

Mail Stop 6010

April 24, 2007

VIA U.S. MAIL and FACSIMILE

James R. Gibson  
Interim Principal Financial Officer  
Affymetrix, Inc.  
3420 Central Expressway  
Santa Clara, California 95051

**RE: Affymetrix, Inc.  
Form 10-K for the fiscal year ended December 31, 2006  
Filed March 1, 2007  
Form 10-K/A for the fiscal year ended December 31, 2005  
Form 8-K dated February 7, 2007  
File No. 000-28218**

Dear Mr. Gibson:

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

Consolidated Financial Statements

Consolidated Statements of Operations, page 61

1. We see that you continue to present stock-based compensation as a separate line item in your consolidated statements of operations for periods prior to December 31, 2006. Expenses related to share-based payment arrangements should be presented in the same line or lines as cash compensation paid to the same employees. Please reference SAB 14-F. Please revise future filings to classify stock-based compensation for all periods in an appropriate financial statement line item.

Note 2. Summary of Significant Accounting Policies, page 65

2. Please tell us and revise future filings to disclose the specific changes in facts, circumstances, scope of operations and business practices that resulted in the functional currency for Affymetrix Pte Ltd changing from the local currency to the U.S. Dollar. Refer to Appendix A to SFAS 52

Note 4. Acquisition, page 75

3. We note the disclosure on page 76 that a valuation of the purchased intangibles and in-process technology was undertaken by a third party valuation specialist. 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 identify the appraisal firm in the "Experts" section and include its consent in the registration statement.

Note 15. Senior Convertible Notes, page 88

4. We see that the conversion price for your senior convertible notes is subject to adjustment in certain circumstances as described on page 88 and 89 of your filing. Tell us how you have applied the guidance in EITF Issue 00-19 in evaluating whether the various features of your senior convertible notes, including for example, the conversion feature, are embedded derivatives that you should separate from the debt host, record as liabilities and account for at fair value under SFAS 133. In this regard, it appears that this note may not meet the definition of conventional convertible debt in paragraph 4 of EITF Issue 00-19 since the note has a feature wherein the conversion price is reset. Please provide us with your analysis of each of these features under paragraphs 12-32 of EITF 00-19.

Form 10-K/A for the year ended December 31, 2005

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations, page 40

Restatement of Consolidated Financial Statements, page 41

5. Please revise your filing to provide a more substantive disclosure of the reasons for the restatement. The expanded disclosure should specifically describe the nature of the "certain errors and documentation lapses" identified during the review of your stock option granting practices. We refer you to the letter from the Chief Accountant of the U.S. Securities and Exchange Commission dated September 19, 2006 which can be found at [http://www.sec.gov/info/accountants/staffletters/fei\\_aicpa091906.htm](http://www.sec.gov/info/accountants/staffletters/fei_aicpa091906.htm).

Consolidated Financial Statements

Consolidated Statement of Operations, page 63

6. We note that you present a table of stock-based compensation in a footnote on the face of the consolidated statements of operations. Consistent with the guidance in SAB Topic 14-F, please revise to present the stock-based compensation charges in parenthetical notes to the appropriate income statement line items. Alternatively, revise to remove the total from the table presented in the footnote. As indicated in the SAB, you may also present the information in the footnotes to the financial statements or within MD&A.

Note 3. Restatement of Previously Issued Financial Statements, page 76

7. Please revise to disclose, for each annual period preceding the most recent three years, the information required by paragraph 45.c.2 of FASB Statement No. 123, the restated stock compensation cost that should have been reported for each fiscal year. Refer to the sample letter sent in response to inquiries related to filing restated financial statements for errors in accounting for stock option grants, available at <http://www.sec.gov/divisions/corpfin/guidance/oilgasltr012007.htm>.
8. Since interim period information for the most recent two fiscal years as required by Item 302 of Regulation S-X is required to be restated, you should revise your filing to present information for the balance sheets and statements of income in a level of detail consistent with Regulation S-X Article 10-01 (A) (2) and (3) and appropriate portions of 10-01(b) and with columns labeled "restated."

Alternatively, please tell us why you do not believe these disclosures are necessary. Please refer to the sample letter sent in response to inquiries related to filing restated financial statements for errors in accounting for stock option grants, available at <http://www.sec.gov/divisions/corpfin/guidance/oilgasltr012007.htm>.

Item 9A. Controls and Procedures, page 104

9. We see that you continue to conclude that your disclosure controls and procedures were effective at December 31, 2005 despite the restatement and control deficiencies related to accounting for stock-based compensation. Please tell us and revise to disclose how your certifying officers considered the effect of the error on the adequacy of your disclosure controls and procedures as of December 31, 2005. We refer you to the sample letter sent in response to inquiries related to filing restated financial statements for errors in accounting for stock option grants, available at <http://www.sec.gov/divisions/corpfin/guidance/oilgasltr012007.htm>.

Form 8-K dated February 7, 2007

Exhibit No. 99.1

10. We see that you present non-GAAP measures of research and development expense and selling, general and administrative expense, excluding the impact of SFAS 123R for the fourth quarter of 2006 and for the fiscal year 2006. Additionally, you present earnings per share excluding the impact of SFAS 123R. However, we do not see separate reconciliation to the most comparable GAAP measure for each of these items. Please note that Instruction 2 to Item 2.02 of Form 8-K requires that when furnishing information under this item you must provide all the disclosures required by paragraph (e)(1)(i) of Item 10 of Regulation S-K. Those disclosures include a reconciliation to the directly comparable GAAP measure for *each* non-GAAP measure presented and explanation of why you believe the *each* non-GAAP measure provides useful information to investors. Please confirm that you will revise Forms 8-K in future periods to provide all of the disclosures required by Item 10(e) (1) (i) of Regulation S-K for *each* non-GAAP presented.

Mr. Gibson  
Affymetrix, Inc.  
April 24, 2007  
Page 5

As appropriate, please amend your filing and respond to these comments within 10 business days or tell us when you will provide us with a response. You may wish to provide us with marked copies of the amendment to expedite our review. Please furnish a cover letter with your amendment 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 amendment and 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.

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) 551-3605 if you have questions. In this regard, please do not hesitate to contact Brian Cascio, Accounting Branch Chief, at (202) 551-3676 with any other questions.

Sincerely,

Gary Todd  
Reviewing Accountant