

Mail Stop 6010

June 21, 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.
Registration Statement on Form S-4, file no. 333-134438
Filed May 24, 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.

General

1. 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.
2. Please provide us with your analysis on a supplemental basis explaining why you believe Discovery Partners does not need to obtain stockholder approval for the sale of its operating assets. Your analysis should include considerations under applicable state law.

3. It appears that waiver of some of the conditions to the merger would result in material changes to your document potentially requiring recirculation. For example, the condition that the shares issuable to Infinity shareholders be approved for listing on the Nasdaq National Market, the condition that each party receive an opinion of counsel stating the transaction would qualify as a reorganization and the condition that Discovery Partners have at least \$60 million in net cash at closing. Please revise the prospectus to disclose whether you would recirculate the document to either Discovery Partners' or Infinity's shareholders, as applicable, if any of these conditions or other material conditions were to be waived. If you would not, then provide us with an analysis supporting your determination that recirculation would not be necessary.
4. Please expand your disclosure regarding the one or more strategic transactions in which Discovery Partners will sell its various operating assets. For example, please identify the major assets to be sold. You currently state that the assets include key personnel and key service agreements. Please identify the key personnel and servicing agreements you intend to sell and also disclose the parties to these agreements. Describe the process and actions Discovery Partners is pursuing with respect to such "strategic transactions." Do any of these agreements contain transfer restrictions? If so, how does Discovery Partners intend to address such transfer restrictions?
5. Please update the prospectus to describe the recent Stock and Asset Purchase Agreement with Galapagos NV and Biofocus Inc. pursuant to which Discovery Partners agreed to sell the stock of its subsidiaries and certain assets and liabilities for \$5.4 million in cash as described in the Form 8-K filed June 14, 2006. In your discussion, you should describe the material terms of the transaction, the impact of the transaction on the merger and what, if any, other operating assets remain for Discovery Partners to sell and file the relevant agreements as exhibits to the registration statement.
6. The forepart of your prospectus contains jargon or technical terms. For example, these words and phrases appear in the forepart of your prospectus:
 - Lead optimization, and
 - assay development, high throughput screening, design and synthesis of proprietary libraries of compounds for screening and primary hit-to-lead expansion, lead compound optimization, drug discovery informatics and in vitro toxicology profiling.

Please replace all technical language and jargon with language that can be understood by persons who do not work in your industry. Alternately, if you cannot find substitute language without changing the meaning, prove an explanation of the term where you first use it. See Rule 421(d)(2)(ii) of Regulation C.

Outside Front Cover Page of the Prospectus

7. Please revise the cover page to limit it to one page. Move all information that is not required to a more appropriate location in your document. For example, please eliminate the detailed bullets in paragraph 1 and eliminate paragraphs 6, 7, 9 and 10. You may include this information in the notice, Q&A or summary, to the extent you have not already done so. See Item 501(b) of Regulation S-K.

Questions and Answers About the Merger

General

8. It is inappropriate to repeat information in the notices, cover page, Q&A and the summary. We note that the Q&A section addresses many of the same topics discussed in the summary section. Please revise to eliminate unnecessary repetition. For example,
 - Description of the merger;
 - Discussion of the strategic sale transactions contemplated by Discovery Partners;
 - Calculation of Discovery Partners' cash balance;
 - Merger exchange ratios;
 - Federal income tax consequences;
 - Regulatory approvals and NASDAQ listing; and
 - Management following the merger.

For purposes of eliminating redundancies and grouping like information together, view your Q&A and summary section as one section. We suggest you consider placing procedural related information in the Q&A and substantive information in the summary, to the extent that these procedural or substantive matters have not already been discussed in either notices or the prospectus cover page.

Summary

Reasons for the Merger, page 12

9. Please expand your disclosure regarding the reasons for the merger. For example, please also disclose Discovery Partners' current business situation and its plan to potentially liquidate the company if the merger is not completed. Please also discuss Infinity's need to seek funding to complete the clinical development of its product candidates and its desire to engage in this reverse merger in lieu of an initial public offering.

