Mail Stop 6010

May 22, 2006

Dr. Andrew Uprichard
President
EPIX Pharmaceuticals, Inc.
161 First Street
Cambridge, Massachusetts 02142

**Re: EPIX Pharmaceuticals, Inc.**
**Registration Statement on Form S-4**
**File No. 333-133513**

Dear Dr. Uprichard:

We have reviewed your filings 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.

Form S-4

General

1. Prior to requesting acceleration for effectiveness, please refer to Item 3-12 of Regulation S-X and file an amended registration statement on Form S-4 to include your most recent interim financial statements, as well as those for Predix Pharmaceuticals Holdings, Inc.,

as of and for the period ended March 31, 2006. In doing so, please also file as an exhibit an updated, signed consent report from your independent accountants.

2. Additionally, update the information throughout your filing to include the results for the three month period ended March 31, 2006.

3. Please note that you are required to file with the Commission any written instructions, scripts, and outlines that will be used by any person that solicit proxies on behalf of the Company through personal interview, telephone, or telegram, and all other soliciting material that will be furnished to the security holders of either company.

4. Your reliance on acronyms makes the discussion of your business and the risks you face difficult to understand. For example:

   - GAD
   - ADHD
   - COPD
   - PAH
   - DSA
   - CTA
   - GPCR
   - PH

   Please revise to eliminate the use of acronyms that are not commonly understood by persons outside of your industry.

Questions and Answers about the Merger, page v

5. We note that mush of the information disclosed in the Q&A section is repeated in "Summary of the Joint Proxy Statement/Prospectus. For example:

   - The percentage of the combined company that the EPIX shareholders will hold and the percentage that the Predix shareholders will hold;
   - The information relating to the $35 million milestone payment; and
   - The voting recommendation to the stockholders.

   Please revise "Questions and Answers about the Merger" and "Summary of the Joint Proxy Statement/Prospectus" to eliminate the redundancies.

Summary of the Joint Proxy Statement/Prospectus, page 1

6. Please revise "Interests of Predix's Directors and Management" to quantify the fees and expenses Lehman Brothers is entitled to upon consummation of the merger. If accurate, please disclose that the entire fee is contingent on the consummation of the merger. Additionally, revise to provide this information throughout your filing where the fees to Lehman Brothers are referenced.

7. Please revise "United States Federal Tax Consequences of the merger" to clearly state that Predix shareholders will pay taxes on the amount of gain recognized. Similarly, revise throughout your filing where the tax consequences are discussed.

8. Please revise "Regulatory Approvals" to disclose whether the premerger Notification and Report forms have been filed. If they have not yet been filed, please indicate when you expect to file them.

Predix Selected Historical Consolidated Financial Information, page 9

9. Please revise the tabular presentation to include the notation related to explanatory note (2), as it presently does not reference to any of the line items or amounts in the table.

Epix and Predix Unaudited Pro Forma Condensed Consolidated Financial Statements, page 10

10. Please revise the pro forma financial statements to update the balance sheet information as of March 31, 2006 and to include a statement of operations for the three months ended March 31, 2006. Refer to Article 11-01(c)(1) and (2).

Notes to Unaudited Pro Forma Condensed Consolidated Financial Statements

Note 2. Purchase Price, page 13

11. We note on page vi, that the milestone payments will be paid in cash or stock within 90 days of the achievement of the milestone and that if stock is issued it will be valued based on a date prior to the achievement of the milestone. It would seem that value of the stock consideration delivered would be based on the date performance of the milestone is achieved not, as noted in the first bullet, the five-day average closing price ten days prior to that date or as noted in the second bullet 75% of the 30-day average closing price ending on the trading day that is ten days prior to the payment date. Please tell us whether you are going to recognize the difference between the fair value of the stock on the date the milestone is achieved and the value of the stock based on the terms of the acquisition of Predix, and if not, why you believe your accounting is appropriate under U.S. GAAP, citing the specific authoritative guidance in your response.

12. You have allocated approximately $87.4 million of the purchase price to in-process research and development expense. Please tell us whether you considered and applied the provisions of paragraph 39 of SFAS No. 142; that is, tell us whether management has given consideration, if only preliminarily, to whether you acquired other identifiable intangibles and allocate purchase price accordingly.

