares of our common stock, which includes 3,263,380 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 June 9, 2009, the last reported sale price of our common stock on The NASDAQ Global Market was $4.36 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 _____, 2009.

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.

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 products to enable the practice of regenerative medicine. Regenerative medicine describes the emerging field that aims to repair or restore lost or damaged tissue and cell function. Our commercial activities are currently focused on cosmetic and reconstructive surgery in Europe and Asia-Pacific, fulfilling the demand among physicians in Europe and Asia Pacific for clinical grade stem and regenerative cells, and stem and regenerative cell banking (cell preservation) worldwide. 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, spinal disc degeneration, gastrointestinal disorders, liver and renal disease and pelvic health conditions.

The foundation of our business is the patented Celution® System family of products 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, proprietary enzymes, and related instrumentation. 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 cosmetic and 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 cardiovascular clinical trials are being conducted in Europe with adipose-derived stem and regenerative cells, processed with the Celution® 600 System, an earlier version of the Celution® 800/CV. The Celution® 800/CV has recently been introduced to these clinical sites. One of the clinical trials is in patients suffering from chronic myocardial ischemia, a severe form of chronic heart disease, and the other is in heart attack patients.

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.

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 need to raise more cash in the near term

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 at or close to the levels currently conducted. If we are not successful in maintaining adequate cash reserves we will be required to negotiate with General Electric Capital Corporation ("GECC") and Silicon Valley Bank ("SVB") to obtain an amendment to the cash liquidity requirements of the Loan and Security Agreement dated October 14, 2008 ("Loan Agreement"). If we are not successful in maintaining adequate cash liquidity and such provisions are not waived then we could be in default under the Loan Agreement. If we are in default or if our senior secured lenders otherwise assert that there has been an event of default, they may seek to accelerate our senior secured loan and exercise their rights and remedies under the Loan Agreement, including the sale of our property and other assets. In such event, we may be forced to file a bankruptcy case or have an involuntary bankruptcy case filed against us or otherwise liquidate our assets. Any of these events would have a substantial and material adverse effect on our business, financial condition, results of operations, the value of our common stock and warrants and our ability to raise capital. 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. Although we entered into a $15,000,000 loan facility with GECC and SVB in October 2008, we could not access the remaining $7,500,000 under that facility as we were not able satisfy certain financial conditions on or before December 12, 2008. Our inability to maintain sufficient operating funds in the near term could, necessitate that we delay, scale back, or eliminate some or all of our research or product development, manufacturing operations, clinical or regulatory activities, which could have a substantial negative effect on our results of operations and financial condition.

Continued turmoil in the economy could harm our business

Negative trends in the general economy, including trends resulting from an actual or perceived recession, tightening credit markets, increased cost of commodities, including oil, actual or threatened military action by the United States and threats of terrorist attacks in the United States and abroad, could cause a reduction of investment in and available funding for companies in certain industries, including ours. Our ability to raise capital has been and may continue to be adversely affected by current credit conditions and the downturn in the financial markets and the global economy.

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.

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. may require more money than its current 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.

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 potential applications of our technology 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 began 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.

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 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 maintain our existing patents, obtain additional patents, maintain trade secret protection, and operate without infringing on the proprietary rights of third parties.

Our 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.

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, 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, 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.

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.

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 will be, 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 and sales 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.

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 5.2% of the shares of our common stock outstanding as of May 14, 2009 may be offered and sold pursuant to this prospectus by the selling stockholders. In addition, up to 3,263,380

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 or about May 14, 2009. 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.

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.

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 $2.62 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.

SELLING STOCKHOLDERS

On May 7, 2009, we entered into a securities purchase agreement with certain institutional investors named below, pursuant to which we sold an aggregate of 1,864,783 shares of common stock and warrants to purchase an additional 3,263,380 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 $4.25 million in connection with the Private Placement before deduction of transaction expenses. This prospectus covers the offer and sale by the selling stockholders listed below of up to 5,128,163 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. 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.

