

Mail Stop 6010

September 27, 2007

Christopher J. Calhoun, Chief Executive Officer  
Cytori Therapeutics, Inc.  
3020 Callan Road  
San Diego, California 92121

Via U S Mail and FAX [(858) 458-0994 ]

**Re: Cytori Therapeutics, Inc.  
Form 10-K for the fiscal year ended December 31, 2006  
Form 10-Q for the quarter ended June 30, 2007  
File No. 0-32501**

Dear Mr. Calhoun:

We have reviewed your filings and have the following comments. We have limited our review to only your financial statements and related disclosures, and do not intend to expand our review to other portions of your documents. Where indicated, we think you should revise your documents in response to these comments in all future filings with the Commission. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or on any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Form 10-K for the fiscal year ended December 31, 2006

Variable Interest Entity, page 46

1. We note your disclosure that Olympus is protected from absorbing all expected losses in the Joint Venture and may not be an “at risk” holder. Please tell us how you concluded that Olympus and not Cytori is the primary beneficiary.

Financial Statements

Note 2. Revenue Recognition, page 61

2. Please tell us and disclose in future filings your basis for recognizing revenues under research and development arrangements and why these would not be recorded as a reduction to research and development expenses. We note the disclosure on page 61 that you are reimbursed for “qualifying expenditures” under some of these arrangements.

Note 4. Transaction with Olympus Corporation, page 67

3. Please tell us and disclose in future filings the basis for your accounting treatment of the proceeds received from the common stock purchase agreement with Olympus. Clarify why you recorded the difference between the proceeds received and the fair values of your common stock and option liability as deferred revenue. Clarify the specific revenue arrangement or activity that this relates to, how the amount of deferred revenue related to this activity was determined and how it will be recognized. Clarify why the difference should not have been recorded to additional paid-in capital.
4. We note the disclosure on pages 36, 45 and 68 of the use of an independent valuation firm. While management may elect to take full responsibility for these valuations, if you choose to continue to refer to the expert in any capacity, please revise future filings, beginning with your next 10-Q, to name the independent valuation firm. In addition, please note that if you intend to incorporate your Form 10-K by reference into any registration statement, you will be required to include the consent of the independent valuation firm as an exhibit to the registration statement.

Note 5. Gain on Sale of Assets, Related Party, page 70

Note 6. Gain on Sale of Assets, Thin Film Product Line, page 70

5. We note the gain on sale of assets included in other income each year and through the second quarter 2007, including the sale of your Thin Film and other product lines. Please tell us why these gains were not included in income from operations and why the assets sold do not relate to your operating activities. See paragraph 46 SFAS 144 and Question 2 of SAB Topic 5.P.

As appropriate, please respond to these comments within 10 business days or tell us when you will provide us with a response. Please furnish a response letter that keys your responses to our comments and provides the requested information. Confirm that you will comply with these comments in all future filings with the Commission. Detailed response letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your responses to our comments and the requested information.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing reviewed by the staff to be certain that the filing includes all information required under the Securities Exchange Act of 1934 and that they have provided all information investors require for an informed decision. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

In connection with responding to our comments, please provide, in writing, a statement from the company acknowledging 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

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- 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.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in our review of your filing or in response to our comments on your filing.

You may contact Jeanne Bennett at (202) 551-3606, or me at (202) 551-3676 if you have questions regarding our comments. In our absence you may contact Martin F. James, Senior Assistant Chief Accountant at (202) 551-3671.

Sincerely,

Brian R. Cascio  
Accounting Branch Chief