Opinion of Discovery Partners' Financial Advisor, page 13

10. Please revise to quantify the fees and expenses Molecular Securities is entitled to upon consummation of the merger. Please disclose what portion of the fee is contingent on the consummation of the merger.

Interests of Certain Directors, Officers and Affiliates of Discovery Partners and Infinity, pages 16-17

11. Please revise your disclosure here to clarify that the retention and severance plans also apply to key employees as you discuss on page 87.
12. Please expand this discussion to quantify the expected amount of cash payable under the change of control agreements and the retention and severance plans (disclosing such amounts separately) and the amount of options and shares of restricted stock that will accelerate vesting for the officers, directors and key employees of Discovery Partners as a result of this transaction. Please also provide this disclosure in the comparable section on pages 85-88.

Risk Factors, page 18

13. Please expand your disclosure of the principal risks relating to the merger to identify some of the key risks.

Comparative Historical and Unaudited Pro Forma Per Share Data, page 24

14. Item 3.(f) of Form S-4 requires that the per share data in this section also provide the following:
 - historical Infinity data.
 - equivalent pro-forma per share data for Infinity common and preferred shareholders.

Please revise the disclosure to include this information. In addition, we note that your

introductory information states that you have included “equivalent historical net loss per share attributable to shares of Discovery Partners common stock which will be issued in the merger.” Please delete this reference as you are required to include pro-forma per share data.

Risk Factors, pages 27-57

General

15. Please review each subheading to ensure it reflects the risk that you discuss in the text. Many subheadings currently either merely state a fact, such as “Infinity relies on third-party manufacturers to produce the raw materials and drug substance for its drug candidates,” or describe an event that may occur in the future, such as “Infinity may be subject to claims that it or its employees have wrongfully used or disclosed alleged trade secrets of their former employers.” Succinctly state in the subheadings the risks that result from the facts or uncertainties.

Risks Related to the Merger, pages 27-30

16. Please add a risk factor that discusses any material risks in integrating the businesses. For example, you should discuss how long you estimate the transition period will last, what difficulties and material costs the combined company will face in winding up the Discovery Partners’ business to the extent it has not already been done, the impact of any change of control provisions in material agreements and whether any third party has indicated its intention to terminate a material agreement or to defer or delay a decision in response to the merger.

If the net cash balance of Discovery Partners at the closing of the merger is below \$70 million, page 27

17. Please revise to provide some examples that quantify how a decrease in cash will impact the number of shares to be issued by Discovery Partners in the merger, including the impact on the percentage of shares to be held by Infinity securityholders following completion of the merger.

The exchange ratio is not adjustable based on the market price of the Discovery Partners common stock, page 27

18. Please revise to provide some examples that quantify how a decrease in the market price of Discovery Partners common stock will impact the value of the merger consideration to be received by Infinity securityholders.

Some of Discovery Partners’ and Infinity’s officers and directors, pages 27-28

19. Please revise to quantify the expected amount of cash payable (including retention and

severance payments) and the amount of options and shares of restricted stock that will vest immediately for the officers and directors of each of Discovery Partners and Infinity as a result of this transaction. Additionally, disclose the weighted average exercise price or the range of exercise prices of such options.

Failure to complete the merger, page 28

20. Please revise to quantify the estimated costs related to the merger.

Discovery Partners and Infinity stockholders may not realize a benefit from the merger, page 29

21. Please revise to quantify the percentage dilution that stockholders of each of Discovery Partners and Infinity will experience as a result of the merger.

Risks Related to Discovery Partners, pages 30-41

Discovery Partners may incur write-downs or write-offs in connection with potential exit costs, pages 31-32

22. Please revise to briefly describe the property, plant and equipment that suffered the \$3.2 million impairment and to disclose the percentage this represents of the company's total long-lived assets.

