



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

DIVISION OF  
CORPORATION FINANCE

Mail Stop 4546

February 22, 2017

Brandi L. Roberts  
Chief Financial Officer and Senior Vice President  
Mast Therapeutics, Inc.  
3611 Valley Centre Drive, Suite 500  
San Diego, CA 92130

**Re: Mast Therapeutics, Inc.  
Registration Statement on Form S-4  
Filed February 10, 2017  
File No. 333-216012**

Dear Ms. Roberts:

We have limited our review of your registration statement to the issue we have addressed in our comment.

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

General

1. We note that you have a pending request for confidential treatment. Please be advised that we will not be in a position to declare your registration statement effective until all outstanding comments, if any, on your request for confidential treatment have been cleared.

We remind you that the company and its management are responsible for the accuracy and adequacy of their disclosures, notwithstanding any review, comments, action or absence of action by the staff.

Refer to Rules 460 and 461 regarding requests for acceleration. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

Brandi L. Roberts  
Mast Therapeutics, Inc.  
February 22, 2017  
Page 2

You may contact Johnny Gharib at (202) 551-3170 or Mary Beth Breslin at (202) 551-3625 with any questions.

Sincerely,

/s/ Mary Beth Breslin for

Suzanne Hayes  
Assistant Director  
Office of Healthcare and Insurance

cc: Larry W. Nishnick, Esq.  
DLA Piper LLP (US)