December 17, 2008

Via EDGAR and Facsimile

Securities and Exchange Commission
Division of Corporation Finance
100 F Street, NE
Mail Stop 3030
Washington, D.C. 20549
Attn: Brian R. Cascio, Accounting Branch Chief

RE: **Cytori Therapeutics, Inc.**
Form 10-K for the Fiscal Year Ended December 31, 2007 Filed March 14, 2008
Form 10-Qs for the Quarterly Periods Ended March 31, June 30, and September 30, 2008
File No. 000-32501

Dear Mr. Cascio:

This letter responds to the comments contained in your letter to Cytori Therapeutics, Inc. (the "Company") dated November 26, 2008. For ease of reference, we have set forth below each of your comments in ***bold/italic*** font and our response thereto immediately after each comment.

Form 10-K for the Fiscal Year Ended December 31, 2007

Item 1. Financial Statements

Note 4. Transactions with Olympus Corporation – Condensed Financial Information for the Joint Venture, page 68

1. **Staff Comment:**
We see that you have a 50% interest in the Olympus-Cytori joint venture. Please tell us and revise future filings to disclose the components of equity loss from investment in joint venture. Tell us why the equity loss is not equal to 50% of the net loss of the joint venture.

Company response:
Our equity loss from investment in joint venture in 2005 consisted of Cytori's 50% share of non-eliminated research and development costs, which were expensed in accordance with SFAS 2. In 2006 and 2007, our equity loss from investment in joint venture consisted primarily of Cytori's 50% share of non-eliminated quality system services and corporate charges for services such as external auditing and insurance.

Our equity loss from investment in joint venture is not equal to 50% of the net loss of the joint venture due to the elimination of intercompany transactions, in accordance with APB 18. Paragraph 4 of APB 18 states that intercompany items are eliminated to avoid double counting and prematurely recognizing income. Paragraph 19 of APB 18 states that in applying the equity method, intercompany profits or losses should be eliminated as if the joint venture were consolidated. Also, a transaction of an investee of a capital nature that affects the investor's share of stockholders' equity of the investee should be accounted for as if the investee were a consolidated subsidiary.

In our future Form 10-K filings we will expand the financial information for the joint venture by presenting a more detailed version of the Statements of Operation that also includes reconciliation from the net loss of the joint venture to Cytori's equity loss from investment in joint venture, as follows:

Statements of Operation	Period from January 1, 2007 to December 31, 2007 (Unaudited)	Period from January 1, 2006 to December 31, 2006 (Unaudited)	Period from November 4, 2005 (inception) to December 31, 2005 (Unaudited)
Operating expenses:			
Research and development expense	$ -	$ 11,000,000	$ 19,343,000
General and administrative expense:			
Accounting and other corporate services	40,000	172,000	-
Quality system services	36,000	-	-
Other	10,000	2,000	-
Operating loss	86,000	11,174,000	19,343,000
Other (income) expense:			
Interest income	(7,000)	-	-
Net loss	$ 79,000	$ 11,174,000	$ 19,343,000
Reconciliation to equity loss from investment in joint venture			
Net loss	$ 79,000	$ 11,174,000	$ 19,343,000
Intercompany eliminations	(65,000)	(11,026,000)	(11,000,000)
Net loss after intercompany eliminations	14,000	148,000	8,343,000
Cytori's percentage of interest in joint venture	50%	50%	50%
Cytori's equity loss from investment in joint venture	$ 7,000	$ 74,000	$ 4,172,000

2. Staff Comment:

As a related matter, please tell us how you considered whether the joint venture is a significant unconsolidated subsidiary for which you should file separate financial statements under Rule 3-09 of Regulation S-X.

Company response:

Rule 3-09 of Regulation S-X, *Separate financial statements of subsidiaries not consolidated and 50 percent or less owned persons*, requires that if a registrant or a subsidiary of a registrant holds a 50% or less interest in a subsidiary that is accounted for using the equity method, and if either the first or third condition specified in Rule 1-02, section 210.1-02(w) are met (substituting 20% for 10%), then the registrant shall file separate financial statements.

