Mail Stop 6010 July 5, 2006

Mr. James Pelot
Chief Operating Officer and Chief Financial Officer
Tm Bioscience Corporation
439 University Avenue
Suite 2000
Toronto, Ontario
CANADA, M5G 1Y8

Re: Tm Bioscience Corporation
Registration Statement on Form 20-FR12G
Filed June 8, 2006
File No. 0-52039

Dear Mr. Pelot:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your documents 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. Please state why you are filing the Form 20-FR12G at this time.

2. Please revise your disclosure to identify the source or your basis for the following statements and provide us with third party support for these statements. The supporting documentation should be marked to indicate the text supporting the statements.

    - Tag-It™ Cystic Fibrosis ("CF") kit became the first multiplexed human disease genotyping test to be cleared by the FDA as an IVD for diagnostic use in the United States.

    - The Company believes the CFplus™ assay is currently the most complex commercial CF genetic test on the market.

    - The Company believes that it has secured a significant leadership position in the U.S. market against these competitors by establishing its technology in 34 clinical laboratories in the U.S., including the two largest reference laboratories in the world, Quest Diagnostics and Labcorp.

    - The current global market for molecular diagnostic testing is estimated to be US$2.0 billion.

    - Molecular diagnostic testing, with a compound annual growth rate estimated at 15%, is predicted to remain one of the most significant growth areas in the enormous global in vitro diagnostics industry, currently estimated at US$26 billion.

3. Your disclosure throughout contains excessive jargon and technical terms. Please revise your disclosure to explain the meaning of such terms. For example, you use the following technical terms or phrases:

    - "pharmacogenomics,"
    - "microarray 'operating system,'"
    - "CF transmembrane conductance regulator gene,"
    - "analyte specific reagents,"
    - "single nucleotide polymorphism,"
    - "ISO 13485:2003 compliant facility,"
    - "coupling "Tag-It™ Universal Array oligonucleotides to Luminex xMAP® beads at 3 times,"
    - "severe sepsis, Xigris® and vasopressin," and
    - "automated platforms with multiplexing capabilities."

    Please revise the disclosure to substitute the technical language for language that is simple and can be understood by investors. Please note that the inclusion of the glossary at the beginning of the document is not sufficient. These terms should be clear from the context. Please note this is not meant to be an exhaustive list. It was provided for illustrative purposes.

Item 3. Key Information, pages 8-14

A. Selected Consolidated Financial Data, page 8

4. Please revise the selected consolidated financial data to also disclose loss from operations as required by Item 3.A.2. of Form 20-F.

B. Capitalization and Indebtedness, page 9

5. Please update your capitalization and indebtedness table so that it is of a date no earlier than 60 days prior to the date of the registration statement as required by Item 3.B. of Form 20-F.

D. Risk Factors, pages 10-14

General

6. Please delete the statement "Additional risks and uncertainties not presently known to the Company or that the Company believes to be immaterial may also adversely affect the Company's business" on page 10. It is not appropriate to refer to other risks that are not disclosed.

7. We note that you intend to submit PGx, sepsis, warfarin and ID-Tag™ RVP tests for regulatory approval in 2006. Please add a risk factor that discusses the specific risks to your business related to these regulatory approvals. The risk factor should address the timing and costs of obtaining the regulatory approvals and the impact of a failure to obtain the regulatory approvals.

8. We note that you have an unlimited number of authorized common shares. Please explain to us the implications of this as it relates to your stockholders. For example, will this enable the directors or management to issue shares without stockholder approval? If so, how could this affect stockholders? Would this cause a material dilution of current company stockholders? Consider adding a risk factor that discusses any such material risks.

9. Please add a risk factor that discusses how the Investment Canada Act and the Competition Act could delay or deter a change of control that may be beneficial to your stockholders.

The Company has a history of losses . . . ., page 10

10. Please consider revising your disclosure to discuss that you may have received a going concern qualification from your auditors had your financial statements been audited by U.S. auditors as indicated in comments by your auditors on page F-2. Please also consider discussing in the next risk factor how this possible going concern qualification would affect you ability to raise capital.

