



DIVISION OF
CORPORATION FINANCE

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

December 19, 2012

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 December 4, 2012
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. We note your response to comment 5 of our letter dated November 16, 2012. We also note the statement on page 26 and elsewhere indicating that you voluntarily withdrew your submission and are currently working with the FDA outside of the formal review process to resolve the issues identified by the FDA in connection with your 510(k) application for the HDL-P assay. Please disclose the nature of the FDA issues and how you are working informally with the FDA to resolve them. Also, please clarify how the issues identified by the FDA may affect the timing and type of application submitted to the FDA.
2. Please note we may have additional comments once you provide a price range and file your exhibits. We are processing your confidential treatment request separately and may have additional comments either on your request or disclosure.

Mr. Richard Brajer
LipoScience, Inc.
December 19, 2012
Page 2

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

Cc: Brent Siler
Cooley LLP