

Mail Stop 6010

July 25, 2006

Michael C. Venuti, Ph.D.
Acting Chief Executive Officer
Discovery Partners International, Inc.
9640 Towne Centre Drive
San Diego, California 92121

**Re: Discovery Partners International, Inc.
Amendment No. 1 to Registration Statement on Form S-4, file no. 333-
134438
Filed July 11, 2006**

Dear Dr. Venuti:

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 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.

Risks Related to Infinity, pages 28-43

Infinity relies on third parties to conduct certain of its clinical trials . . . , page 35

1. We note your response to our prior comment 37. Please revise this risk factor to disclose the number of third parties upon Infinity relies on to conduct clinical trials.

Infinity relies on third-party manufacturers to produce the raw materials and drug substance. . . . , pages 36-37

2. We note your response to our prior comment 39. Please revise this risk factor to disclose the number of third parties upon Infinity relies to produce raw materials and drug substance.

The Merger, pages 55-93

Background of the Merger, pages 55-62

3. We note your response to our prior comment 50 and reissue that comment in part. Your description of the five potential strategic transaction partners in your response to us differs from your disclosure in the first paragraph on page 57. Please revise your disclosure on page 57 to provide a more accurate description of these five potential strategic transaction partners. For example, are their compounds in early stages of clinical development? Do they have little to no revenues?
4. We note your response to our prior comment 51 and reissue that comment in part. Please expand your disclosure regarding the “certain biotechnology industry contacts” to describe these persons.
5. We note your response to our prior comment 54 and reissue that comment in part. Please disclose the pre-money valuation for Infinity and assumed net cash balance for Discovery Partners agreed upon. Please also disclose how this consideration compared to that proposed and considered by the “other potential strategic transaction partner.”

Reasons for the Merger, pages 62-67

6. We note your response to our prior comment 59 and reissue that comment. Please revise your disclosure to explain why the Infinity board believed the merger is advantageous due to factors such as length of time and overall probability of closure as you have done in your response to us.

Opinion of Discovery Partners’ Financial Advisor, pages 67-76

7. We note your response to our prior comment 60 and reissue that comment in part. Please revise your disclosure in this section to disclose that Molecular Securities has consented to the use of the opinion in this document.

8. We note your response to our prior comment 61 and reissue that comment. We note the statement that Molecular Securities' opinion does not "constitute any opinion" to any Discovery Partners' stockholder as to how to vote. Please delete this limitation here and where it appears elsewhere in the prospectus, including in the opinion, as it could be interpreted as a disclaimer to shareholders' ability to rely on Molecular Securities' opinion. Alternatively, disclose the basis for Molecular Securities' belief that shareholders cannot rely upon the opinion to support any claims against Molecular Securities arising under applicable state law, including whether Molecular Securities intends to assert the substance of the disclaimer as a defense to shareholder claims that might be brought against it under applicable state law. Describe any applicable state-law authority regarding the availability of such a potential defense. In the absence of applicable state-law authority, disclose that the availability of such a defense will be resolved by a court of competent jurisdiction. Also disclose that resolution of the question of the availability of such a defense will have no effect on the rights and responsibilities of the board of directors under applicable state law, or the rights and responsibilities of either Molecular Securities or the board of directors under the federal securities laws.
9. We note your response to our prior comment 66 and reissue that comment. Your revised disclosure deletes the statement that Molecular Securities made judgments and assumptions based upon industry performance, general business, economic, market and financial conditions and other matters in performing the comparable company analysis and precedent transaction analysis. If Molecular Securities did make such judgments and assumptions, please revise your disclosure to summarize the material judgments and assumptions.

Discovery Partners' Business, pages 126-128

10. We note your response to our prior comment 77 that you have revised the disclosure in this section "Discovery Partners' Management's Discussion and Analysis of Financial Condition and Results of Operations – Discontinued Operations" on page 153 to explain what constituted the "instrumentation product line." We are unable to locate this revised disclosure. Please revise your disclosure accordingly.
11. On page 126 you list the subsidiaries acquired by Galapagos and Biofocus. Are these all of Discovery Partners' subsidiaries? If not, what assets are held by the remaining subsidiaries?
12. Please revise your disclosure to briefly describe the "certain items of Discovery Partners' intellectual property" held at the Discovery Partners parent level that you refer to on page 126.

13. You state that certain assets essential to Discovery Partners continuing to function as a public reporting company, such as information technology infrastructure and financial/accounting infrastructure, will be transferred from Discovery Partners to Biofocus following the closing of the merger. You also describe earlier in the prospectus that one of Infinity's reasons for the merger is Discovery Partners' public company infrastructure. Please revise your disclosure to explain why Infinity would not need these assets "essential to Discovery Partners continuing to function as a public reporting" that will be transferred to Biofocus.

Infinity's Business, pages 129-149

Strategic Alliances, pages 140-142

14. We note your response to our prior comment 87 and reissue that comment in part. Please revise your disclosure to disclose the aggregate potential milestone payments under each of the Amgen and Novartis alliances.

Infinity Management's Discussion and Analysis Of Financial Condition and Results of Operations, pages 164-177

Liquidity and Capital Resources, pages 170-172

15. We note your response to our prior comment 89 and reissue that comment in part. Please identify how much Infinity expects to expend on major projects you have identified to the extent practicable.

Note 2. Summary of Significant Accounting Policies, page F-9
Revenue Recognition, page F-15

16. Refer to your response to our comment 98. Please revise your filing to clarify the basis for your accounting policy to address why it is appropriate to recognize royalty revenue upon the receipt of monies.

Infinity Financial Statements, page F-48

Note 2. Significant Accounting Policies, page F-58
Revenue Recognition, page F-60

17. Refer to your response to our comment 99. Please tell us and clarify in the filing why you believe the initiation of clinical trials and filing for approval with regulatory agencies is at risk and substantive at the inception of the agreement to allow for immediate recognition in revenue.

Unaudited Pro Forma Financial Statements, page 191

Notes to Unaudited Pro Forma Financial Information, page 196

18. Refer to your response to our comment 105 and your revised disclosure in paragraph 4. Please clarify what Biofocus actually acquired as “also acquired or will acquire” and “were or will be assigned” used throughout this disclosure is vague. Also clarify your statements regarding “were or are held at the Discovery Partner level” as this is vague.
19. Refer to pro forma adjustment B. Please provide a detailed explanation to us and clarify in the filing what this amount represents.
20. Refer to your response to comment 102. Please revise the pro forma information to clearly quantify the different scenarios that would occur based on different cash balances at the closing of the transaction and how the purchase price and goodwill/extraordinary gain will be affected based on each scenario.

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As appropriate, please amend your filing 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 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.

Michael C. Venuti, Ph.D.
Discovery Partners International, Inc.
July 25, 2006
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You may contact Sasha Parikh at (202) 551-3627 or Mary Mast at (202) 551-3613 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) 551-3715 with any other questions.

Sincerely,

Jeffrey P. Riedler
Assistant Director

cc: L. Kay Chandler, Esq.
Matthew T. Browne, Esq.
Cooley Godward LLP
4401 Eastgate Mall
San Diego, CA 92121