The two applicable conditions from Rule 1-02, section 210.1-02(w) are summarized, after substituting 20% for 10%, as follows:

1) The registrant's and its other subsidiaries' investments in and advances to the subsidiary exceed 20% of the total assets of the registrant and its subsidiaries consolidated as of the end of the most recently completed fiscal year.

2) The registrant's and its other subsidiaries' equity in the income from continuing operations before income taxes, extraordinary items and cumulative effect of a change in accounting principle of the subsidiary exceeds 20% of such income of the registrant and its subsidiaries consolidated for the most recently completed fiscal year.

With respect to the first condition above, Cytori's total assets were $21,507,000, $24,868,000, and $28,166,000 as of December 31, 2007, 2006, and 2005, respectively. Cytori's investment in the joint venture as of December 31, 2007, 2006, and 2005 was $369,000, $76,000, and $0, respectively (note that our share of the joint venture's incurred losses reduced our investment balance in the joint venture to zero as of December 31, 2005, and we advanced an additional $150,000 to the joint venture in early 2006). Investments in (or advances to) the joint venture represented 1.7%, 0.3%, and 0.0% of total assets at December 31, 2007, 2006, and 2005, respectively. As such, this condition is not met.

With respect to the second condition above, Cytori's losses from continuing operations for the fiscal years ended December 31, 2007, 2006, and 2005 were $28,672,000, $25,447,000, and $26,538,000, respectively. Cytori's equity losses from investment in the joint venture during the same periods were $7,000, $74,000, and $4,172,000. These equity losses represented 0.0%, 0.3%, and 15.7% of Cytori's losses from continuing operations for the fiscal years ended December 31, 2007, 2006, and 2005, respectively. As such, this condition is not met.

Because the 20% threshold in either condition was not met in any periods reported, we concluded that separate financial statements for the joint venture were not required in accordance with Rule 3-09 of Regulation S-X.

Note 5. Gain on Sale of Assets, page 68

3. Staff Comment:

We see that in May 2007 you sold your intellectual property rights and tangible assets related to the spine and orthopedic bioresorbable implant product line. Please tell us how you considered whether you should record the disposition as discontinued operations, in accordance with SFAS 144. Please reference paragraphs 41-43 of the SFAS.

Company response:

Paragraph 42 of SFAS 144 states that, "the results of operations of a component of an entity that either has been disposed of or is classified as held for sale shall be reported in discontinued operations in accordance with paragraph 43 if both of the following conditions are met: (a) the operations and cash flows of the component have been (or will be) eliminated from the ongoing operations of the entity as a result of the disposal transaction and (b) the entity will not have any significant continuing involvement in the operations of the component after the disposal transaction."

Paragraph 41 of SFAS 144 states that a component of an entity comprises operations and cash flows that can be clearly distinguished, operationally and for financial reporting purposes, from the rest of the entity. Although we were able to distinguish the revenues from the four individual product lines of our MacroPore Biosurgery segment (Craniomaxillofacial – sold in 2002, Thin Film except for Japan interests – sold in 2004, Spine and Orthopedic – sold in 2007, and the Japanese Thin Film rights), the largest component of cost of sales and operating expense, salaries and wages, was not tracked by specific product, as the labor skill sets used in the manufacturing processes were similar and to some degree interchangeable between the product lines, including aspects of milling, molding, labeling, sterilization, packaging and inspection. Further, our bioresorbable products were made from the same copolymer material, and due to the commonality of the materials and processes, it was not possible to clearly distinguish cash outflows between the product lines. As such, we considered the entire segment to be the lowest level component that could be clearly distinguished, operationally and for financial reporting purposes, from the rest of the entity.

Our remaining Thin Film interests in Japan are a small portion of current or prior operations, as they represent our rights with respect to future manufacturing and sales. However, our Thin Film activities may become material in the near future; see EITF 03-13 discussion below.