Discovery Partners' strategy of placing a high degree of emphasis on integrated drug discovery collaborations is untested, pages 32-22

23. Please revise your disclosure to briefly explain why the form of agreement that Discovery Partners relies upon is so complex and why the company is unlikely to be able to use its previous fee-for-service pricing structure in the future.
24. Please revise your disclosure to briefly describe the major changes in the business sector that are affecting the company's future prospects.

Discovery Partners derives a significant percentage of its revenues from a single customer, pages 33-34

25. Please revise your disclosure to quantify the impact on revenue of NIH being delayed in the selection process of acquiring compounds in 2005 and early 2006.

The drug discovery industry is highly competitive and subject to technological changes, pages 34-35

26. Please revise your disclosure in this risk factor to briefly describe the impact of competitors in India, China and Eastern Europe, as this appears to be a significant competitive factor affecting the company.

The intellectual property rights on which Discovery Partners relies to protect the technology underlying its techniques may not be adequate, pages 37-38

27. Please revise your disclosure to describe the negative impact on Discovery Partners' business, if any, of having to amend the patent for eukaryotic gene profiling.

Discovery Partners' stock price will likely be volatile. Pages 38-39

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

Discovery Partners' ability to maintain the current infrastructure will depend on attracting and retaining key executives, pages 39-40

29. Please revise your disclosure to name all of the company's key executives and their positions with the company.
30. Please revise your disclosure to describe the term and termination provisions of any employment contracts with key executives.

Discovery Partners is subject to foreign currency risk, page 40

31. Please revise your disclosure to quantify any material negative impact that exchange rate fluctuations have had on operating results in the past.

Discovery Partners may be subject to liability regarding hazardous materials. Page 40

32. Please disclose whether the company maintains insurance for the use of hazardous materials and chemicals and, if so, the level of coverage and, if material, the cost of such coverage.

Risks Related to Infinity, pages 41-57

Infinity has a limited operating history and has incurred a cumulative loss since inception , pages 41-42

33. Please disclose Infinity's net losses for the last three fiscal years and the most recent interim period.

Infinity will need substantial additional capital to fund its operations , pages 42-43

34. Please incorporate into this discussion the rate at which Infinity is currently burning cash on a monthly basis.

If Infinity is not able to attract and retain key management and scientific personnel and advisors , page 44

35. Please revise the disclosure to describe the term and termination provisions of employment contracts with Infinity's key personnel.

Infinity's business has a substantial risk of product liability claims , pages 44-45

36. Please disclose for Infinity's clinical trial insurance the level of coverage and, if material, the cost of such coverage.

In the future, Infinity intends to rely on third parties to conduct certain of Infinity's clinical trials , page 47

37. In the description of Infinity's business, you have identified various third parties that Infinity currently intends to rely upon to conduct its clinical trials, e.g. investigators at the Dana Farber Cancer Institute. Please revise this risk factor to delete the reference to "in the future" in the subheading and to expand the discussion to identify any third parties that Infinity currently believes are material to its business and discuss any specific risks related to those third parties.

Infinity works with hazardous materials , page 48

38. Please disclose the level of coverage and, if material, the cost of such coverage, of Infinity's insurance for liability from hazardous material.

Infinity relies on third-party manufacturers , pages 48-49

39. Please identify the third party manufacturers that Infinity substantially relies on. Also, to the extent Infinity has any agreements with such parties, please so indicate and describe in Infinity's 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 Infinity

is not substantially dependent on these parties, please provide us with an analysis supporting this determination.

Forward-Looking Statements, page 58

40. 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 Infinity is not currently a reporting company, Infinity is not eligible for the safe harbor. Please revise to clarify that the safe harbor does not apply to forward looking statements relating to Infinity.
41. We note the disclaimer that you do not assume any obligation to update any forward-looking statements. Please represent to us that you understand that Rule 14a-9 of the Exchange Act imposes on registrants a duty to correct statements in soliciting materials.