Cautionary Information Regarding Forward-Looking Statements, page 18

13. We note the statement that the joint proxy statement/prospectus include forward looking statements within the meaning of the safe harbor provisions of the United States Private Securities Litigation Reform Act of 1995. As Predix is not currently a reporting company, Predix is not eligible for the safe harbor. Please revise to clarify that the safe harbor does not apply to forward looking statements relating to Predix.

14. We note the disclaimer that you do not undertake any obligations to publicly update any forward-looking statements to reflect subsequent events or circumstances. Please represent to us that you understand that Rule 14a-9 of the Exchange Act imposes on the registrants a duty to correct statements in soliciting materials.

"If we are not successful in integrating our organizations, we may not be able to . . . ," page 19

15. To help investors understand the magnitude of the potential integration difficulties that may result from possible cultural conflicts and different opinions on scientific and regulatory matters, please describe the differences between the two companies that are most likely to lead to conflicts or differences of opinion.

16. If either Epix or Predix have research and development, collaboration, distribution, marketing, promotion or other important agreements that, by their terms, may be terminated or renegotiated as a result of the merger transaction, please add a separate risk factor that addresses this point. You should also disclose whether any third party has indicated its intention to terminate its agreement with Epix or Predix or to defer or delay a decision in response to the merger.

17. Please disclose any difficulties you anticipate in transferring Epix's or Predix's material agreements to the combined company.

"If we fail to retain key employees, the benefits of the merger could be . . . .," page 20

18. Please name the key personnel upon whom the combined company will be dependent, including their positions.

19. Please disclose the term and termination provisions of any employment contracts with key personnel.

"Certain directors and management of EPIX and Predix may have interests . . . .," page 21

20. Please also disclose the number of any options, if any, that will vest immediately as a consequence of the transaction for each of the identified individuals in this risk factor. Additionally, disclose the weighted average exercise price or the range of exercise prices of such options.

Risks Relating to the Business of EPIX and the Combined Company, page 23

21. We note your disclosure in the Business section regarding the reduction in work force in connection with your FDA approvable letter. We also note your disclosure that related to your reduction in workforce, you have ceased work on a majority of your products relating to imaging and will continue to allocate resources to only one research project. Please consider adding a risk factor that discusses the risks and consequences stemming from focusing on one research project.

"EPIX may never receive marketing approval for any of its product candidates in . . . .," page 23

22. Please indicate how long Schering AG has to exercise their option to exclusively license the EP-2104R product candidate.

23. Please also indicate what phase trials the EP-2104R product candidate has completed to date and the current status of this drug product.

24. Please explain what is involved in a "re-read of images."

If EPIX's clinical trials are not successful, EPIX may not be able to develop and commercialize its product candidates, page 24

25. Did the FDA explain why the data for Vasovist submitted in connection with its NDA was not adequate for approval? If they did, please revise to explain.

If EPIX fails to comply with the extensive regulatory requirements to which it and its product candidates are subject …, page 25

26. This risk factor discussion appears to include many details that are not directly related to non-compliance that might result in restrictions, withdrawal from the market or penalties. For example:

    - In the third paragraph, you discuss the lengthy and expensive approval process;
    - The fourth paragraph discusses suspending, terminating or altering clinical trials for safety reasons;

- The fifth paragraph discusses delays and costs you may encounter in efforts to secure necessary approvals.

27. This information appears to be related to the risk that you might not be able to obtain approval for your products, as opposed to the risk that approved products may be subject to restrictions, withdrawn from the market or you may be fined. Please revise to move the details regarding obtaining approval to a more appropriate risk factor and focus this discussion on the risk that you may fail to comply with regulatory requirements.

"EPIX depends on exclusively licensed technology from the Massachusetts . . . .," page 28

28. Please state the termination date of the existing license agreement with the Massachusetts General Hospital and also indicate if the agreement also contains a renewal option. Please also provide similar disclosure in your Business section.

"EPIX depends on patents and other proprietary rights, and if they fail to . . . .," page 28

29. Please disclose those material technologies and or products that are covered by patents as well as when the patents expire.

"If EPIX is unable to attract and retain key management and other personnel . . . .," page 30

30. Please update the information concerning Michael Astrue's departure as interim Chief Executive Officer as set forth in your Form 8-K filed May 8, 2006. Please update other sections of your document as appropriate.

EPIX currently depends on its strategic collaborators for support …, page 31

31. We note that you expect to discuss the disposition of current research programs with Schering AG prior to expiration of the collaboration. If you have had such discussions, please provide updates discussion in all relevant places throughout your document.

