

Mail Stop 3561

May 11, 2007

Dr. Edwin C. Quattlebaum, CEO
MetaMorphix, Inc.
8000 Virginia Manor Road Suite 140
Beltsville, Maryland 20705

**Re: MetaMorphix, Inc.
Form 10-KSB
Filed April 3, 2007
File No. 000-51294**

Dear Mr. Quattlebaum:

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 supplemental information so we may better understand your disclosure. After reviewing this information, we may or may not 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.

General

1. We note the disclosure on the cover page of the Form 10-KSB in which you check the box "No" as to whether the issuer has filed all reports required to be filed by Section 13 or 15(d) of the Exchange Act during the past 12 months. Please reconcile this disclosure with the statement on page 27 that, "To date, we have complied with all of the required filings."

Item 1. Description of Business, page 1

General

2. We note your response to comment two from our letter of January 12, 2007 and we reissue in part our prior comment. We note that you have various licensing agreements. Please add disclosure that provides the range of fees to be paid by the company pursuant to these agreements along with the duration of such agreements, e.g., agreements between 1) the company and GTG; and 2) the company and Hubbard. Also, in regards to the GTG agreement, please disclose this range along with the duration of the agreement in the notes to the financial statements (see comment four from our previous letter).

Growth and Differentiation Factor Technology, page 11

Amended and Restated Collaboration Agreement with Genetics Institute and The John Hopkins University, page 11

3. In comparing the disclosure in this section to the disclosure in your amended Form 10-SB, we note the deletion of the statement that, "No such notice has been served upon us by Johns Hopkins." Please advise and disclose whether Johns Hopkins has provided you with a 60-day notice-and-cure letter. If so, please discuss the company's response to the letter and the effect upon the company's business if the Collaboration Agreement is terminated.

Risk Factors, page 10

Risks Related to the Ownership of Our Securities, page 27

4. We note the additional risk factor under the subheading "The existence of a significant number of securities exercisable ..." We further note the statement under this risk factor that "certain of these securities contain conversion or exercise prices that are measured as a discount to our initial offering price." Please disclose the number of securities that are subject to the discount and the amount of the discount to the offering price.

Part II

Item 6. Management's Discussion and Analysis or Plan of Operation, page 31

Overview, page 31

5. We believe the "Overview" in the MD&A could be expanded to offer investors an introductory understanding of, to the extent known, the challenges and risks of which management is aware and to discuss any actions being taken to address the same. These challenges and risks could be related to how the company earns revenue and income and

generates cash. For example, a brief overview of the company's recent losses along with its outstanding debt would appear to be beneficial to investors. For a more detailed discussion of what is expected in both this subheading and the MD&A section in general, please refer to: <http://www.sec.gov/rules/interp/33-8350.htm>. See also, Item 303 of Regulation S-B.

Comparison of the Years Ended December 31, 2006 and 2005, page 38

6. Under the "Net Loss" subheading, please disclose the amount of the net loss for the years 2006 and 2005. Also revise accordingly the "Net Loss" section for the comparison of the years 2005 and 2004.

Beneficial Conversion Feature, page 41

7. Please discuss and analyze in more detail the "Preferred stock dividends and accretion of beneficial conversion features" on the income statement.

Liquidity and Capital Resources, page 41

8. We note that as of December 31, 2006, the company had \$65,215,023 in liabilities in which \$40,975,000 was in the form of short-term and long-term promissory notes. Of the amount in notes, the company was also past due in the amount of \$4,396,000. We further note the legal proceedings against the company for breach of contract claims regarding some of these notes. In light of this disclosure, it appears that a discussion and analysis of material covenants related to the outstanding debt would be required. See the Commission's recent Release No. 33-8350 (December 19, 2003), Part IV.C. Debt Instruments, Guarantees and Related Covenants. Also revise accordingly your discussion and analysis to ensure that you provide a clear picture of the company's ability to generate cash and to meet existing and known or reasonably likely future cash requirements. See Release No. 33-8350, Part IV. Liquidity and Capital Resources.

Executive Compensation, page 53

9. In the table, please provide the information for the last two fiscal years as required by Item 402(b)(1) of Regulation S-B.
10. If applicable, please include a column for "Bonus" in the table. See Item 402(b)(2) and the Instruction to Item 402(b)(2)(iii) and (iv) of Regulation S-B.
11. Please describe in more detail the principal terms of the employment agreement between the company and Mr. Russo, including a description of future increases. See Item 402(c)(1) and (e)(2) of Regulation S-B.

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Edwin C. Quattlebaum
MetaMorphix, Inc.
May 11, 2007
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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 supplemental 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.

You may contact Babette Cooper at (202) 551-3396 or Terence O'Brien at (202) 551-3355 if you have questions regarding comments on the financial statements and related matters. Please contact Thomas Kluck at (202) 551-3233 with any other questions.

Sincerely,

John Reynolds
Assistant Director

cc: Thomas Prescott Russo
Fax (301) 617-9075