Mast Therapeutics, Inc. Form FWP June 10, 2013

Issuer Free Writing Prospectus Dated June 7, 2013

(to the Preliminary Prospectus dated June 5, 2013)

Filed Pursuant to Rule 433

Relating to Registration Statement on Form S-1

Registration No. 333-188870

Mast Therapeutics, Inc. has filed a registration statement (Registration No. 333- 188870, including a prospectus) under the Securities Act of 1933, as amended, with the Securities and Exchange Commission for the offering to which this communication relates. Before you invest, you should read the prospectus in that registration statement for more complete information about the Company and the Offering. You may get these documents for free by visiting EDGAR on the SEC website at www.sec.gov. Alternatively, copies of the prospectus may be obtained from Piper Jaffray & Co., Attention: Prospectus Department, 800 Nicollet Mall, J12S03, Minneapolis, MN 55402, via telephone at 800-747-3924 or email at prospectus@pic.com.