



DIVISION OF  
CORPORATION FINANCE

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

September 2, 2011

Via Email

Mr. Richard Brajer  
Chief Executive Officer  
LipoScience, Inc.  
2500 Sumner Boulevard  
Raleigh, NC 27616

**Re: LipoScience, Inc.  
Amendment to Registration Statement on Form S-1  
Filed August 19, 2011  
File No. 333-175102**

Dear Mr. Brajer:

We have reviewed your 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 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.

General

1. Please revise to disclose the substance of your response to prior comment one from our letter dated August 15, 2011 and to address any potential conflicts of interest with respect to Dr. Otvos' status as an executive officer and co-author of the cited studies. In addition, please advise us how you chose the studies for inclusion in your disclosure, and revise to address the extent to which you have excluded any relevant studies, including studies reaching alternate conclusions, whether or not authored by Dr. Otvos.
2. We note your revised disclosure on page three and response to comment three of our letter dated August 15, 2011. Please revise the risk factor on page 25 and where appropriate to further clarify the potential risks from continued commercial use of tests without FDA clearance. In this regard, we note the statement on page 25 that if you were to not receive clearance you would plan to continue to offer test results as LDTs. It is

unclear what risk you are describing if you would continue your current operations even if you fail to receive clearance.

3. We note your response to comment four of our letter dated August 15, 2011. With a view to clarifying disclosure, advise us whether (1) the second page of results of your NMR LipoProfile test is reported as FDA cleared, not FDA cleared or otherwise and (2) failure to receive clearance from the FDA for Vantera would affect your ability to report such results.
4. We note your response to prior comment five from our letter dated August 15, 2011 and request additional clarification. Please advise us how and where your document reflects or will reflect the number and terms of the warrants that will become exercisable for common stock upon the conversion of your preferred stock. In this respect, it is unclear whether these are the 245,115 warrants to purchase common stock you reflect as outstanding as of June 30, 2011.

Management's Discussion and Analysis, page 44

Critical Accounting Policies and Significant Judgments and Estimates, page 57

Stock-Based Compensation Expense, page 58

Determination of the Fair Value of Common Stock on Grant Dates, page 60

5. We note on page 61 that on August 1, 2011 you granted options to purchase 96,400 shares with an exercise price of \$4.77 per share based on the April 30, 2011 contemporaneous valuation (page 71), and that you also estimated the grant date fair value of common stock to be \$4.77 per share for these options. Please confirm to us that there were no events that occurred between April 30, 2011 and August 1, 2011 that resulted in a significant increase in the \$4.77 per share value as of April 30, 2011. To the extent that there were events that resulted in a significant increase in the per share value, tell us the estimated per share fair value on the August 1, 2011 grant date. Also quantify for us the increase in total grant date fair value that would have resulted from using a reassessed value as of the grant date.
6. We note that during fiscal 2011 you have only granted stock options on April 8, 2011 and August 1, 2011, and that to determine the grant date fair value for these options you used valuations as of dates that were several months prior to these two grant dates. Please explain to us how you considered the requirement to estimate the fair value at the grant date. Refer to ASC 718-10-30-6 and ASC 718-10-30-21.

Common Stock Valuation Methodologies, page 61

7. We note your quantitative and qualitative analysis in response to comments nine and ten of our letter dated August 15, 2011 to support your conclusion that the reassessment of the fair market value of the Company's common stock was immaterial in accordance with the guidance in SAB Topics 1M and 1N. We further note in your quantitative analysis that you mostly compare the resulting stock-based compensation expense increase to revenue for the respective periods, or to the cost of revenues or operating expense line items that were affected. It appears to us that the additional stock-based compensation expense would result in significant adjustments to your income (loss) from operations, net income (loss), net income (loss) attributable to common stockholders – basic and diluted and your net income (loss) per share attributable to common stockholders – basic and diluted. Please further discuss the significant percentage adjustments to these line items that would result upon reassessment, and explain how you considered these significant percentage adjustments in your conclusion that the reassessment of the fair market value of your common stock was immaterial.
8. It appears that you have not tax effected the additional stock-based compensation expense for purposes of calculating the as adjusted net income (loss), net income (loss) attributable to common stockholders – basic and diluted and net income (loss) per share attributable to common stockholders – basic and diluted. In this regard, it appears that you have used the same stock-based compensation expense adjustments for both pre-tax and post-tax line items. To the extent that you have not tax effected the additional stock-based compensation for purposes of calculating the above referenced as adjusted amounts, please either confirm to us that no tax effects would result or revise as necessary.

Management, page 97

9. Please briefly explain the reference to “the safe harbor position of Rule 10A-3 ...” as referred to on page 104.

Financial Statements, page F-1

Notes to Financial Statements, page F-7

1. Description of Business and Significant Accounting Policies, page F-7

Preferred Stock Warrant Liability, page F-12

10. We note your ASC 815-40-15 analysis in response to comment 50 of our letter dated July 20, 2011 to support your conclusion that warrants to purchase common stock (upon automatic conversion from warrants to purchase redeemable convertible preferred stock immediately prior to the closing of the IPO) are considered indexed to your own stock,

and will be classified as equity instead of a derivative liability. Based upon your response, it appears to us that the terms of the warrants to purchase redeemable convertible preferred stock in Exhibits 10.2 to 10.6 to your Form S-1 will no longer apply upon conversion to warrants to purchase common stock. Please tell us where the underlying terms of the warrants to purchase common stock can be located, or provide us with the revised agreements for these warrants.

Pro Forma Net Income (Loss) Per Share, page F-17

11. We note that the pro forma net income (loss) per share does not give effect to potential dilutive securities where the impact would be anti-dilutive. Please disclose the potential dilutive securities that were not included because the impact would be anti-dilutive.

Exhibits

12. We note your responses to prior comment 17 from our letter dated August 15, 2011 and prior comment 60 from our letter dated July 20, 2011. Please file your agreements with LabCorp and Health Diagnostics Laboratory as exhibits. It is unclear whether and why you believe, even assuming the agreements are “ordinary course,” that the agreements should not be filed pursuant to Item 601(b)(10)(ii)(B).

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes the information the Securities Act of 1933 and all applicable Securities Act rules 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.

You may contact Steve Lo at (202) 551-3394 or John Archfield at (202) 551-3315 if you have questions regarding comments on the financial statements and related matters. Please contact Jay Williamson at (202) 551-3393 or Jim Lopez at (202) 551-3536 with any other questions.

Sincerely,

/s/ James Lopez (for)

John Reynolds  
Assistant Director