EPIX's stock price is volatile …, page 32

32. Please revise to provide EPIX stock price as of the latest practicable date.

"EPIX anticipates future losses and may never become profitable, page 34

33. Please revise this risk factor to include a discussion of the risks and consequences stemming from the fact that Predix's independent auditors have issued a going concern opinion for that company and further that you will assume approximately $7.8 million in debt in connection with your acquisition of Predix.

"Product liability claims could increase EPIX's costs and adversely affect . . . .," page 36

34. Please quantify your level of insurance coverage and disclose the liabilities that are insured and the limitations of your insurance coverage. If material, please also disclose the cost to you of your insurance.

Risks Relating to the Business of Predix and the Combined Company, page 37

35. Please include a risk factor addressing the fact that Predix has never earned a profit and that its auditors have issued a going concern opinion and the implications of these issues for the combined company. Please also include the accumulated deficit of Predix to date in your discussion.

"Predix's clinical trials may not yield results that will enable Predix to obtain . . . .," page 38

36. We note your disclosure that Predix has limited experience in conducting and managing clinical trials necessary to obtain regulatory approvals. Please discuss the risks and consequences stemming from that risk and also describe how limited Predix's experience in conducting and managing the clinical trials necessary to obtain regulatory approval is.

"Because all of Predix's drug candidates are in early stages of development . . . .," page 38

37. Please revise this risk factor heading to indicate that Predix has no products available or has never had any products available for commercial sale.

"Predix deals with hazardous materials and must comply with environmental . . . .," page 43

38. Please discuss if Predix has been the subject of any investigations in the past.

"Predix's drug candidates require significant biological testing, pre-clinical . . . .," page 45

39. If Predix relies on any one individual or group to perform its testing and manufacturing needs, please identify that individual or group in this risk factor.

"If Predix does not establish a collaboration to further develop and . . . .," page 45

40. To the extent possible, please quantify approximately how much cash Predix will need to fund its drug development programs.

"If Predix's patent position does not adequately protect Predix's drug candidates . . . .," page 47

41. Please disclose those material technologies and or products that are covered by patents as well as when the patents expire.

Background of the Merger, page 58

42. Provide us supplementally with copies of any non-public information that were exchanged between the parties in the acquisition negotiations that were not filed with the registration statement, including all analysts' reports, financial forecasts, and projections used by the Epix and its financial advisors. In addition, to the extent that the information has not been disclosed in the document, provide us the basis for your conclusion that the non-public information is not material and therefore need not be disclosed.

43. To the extent known, disclose Mr. Webb's reasons for resigning as CEO and from its board of directors.

44. We note that Mr. Astrue had informal discussions with members of the EPIX board of directors prior to his appointment as Interim CEO. Please explain in what capacity he was acting prior to his appointment as Interim CEO.

45. We note that you engaged Dr. Neil Kirby and Dr. Michael Gilman to assist in your due diligence review. Are these your employees?

46. In instances where you have stated that outside legal and/or financial advisors participated in meetings, please revise to identify these parties by name.

47. Many of the descriprions of the meetings are vague. Please revise to more specifically describe the information discussed at the meetings. In instances where conclusions are reached based on the discussion at the meeting, state these conclusions. For example:

    - the January 12, 2006 meeting between Mr. Holman and Mr. Frank, the conclusions with respect to the strengths and weaknesses of Predix's technology platform discussed;

    - the preliminary financial valuation analysis at the February 10, 2006 meeting;

    - the significant issues related to a potential merger between EPIX and Predix and the then current draft of the merger agreement discussed at the March 1, 2006 meeting,

48. We note that the EPIX board of directors considered several merger candidates. Please expand your discussion regarding other candidates EPIX considered, identified or engaged in discussions with regarding a potential business combination. For example, please disclose the size of the other companies with which EPIX communicated with regarding effecting a business combination, identify them, explain why and when the board did not pursue those other alternatives. Similarly, expand the discussion of alternatives that the Predix Board of Directors considered. To the extent that the Predix

Board considered other stock for stock offers, please identify the offering party, and explain why the merger with EPIX was chosen instead of the other offers.

49. We note that you engaged Chestnut Securities to assist in evaluating the previously identified merger candidates and explore other opportunities to diversify. Please revise to describe recommendation or findings presented by Chestnut Securities.

