



DIVISION OF
CORPORATION FINANCE

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

January 16, 2013

Via E-mail

Michael A. Martino
President and Chief Executive Officer
Ambit Biosciences Corporation
4215 Sorrento Valley Blvd.
San Diego, California 92121

**Re: Ambit Biosciences Corporation
Confidential Draft Registration Statement on Form S-1
Submitted December 20, 2012
CIK No. 0001131543**

Dear Mr. Martino:

We have reviewed your confidential draft registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by providing the requested information and either submitting an amended confidential draft registration statement or publicly filing your registration statement on EDGAR. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing the information you provide in response to these comments and your amended confidential draft registration statement or filed registration statement, we may have additional comments.

General

1. We note that there are a number of additional exhibits that still need to be filed including the legal opinion. Please provide these exhibits as promptly as possible. Please note that we may have comments on these materials once they are provided.
2. Please note that our comments on your request for confidential treatment will be provided under separate cover. Please be aware that all confidential treatment issues must be resolved before we will consider a request for acceleration of the registration statement.
3. Please confirm that the graphics included in your registration statement are the only graphics you will use in your prospectus. If those are not the only graphics, or if you plan to use any photographic material, please provide any additional graphics or photographic material prior to its use for our review.

4. Please consider the need to update your financial statements and related financial schedules to include Audited Financial Statements for the year ended December 31, 2012, as required by Rule 3-12(b) of Regulation S-X.
5. Please supplementally provide us with copies of all written communications, as defined in Rule 405 under the Securities Act, that you, or anyone authorized to do so on your behalf, present to potential investors in reliance on Section 5(d) of the Securities Act, whether or not they retain copies of the communications. Similarly, please supplementally provide us with any research reports about you that are published or distributed in reliance upon Section 2(a)(3) of the Securities Act of 1933 added by Section 105(a) of the Jumpstart Our Business Startups Act by any broker or dealer that is participating or will participate in your offering.

Summary, page 1

Our Pipeline of Targeted Therapies, page 2

6. We note that you are developing a companion diagnostic test with “a partner” to identify FLT3-ITD positive patients. Please revise your disclosure throughout your filing to identify your partner as Genoptix Medical Laboratory.

Emerging Growth Company, page 5

7. Please revise your disclosure under the third bullet point in this section to clarify that you are not required to hold non-binding advisory “votes” on executive compensation or golden parachute arrangements.

Risk Factors, page 12

The FDA regulatory approval process is lengthy, time consuming and...., page 14

8. Please expand your disclosure in this risk factor to clarify that a “PMA” is a premarket approval application the first time you use the acronym in the eighth bullet point.

We rely completely on third parties to manufacture our preclinical and...., page 20

9. Please expand your disclosure to disclose the current manufacturers that are material to your business.

If we are not successful in attracting and retaining highly qualified personnel...., page 26

10. To the extent that you have experienced problems attracting and retaining key members of your management personnel in the recent past, please revise your disclosure to describe these problems.

We will need to grow the size of our organization, and we may experience..., page 27

11. You state that you will need to hire additional personnel. Please disclose whether you have any current plans to hire additional personnel, and if so, describe your plans and the timeline for executing those plans.

Our employees may engage in misconduct or other improper activities..., page 29

12. To the extent that you have received notice of claims for employee misconduct or other improper activities, please discuss the claim and potential consequences. Similarly, to the extent that you have received notice of any product liability lawsuits against you, please expand your disclosure in the risk factor entitled, "If product liability lawsuits are brought against us, we may incur substantial liabilities and may be required to limit commercialization of our drug candidates" to discuss the lawsuit and potential consequences.

Risks Related to Our Financial Position and Capital Requirements, page 31

The terms of our secured debt facility require us to meet certain operating..., page 32.

13. We note that if you default under the Compass Loan, the Lenders may accelerate all of your repayment options and take control of your pledged assets. Please expand your disclosure in this risk factor to provide the current balance of the Compass Loan.

Risks Related to Our Intellectual Property, page 35

Third-party claims of intellectual property infringement may prevent or delay..., page 36

14. To the extent that you have received notice of claims for intellectual property infringement, please discuss the situation and potential consequences in this risk factor discussion. Similarly, revise the risk factor entitled "We may be involved in lawsuits to protect or enforce our patents or the patents of our licensors, which could be expensive, time consuming and unsuccessful" if you have initiated any actions related to possible infringement of your patents or those of your licensors.

Obtaining and maintaining our patent protection depends on compliance with..., page 38

15. To the extent you have failed to comply with any procedural, document submission, fee payment and other similar requirements which have caused the abandonment or lapse of a patent or patent application, resulting in partial or complete loss of patent rights, please discuss the situation and potential consequences in this risk factor discussion.

