



UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549-7010

August 10, 2006

James J. Barber
Chief Executive Officer
Metabolix, Inc.
21 Erie Street
Cambridge, MA 02139

**Re: Metabolix, Inc.
Registration Statement on Form S-1
Filed July 14, 2006
File No. 333-135760**

Dear Mr. Barber:

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.

General

1. Please include all information that is not subject to Rule 430A in the next amendment, including a bona fide estimate of the range of the maximum offering price for the shares and the maximum number of shares offered. This information must be included on the prospectus cover page, as well as in the body of the prospectus. See instruction 1(A) to Item 501(b)(3) of Regulation S-K. We will need adequate time to review this information once it is provided. You must file this amendment prior to circulating the prospectus.
2. All exhibits are subject to our review. Accordingly, please file or submit all of your exhibits with your next amendment, or as soon as possible. Please note that we may have comments on the legal opinion and other exhibits once they are

filed. Understand that we will need adequate time to review these materials before accelerating effectiveness.

3. Prior to the effectiveness of the registration statement, please arrange to have the NASD call us or provide us with a letter indicating that the NASD has cleared the filing.
4. Comments regarding your confidential treatment request will be sent under separate cover. Please note that we will not be in a position to consider a request for acceleration of effectiveness of the registration statement until we resolve all issues concerning the confidential treatment request.

Prospectus Cover Page

5. Please delete the reference to “Sole Book-Running Manager.”
6. We note that your cover page contains information that is not required by Item 501 of Regulation S-K and is not key to an investment decision. In this regard, we note the statement “where nature performs” underneath your company’s name at the top of the page. Please remove this statement from your cover page. Please also comply with this comment on the outside back cover page of your prospectus.

Table of Contents, page i

7. We note your disclosure that investors should rely only on the information contained in this prospectus. If you intend to use any free writing prospectuses, you should consider removing this language when you have a Section 10 prospectus available, as you will be liable for, and investors would be entitled to rely upon, that information.

Prospectus Summary, page 1

8. The forepart of your prospectus contains unnecessary jargon and technical terms. For example, these words and phrases appear in the prospectus summary and the risk factors:
 - Microbial
 - Biomass biorefinery system
 - Thermoforming
 - C3 and C4 chemicals

Eliminate the industry jargon from the forepart of your prospectus. Instead, explain these concepts in simple, concrete, everyday language. In the remainder of the prospectus, place any industry terms you use in context so those potential

- investors who do not work in your industry can easily understand the disclosure. The meaning of the term should be made clear at the first place the term appears. See Rule 421(d)(2)(ii) of Regulation C.
9. Please revise to briefly explain, with more detail in an appropriately captioned section of your business section, the genetic engineering you engage in and how it relates to your business platforms.
 10. Please also revise to briefly provide more detail about switchgrass. For example, without limitation, briefly describe what switchgrass is, where it grows, and how you plan to procure it in amounts sufficient to carry out this part of your business plan.
 11. In the first bullet point on page 3, please revise to explain what you mean by “patent estate.”

Metabolix, Inc., page 1

12. Please disclose in the forepart of this section that since 1992 you have been engaged solely in research and developmental activities and, as you disclose under Risk Factors, you currently do not produce commercial products and may not be able to successfully manufacture PHA Natural Plastics at a commercial scale in a timely or economical manner.
13. Please also consider revising your graphics that follow your cover page in order to remove any implication that you currently produce natural plastics.
14. Disclose the basis for your assertion that you are a leading biotechnology company that develops and plans to commercialize alternatives to petrochemical based plastics. If you funded or were otherwise affiliated with any of the studies or reports you cite, please disclose this. Otherwise, please confirm that these sources are widely available to the public. If you do not have appropriate independent support for a statement, please revise the language to make clear that this is your belief based on your experience in the industry, if true.
15. Currently you highlight only positive information in the summary. For example, you discuss PHA Natural Plastics and strategies without explaining any disadvantages or your history of losses. Revise your summary to present a balanced view of your company.