50. Describe Health Advances presentations to the board of directors.

51. We note that Lehman Brothers did not provide Predix with a fairness opinion. Please revise to describe the services that Lehman Brothers did provide. Additionally, describe any materials prepared by Lehman Brothers for use by the board of directors and describe any presentations they made to the Predix board of directors.

52. Please explain how the consideration was determined by you and Predix. Please disclose the terms as initially proposed and describe changes to the terms during the course of the negotiations.

53. You state that the representatives of Health Advances also led a discussion regarding "additional analyses preformed [sic] by them related to PRX-00023" at the February 10, 2006 meeting. Please briefly state what additional analyses that the board reviewed at this meeting.

EPIX's Reasons for the Merger, page 63

54. Please expand the discussion in the last paragraph of this section to clarify that you have discussed all the material factors considered by the board. We note you currently have that language that the discussion sets forth the "principal reasons" for the EPIX board of directors' recommendation in support of the merger agreement.

Opinion of EPIX's Financial Advisor, page 66

55. We note that Needham reviewed financial and operating information, including financial forecasts prepared by EPIX and Predix management with respect to the excipient business. To the extent this, or other non-public information supplied to Needham differed materially from publicly available information, please disclose this information in the filing.

56. Disclose that Needham & Company has consented to use of the opinion in the document. We note you have filed their consent as an exhibit.

57. Please disclose in the first full paragraph on page 67 that all material portions of Needham & Company's written opinion are disclosed in the discussion.

58. In the first full paragraph on page 67, please delete the language that "The Needham & Company opinion is addressed to the EPIX board of directors." This language could be interpreted as a disclaimer to shareholders' ability to rely on Needham's opinions. Alternatively, disclose that Needham & Company has consented to the shareholders use of the opinion.

Comparable Transactions Analysis, page 68
Comparable Public Companies Analysis, page 69
Comparable Biotechnology Initial Public Offerings Analysis, page 70

59. We note the discussion of the criteria used to select the companies/transactions used in the analyses. If there were companies/transactions that met the criteria but were excluded from the analyses, please disclose this information and explain why they were not included in the analyses.

60. It is not clear how any of the analyses presented support the fairness opinion provided by Needham. Please revise these discussions to provide more information. For example:

- Please revise the discussion of the stock trading history to disclose the trading price as of the latest practicable date. Did Needham compare the value of the shares to be issued in the transaction to a valuation of Predix? If so, please provide the information about this comparison, including the valuation assigned to Predix and how the valuation was determined.

- We note that the comparable transaction analysis discloses the low, median, mean and high values for the initial equity purchase price, and the enterprise value both with and without the contingent payment. It is unclear how Needham used this information to analyze the fairness of the price paid for Predix. Did they compare the premiums issued over the enterprise value? If so disclose the premiums for the selected transactions and the premium paid over the Predix enterprise value. If some other methodology was used, please describe the methodology so that shareholders can understand how they are supposed to use the presented information.

- Disclose how many of the transactions considered in the comparable transaction analysis included a contingent payment.

- Please revise the comparable company analysis to disclose the equity and enterprise value of Predix and explain how this information was used to support the fairness determination. Similarly, revise "Comparable Biotechnology Initial Public Offerings."

Comparable Public Companies Analysis, page 69
Comparable Biotechnology Initial Public Offerings Analysis, page 70

61. You indicate that in both of these sections that Needham & Company reviewed "selected data" for Predix and compared this data to "certain publicly available financial, operating and stock data" for other companies in computing its analysis. Please explain more specifically what "selected data" and "certain publicly available financial, operating and stock data" refer to.

62. On page 71, it provides that Needham & Company made numerous assumptions with respect to industry performance, general business and economic conditions and other matters in their analyses. Please provide in greater detail what these assumptions were.

63. Please revise page 71 to disclose the portion of the fee, if any, that is contingent on consummation of the merger.

Predix's Reasons for the Merger, page 72

64. Please disclose the fee paid to Lehman Brothers, the portion of the fee that is contingent upon the consummation of the merger.

65. If Lehman Brothers made a presentation to the board of directors or prepared materials for the board's use, please describe them.