The Special Meeting of Discovery Partners Stockholders, pages 59-63

Recommendation of Discovery Partners' Board of Directors, pages 59-60

42. Please revise your disclosure to clarify if the board's recommendations are unanimous.

Required Vote, page 62

43. Please revise your disclosure in this section to clarify that neither Infinity, nor affiliates of Infinity, own any shares of Discovery Partner common stock entitled to vote at the special meeting. If this is not the case, please disclose the shares of common stock held by Infinity and Infinity affiliates and identify the affiliates.

The Special Meeting of Infinity Stockholders, pages 64-66

Recommendations of Infinity's Board of Directors, page 64

44. Please revise your disclosure to clarify if the board's recommendations are unanimous.

The Merger, pages 67-102

Background of the Merger, pages 67-72

45. Provide us supplementally with copies of any non-public information that was 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 Discovery Partners 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.

46. Many of the descriptions 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:
 - At the October 27 meeting, what discussions did the Discovery Partners' board have and what conclusions were reached regarding the engagement proposals from L.E.K. Consulting and Molecular Securities and the recommendations from L.E.K. Consulting;
 - At the January 26 meeting, what conclusions did the Infinity board reach and why; and
 - At the April 10 meeting, what conclusions did the Discovery Partners' board reach and why.
47. Please expand your disclosure of the strategic analysis conducted by Infinity to disclose when it conducted this analysis.
48. Please expand your disclosure of the reports, recommendations and presentations received by Discovery Partners from L.E.K. Consulting. For example, please describe what the report received on August 23 said about the company's current business model and recent industry trends, and what other strategic alternatives were suggested. Also describe the recommendations L.E.K. Consulting made on October 27 and the presentation made on December 15.
49. Please explain why on October 6 or 7, Discovery Partners' former Chief Executive Officer, and Harry Hixson, Jr., Chairman of Discovery Partners' board of directors, separately made initial contact with Steven Holtzman, Infinity's Chief Executive Officer, and Anthony Evnin, an Infinity director.
50. We note that the Discovery Partners' board of directors considered several strategic transaction candidates. Please expand your discussion regarding other candidates Discovery Partners considered, identified or engaged in discussions with regarding a strategic transaction, in particular the five potential candidates invited to submit indications of interest. For example, please disclose the size of the other companies, identify them and explain why the board did not pursue those other alternatives, to the extent you have not already done so. Also explain why Infinity was eventually identified as the "preferred merger partner." Similarly, expand the discussion of alternatives that Infinity's board of directors considered. To the extent that the Infinity board considered other similar offers, please identify the offering party, and explain why the merger with Discovery Partners was chosen instead of the other offers.
51. Please expand your disclosure regarding the multiple internal discussions between February 3, 2006 and February 13, 2006 among Infinity and its counsel and external business advisors. Please name Infinity's "external business advisors" and describe the engagements between them and Infinity, in particular whether the engagements relate to a

strategic transaction. For example, were these advisors financial advisors, strategic consultants or others, and why were they engaged?

52. Please name the external consultants engaged by Discovery Partners to assist with additional due diligence of the three potential strategic partners.
53. Please summarize the presentations made by Cooley Godward, Molecular Securities, Easton Associates and L.E.K. Consulting to the Discovery Partners' board at the March 30 meeting. Each presentation, discussion or report held with or presented by an outside party that is materially related to the transaction, whether oral or written, is a separate report that requires a reasonably detailed description meeting the requirements of Item 1015 of Regulation M-A. This requirement applies to both preliminary and final reports.
54. Please explain how the consideration was determined by you and Infinity. Please disclose the terms as initially proposed and describe changes to the terms during the course of the negotiations. Please also disclose how this consideration compared to that proposed and considered by the "other potential strategic transaction partner."
55. Please disclose whether the Discovery Partners or Infinity boards also discussed potential adverse effects of this transaction. If so, please disclose the nature of those discussions. If not, please disclose why not.
56. Please disclose whether Discovery Partners or Infinity had discussions with any of its customers, suppliers, collaboration partners or other significant third parties regarding the potential transaction. If so, please discuss the outcome of those discussions.

