



DIVISION OF  
CORPORATION FINANCE

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

March 14, 2011

Rosetta Genomics Inc.  
3711 Market Street, Suite 740  
Philadelphia, Pennsylvania 19104  
Attn: President

**Re: Rosetta Genomics Ltd.**  
**Registration Statement on Form F-3**  
**Filed March 7, 2011**  
**File No. 333-172655**

Dear Sir or Madam:

We have limited our review of your registration statement to the issue we have addressed in our comment. In our comment, we ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by providing the requested information and/or amending your registration statement. Where 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 registration statement and the information you provide in response to this comment, we may have additional comments.

General

1. You disclose that on February 23, 2011, you closed the sale of 4,541,668 ordinary shares at a price of \$0.60 per share in a private placement transaction. You also disclose that on February 23, 2011, you also closed the sale of 5,458,671 ordinary shares at a price of \$0.60 per share in a registered direct offering. Please provide us with an analysis which supports your conclusion that these offerings are consistent with the guidance provided in Securities Act Release No. 8828 (Aug. 3, 2007) and Securities Act Rules CDI Question 212.06.

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 comment, 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.

Please contact Jennifer Riegel at (202) 551-3575 or me at (202) 551-3715 with any questions.

Sincerely,

Jeffrey Riedler  
Assistant Director

cc: Brian P. Keane, Esq.  
Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.  
One Financial Center  
Boston, Massachusetts, 02111