Risk Factors, page 7

16. Delete the third second sentence of the first paragraph. All material risks should be described in the risk factors section. If risks are not deemed material, you should not reference them.
17. Item 503(c) of Regulation S-K states that issuers should not “present risk factors that could apply to any issuer or to any offering.” The risks you disclose relating to being a public company and developing internal controls could apply to nearly any issuer in your industry and even in other industries. If you elect to retain these general risk factors in your prospectus, you must clearly explain how they apply to your company or offering. For example, disclose whether you or your auditors have identified any material deficiencies related to your disclosure controls or internal controls.
18. Please provide the information investors need to assess the magnitude of the risks. For example:
 - Quantify the cost of constructing the Commercial Manufacturing Facility and ancillary facilities under “We may not be able to develop manufacturing capacity....” on page 8;
 - Quantify your existing cash resources and anticipated payments from your strategic alliance with ADM under “We may need to secure additional funding....” on page 12;
 - Disclose whether any material patent licenses are due to expire in the near future under “A substantial portion of the technology used in our business....” on page 15 and tell investors what you mean by “a substantial portion;” and
 - Quantify the effect that the adoption of SFAS No. 123R’s fair value method will have on your results of operations.
19. Please revise throughout your risk factors to remove the implication that you currently have products or advise us otherwise. For example, without limitation, refer to the following risk factors:
 - Patent protection for our products is important and uncertain, page 9.
 - Our products are made using genetically modified products, page 16.
 - We face risks associated with our international business, page 18.

We may not be able to develop manufacturing capacity sufficient to meet demand . . . , page 8

20. It appears that you are including multiple risks under this subheading. In this regard, we note that the risk described in the first paragraph of this risk factor appear to be a significant risk that should stand alone under its own explanatory subheading. Please revise accordingly.

We rely heavily on ADM . . . , page 10

21. Please break out the first sentence into bullet points. Please also apply this comment to the third sentence in your first risk factor on page 23, “Our management will have broad discretion”

Special Note Regarding Forward-Looking Statements, page 26

22. Please delete the language in the last paragraph of this section to eliminate the implication that you are not responsible for the accuracy of the information you elect to include in your prospectus. Make similar changes under Market and Industry Data on page 100.

Use of Proceeds, page 28

23. Please quantify and state the amount of net proceeds you anticipate using for each of the purposes listed.

Dilution, page 30

24. Revise the dilution table to include the shares underlying options that officers, directors and affiliates have the right to acquire.
25. Please also provide dilution information assuming the underwriters exercise the over allotment option.

Management’s Discussion and Analysis of Financial Condition and Results of Operation, page 34

26. Please describe the grants that the U.S. Department of Energy and the U.S. Department of Agriculture have provided you.

Research and Development Expenses, page 36

27. Please disclose the following information for each of your major research and development projects:
 - The costs incurred during to date for the project;
 - The anticipated completion dates;
 - The risks and uncertainties associated with completing development on schedule, and the consequences to operations, financial position and liquidity if the project is not completed timely; and finally
 - The period in which material net cash inflows from significant projects are expected to commence.

To the extent that information requested above is not known or estimable, disclose that fact and the reason why it is not known. Please refer to the Current Issues and Rulemaking Projects Quarterly Update; Division of Corporation Finance, March 31, 2001, under Section VIII: Industry Specific Issues Accounting and Disclosure by Companies Engaged in Research and Development Activities.

Critical Accounting Estimates and Judgments, page 37

Revenue Recognition, page 38

28. You deferred \$2,000,000 in cash received in 2005 under a joint development arrangement with BP since these amounts were applicable for determining BP's equity participation in a potential future joint venture. Please explain to us in further detail the nature of this transaction and cite for us authoritative accounting literature that supports your accounting treatment.

Liquidity and Capital Resources, page 42

29. You disclosed that you expect to continue to make significant investments in the purchase of property and equipment to support your pilot manufacturing and other efforts. You also disclosed that you are unable to estimate the exact amount of capital outlays. However, given the materiality of these capital expenditures you should estimate a range of anticipated capital expenditures if practicable. Please refer to Item 303(a)(1)-(2) of Regulation S-K.

Business, page 47

30. Please disclose the significant terms and characteristics of the ADM agreements and the MIT license agreement, including the various elements of products and services to be delivered by each party, the contract period, payment terms and amounts, obligations of the parties, events and circumstances that trigger milestone payments, and termination provisions.
31. Please tell us more about the BP America Production Company agreement, such as why the agreement was terminated. Please provide us a copy of the joint development agreement with BP America. We may have further comment based on your response.

Intellectual Property, page 67

32. Please clarify how many of the issued patents and patent applications are owned by third parties and licensed to you.

33. Please clarify how many patents, applications, and licenses relate to the technology in your current business plan.

Certain Relationships and Related Party Transactions, page 83

34. Please file the agreement with Tephra as an exhibit.

Description of Capital Stock, page 89

35. Please remove the statement in the second sentence of the first paragraph that the description is qualified by reference to your second amended and restated certificate of incorporation, as it is inconsistent with Rule 411 of Regulation C.