Reasons for the Merger, pages 72-77

Discovery Partners' Reasons for the Merger, pages 73-75

57. Please explain what about the understanding of Discovery Partners' business, operations, financial condition and prospects, and of Infinity's business, operations, financial condition and prospects weighed in favor of the merger in this section and also on page 76.
58. Please explain why the results of the due diligence review are considered a positive factor.

Infinity's Reasons for the Merger, pages 75-77

59. Please explain why the Infinity board believed the merger was judged to be a more time—and cost—effective means to access capital.

Opinion of Discovery Partners' Financial Advisor, pages 77-85

60. Please delete the language that "Molecular Securities' opinion is directed to Discovery Partners' board of directors." This language could be interpreted as a disclaimer to shareholders' ability to rely on Molecular Securities' opinion. Alternatively, disclose that Molecular Securities has consented to the shareholders use of the opinion.
61. 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 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.
62. We note that Molecular Securities reviewed financial and other information, including financial forecasts prepared by the managements of Infinity and Discovery Partners. To the extent this, or other non-public information supplied to Molecular Securities differed materially from publicly available information, please disclose this information in the filing.
63. We note that Molecular Securities reviewed reports prepared by L.E.K. Consulting LLC, Easton Associates, LLC, Ernst & Young LLP and Cooley Godward LLP. Please briefly summarize the contents of these reports, to the extent you have not already done so.
64. Please revise the disclosure to describe the relevance of the last two columns in the table on page 80, "\$2.66" and "\$3.00" and what those columns illustrate.
65. We note that for each precedent company that completed an initial public offering, Molecular Securities calculated the pre-money equity and firm valuation of each company. Please revise the disclosure to explain how Molecular Securities calculated the pre-money equity and firm valuation of each company and to disclose the pre-money equity and firm valuation calculated for each company. Please also disclose which companies were included as "oncology comparable" and "other comparable." Please provide similar disclosure for the calculations on pages 82 and 83 as well.

66. In performing the comparable company analysis and precedent transaction analysis, Molecular Securities made judgments and assumptions based upon industry performance, general business, economic, market and financial conditions and other matters. Please provide in greater detail what these assumptions were.
67. Please revise the disclosure to explain how Molecular Securities calculated the “Market Value” for DPI in the table on page 84.
68. Please disclose the fees already paid to Molecular Securities and how the portion of the fee based on transaction value will be calculated.

Interests of Discovery Partners’ Directors and Executive Officers in the Merger, pages 85-88

69. With respect to the retention and severance plans, please name the key executive officers and the number of key employees who received such plans.
70. With respect to the retention and severance plans, please briefly describe the “specific incremental percentages” and the “applicable milestones.”

Interests of Infinity’s Directors and Executive Officers in the Merger, pages 88-91

71. Please revise to disclose how many of the directors after the merger are pre-merger Infinity directors and how many are pre-merger Discovery Partners directors for each scenario.

Stock Options and Warrants, pages 91-92

72. Please revise to disclose the number of Discovery Partners common stock options and warrants and the related exercise prices you will be required to issue in exchange for Infinity common stock options or preferred stock warrants, assuming no Infinity options or warrants are exercised prior to the merger.

Matters Being Submitted to a Vote of Discovery Partners Stockholders, pages 118-132

Discovery Partners Proposal No. 2: Approval of Amendment to Discovery Partners’ Certificate of Incorporation Effecting the Reverse Stock Split, pages 118-123

73. Please revise your disclosure in this section to discuss the fact that the merger is conditioned upon the approval of this proposal.
74. Please revise your disclosure in this section to provide a comprehensive picture of the following information prior to and after the merger and assuming both 2:1 and 6:1 reverse split scenarios:

- the number of shares issued and outstanding,
- the number of shares reserved for issuance, and
- the number of shares authorized but neither issued nor reserved for issuance.

Please also disclose the number of shares you expect to issue in the merger, assuming both 2:1 and 6:1 reverse split scenarios. In addition, please disclose whether you will need to do the reverse stock split to effect the merger because you may not have sufficient authorized but unissued shares for issuance in the merger. We note that you have registered approximately 73 million shares for issuance in the merger and you currently have 100 million shares authorized and approximately 26 million shares issued and outstanding.