The Company has limited financial resources and may not be able to raise additional funds . . . ., page 10

11. Please incorporate into this discussion the rate at which you are currently burning cash on a monthly basis.

12. Please revise to quantify and disclose your current anticipated needs for additional financing.

The Company relies on third party suppliers for key components and raw materials . . . ., page 11

13. Please identify the third parties that you substantially rely on for key components and raw materials. Also, to the extent you have any agreements with such parties, please so indicate and describe in your Business section the material terms of the agreements. You should also file the agreements as exhibits to the registration statement. If you have determined that you are not substantially dependent on these parties, please provide us with an analysis supporting this determination and disclose the approximate number of suppliers you rely on.

14. Please revise your disclosure to briefly describe the "key components and raw materials" you purchase from outside vendors.

The Company depends on key strategic partners . . . ., page 11

15. Please revise your disclosure to name your key strategic partners and to discuss any specific risks associated with any particular key strategic partner. We note that you discuss relationships with various parties in the business section, e.g. Genzyme, Gamidor, Calgary Laboratory Services. Your risk factor disclosure should discuss the specific risks your business faces as a result of these or any other strategic relationships. Consider adding additional risk factors to discuss risks related to any individual relationship.

The Company is in the early stages of commercialization . . . ., page 11

16. Please revise your disclosure to briefly explain why "market uptake remains uncertain."

The Company may not be able to develop, exploit, enforce and defend its intellectual property. Page 12

17. Please update to disclose whether there have been threats of litigation or negotiations regarding patent issues or other intellectual property, court challenges, legal actions, etc.

The Company is subject to evolving legislative, judicial and ethical standards . . . ., page 13

18. Please revise this risk factor to provide more specific disclosure on the legislative, judicial and ethical standards that pose a risk to your business. For example, you should describe some of the key decisions related to genetic patenting and genotyping that could materially affect your business.

The Company is subject to currency risk. Page 13

19. Please revise your disclosure to quantify the impact of the exchange rate risk to your business of the Canadian dollar to foreign currencies. We note your discussion on page F-24 that indicates a significant portion of the company's trade accounts receivable, accounts payable and accrued liabilities and long-term debt are denominated in foreign currencies.

The Company has not produced reagents at full production volume. Page 13

20. Please revise this risk factor to explain why the fact that you have not yet produced tests at full production volume is a material risk. What is your current production compared to current needs or sales? Do you anticipate a shortfall in the future?

The Company is dependent on key customers and Products. Page 14

21. Please separate this risk factor into two different risk factors, one related to your key customers, the other related to your key products.

22. In the discussion of your key customers, please identify the key customers and disclose the percentage of revenue they account for. Also, to the extent you have any agreements with such parties, please so indicate and describe in your Business section the material terms of the agreements. You should also file the agreements as exhibits to the registration statement.

23. In the discussion of your key products, please identify the key products and disclose the percentage of revenue they account for.

The Company relies on key management and scientific personnel. Page 14

24. Please name your key personnel and the positions they hold with the company.

25. Please briefly describe the material term and termination provisions of any employment contracts with key personnel.

26. To the extent that you have experienced problems attracting and retaining key personnel in the recent past, please revise to describe these problems. Additionally, if any key employee has plans to retire or leave your company in the near future, please revise the discussion to disclose this information.

27. Please disclose if you maintain key person insurance on any key personnel.

The Company's Common Shares are subject to significant market price volatility. Page 14

28. Please revise to disclose that the company's common stock trades on the Toronto Stock Exchange.

29. To illustrate the price fluctuations, please provide a range for of the common stock price during the past two years. Please note that it is not necessary to provide a market price table. Disclosure of the high and low price during this time period is sufficient.

Item 4. Information on the Company, pages 14-22

A. History and Development of the Company, pages 14-17

30. Please revise your disclosure to explain why the Tag-It™ Universal Array is a "highly flexible platform."

31. Please revise your disclosure to expand your description of the "Early Access Program." Other than the Mayo clinic and Specialty Laboratories, who are the "leading academic and commercial laboratories in the United States" permitted to participate? How many participants are involved? You state that the program allows the participants to "familiarize themselves with the Company's Products and technology prior to their commercialization." Please explain what this means.

