



DIVISION OF
CORPORATION FINANCE

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

Mail Stop 6010

August 8, 2007

VIA U.S. MAIL and FACSIMILE

Andrew S. Maslan
Cytomedix, Inc.
Chief Financial Officer
416 Hungerford Drive, Suite 330
Rockville, MD 20850

RE: Cytomedix, Inc.
Form 10-K for the fiscal year ended December 31, 2006
Filed February 26, 2007
File No. 001-32518

Dear Mr. Maslan:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your document in response to these comments. 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 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 year ended December 31, 2006

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operation, page 17

Comparative Results of Operations for the years ended December 31, 2006 and 2005, page 18

Operating Expenses, page 18

1. We see that you present non-GAAP operating expenses excluding equity based compensation. Under Item 10(e) of Regulation S-X, registrants are not permitted to adjust a non-GAAP performance measure to eliminate or smooth items identified as non-recurring, infrequent or unusual if the nature of the item is such that it is reasonably likely to recur within two years or there was a similar charge within the prior two years. We also refer you to SAB Topic 14G which states that if the company determines that a non-GAAP measure, excluding equity based compensation, does not violate any of the prohibitions from inclusion in filings with the Commission outlined in Item 10(e) of Regulation S-K, management would be required to disclose, among other items, the following:
 - The reasons that the company's management believes that presentation of the non-GAAP financial measure provides useful information to investors regarding the company's financial condition and results of operations; and
 - To the extent material, the additional purposes, if any, for which the company's management uses the non-GAAP financial measure that are not otherwise disclosed.

In addition, you should consider the staff's response to Question 8 included in Frequently Asked Questions Regarding the Use of Non-GAAP Measures in June of 2003. Please revise in future filings.

Modified EBITDA Information Not In Conformity With Generally Accepted Accounting Principles, page 22

2. We see that you present modified EBITDA – Non-GAAP. Adjusted EBITDA is not exempt from the prohibition in Item 10(e)(1)(ii)(A) of Regulation S-K. Under Item 10(e) of Regulation S-X, registrants are not permitted to adjust a non-GAAP performance measure to eliminate or smooth items identified as non-recurring, infrequent or unusual if the nature of the item is such that it is reasonably likely to recur within two years or there was a similar charge within the prior two years. As such, please remove this measure from future filings.

Financial Statements

Statements of Operations, page 26

3. We reference the patent litigation settlement recorded within other income (expense) on the statement of operations. Since the patents and license agreements appear to relate to your operations, please tell us why you should not record the settlement within operating income. We also note that you record expenses for patent enforcement actions within operations. Please advise.

Note 4. Licensing Agreements, page 36

4. We see that you received significant initial licensing fees under license agreements for the Knighton Patent. Please tell us and clarify in future filings your revenue recognition policy for the initial licensing fees. The disclosure on page 33 that "certain" upfront license fees are amortized over the life of the license agreement is not clear.

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 cover letter with your response that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your responses to our comments.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing 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
- 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.

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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 Kristin Lochhead at (202) 551-3664 or me at (202) 551-3676 if you have questions. In this regard, please do not hesitate to contact Martin James, Senior Assistant Chief Accountant, at (202) 551-3671 with any other questions.

Sincerely,

Brian Cascio
Accounting Branch Chief