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 May 14, 2009. The percentages of common stock owned after the offering are based on 35,953,698 shares of our common stock outstanding as of May 14, 2009 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 May 14, 2009 are considered outstanding. However, such shares are not included in the shares outstanding as of May 14, 2009 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
Walter Cruttenden	783,070	603,070	180,000	*
Genet Family 2007 Opportunity Trust	482,458	482,458	—	*
Thomas R. Speno & Laura M. Speno	512,500	412,500	100,000	*
Michael G. Masarek 2008 Grantor Retained Annuity Trust	411,843	361,843	50,000	*
Robert M. Schneider	322,500	302,500	20,000	*
Gagnon Investment Associates Master Fund (3)	900,017	301,535	598,482	1.66%
London Family Trust	275,000	275,000	—	*
M. Stephen Jackman, as Trustee utd 2/12/96	321,858	260,478	61,380	*
David Sonenberg	301,228	241,228	60,000	*
Neil Gagnon (4)	532,120	180,920	351,200	*
David B. Schulman (5)	137,500	137,500	—	*
Lois Gagnon (6)	350,475	120,615	229,860	*
Manuel F. Mair	120,615	120,615	—	*
Perry Isenberg	120,615	120,615	—	*
Peter Lacey	120,615	120,615	—	*
Alfred Sacks	90,462	90,462	—	*
Evan Brody	90,462	90,462	—	*
Darren and Tara Levine JTWROS	102,500	82,500	20,000	*
John Collins	98,750	68,750	30,000	*
Ronald Henriksen (7)	330,377	60,500	269,877	*
Alan Rutner	63,308	60,308	3,000	*
Lisa J. Burley Revocable Trust	90,308	60,308	30,000	*
Randy M. Bennis	85,308	60,308	25,000	*
Marc Hedrick (8)	896,257	55,000	841,257	2.31%
Robin Stricoff	55,000	55,000	—	*
Andrea Philippou	54,277	54,277	—	*
Angel Martinez	36,185	36,185	—	*
Gregory J. Randazza	36,185	36,185	—	*
Bob & Jeanette Friedman	30,250	30,250	—	*
1999 Garfinkle Family Trust Marla Garfinkle, Trustee	30,154	30,154	—	*
Louis H. Berlin & Nancy H. Berlin JT TEN	30,154	30,154	—	*
Sidney J. Workman	31,154	30,154	1,000	*
James Garrett Schwendig, MD, Inc.	71,000	27,500	43,500	*
Kenneth J. Sobel & Debra S. Sobel, husband and wife, as tenants by the entireties	24,123	24,123	—	*
Mike Reuter	24,123	24,123	—	*
Seitlin and Company	30,625	20,625	10,000	*
Stanley R. Brenner	13,750	13,750	—	*
Alan J. Brenner	13,750	13,750	—	*
Samuel Katz	13,750	13,750	—	*
Dave Rickey & Daughters Foundation (9)	20,911	12,062	8,849	*
Solomon Genet	7,746	6,031	1,715	*

* Indicates less than one percent ownership.

(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.

(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 35,953,698 shares of common stock outstanding as of May 14, 2009.

(3) 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.

(4) 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.

(5) Mr. Schulman has identified himself as an affiliate of Mass Mutual Investors Services, a registered broker-dealer. Mr. Schulman has represented to us that he 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. Schulman has voting and/or investment control over the securities held by him.

(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.

(7) Ronald Henriksen is Chairman of the Board for Cytori Therapeutics Inc. and has served as a director since 2002.

(8) Marc Hedrick, M.D. is President and a director of Cytori Therapeutics, Inc.

(9) Dave Rickey & Daughters Foundation is affiliated with David Rickey who is a director of Cytori Therapeutics, Inc.

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.

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 LLP (US), San Diego, California.

EXPERTS

The consolidated financial statements and schedule of Cytori Therapeutics, Inc. as of December 31, 2008 and 2007, and for each of the years in the three-year period ended December 31, 2008, and management's assessment of the effectiveness of internal control over financial reporting as of December 31, 2008, have been incorporated by reference herein and in the registration statement in reliance upon the reports of KPMG LLP, independent registered public accounting firm, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

The audit report covering the December 31, 2008, consolidated financial statements contains an explanatory paragraph that states that the Company has suffered recurring losses from operations and has a net capital deficiency, which raise substantial doubt about its ability to continue as a going concern. The consolidated financial statements and the related financial statement schedule do not include any adjustments that might result from the outcome of that uncertainty.

