



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

DIVISION OF
CORPORATION FINANCE

April 9, 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
Amendment No. 1 to Registration Statement on Form S-1
Filed March 28, 2013
File No. 333-186760**

Dear Mr. Martino:

We have reviewed amendment no. 1 to your registration statement and your response letter filed on March 28, 2013 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 amending your registration statement and providing the requested information. 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 any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

Prospectus Summary

Our Pipeline of Targeted Products, page 2

1. We note that your agreement with Astellas will terminate effective on September 2013 and that you are in the process of developing a transition plan for the future development of quizartinib. We also note that Astellas is currently conducting a Phase 2b study which will establish the dosing levels for a Phase 3 study scheduled to begin in 2014. Please expand your disclosure throughout your prospectus, as appropriate, to provide specific information regarding the effect of the termination with Astellas on the expected completion date for the Phase 2b study and commencement date of the Phase 3 study. You should also disclose the additional management and oversight activities you will have to provide regarding these clinical trials and any challenges you will face in doing so.

2. Please expand your disclosure throughout the prospectus, as appropriate, to discuss the key factors that contributed to Astellas' decision to terminate its involvement in the development of quizartinib. Your discussion should address the extent to which Astellas considered clinical data as well as the factors unrelated to the clinical properties of quizartinib.
3. If the transition agreement with Astellas could include a provision establishing some royalty or other form of contingent compensation related to future commercial sales of quizartinib, please expand your discussion, where appropriate, to provide necessary disclosure.

Summary Consolidated Financial Information, page 8

4. Please revise the consolidated balance sheet data to include a line item for common stock and additional paid in capital.

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

Financial Overview

Research and Development Expenses, page 57

5. You state on pages 56 and 57 that your agreement with Astellas will be terminated, effective September 2013, and that you will be responsible for research and development costs that formerly were paid by Astellas. Please revise your disclosure to quantify the expected effect on your results of operations and how you intend to fund the additional costs to pursue development of quizartinib. Clarify if you intend to pursue development of quizartinib outside the U.S. and European Union, which development costs were previously the responsibility of Astellas.

Critical Accounting Policies and Significant Judgments and Estimates

Stock-Based Compensation, pages 61-64

6. We acknowledge your response and disclosure revisions related to our prior comment number 1. As a reminder, we continue to include the following follow-up comments regarding your disclosure and accounting for stock-based compensation:
 - 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. Please provide a discussion of 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.

Summary of Stock Option Grants, page 64

7. We acknowledge your response and disclosure revisions related to our prior comment number 2, including your supplemental paragraph added at the top of page 64. We have the following additional comments regarding the material decrease in the fair value of your common stock from April 2012 to December 2012:
- Please clarify in the filing how a 1-for-100 reverse common stock split in October 2012 would have the effect of decreasing your common stock valuation.
 - Please clarify whether all quantities (shares and dollars) are presented as adjusted for the 1-for-100 reverse common stock split in October 2012.
 - Qualitatively explain in the filing in detail what events or factors occurred within the company to cause its post stock split fair value per common share to decline from \$7.00 per share (as “Reassessed”) on April 24, 2012 to \$0.25 cents per share on December 13, 2012.

Notes to Consolidated Financial Statements

2. Ambit Canada, page F-15

8. We acknowledge your response to our prior comment number 3. As a continuing reminder, you state that “The Company acknowledges the Staff’s comment and will amend the First Amended Registration Statement to describe such written agreement when it is finalized.” Also, please tell us your accounting treatment for the agreement and cite the applicable accounting literature used. Address whether or not the convertible features of the convertible issuances would result in a derivative and provide additional disclosure as necessary. Disclose the amount of any beneficial conversion feature that will be recorded in connection with the convertible issuances. Please file the agreement.

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
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