



DIVISION OF
CORPORATION FINANCE

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

October 6, 2014

Via E-mail

Rose Crane
President and Chief Executive Officer
MELA Sciences, Inc.
50 S. Buckhout Street, Suite 1
Irvington, New York 10533

**Re: MELA Sciences, Inc.
Amendment No. 1 to Registration Statement on Form S-3
Filed September 22, 2014
File No. 333-198249**

Dear Ms. Crane:

We have limited our review of your registration statement to those issues we have addressed in our comments. In 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. Where 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.

Selling Stockholders, page 19

1. Regarding your response to prior comment 1:
 - Please disclose in your prospectus, if true, that each selling stockholder that is an affiliate of a broker-dealer purchased the offered securities in the ordinary course of business and, at the time of the purchase of the securities to be resold, the seller had no agreements or understandings, directly or indirectly, with any person to distribute the securities.
 - Please reconcile your statement on page 5 of your response letter that no shares registered for sale in your April registration statement have been sold with your disclosure in the Selling Stockholders table that Broadfin beneficially owns no shares other than those offered by the current registration statement, either before or after this offering.

- We note the statement on page 10 of your response letter that the selling stockholders' representations excluded "sales registered under the Securities Act..." Do you mean that, at the time of purchase, the selling stockholders could have intended to publicly sell or distribute the securities when the shares were registered for sale under the Securities Act? If so, please clarify why this does not affect your analysis of whether this transaction is appropriately characterized as a transaction that is eligible to be made on a shelf basis under Rule 415(a)(1)(i).
- Please tell us about any selling stockholder's ability to have designated a member of your board of directors in the past three years, how that ability affects your analysis presented in response to prior comment 1, and how you have addressed the related disclosure requirement in Regulation S-K Item 507.

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.

Notwithstanding our comments, in the event you request acceleration of the effective date of the pending registration statement please provide a written statement from the company 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 staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Please refer to Rules 460 and 461 regarding requests for acceleration. We will consider a written request for acceleration of the effective date of the registration statement as 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 registration statement. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

Rose Crane
MELA Sciences, Inc.
October 6, 2014
Page 3

Please contact Jay Mumford at 202-551-3637 or me at 202-551-3617 with any questions.

Sincerely,

/s/ Russell Mancuso

Russell Mancuso
Branch Chief

cc (via-email): Megan N. Gates, Esq.