



DIVISION OF
CORPORATION FINANCE

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

May 31, 2013

Via E-mail

Harry F. Hixson, Jr., Ph.D.
Chief Executive Officer
Sequenom, Inc.
3595 John Hopkins Court
San Diego, California 92121

Re: Sequenom, Inc.
Form 10-K for the fiscal year ended December 31, 2012
Filed April 2, 2013
File No. 000-29101

Dear Dr. Hixson:

We have reviewed your filing and have the following comment. In our comment, we ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter within ten business days by amending your filing, by providing the requested information, or by advising us when you will provide the requested response. If you do not believe our comment applies 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 filing and the information you provide in response to this comment, we may have additional comments.

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1. We note your disclosure that “[h]istorically, the FDA has not exercised enforcement discretion and exempted from regulation LDTs, but the FDA has stated that additional regulation of LDTs may be warranted.” Please tell us and clarify in future filings (1) when the FDA made those statements and what those statements say about why additional regulation may be warranted, and (2) the portion of your business at issue.

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 Exchange Act of 1934 and all applicable Exchange 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.

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In responding to our comments, please provide a written statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Please contact Tom Jones at (202) 551-3602 or Tim Buchmiller, reviewing attorney, at (202) 551-3635 with any questions.

Sincerely,

/s/ Tim Buchmiller for

Russell Mancuso
Branch Chief

cc (via e-mail): William Bowen, Esq.