Discovery Partners' Business, pages 134-145

General

75. We note your reference to a sublicense on page 136 and your reference to significant customers on page 139. To the extent you have material agreements with such parties, please describe all material terms of the material agreements and arrangements and file these agreements as exhibits to the extent you have not already done so.

Overview, pages 134-136

76. Please expand your disclosure of Discovery Partners' "restructuring of its South San Francisco facility and consolidation of its chemistry platform into its San Diego facility" in this section to explain what these events entailed. For example, did the company reduce the number of employees or sell material property, plant and equipment, or both? What material costs did the company incur in the restructuring and consolidation?
77. On page 135, you state that in the fourth quarter of 2005, Discovery Partners sold its instrumentation product line, as it was not consistent with its collaborations strategy. Please expand your disclosure in this section to explain what constitutes the "instrumentation product line," what percentage of the business came from the product line and why it was not "consistent with its collaborations strategy."
78. Please expand your disclosure to describe the "one or more viable alternatives that would not lead to a loss on the recoverability of the remaining long-lived assets."

Changes in Compatibility, pages 140-141

79. Please expand your disclosure of the Pfizer and NIH agreements to disclose the aggregate milestone payments and any other material payments made/received under the agreements.

Intellectual Property, pages 141-143

80. Please expand your disclosure to briefly describe the nature of the company's two issued patents.

Competition, pages 143-144

81. Please revise your disclosure to name any key competitors.

Infinity's Business, pages 146-165

Overview, pages 146-147

82. Please explain what you mean by the statement that "IPI-504 has demonstrated activity in a wide variety of preclinical models of hematologic and solid tumors."
83. You refer to Infinity's product candidates as having the potential to be "best-in-class" or "first-in-class." Please revise your disclosure to explain what these designations mean and disclose the basis for Infinity's belief.

Product Development Programs, pages 149-154

84. You explain that "Infinity has preliminary evidence that IPI-609 is affecting the cancer stem cells." Please revise the disclosure to briefly describe this preliminary evidence.

Proprietary Rights and Licensing, pages 155-156

85. Please revise the disclosure to describe additional material terms of the license with Nexus, including, amounts paid to date and any future payment provisions and the obligations and rights to defend the subject patents and patent applications. Please also file the agreement as an exhibit to the registration statement.

Strategic Alliances, pages 156-157

86. Please revise the disclosure to describe what portion of the \$400 million in total potential payments from Novartis have already been paid and break down the payments into major categories, such as license fees, research fees and milestone payments.
87. To the extent you have not already done so, for each of the alliances discussed in this section, 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.

Please also file each of these agreements as exhibits to the registration statement.

Discovery Partners International Results of Operations, page 173

88. Please clarify in the filing for the periods ended March 31, 2006 and December 31, 2005 why your cost of services remained constant related to the significant decrease in revenues from the prior related periods.

Infinity Management's Discussion and Analysis Of Financial Condition and Results of Operations, pages 182-194

Liquidity and Capital Resources, pages 188-190

89. Please revise the disclosure to describe Infinity's "current operating plan" and how Infinity intends to use the cash resources that will be available if the merger is complete. The expanded disclosure should identify how much Infinity expects to expend on major projects and identify the stage of development Infinity expects to achieve with these funds.

Critical Accounting Policies, page 190

Accrued Expenses, page 191

90. We note that you estimate accrued expenses. Please revise to include the following disclosures:
- How accurate the estimate/assumption has been in the past
 - How much the estimate/assumption is reasonably likely to change in the future

Principal Stockholders of Infinity, pages 231-232

91. For each principal stockholder that is neither a natural person nor a publicly registered company, revise to disclose the natural person(s) who hold voting and dispositive rights, to the extent you have not already done so.