Material United States Federal Income Tax Consequences of th Merger, page 74

66. Please provide an opinion as opposed to a summary of the law. The opinion should state, in the opinion of counsel, how shareholders will be treated for tax purposes. The opinion should state whether the merger will qualify as a reorganization for tax purposes, rather than assuming it will be treated as a reorganization or stating that it is intended to be treated as a reorganization and explaining the circumstances under which it will be treated as a reorganization.

Interests of EPIX's Directors and Management, page 78

67. Please disclose the number of any options that will vest immediately as a consequence of the transaction. Additionally, disclose the weighted average exercise price or the range of exercise prices of such options.

68. Quantify the fee to be paid to Lehman Brothers here, rather than cross referencing to other parts of the document.

The Merger Agreement, page 80

69. We note your statement that the "following summary describes certain material provisions of the merger agreement." Please note that this section should describe all material provisions of the merger agreement. To that end, please revise your statement or this section accordingly such that all material provisions of the merger agreement are described.

Severance Payments, page 87

70. Please identify the "certain employees" who will be entitled to severance pay and the amounts that each individual would be entitled to receive.

EPIX Board of Directors, page 87

71. Please include the consent of each individual designated by Predix who will become a board member of EPIX as required by Rule 438 of Regulation C.

Additional Conditions to the Obligations of Predix, page 89

72. Based on your disclosure on page 210 where you state that EPIX does not currently have sufficient authorized shares to complete the merger and further that it is a condition of the transaction that the number of authorized shares of EPIX common stock be increased, please disclose that condition in this section. Please also explicitly state in your Notice of the Annual Meeting that your proposal to approve the merger agreement is also contingent on approval of your proposal to increase the authorized shares of common stock.

Schering AG, page 127

73. We note your disclosure that your research collaboration agreement with Schering AG expires in May 2006 and that you were expected to discuss the disposition of current research programs with Schering AG prior to expiration of the agreement. Please update this section to indicate whether you have discussed the disposition of current research programs with Schering AG and if so, the outcome of those discussions.

74. You also state that the amendment narrowed the definition of the field of Epix's collaboration with Schering AG. Please explain and specify how the collaboration with Schering AG was narrowed.

Vasovist, page 128

75. You indicate that Schering AG will begin marketing Vasovist in additional countries in Europe. Please indicate the anticipated countries as well as the approximate timing of when you expect such marketing to take place.

EP-210R, page 129

76. Please indicate when you expect your Phase II clinical trial of your EP-2104R to conclude. Please also specify how long Schering AG will have to exercise the option to license to develop and market the EP-210R product.

Use of Vasovist with MRI and MRA Technology, page 130

77. Please provide us with a marked copy of third party documentation supporting your statement that "many experts believe MRI contrast agent agents that remain in the bloodstream for extended periods of time will be necessary to attain widespread use of MRI to image the vascular system."

Schering AG, page 131

78. You indicate that you are entitled to exercise options with respect to the licensing of two of Schering AG's imaging products upon the payment of certain fees. Please disclose the aggregate payment amount you will have to pay in order to exercise these options as well as the aggregate milestone payment you are obligated to make under the agreement. Please also indicate how long you have to exercise your options.

79. You indicate that you or Schering AG may terminate the agreement if either party fails to meet certain milestones. Please specify in greater detail what you mean by "certain milestones."

80. Please disclose how long Schering AG has to exercise the option to develop and commercialize your EP-2104R product under your agreement. Please also disclose the termination date of this agreement as well as any termination provisions. Please also provide similar disclosure with respect to the MRI three-year joint research agreement.

81. Please indicate what consideration EPIX received for granting a license to Schering AG on May 8, 2000. Please also disclose the termination dates for both agreements with Schering AG that you entered into on May 8, 2000.

Dyax, page 134

82. Please disclose the aggregate payment amount that you may be obligated to pay Dyax under your agreement with them as well as any cost sharing provisions under the agreement. You should also disclose any amounts you have paid to date to Dyax. Please also disclose the termination date of this agreement as well as any termination provisions.

Massachusetts General Hospital, page 134

83. Please disclose the date you entered into the agreement as well as the expiration date of your license agreement with Massachusetts General Hospital.

84. Please disclose the amount you have paid to date under the agreement with Massachusetts General Hospital, and to the extent possible, the aggregate amount in milestones payments or otherwise that you are obligated to pay to the hospital under the agreement. For example, are you required to pay any annual license payments?