32. You state that your product the Tag-It™ Cystic Fibrosis kit is a "multiplexed" human disease genotyping test. Please explain how this product is "multiplexed."

B. Business Overview, pages 17-22

33. To the extent that you have not already done so, please describe all material terms of all material agreements and arrangements and file these agreements as exhibits. We specifically note the following agreements:

    - Purchase agreements with Mayo Clinic and Specialty Laboratories;

- Supply agreements with LabOne, Inc., University of Medicine and Dentistry of New Jersey, Resurrection Health Care, Pharmacogenetics Laboratory of the University of Louisville, Laboratory Corporation of America Holdings and Quest Diagnostics
- development and supply agreement with Genzyme Corporation
- distribution agreements (Gamidor Diagnostics Ltd., products in Israel and ID-Tag™ RVP in Turkey)
- collaborations with Calgary Laboratory Services of the University of Calgary and Dr. Jim Mahony of McMaster University
- agreement related to companion test for Warfarin
- OEM supply agreements with Maxxam Analytics and InterGenetics Incorporated
- Supply agreement and partnership with Luminex

For each agreement, please disclose:

- Each parties obligations, including, but not limited to, research and development funding obligations and obligations to defend patents;
- Fees paid to date, including upfront payments, annual payments, royalties and milestone payments,
- Aggregate potential milestone payments;
- Existence of royalty provisions;
- Term and termination provisions, including any penalties.

If you believe any of the agreements or relationships noted are not material, then provide us with an analysis supporting your determination.

34. To the extent you have not already done so, for patents that you license from other parties, describe the material terms of the license, including, but not limited to payment provisions, the existence of royalty provisions, exclusivity provisions, obligations/rights to defend, and termination provisions. We specifically note the agreements with the following parties:

    - Abbott Laboratories
    - EPIDAUROS Biotechnologie AG
    - Sirius Genomics Inc.
    - Roche

    If you believe any of the agreements or relationships noted are not material, then provide us with an analysis supporting your determination.

35. Please revise your disclosure to clearly explain your product. Currently, you state that it is a “proprietary universal tag system that allows for easy optimization, product development and expansion.” This description may be difficult for the average investor to understand.

36. Throughout the registration statement, you make various statements regarding the regulatory status of your products. In particular, we not the following statements:

    - In May 2005, the Company's Tag-It™ Cystic Fibrosis ("CF") kit became the first multiplexed human disease genotyping test to be cleared by the FDA as an IVD for diagnostic use in the United States and how this is the first of its kind FDA approval on this test;
    - The Company is also focused on gaining regulatory clearance for ID-Tag™ RVP as an IVD and is undertaking validation studies to generate data for a FDA submission in the first half of 2006;
    - the Company's Products are sold for investigational use only ("IUO") within the FDA regulatory framework, allowing laboratories to compare the results achieved using their current technology with the results from the Company's Products;
    - The Company's ASRs are sold to high complexity laboratories certified under the United States Clinical Laboratory Improvement Amendments regulations ("CLIA") within the FDA regulatory framework;
    - The data supporting these Products have been reviewed by regulatory authorities such as the FDA prior to being labelled as IVD;
    - Tests developed to date have allowed an FDA approved claim of 99.99%; and
    - Annual regulatory facility inspection.

    Please revise your disclosure to clearly explain the regulatory status of each of your products and to provide an overview of the relevant regulatory process. For example, please explain the context surrounding the "first of its kind FDA approval" for the Cystic Fibrosis test. Why is it the first of its kind? What division of the FDA regulates the product? Describe generally the regulatory approval process for such type of products. What do you mean by "cleared by the FDA?" What type of FDA submission are you seeking for ID-Tag™ RVP? Which products are the ones that are sold for investigational use only? What does it mean to be for investigational use only? How are these products "within the FDA regulatory framework?" What are "high complexity laboratories?" Which products have been reviewed by the FDA prior to being labelled as IVD? What type of review is this? What type of FDA approval covers the 99.99% accuracy claim? What is the annual regulatory facility inspection and who conducts it?

37. Please briefly describe the subject matter of your material patents and indicate which are owned by you and which are licensed.