SFAS 144 paragraph 42, criteria (a): The operations and cash flows of the component have been (or will be) eliminated

According to EITF 03-13, if after sale, we are still receiving or expecting to receive cash flows related to the operations of the disposed component and they are direct cash flows, we should not classify this component as a discontinued operation. Such activities or cash flows are considered to be direct cash flows if (a) significant cash outflows are expected to be recognized by the ongoing entity as a result of a migration of costs from the disposed component after the disposal transaction; or (b) significant cash outflows are expected to be recognized by the ongoing entity as a result of the continuation of activities between the ongoing entity and the disposed component after the disposal transaction.

EITF 03-13 states that migration means "the ongoing entity expects to continue to generate revenues and (or) incur expenses from the sale of similar products or services to specific customers of the disposed component." Also, the term 'continuation of activities' means the continuation of any revenue-producing or cost-generating activity through active involvement with the disposed component.

We do expect to sell Thin Film products through our Japan distribution partner, Senko. Although the products will be sold in Japan rather than the U.S., there is a similar core technology shared with the business line we sold in May.

Our balance sheet currently has two deferred amounts that relate to the Japan Thin Film. The first is a $1.5M license fee that was paid to us in 2004 by Senko in exchange for the right to sell and distribute certain Thin Film products in Japan. We also received a $1.25M milestone payment. The details of when and how much revenue we can recognize from these deferred balances is disclosed in our quarterly and annual reports. We believe that regulatory approval from Japan for the Thin Film products will be granted in the near future, and this approval will trigger revenue recognition for a portion of these deferred amounts. Further, we currently have a standing order to produce roughly $1.2M in product for Senko upon receiving the regulatory approval as well as another probable order after the first one is filled. All of these factors indicate we may be able to generate significant revenue and production activity related to this product line in the future.

SFAS 144 paragraph 42, criteria (b): The entity will not have any significant continuing involvement after disposal

According to EITF 03-13, continuing involvement in the operations of the disposed component provides the ongoing entity with the ability to influence the operating and (or) financial policies of the disposed component. The following factors should be considered in evaluating whether continuing involvement constitutes significant continuing involvement:

(a) The ongoing entity retains an interest in the disposed component sufficient to enable the ongoing entity to exert significant influence over the disposed component's operating and financial policies.

(b) The ongoing entity and the buyer (or the disposed component) are parties to a contract or otherwise parties to an arrangement that in substance enables the ongoing entity to exert significant influence over the disposed component's operating and financial policies.

We will continue to have an interest in the bioresorbable arena (a percentage of future Thin Film sales, production activity, and revenue recognition elements from our balance sheet), and while we will not have the ability to exert any influence over the operations of the spine and orthopedic product line sold, we will have influence over, and therefore continuing involvement with, the Japan distribution agreement with Senko. We are expecting potentially significant cash inflows as a result of the agreement with Senko, as noted above.

In conclusion, the MacroPore Biosurgery reporting segment in total represents the lowest level component that could be presented as a discontinued operation, as defined in paragraph 41 of SFAS 144. However, this component does not meet the discontinued operations criteria as described in paragraph 42, because we expect to have continuing involvement and on-going cash flows related to a portion of this component. Because neither condition from paragraph 42 are met, we determined the sale of our spine and orthopedic product line should not be shown as a discontinued operation in accordance with paragraph 43 of SFAS 144.

Exhibits 31.1 and 31.2

4. Staff Comment:

We note that you omitted the language in paragraph 4 of Item 601(b)(31)(i) of Regulation S-K that refers to internal control over financial reporting. Please file an abbreviated amendment to the Form 10-K that includes a cover page, explanatory note, signature page and paragraphs 1, 2, 4 and 5 of the certification. Please note that you should also comply with any applicable futures comments in the abbreviated amendment.

Company response:
On December 17, 2008, we filed Amendment No. 1 to our annual report on Form 10-K for the year ended December 31, 2007. In accordance with your request and #246.13 of the Staff's Compliance & Disclosure Interpretations of Regulation S-K (last updated July 3, 2008), Amendment No. 1 contains only the cover page, an explanatory note, a signature page and revised certifications of our principal executive and principal financial officers as Exhibits 31.1 and 31.2. Those certifications contain paragraphs 1, 2, 4 and 5 of the certification required by Item 601(b)(31)(i) of Regulation S-K and include the language from the introductory portion and subparagraph (b) of paragraph 4 of Item 601(b)(31)(i) of Regulation S-K that refer to internal control over financial reporting. In addition, those certifications do not include the titles of the certifying individuals at the beginning of the certifications and do include the phrase "(the registrant's fourth fiscal quarter in the case of an annual report)" in paragraph 4(d).

