



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

DIVISION OF
CORPORATION FINANCE

Mail Stop 4546

January 25, 2017

Kenneth A. Berlin
Chief Executive Officer and President
Rosetta Genomics Ltd.
10 Plaut Street, Science Park
Rehovot 76706 POB 4059
Israel

**Re: Rosetta Genomics Ltd.
Registration Statement on Form F-1
Response dated January 10, 2017
File No. 333-214981**

Dear Mr. Berlin:

We have reviewed your January 10, 2017 response to our comment letter 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 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 your response to these comments, we may have additional comments. Unless we note otherwise, our references to prior comments are to comments in our January 4, 2017 letter.

General

1. We continue to evaluate your response to prior comment one regarding whether the transaction is a primary offering pending your response to comment two below.
2. Your response to prior comment two indicates that the selling stockholder has represented to you that it did not engage in any purchases or sales, including short sales, from the date it first received a term sheet to the date the material terms of the offering were publicly announced. Your response, however, does not address whether during that same period the selling stockholder entered into hedging/loan/pledge or other transactions with broker-dealers who could engage in short sales of your ordinary shares. Please

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provide us this information in your response. In addition, please tell us whether - based on information obtained from the selling stockholder – the holder (i) has engaged in short sales or entered into hedging/loan/pledge or other transactions with broker-dealers who may engage in short sales of your ordinary shares subsequent to your public announcement of the offering and (ii) whether the selling stockholder will or will not conduct these type of transactions while the convertible debentures and warrants remain outstanding.

Please contact Joseph McCann at (202) 551-6262 with any questions.

Sincerely,

/s/ Joseph McCann for

Suzanne Hayes
Assistant Director
Office of Healthcare and Insurance

cc: Brian Keane, Esq.
Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.