We may be subject to claims that our employees, consultants, or independent..., page 38

16. To the extent that you have received notice of claims for your employees, consultants or independent contractors wrongfully using or disclosing confidential information of third

parties or former employers, please discuss the claim and potential consequences in this risk factor discussion.

Management's Discussion and Analysis of Financial Condition and Results of Operations, page 57

Financial Overview, page 59

Research and Development Expenses, page 59

17. Please expand your tabular disclosure to include research and development costs incurred to date from the point in time that you began tracking those costs by project/category, and disclose that prior to 2007, you did not track research and development costs by project/category. Refer to your response to comment 20 of your December 10, 2010 letter.

Critical Accounting Policies and Significant Judgments and Estimates, page 62

Stock-Based Compensation, page 63

18. We have the following comments regarding your disclosure and accounting for stock-based compensation:
- Please expand your discussion under "Common Stock Value" to disclose the significant factors and assumptions used in determining fair value. For example, for the market value approach disclose the factors used in determining the comparables and tell us on a supplemental basis the names of the public companies used and why you consider them to be the most similar. Please disclose the discount applied for "lack of marketability".
 - Since you have not disclosed an estimated offering price we are deferring a final evaluation of stock compensation and other costs recognized until the estimated offering price is specified. We may have further comment in this regard when the amendment containing that information is filed. In this regard, please provide us an analysis of any stock compensation or other expense recorded in connection with your equity issuances such as the 29 million stock options issued in December 2012 with an exercise price of \$.25 and warrants issued in connection with your convertible preferred stock issuances subsequent to the balance sheet date.
 - Please expand your disclosure to discuss each significant factor contributing to the difference between the fair value as of the date of each grant and the estimated IPO price range. Please reconcile and explain the differences between the mid-point of your estimated offering price range and the fair values included in your analysis.
 - Once the IPO price is disclosed, we will assess your accounting for convertible equity issuances such as the convertible preferred stock issued in October 2012 and convertible note issuances in 2012. Please provide us an analysis of what consideration was given to recording a beneficial conversion feature for your convertible equity issuances.

Management, page 112

Non-Employee Directors, page 113

19. Please expand your disclosure to provide Mr. Peimer's experience from January 2009 to August 2010.

Executive and Director Compensation, page 119

20. Please expand your disclosure to include executive and director compensation disclosure for your named executive officers and directors for the fiscal year ended December 31, 2012.

Annual Performance-Based Bonus Opportunity, page 120

21. We note that the corporate goals established by the board of directors for 2011 related to cash management and expense control, AC220 (completion of Phase 2 trial enrollment and acquisition of top line data results, initiation of a Phase 3 clinical trial and progress towards regulatory milestones), and progress in Phase 1 trials in other development programs. Please revise your disclosure to clearly describe each corporate goal, including a quantification of the goal where appropriate.
22. We note that in early 2012, the compensation committee and the board of directors considered each corporate goal in detail and determined that you had achieved or overachieved certain goals and that you did not achieve other goals. We also note that after recommendation from the compensation committee, the board of directors determined that you had achieved overall 60% of your corporate goals. Please revise your disclosure to specify the level of achievement of each goal, how the level of achievement was determined and how the board of directors arrived at an overall level of achievement of 60%.

Shares Eligible For Future Sale, page 157

Lock-up Agreements, page 158

23. Please file the lock-up agreements as exhibits.

Notes to Consolidated Financial Statements, page F-7

2. Ambit Canada, page F-16

24. Refer to your December 10, 2010 response to comment number 34 in our letter dated December 2, 2010. As a reminder, once the written agreement with GrowthWorks is executed and related disclosure is included in the filing, we will assess the adequacy of your related disclosures.

If you intend to respond to these comments with an amended draft registration statement, please submit it and any associated correspondence in accordance with the guidance we provide

Michael A. Martino
Ambit Biosciences Corporation
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in the Division's October 11, 2012 announcement on the SEC website at
<http://www.sec.gov/divisions/corpfin/cfannouncements/drsfilingprocedures101512.htm>.

Please keep in mind that we may publicly post filing review correspondence in accordance with our December 1, 2011 policy (<http://www.sec.gov/divisions/corpfin/cfannouncements/edgarcorrespondence.htm>). If you intend to use Rule 83 (17 CFR 200.83) to request confidential treatment of information in the correspondence you submit on EDGAR, please properly mark that information in each of your confidential submissions to us so we do not repeat or refer to that information in our comment letters to you.

You may contact James Peklenk at (202) 551-3661 or Mary Mast at (202) 551-3613 if you have questions regarding comments on the financial statements and related matters. Please contact Johnny Gharib at (202) 551-3170 or me at (202) 551-3715 with any other questions.

Sincerely,

/s/ Jeffrey P. Riedler

Jeffrey P. Riedler
Assistant Director

cc: Via E-mail
Kenneth J. Rollins, Esq.
Cooley LLP
4401 Eastgate Mall
San Diego, California 92121