5. Staff Comment:

We note that the identification of the certifying individual at the beginning of the certification required by Exchange Act Rule 13a-14(a) also includes the title of the certifying individual. We note that you deleted the phrase '(the registrant's fourth fiscal quarter in the case of an annual report)' in paragraph 4(c) of the certification. In future filings, the identification of the certifying individual at the beginning of the certification should be revised so as not to include the individual's title and the wording should be consistent with Item 601 (b)(31)(i) of Regulation S-K.

Company response:
We acknowledge your comments and in future filings the certifications required by Exchange Act Rule 13a-14(a) will not include the title of the certifying individual at the beginning of the certification and such certifications will have wording consistent with Item 601(b)(31)(i) of Regulation S-K. Please see our response to comment 4 above regarding the certifications filed with Amendment No. 1 to our Form 10-K for the year ended December 31, 2007 and our response to comment 7 below regarding the certifications filed with Amendment No. 1 to each of our Form 10-Qs for the quarterly periods ended March 31, June 30, and September 30, 2008.

Form 10-Qs for the Quarterly Periods Ended March 31, June 30, and September 30, 2008

Note 6. Revenue Recognition, page 9

6. Staff Comment:

Please tell us and revise future filings to disclose the nature of the multiple elements that are included in the product sales of your Celution 800/CRS System and how you apply EITF 00-21 to these arrangements. Please also discuss how you determine fair value of each element and the timing of revenue recognition for each element.

Company response:
Our Celution® 800/CRS Systems consist of standalone products (a medical device and various consumable supplies) that do not contain multiple elements of future deliverables, and therefore are not within the scope of EITF 00-21. These systems are recognized upon shipment or delivery, depending on the agreement terms.

We delivered and installed our first StemSource® Cell Bank in the 3rd quarter of 2008. A cell bank, which includes similar medical device(s) and supplies as described above for the 800/CRS Systems, also includes other peripheral equipment delivered at time of installation as well as license and territory exclusivity rights. Our agreement with the customer also includes future service deliverables related to the maintenance and support of the bank. Because our cell bank sales involve multiple revenue-generating activities, the "units of accounting" within such an arrangement must be determined prior to the application of SAB 104 criteria, using EITF 00-21. We identified the following elements:

1. Equipment, supplies, and instructional materials
2. Installation and setup services
3. Initial training services
4. Equipment maintenance, technical support and database hosting services

We then analyzed these elements as follows:

Deliverables 1-3 (completed / provided prior to our point of initial revenue recognition)

The cell bank sold in Q3 was determined to be fully functioning and operational from the customer's perspective once all equipment had been delivered, installation and setup had been completed, and initial training was performed.

Once delivery, installation, and training has been completed, all Cytori deliverables have been fulfilled with the exception of the hosting services for the web-based data management application, technical and administrative support, and maintenance services for the equipment. Completion of deliverables 1 through 3 results in a stand-alone package that has value to the customer and could be sold separately, and therefore we believe it is appropriate to recognize revenue for these delivered items at that time, provided we can also demonstrate that there is objective and reliable evidence of fair value for the undelivered elements of the transaction (see below). There is no general right of return associated with sales of cell banks.

Deliverable 4 – Equipment maintenance, technical support and database hosting services

Included in the sales arrangement for the StemSource® Cell Bank are equipment maintenance, technical support and database hosting services. Cytori will provide access to a secure web-based data management system for the first year. This simple database application will reside on Cytori servers and be accessible to bank customers. We will also provide maintenance and technical support services for the first year, with an annual renewal option of $36,000 per year to extend these services (maintenance, technical support, and database hosting) for up to four consecutive years. As they will be delivered over time, we determined a fair value for these undelivered services using the fair value guidance in EITF 00-21.