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, any filings we make with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of the initial registration statement of which this prospectus is a part and prior to the effectiveness of the registration statement, 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, 2008 filed with the SEC on March 6, 2009 (File No. 000-32501- 09663762);
- the information specifically incorporated by reference into our annual report on Form 10-K for the year ended December 31, 2008 from our definitive proxy statement on Schedule 14A filed with the SEC on April 30, 2009 (File No. 000-32501-09783581);
- our quarterly report on Form 10-Q for the quarterly period ended March 31, 2009 filed with the SEC on May 11, 2009 (File No. 000-32501-09814722);
- our current report on Form 8-K filed with the SEC on February 2, 2009 (File No. 000-32501- 09562083);
- our current report on Form 8-K filed with the SEC on March 10, 2009 (File No. 000-32501- 09667881);
- our current report on Form 8-K filed with the SEC on May 6, 2009 (File No. 000-32501- 09802677);
- our current report on Form 8-K filed with the SEC on May 8, 2009 (File No. 000-32501- 09807196);
- 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.
- the description of our warrants contained in our registration statement on Form 8-A filed with the SEC on June 8, 2009 (File No. 001-34375-09878357), 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.

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. ***Other Expenses of Issuance and Distribution.***

The following sets forth the estimated costs and expenses, all of which shall be borne by the registrant, in connection with the offering of the securities pursuant to this registration statement:

Registration fee	$	1,262
Legal fees and expenses	$	10,000
Accounting fees	$	9,500
Printing expenses	$	5,000
Miscellaneous expenses	$	1,238
Total	$	27,000

Item 15. ***Indemnification of Officers and Directors.***

Section 145 of the Delaware General Corporation Law authorizes a court to award or a corporation's board of directors to grant indemnification to directors and officers in terms sufficiently broad to permit such indemnification under certain circumstances for liabilities (including reimbursement for expenses incurred) arising under the Securities Act.

Our amended and restated certificate of incorporation, or our Certificate, includes a provision that, to the fullest extent permitted by the Delaware General Corporation Law, eliminates the personal liability of our directors for monetary damages for breach of fiduciary duty as a director. In addition, together our Certificate and our bylaws, as amended, require us to indemnify, to the fullest extent permitted by law, any person made or threatened to be made a party to an action or proceeding (whether criminal, civil, administrative or investigative) by reason of the fact that such person is or was a director, officer or employee of Cytori or any predecessor of ours, or serves or served at any other enterprise as a director, officer or employee at our request or the request of any predecessor of ours, against expenses (including attorneys' fees), judgments, fines, settlements and other amounts actually and reasonably incurred in connection with any proceeding, arising by reason of the fact that such person is or was an agent of ours. Our bylaws also provide that we may, to the fullest extent provided by law, indemnify any person against expenses (including attorneys' fees), judgments, fines, settlements and other amounts actually and reasonably incurred in connection with any proceeding, arising by reason of the fact that such person is or was an agent of ours. We are required to advance expenses incurred by our directors, officers, employees and agents in defending any action or proceeding for which indemnification is required or permitted, subject to certain limited exceptions. The indemnification rights conferred by our bylaws are not exclusive.

We have obtained directors and officers liability insurance.