Exhibits

92. Please file the consent of each Infinity director who will become a board member of Discovery Partners as required by Rule 438 of Regulation C.
93. Please file the voting and lock-up agreements discussed on pages 116 to 117 as exhibits.
94. It appears that the following agreements may be material contracts required to be included in the exhibit list to this registration statement under Item 601 of Regulation S-K. Please include these agreements in the exhibit list and file these agreements to the extent you have not already done so, or alternatively, provide us your analysis of why you are not required to include these agreements as material contracts.
 - Agreement with Biofrontera Discovery GmbH; and
 - Agreement relating to sale of assets related to the IRORI[®] chemical synthesis, Crystal Farm[®] automated protein crystallization, and Universal Store[™] compound storage systems product lines.

In addition, we note that you have a pending confidential treatment request that relates to the agreement with Biofrontera. Please be advised that comments, if any, to the confidential treatment request will be forthcoming in a separate letter. If we issue any comments to the confidential treatment request, we will act upon any request for acceleration of the effective date of the Form S-4 only after you have complied with our comments.

Discovery Partners International Financial Statements, page F-1

95. Please provide Management's report regarding the assessment of the effectiveness of internal controls over financial reporting.

Discovery Partners International: Report of Independent Registered Public Accounting Firm, page F-2

96. Please provide the report from your auditors dated March 10, 2006 which is referenced in the audit opinion for your financial statements related to the audit of the effectiveness of your internal controls over financial reporting as of December 31, 2005.

Note 2. Summary of Significant Accounting Policies, page F-7

Revenue Recognition, page F-13

97. You state that you have revenue from the sale of chemical compounds and other license revenue, but we do not see a line item on the face of the Statements of Operations for product sales or license revenue and their related cost of sales. Please revise to clarify.

98. Please tell us why you appear to recognize royalty revenue on a cash received basis or revise your filing to clarify the basis for your accounting policy.

Infinity Financial Statements, page F-48

Note 2. Significant Accounting Policies, page F-56
Revenue Recognition, page F-58

99. Please tell us and clarify in the filing the basis for recognizing substantive milestones that have remaining performance obligations as the milestone is reached.

Stock-Based Compensation, page F-59

Determination of the fair value of the company's common stock, page F-61

100. Please revise to provide a consent from your specialist and to refer to them in the "Expert" section on page 236.

Unaudited Pro Forma Financial Statements, page 208

101. Please clarify in the filing why you have not accounted for the proposed reverse stock split described in Discovery Partners Proposal No. 2.
102. Refer to pro forma adjustment E. Please consider providing additional pro forma presentations and/or a sensitivity analysis which give effect to the range of possible results related to the merger, such as the exchange ratios for Infinity's capital stock which is subject to upward and downward adjustments based on Discovery Partners' net cash balance at the closing of the merger. We also note that it is possible that you may not sell the assets held for sale prior to the merger and thus it would appear that the transaction could be considered a business combination under EITF 98-3. Please revise to reflect that scenario in the pro forma information and tell us why your current presentation is appropriate given that you are assuming the assets held for sale will remain after the merger.
103. Refer to adjustment F. It does not appear appropriate to eliminate the treasury stock of Discovery. Please revise or tell us your basis for the adjustment.
104. Please refer to adjustment H and clarify why it is appropriate to reflect discontinued operations in the combined entity.
105. We noted in your Form 8-K filed June 14, 2006 that the company has entered into a Stock and Asset Purchase Agreement with Galapagos NV and Biofocus Inc., a subsidiary of Galapagos, pursuant to which you agreed to sell the capital stock of your direct subsidiary, Discovery Partners International AG, to Galapagos and the capital stock or equity interests of its direct subsidiaries, ChemRx Advanced Technologies, Inc., Xenometrix, Inc. and Discovery Partners, L.L.C., to Biofocus, and to assign certain assets and liabilities related

to the businesses of the acquired subsidiaries to Biofocus for \$5.4 million in cash which is expected to close in July 2006. Please update the filing and your pro forma financial statements for this subsequent transaction.

* * * * *

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 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 for an informed 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 this action 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 a 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

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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 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