Determination of fair value and timing of revenue recognition for undelivered elements

We applied guidance from EITF 00-21 to develop our estimates of fair value. Paragraph 16 of EITF 00-21 indicates that the best evidence of fair value is the price of a deliverable when it is regularly sold on a standalone basis, constituting vendor-specific objective evidence of fair value. Although we have not sold these services (i.e. maintenance, technical support and database hosting) on a stand alone basis, we have offered our customers the option to purchase these services at comparable prices in similar geographic regions. And as such, we developed our fair value estimates for undelivered elements based primarily on the annual renewal rate stated in the agreement of $36,000. We have also gathered third party evidence for performance of these services which provided us with additional comfort that our fair value estimate for future services was reasonable. We initially recorded deferred revenue of $67,000, and passed on adjusting this amount down to $36,000 due to immateriality. We will earn this amount as revenue during the next year.

In conclusion, we determined that elements 1-3 above constitute a separate unit of accounting, as 1) they represent stand-alone value to the customer and could be sold separately, 2) there is objective and reliable evidence of fair value for the undelivered elements of the transaction, and 3) there is no general right of return associated with the sale. We recognized the value for these deliverables in the third quarter of 2008 using the residual value method prescribed in EITF 00-21. The fair value of future service deliverables associated with this agreement was deferred and will be recognized during the first year of the contract.

In our future filings, we will expand our discussion of product revenue as follows:

Beginning in March 2008, we began sales and shipments of our Celution® 800/CRS System to the European and Asia-Pacific reconstructive surgery market. Assuming all other applicable revenue recognition criteria have been met, revenue for these product sales will be recognized upon delivery to the customer, as all risks and rewards of ownership have been substantively transferred to the customer at that point. For Celution® 800/CRS System sales to customers who arrange for and manage the shipping process, we recognize revenue upon shipment from our facilities.

In September 2008 we completed installation of our first StemSource® Cell Bank. This product includes a combination of equipment and service deliverables, some of which will be provided to the customer over time. We defer an estimate of the fair value of those future deliverables from product revenue until such deliverables have been provided, or earned, in accordance with EITF Issue No. 00-21, "Revenue Arrangements with Multiple Deliverables" ("EITF 00-21"). Future deliverable elements of a cell bank sale may include a database management web hosting service, routine maintenance, and technical support services. Fair values for undelivered elements are determined based on vendor-specific objective evidence. Deferred product revenue will be recognized over time based on the terms of the contract.

Exhibits 31.1 and 31.2

7. Staff Comment:

We note that you omitted the language in paragraph 4 of Item 601(b)(31)(i) of Regulation S-K that refers to internal control over financial reporting. Please file an abbreviated amendment to each Form 10-Q that includes a cover page, explanatory note, signature page and paragraphs 1, 2, 4 and 5 of the certification. Please note that you should also comply with any applicable futures comments in the abbreviated amendment.

Company response:

On December 17, 2008, we filed Amendment No. 1s to each of our quarterly reports on Form 10-Q for the quarterly periods ended March 31, June 30, and September 30, 2008. In accordance with your request, each Amendment No. 1 contains only the cover page, an explanatory note, a signature page and revised certifications of our principal executive and principal financial officers as Exhibits 31.1 and 31.2. Those certifications contain paragraphs 1, 2, 4 and 5 of the certification required by Item 601(b)(31)(i) of Regulation S-K and include the language from the introductory portion and subparagraph (b) of paragraph 4 of Item 601(b)(31)(i) of Regulation S-K that refer to internal control over financial reporting. In addition, those certifications do not include the titles of the certifying individuals at the beginning of the certifications and do include the phrase "(the registrant's fourth fiscal quarter in the case of an annual report)" in paragraph 4(d).

Additionally, as requested by your letter, the Company hereby acknowledges that:

- the Company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the Company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

If you have any further questions or wish to discuss any of the responses we have provided above, please do not hesitate to call the undersigned at (858) 458-0900.

Sincerely,

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

/s/ Mark E. Saad
Mark E. Saad
Chief Financial Officer