85. You state that you believe that the expiration of the patents does not compromise the proprietary position with respect to Vasovist. Please explain why. Please also describe the patents you are referring to in this section as well as the relevant expiration dates.

Prince, page 134

86. You indicate that Dr. Prince made "certain covenants and agreements" under the intellectual property agreement. Please explain what you mean by certain covenants and agreements.

87. Please describe the "certain discharges, licenses and releases" you received from Dr. Prince in connection with the use of Vasovist.

88. Please disclose the aggregate payments you have made to date under this agreement with Dr. Prince as well as the aggregate payment amounts you are still obligated to pay him. With respect to the issuance of common stock, please quantify the total value of the stock you issued him.

Patents and Proprietary Rights, page 135

89. Please revise to identify your product candidate dependent on / related to each patent.

Reimbursement, page 138

90. Please include disclosure on how the passage of the Medicate Prescription Drug and Modernization Act of 2003 could impact the marketing of your products in the future.

Employees, page 139

91. Please indicate how you employ your full time employees. For example, how many are designated as part of your research and development staff and how many are part of your administrative and management staff.

Epix Management's Discussion and Analysis of Financial Condition and Results of Operations

Critical Accounting Policies and Estimates

Revenue Recognition, page 140

92. Please provide us with additional information that clarifies how you record the reimbursement payments and expenses incurred under your agreement with Schering AG related to the Vasovist development program. That is, tell us whether you record the research and development expense that you incur for Vasovist within operating expense, as it appears that you record the reimbursement payments from Schering AG net of the expenses that you incur within revenue. Tell us how your accounting treatment of both the reimbursement payments and the related expenses that you incur reflects the substance of your agreement with Schering AG; that is, clarify whether the agreement with Schering AG is to jointly fund the research and development efforts related to Vasovist. Contrast this to your accounting treatment for the agreement with Schering AG related to the EP-2140R feasibility program.

93. Please tell us why you recognize product development revenue under your agreement with Schering AG related to the EP-2140R feasibility program according to a ratio of actual costs incurred to your estimated cost to complete the feasibility program, rather than recognizing the reimbursement payments in correlation to the actual work performed. It is unclear why increasing estimated costs to complete the program results in a reduction in product development revenue. Please consider and reference the applicable provisions of SAB No. 104, Topic 13A, in your response.

94. It appears that you are no longer estimating your royalty revenue since you feel that you can no longer rely on the information provided by Bracco to make an estimate. The company should still estimate the royalty revenue under US GAAP. Please revise or advise.

Results of Operations

Research and Development Expenses, page 143

95. We acknowledge the information included in the section entitled "Product Candidates Under Development" on page 128. However, we believe that your disclosures about historical research and development expenses and estimated future expenses related to your major research and development projects could be enhanced for investors. Please refer to the Division of Corporation Finance "Current Issues and Rulemaking Projects Quarterly Update" under section VIII – Industry Specific Issues – Accounting and Disclosure by Companies Engaged in Research and Development Activities. You can find it at the following website address: http://www.sec.gov/divisions/corpfin/cfcrq032001.htm#secviii.

    Please then revise your disclosure to include the following information for each of your major research and development projects:

    a. The costs incurred during each period presented and to date on the project;
    b. Describe and quantify the estimated costs of the efforts necessary to complete the project;
    c. The anticipated completion date;
    d. The consequences to your operations, financial position and liquidity if the project is not completed timely; and
    e. The period in which material net cash inflows from each significant project are expected to commence.

    Regarding a., if you do not maintain research and development costs by project, please tell us why management does not maintain and evaluate research and development costs by project. Include other quantitative or qualitative analyses that indicate the amount of the company's resources being used on these projects.

    Regarding b., please provide us with the amount or range of estimated costs and timing to complete the phase in process and each future phase. To the extent that information is not estimable, please tell us the facts and circumstances indicating the uncertainties that preclude you from making a reasonable estimate.

GPCRs and Icon Channels as Drug Targets, page 154

96. Please provide us with third party documentation supporting the statements you made in the first full paragraph on page 154 in this section.

Disease and Market Overview, page 158

97. Please provide us with third party documentation supporting your use of statistical and dollar information used in this section. Please ensure the documentation is marked to show the language or description that supports your disclosure. Please also provide similar information for the disclosure provided on pages 162 and 165 regarding disease and market overview information relating to Alzheimer's disease and pulmonary hypertension, respectively.