Where You Can Find More Information, page 100

36. Please revise the last sentence of the first paragraph that indicates that you currently file Exchange Act reports with the SEC.

Financial Statements

Consolidated Statements of Operations, page F-4

37. Given that related party revenues represent almost 9% of revenues in 2005 and 2004, please disclose related party revenues on the face of your statements of operations. Please refer to Rule 4-08(k) of Regulations S-X.
38. Please disclose research and development cost of revenue and grant cost of revenues separately. Please refer to Rule 5.03(b)(2) of Regulation S-X.

Note 2 – Summary of Significant Accounting Policies, page F-7

Revenue Recognition, page F-11

39. You disclose on page 41 that license fees and related royalty payment revenues decreased to \$242,000 in 2005 from \$392,000 in 2004 substantially due to a change in your assessment regarding the collectibility of certain license fees and royalty payment due from a related party. Please tell us the factors that led to your change in accounting policy for license and royalty payments due from related parties from an accrual basis to a cash basis. Please also tell us what portion of such revenues recognized in each period presented have been collected.

Note 3 – Significant Collaborations, page F-7

40. Please tell us the factors you considered in determining that the elements of your agreements with ADM are inseparable under EITF 00-21. Please disclose the significant deliverables that you are required to complete under the agreements.
41. Your policy with respect to up-front payments is to defer the payments and “recognize [them] over the period of performance of undelivered services or as undelivered items are delivered.” On page 37 you state that the deferred revenues related to payments received from ADM “will be recognized in future periods after the commencement of product commercialization and as the final deliverables under the arrangement are being completed.” Please revise your disclosure on pages 37 and F-11 to clarify whether you intend to recognize the deferred revenue related to ADM, including milestone payments, only once all deliverables under the arrangement are completed or using a time-based method following the commencement of product commercialization.
42. You indicate that under certain conditions you may be required to refund a portion of the reimbursements received from ADM under the Technology Alliance and Option Agreement. Please disclose the conditions under which you would be required to refund reimbursements received from ADM.
43. Please file the November 3, 2004 Technology Alliance and Option Agreement as an exhibit to your Form S-1.

Note 6 – Accrued Expenses, page F-21

44. If true, please confirm that there are no items included in other accrued expenses in excess of 5% of total current liabilities that require disclosure in accordance with Rule 5.02 of Regulation S-X.

Note 8 – Related Party Transactions, page F-22

45. Please tell us the factors that you considered in determining that your investment in Tephra, Inc. became impaired in 2005. We note that you recognized license and royalty revenues on this investment of \$112,800 in 2003, \$316,900 in 2004 and \$139,900 in 2005. Please tell us the assumptions you used to determine the fair value of your investment in Tephra, Inc.

Note 11 – Stock Compensation Plans, page F-33

46. Please provide us with an analysis of the stock-based compensation that you granted from January 1, 2005 through the date of your response letter. Your analysis should also include any outstanding instruments to which you are applying variable accounting. Tell us how you determined the fair value of your

common stock at each relevant date. To the extent applicable, please reconcile the fair values you determined for your common stock to contemporaneous equity transactions and the anticipated IPO price range.

As appropriate, please amend your registration statement in response to these comments. 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 Act of 1933 and that they have provided all information investors require for an informed investment 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.

Notwithstanding our comments, in the event the company requests acceleration of the effective date of the pending registration statement, it should furnish a letter, at the time of such request, acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness 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 connection with our review of your filing or in response to our comments on your filing.

We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. We will act on the request and, pursuant to delegated authority, grant acceleration of the effective date.

We direct your attention to Rules 460 and 461 regarding requesting acceleration of a registration statement. Please allow adequate time after the filing of any amendment

James J. Barber
Metabolix, Inc.
August 10, 2006
Page 10

for further review before submitting a request for acceleration. Please provide this request at least two business days in advance of the requested effective date.

Please direct questions regarding accounting comments to Gus Rodriguez at (202) 551-3752, or in his absence, to Scott Watkinson at (202) 551-3741. Please contact Brigitte Lippmann at (202) 551-3713 or in her absence, Lesli Sheppard at (202) 551-3708 with any other questions.

Sincerely,

Pamela A. Long
Assistant Director

cc: Robert E. Puopolo, Esq.
Goodwin Procter LLP
Exchange Place
Boston, MA 02109