Item 16. ***Exhibits.***

Exhibit Number	Description
2.5	Asset Purchase Agreement dated May 30, 2007, by and between Cytori Therapeutics, Inc. and MacroPore Acquisition Sub, Inc (filed as Exhibit 2.5 to our Form 10-Q Quarterly Report as filed on August 14, 2007 (File No. 000-32501-071054007) and incorporated by reference herein)
3.1	Amended and Restated Certificate of Incorporation (filed as Exhibit 3.1 to our Form 10-Q Quarterly Report as filed on August 13, 2002 (File No. 000-32501-02727729) and incorporated by reference herein)
3.2	Amended and Restated Bylaws of Cytori Therapeutics, Inc. (filed as Exhibit 3.2 to our Form 10-Q Quarterly Report, as filed on August 14, 2003 (File No. 000-32501-03844770) and incorporated by reference herein)
3.3	Certificate of Ownership and Merger (effecting name change to Cytori Therapeutics, Inc.) (filed as Exhibit 3.1.1 to our Form 10-Q, as filed on November 14, 2005 (File No. 000-32501-051202324) and incorporated by reference herein)
4.1	Rights Agreement, dated as of May 19, 2003, between Cytori Therapeutics, Inc. and Computershare Trust Company, Inc. as Rights Agent, which includes: as Exhibit A thereto, the Form of Certificate of Designation, Preferences and Rights of Series RP Preferred Stock of Cytori Therapeutics, Inc.; as Exhibit B thereto, the Form of Right Certificate; and, as Exhibit C thereto, the Summary of Rights to Purchase Series RP Preferred Stock (filed as Exhibit 4.1 to our Form 8-A which was filed on May 30, 2003 (File No. 000-32501-03725608) and incorporated by reference herein)
4.1.1	Amendment No. 1 to Rights Agreement dated as of May 12, 2005, between Cytori Therapeutics, Inc. and Computershare Trust Company, Inc. as Rights Agent (filed as Exhibit 4.1.1 to our Form 8-K, which was filed on May 18, 2005 (File No. 000-32501-05842203) and incorporated by reference herein).
4.1.2	Amendment No. 2 to Rights Agreement, dated as of August 28, 2007, between us and Computershare Trust Company, N.A. (as successor to Computershare Trust Company, Inc.), as Rights Agent (filed as Exhibit 4.1.1 to our Form 8-K, which was filed on September 4, 2007 (File No. 000-32501-071096673) and incorporated by reference herein).
5.1*	Opinion of DLA Piper LLP (US)
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10.64	Form of Warrant to Purchase Common Stock issued on or about May 14, 2009 (filed as Exhibit 10.64 to our Form 8-K, which was filed on May 8, 2009 (File No. 000-32501-09802677) and incorporated by reference herein).
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23.1*	Consent of KPMG LLP
23.2*	Consent of DLA Piper LLP (US) (included in Exhibit 5.1).
24.1*	Power of attorney (included on the signature page to the registration statement).

* Filed herewith

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;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the SEC pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20% 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 the registration statement or any material change to such information in the registration statement;

Provided, *however*, that paragraphs (1)(i), (1)(ii) and (1)(iii) do not apply if the registration statement is on Form S-3 or Form F-3, and the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the SEC by the registrant pursuant to Section 13 or Section 15(d) of the Exchange Act 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, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(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 this offering.

(4) That, for the purpose of determining liability under the Securities Act 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 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 field 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.

The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) 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.

Insofar as indemnification for liabilities arising under the Securities Act 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 SEC this form of indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against these 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 a director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of this issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized in the City of San Diego, State of California, on June 11, 2009.

CYTORI THERAPEUTICS, INC.

By: /s/ Christopher J. Calhoun
Christopher J. Calhoun
Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Christopher J. Calhoun and Mark E. Saad, and each of them acting individually, as his or her true and lawful attorneys-in-fact and agent, with full power of each to act alone, with full powers 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 to this registration statement (including post-effective amendments and any related registration statements filed pursuant to Rule 462 and otherwise), and to file the same with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully for all intents and purposes as he or she might or could do in person, hereby ratifying and confirming that all said attorneys-in-fact and agents, or any of them or their substitute or resubstitute, may lawfully do or cause to be done by virtue hereof.