98. Please identify the recent study that showed the increased 5-HT availability with SSRI treatment.

Predix Management's Discussion and Analysis of Financial Condition and Results of Operations
Critical Accounting Policies

Revenue Recognition

Collaboration Revenue, page 180

99. Your revenue recognition policy indicates that fees received for continuing involvement arrangements are recognized in one of two ways as disclosed on page 181. The first method is when there is significant development risk and it would appear the second method would be when significant development risk is not present. Please explain to us and disclose the situations where significant development risk is not present. It is unclear to us situations that involve research and development arrangements were significant development risk does not exist.

Financial Operations Overview

Research and Development Expense, page 185

100. We acknowledge that you do not maintain cost information for each of your individual research projects. Please revise your disclosure to include other quantitative or qualitative analyses that indicate the amount of the company's internal resources being used on those projects. For example, present that information by type of research and development cost for each income statement period presented.

Where You Can Find More Information, page 218

101. Please incorporate by reference the Form 10-K/A filed on April 28, 2006, Form 10-Q for the quarter ended March 31, 2006 as well as the Form 8-Ks filed on April 26, 2006, May 1, 2006 and May 8, 2006.

EPIX Financial Statements

Notes to Financial Statements

Note 2. Significant Accounting Policies

Revenue

Royalty revenue, page F-10

102. Please explain to us and disclose why only a portion of the royalty revenue earned is offset against the advance royalty.

Note 12. Strategic Alliances and Collaborations

Schering AG, page F-20

103. Please disclose what EPIX's performance obligation is if they exercise the SHU555C option, as it appears that Schering is responsible for all development, marketing and sales activities.

Tyco/Mallinckrodt, page F-22

104. Please disclose why EPIX would pay Tyco/Mallinckrodt an upfront fee and milestone payments when it is EPIX that granted the license to Tyco/Mallinckrodt.

Predix Consolidated Financial Statements

Report of Independent Auditors, page F-26

105. The independent auditors' report for Predix Pharmaceuticals Holdings, Inc. states that the audit was conducted in accordance with the "auditing standards generally accepted in the United States." Please tell us how this report complies with paragraph 3 of PCAOB Auditing Standard No. 1. Based on the language used in the report, it is unclear whether the audit was conducted in accordance with the related professional practice standards of the PCAOB. Otherwise, please provide us with a revised audit report that complies with paragraph 3 of PCAOB Auditing Standard No. 1.

Notes to Consolidated Financial Statements, page F-36

Note 2. Summary of Significant Accounting Policies

Stock-Based Compensation, page F-36

106. Please provide us with additional information regarding your determination of the volatility factor related to Predix' shares. That is, correlate your selection of an expected volatility factor to paragraph A139 of SFAS No. 123(R), as "public small capitalization stocks with significant risks- scientific or otherwise" appears vague.

Note 14. Subsequent Events, page F-47

107. Please provide us with additional information regarding your accounting treatment of the warrants issued in conjunction with the $9.5 million March 31, 2006 convertible bridge financing, giving consideration to the provisions of EITF No. 00-19 and SFAS No. 133, as applicable.

Annex A – Merger Agreement

108. We note you have several attachments and schedules to your merger agreement that are not filed with this registration statement. Please file these schedules and attachments to the acquisition agreement with your amended registration statement.

Exhibits

109. Provide us as soon as practicable the legal and tax opinions that you will file. Note that we review all exhibits as a part of our examination process and may have additional comments.

110. We understand that you are not currently seeking confidential treatment for any exhibits. Please be advised that in case you file a confidential treatment request in relation to any exhibit, we will issue comments on it in a separate letter. We will not consider requests for acceleration of the effective date of the registration statement on Form S-4 until all issues with respect to the confidential treatment request have been resolved.

* * *

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 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.

You may contact Amy Bruckner at (202) 551-3657 or Joseph Roesler, Accounting Branch Chief at (202) 551-3628 if you have questions regarding comments on the financial statements and related matters. Please contact Song Brandon at (202) 551-3621, Suzanne Hayes, Legal Branch Chief at (202) 551-3675, or me at (202) 551-3715 with any other questions.

Sincerely,

Jeffrey Riedler
Assistant Director

cc: William T. Whelan, Esq.
Daniel T. Kajunski, Esq.
Mintz, Levin, Cohn, Ferris, Glovsky and Popeo P.C.
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