D. Property, Plant and Equipment, page 22

38. We note that you employ five individuals in the U.S. If the company leases or owns any property in the U.S. for these individuals, please consider whether you should add disclosure with respect to such U.S. property.

Item 5. Operating and Financial Review and Prospects, pages 22-37

39. Your MD&A overview on pages 23-31 as currently written contains a detailed description of your business. In our MD&A Interpretive Release No. 34-48960 (December 2003), we explained that an MD&A overview should include "the most important matters on which a company's executives focus in evaluating financial condition and operating performance and provide the context for the discussion and analysis of the financial statements" and that the overview should not be "a duplicative layer of disclosure." For example, on pages 24-26 you discuss the market opportunity for your business. While there may be certain aspects of this discussion that are key to the company's executives in evaluating the financial condition and operating performance, most of this discussion should be placed in your "Business Overview." Please review and revise this section to:

    - remove any duplicative disclosure,
    - move the disclosure that describes the basics of your business to the "Business Overview" section of the registration statement, and
    - summarize the most important matters regarding the company's financial condition and operating performance that provide the context for the rest of the MD&A.

Results of Operation for the Three Months ended March 31, 2006 Compared to the Three Months ended March 31, 2005, pages 31-32

40. Please revise your disclosure to explain what you mean by "period charges."

Results of Operations for the Financial Year ended December 31, 2005 Compared to the Financial Year ended December 31, 2004, pages 33-34

41. Please revise your disclosure to explain why you expect to see a reversal in the increase of instrument sales.

Results of Operations for the Financial Year Ended December 31, 2004 Compared to the Financial Year Ended December 31, 2003, page 34

42. Please revise your disclosure to include a discussion comparing standard reagent product margins and total margins for 2003 and 2004, or explain to us why you believe this discussion is not relevant for these periods as it is for the other periods you discuss in the MD&A.

Liquidity and Capital Resources, pages 34-35

43. We note your reference to working capital and cash, cash equivalents and short-term investments amounts of $6,119,009 and $5,013,110 at March 31, 2004. Please provide the amounts for December 31, 2004 as this is the period for which you have included a balance sheet.

44. Please describe the material terms of your note with Laurus in this section.

45. Please expand your disclosure as it relates to the financing from TPC. Please explain that the financing is recorded in your financial statements as long-term debt. Please also explain what you mean by the statement that the "investment is repayable by a modest royalty." How does the royalty work? Is there a cap on the royalty amount that relates to the funds reimbursed? Since the royalty is the repayment for the financing, please disclose the terms of the "modest royalty." Please describe TPC itself. Is TPC a group of private companies, investors or governmental entities? What do you mean by the statement that TPC is a "special operating program?"

46. We refer to your discussion regarding capital expenditures. Your current disclosure of some of the items is unclear. Please revise your disclosure to explain what you mean by "flexible executive seating arrangement," "headcount related capital" and "the automation solution within R&D and technical support functions."

47. Please revise your disclosure to quantify your current and long-term liquidity and capital needs.

Item 6. Directors, Senior Management and Employees, pages 37-50

B. Compensation, pages 40-44

Compensation of Directors, pages 40-41

48. We note your reference to http://www.sedi.ca for information on options granted to the directors under the Share Option Plan. Please revise your disclosure in the registration statement to provide this information. Item 6.B. of Form 20-F requires disclosure of "the title and amount of securities covered by the options, the exercise price, the purchase price (if any), and the expiration date of the options."

Employment Agreements, page 44

49. Please summarize the material terms of your employment agreements with executive officers naming each officer party to the agreement. To the extent you have not already done so, please file the agreements as exhibits to the registration statement.

E. Share Ownership, pages 48-49

50. We note your use of the term "beneficially owned" in the table on page 48. The definitions in General Instruction F. of Form 20-F define beneficial owner to include "securities that the person has the right to acquire within 60 days." Please revise the table, using footnotes, to disclose the number of shares each individual has the right to acquire within 60 days.

51. On page 48, you indicate that the Deferred Share Units "do not have a specific exercise price." Please clarify this statement as it appears from the description of the plan on page 49 that the Deferred Share Units have no exercise price.

