

VIA EDGAR

August 13, 2015

U.S. Securities and Exchange Commission
Division of Corporation Finance
100 F Street, NE
Washington, D.C. 20549-4561
Attn: Mr. Daniel Greenspan
Mr. Scot Foley

**Re: Mast Therapeutics, Inc.
Registration Statement on Form S-3
File No. 333-202960**

Ladies and Gentlemen:

Pursuant to Rule 461 of the Securities Act of 1933, as amended, Mast Therapeutics, Inc. (the "**Company**") hereby requests that the Securities and Exchange Commission (the "**Commission**") accelerate the effectiveness of the above-referenced Registration Statement to 4:00 p.m., Eastern Time, on Wednesday, August 19, 2015, or as soon thereafter as practicable. The Company hereby authorizes Michael Kagnoff and Patrick O'Malley of DLA Piper LLP (US), legal counsel for the Company, to orally modify or withdraw this request for acceleration.

The Company acknowledges 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 contact Mr. Kagnoff at (858) 638-6722 or Mr. O'Malley at (858) 677-1471 with any questions or comments. Thank you for your assistance with this filing.

Very truly yours,

Mast Therapeutics, Inc.

By: /s/ Brandi L. Roberts
Name: Brandi L. Roberts
Title: Chief Financial Officer and Senior Vice President