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

SIGNATURE	TITLE	DATE
/s/ Ronald D. Henriksen Ronald D. Henriksen	Chairman of the Board of Directors	June 11, 2009
/s/ Christopher J. Calhoun Christopher J. Calhoun	Chief Executive Officer, Vice-Chairman, Director (Principal Executive Officer)	June 11, 2009
/s/ Marc H. Hedrick, MD Marc H. Hedrick, MD	President, Director	June 11, 2009
/s/ Mark E. Saad Mark E. Saad	Chief Financial Officer (Principal Financial Officer)	June 11, 2009
/s/ John W. Townsend John W. Townsend	Chief Accounting Officer (Principal Accounting Officer)	June 11, 2009
/s/ Richard J. Hawkins Richard J. Hawkins	Director	June 11, 2009
/s/ Paul W. Hawran Paul W. Hawran	Director	June 11, 2009
/s/ E. Carmack Holmes, MD E. Carmack Holmes, MD	Director	June 11, 2009
/s/ David M. Rickey David M. Rickey	Director	June 11, 2009

EXHIBIT INDEX

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24.1*	Power of attorney (included on the signature page to the registration statement).

* Filed herewith

Exhibit 5.1

DLA Piper LLP (US)
4365 Executive Drive, Suite 1100
San Diego, California 92121-2133
www.dlapiper.com

T 858.677.1400
F 858.677.1401

June 11, 2009

Cytori Therapeutics, Inc.
3020 Callan Road
San Diego, CA 92121

Ladies and Gentlemen:

We have acted as counsel to Cytori Therapeutics, Inc., a Delaware corporation (the "***Company***"), in connection with the filing on the date hereof of a registration statement on Form S-3 (the "***Registration Statement***") under the Securities Act of 1933, as amended (the "Securities Act"). The Registration Statement relates to the registration of a total of 5,128,163 shares of the Company's common stock, par value $0.001 per share (the "*Shares*"), for resale by the stockholders identified in the Registration Statement, (i) 1,864,783 of which are issued and outstanding and (ii) up to 3,263,380 of which are issuable by the Company upon the exercise of outstanding warrants (the "***Warrant Shares***").

We have examined all instruments, documents and records which we deemed relevant and necessary for the basis of our opinion hereinafter expressed. In such examination, we have assumed the genuineness of all signatures and the authenticity of all documents submitted to us as originals and the conformity to the originals of all documents submitted to us as copies. We express no opinion concerning any law other than the corporation law of the State of Delaware and the federal law of the United States. As to matters of Delaware corporation law, we have based our opinion solely upon our examination of such laws and the rules and regulations of the authorities administering such laws, all as reported in standard, unofficial compilations.

Based on such examination, we are of the opinion that the Shares (excluding the Warrant Shares) have been validly issued and are fully paid and nonassessable and, if, as and when the Warrant Shares are issued and delivered by the Company pursuant to the terms of each warrant, including, without limitation, payment in full of the applicable consideration, the Warrant Shares will be validly issued, fully paid and nonassessable.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement and the reference to us under the caption "Legal Matters" in the prospectus included in the Registration Statement. In giving this consent, we do not admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Securities and Exchange Commission promulgated thereunder.

This opinion letter is given to you solely for use in connection with the registration for resale of the Shares in accordance with the prospectus included in the Registration Statement and is not to be relied upon for any other purpose. Our opinion is expressly limited to the matters set forth above, and we render no opinion, whether by implication or otherwise, as to any other matters relating to the Company, the Shares or the Registration Statement.

Very truly yours,

/s/ DLA Piper LLP (US)

DLA Piper LLP (US)

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

The Board of Directors

Cytori Therapeutics, Inc:

We consent to the use of our reports dated March 6, 2009, with respect to the consolidated balance sheets of Cytori Therapeutics, Inc. and subsidiaries as of December 31, 2008 and 2007, the related consolidated statements of operations and comprehensive loss, stockholders' equity (deficit), and cash flows for each of the years in the three-year period ended December 31, 2008, and the related financial statement schedule, and the effectiveness of internal control over financial reporting of Cytori Therapeutics, Inc. as of December 31, 2008, incorporated by reference herein and to the reference to our firm under the heading "Experts" in the prospectus.

Our report on the consolidated financial statements dated March 6, 2009, contains an explanatory paragraph that states that the Company has suffered recurring losses from operations and has a net capital deficiency, which raise substantial doubt about its ability to continue as a going concern. The consolidated financial statements and the related financial statement schedule do not include any adjustments that might result from the outcome of that uncertainty.

/s/ KPMG LLP

San Diego, California
June 10, 2009