Item 7. Major Shareholders and Related Party Transactions, pages 50-51

A. Major Shareholders, page 50

52. Your major shareholder table on page 50 discloses persons or corporations who beneficially own more than 10% of the issued and outstanding common shares. Item 7.A.1. of Form 20-F, however, requires you to disclose the beneficial owners of 5% of more of each class of the company's voting securities. Please revise the table accordingly.

53. Based on your disclosure in footnote 8 to the financial statements on page F-13, it appears that Laurus may be a beneficial owner of more than 5% of your common stock. If so, please add Laurus to the major shareholder table.

54. Item 7.A.2. of Form 20-F requires you to disclose "the portion of each class of securities held in the host country and the number of record holders in the host country." Please revise your disclosure to include this information.

B. Related Party Transactions, page 51

55. Please disclose the interest rate on the debenture issued to CMDF in November 2004 as required by Item 7.B.2. of Form 20-F. Please also disclose the exercise price of the special warrants issued to CMDF in the same transaction.

Item 9. The Offer and Listing, pages 51-53

56. With respect to the Laurus note, you state that if "certain trading volume conditions have been satisfied, the Company is required to convert cash repayments under the Note into common shares." Please revise your disclosure to clarify the operation of the note as described in this statement. For example, please describe the trading volume conditions and how the company will "convert cash repayments . . . into common shares." Consider using an example for clarification.

57. Please revise your disclosure to provide the amount of net proceeds of your December 19, 2005 public offering. We note that on page F-18, you have indicated the offering had financing costs of $1,151,001.

58. Please revise your disclosure to indicate if you will seek to list your common stock on another exchange. See Item 9.C. of Form 20-F.

Item 10. Additional Information, pages 54-60

A. Share Capital, page 54

59. Please provide the information required as of the latest practicable date as well, as required by Item 10.A. of Form 20-F.

60. Please also provide any other information in this section that is required by Item 10.A. of Form 20-F. For example, Item 10.A. also requires the following:
    - a reconciliation of the number of shares outstanding at the beginning and end of the year (Item 10.A.1.),
    - information with respect to warrants, convertible obligations or other outstanding equity-linked securities (Item 10.A.4.),
    - information with respect to options (Item 10.A.5.), and
    - history of share capital (Item 10.A.6.)

C. Material Contracts, page 57

61. Please provide the required description of the material contacts in the text of the registration statement to the extent that you have not already done so. See Item 10.C. of Form 20-F. You may refer to other sections in the registration statement that describe the material contracts. It is not, however, appropriate to refer to the notes to the financial statements.

Notes to Consolidated Financial Statements

Reconciliation of Consolidated Balance Sheet, page F-26

[a] Long term debt, page F-27

iv) Convertible Debentures, page F-28

62. Please describe to us how you have complied with the transition provisions of SFAS 155, Accounting for Certain Hybrid Financial Instruments, with regard to your convertible debentures issued on November 23, 2005. Please reference the specific paragraph of SFAS 155 management relied upon to ensure the proper timing and method of adoption.

[e] Allowance for doubtful accounts, page F-30

63. Please quantify the allowance for doubtful accounts in accordance with Rule 5-02 (4) of Regulation S-X.

Consolidated Financial Statement, as of March 31, 2006

Note 5. License Fee Advances, page F-38

64. Please tell us how to intend to account for the co-development/co-promotional agreement with Sirius Genomics under Canadian and U.S. GAAP. Please specifically address the financial presentation of reimbursements of development costs between parties, recognition and presentation of your 50% interest in the net profit, and how you intend to account for the variable interest rate on the license fee advance.

* * * * *

As appropriate, please amend your filings 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 supplemental information. Detailed cover letters greatly facilitate our review. Please file your cover letter on EDGAR under the form type label CORRESP. 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 filings reviewed by the staff to be certain that they have provided all information investors require. 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 filings;
- staff comments or changes to disclosure in response to staff comments in the filings reviewed by the staff 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 Christine Allen at (202) 551-3652 or Kevin Woody at (202) 551-3629 if you have questions regarding comments on the financial statements and related matters. Please contact Sonia Barros at (202) 551-3655 or me at (202) 551-3765 with any other questions.

Sincerely,

Jeffrey P. Riedler
Assistant Director

cc: Curtis A. Cusinato, Esq.
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