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

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): September 28, 2015

Mast Therapeutics, Inc.

(Exact name of Registrant as Specified in Its Charter)

Delaware	**001-32157**	**84-1318182**
(State or Other Jurisdiction of Incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**

3611 Valley Centre Drive, Suite 500, San Diego, CA	**92130**
(Address of Principal Executive Offices)	**(Zip Code)**

Registrant's Telephone Number, Including Area Code: (858) 552-0866

Not Applicable
(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instructions A.2. below):

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Item 1.01 Entry into a Material Definitive Agreement.

On September 28, 2015, Mast Therapeutics, Inc. (the "Company") entered into an amendment (the "First Amendment to Loan Agreement") to the Loan and Security Agreement, dated August 11, 2015 (the "Loan Agreement") with Hercules Technology III, L.P. and Hercules Technology Growth Capital, Inc. (together, "Hercules") and the Company received the second advance of $10 million (the "Second Advance") under the Loan Agreement. As described in the Company's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on August 12, 2015, the Loan Agreement provides for a $15 million debt facility (the "Debt Facility"), $5 million of which was funded to the Company on August 11, 2015. Prior to the First Amendment to Loan Agreement, the Second Advance was available to the Company only if it achieved certain clinical development and financial milestones by December 31, 2015. Pursuant to the terms and conditions of the First Amendment to Loan Agreement, those conditions to funding the Second Advance were removed and the Company agreed to draw the Second Advance. The Second Advance will be prepaid to Hercules on April 30, 2016, without any prepayment penalty, unless the Company's vepoloxamer and AIR001 programs achieve certain clinical development milestones by December 31, 2015, and, by April 30, 2016, the Company either (a) receives unrestricted and unencumbered net cash proceeds of at least $15 million from either, or a combination of, upfront cash payments from one or more strategic corporate partnerships or one or more equity financings, or (b) positive results in the Company's ongoing Phase 3 clinical study of vepoloxamer in patients with sickle cell disease ("EPIC").

Under the Loan Agreement, as amended, the Company will make monthly interest-only payments until June 1, 2016, but the interest-only period will be extended to September 1, 2016 if, on or before June 1, 2016, the Company has demonstrated positive results in EPIC and no event of default has occurred (the "First Interest Only Extension Condition"). The interest-only period will be extended further to March 1, 2017 if, on or before June 1, 2016, the Company has achieved the First Interest Only Extension Condition, has not prepaid the Second Advance, and no event of default has occurred. Pursuant to the First Amendment to Loan Agreement, the Company paid an additional facility charge of $37,500.

On September 28, 2015, in connection with, and as partial consideration for, the First Amendment to Loan Agreement, the Company and Hercules also entered into an amendment (the "First Amendment to Warrant Agreement") to the Warrant Agreement, dated August 11, 2015 (the "Warrant Agreement"), between the parties. Pursuant to the First Amendment to Warrant Agreement, the warrant issued to Hercules Technology III, L.P. was amended such that it is now exercisable for an additional 243,903 shares of the Company's common stock, for a total of up to 1,524,390 shares. There was no change to the exercise price of $0.41 per share.

Except as specifically amended by the First Amendment to Loan Agreement and the First Amendment to Warrant Agreement, the Loan Agreement and Warrant Agreement remain in full force and effect.

Item 2.03 Creation of a Direct Financial Obligation or an Obligation under an Off-Balance Sheet Arrangement of a Registrant.

To the extent required by Item 2.03 of Form 8-K, the information regarding the Debt Facility, as amended by the First Amendment to Loan Agreement, set forth under Item 1.01 of this Current Report on Form 8-K and under Item 5 of the Company's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on August 12, 2015 is incorporated by reference in this Item 2.03.

Item 3.02 Unregistered Sales of Equity Securities.

To the extent required by Item 2.03 of Form 8-K, the information regarding the Warrant Agreement and warrant issued to Hercules Technology III, L.P., as amended by the First Amendment to Warrant Agreement, set forth under Item 1.01 of this Current Report on Form 8-K and under Item 5 of the Company's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on August 12, 2015 is incorporated by reference in this Item 3.02.

The securities described above were offered and sold to Hercules by the Company in reliance upon the exemption from the registration requirements of the Securities Act of 1933, as amended (the "Securities Act"), provided by Section 4(2) of the Securities Act. The Company relied on this exemption based in part on representations made to it by Hercules, including Hercules' intention to acquire the securities for investment only and not with a view to, or a present intention of, selling or distributing any part thereof in violation of applicable laws, and Hercules' status as an "accredited investor," as such term is defined in Rule 501 of Regulation D promulgated under the Securities Act.

Item 7.01 Regulation FD Disclosure.

On September 30, 2015, the Company issued a press release announcing the execution of the First Amendment to Loan Agreement and funding of the Second Advance. A copy of the press release is furnished as Exhibit 99.1 hereto.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

The list of exhibits called for by this Item is incorporated by reference to the Exhibit Index immediately following the signature page of this report.

The information set forth under Item 7.01 and in Exhibit 99.1 is not being filed for purposes of Section 18 of the Securities Exchange Act of 1934 and is not to be incorporated by reference into any filing of the registrant, whether made before or after the date hereof, regardless of any general incorporation language in any such filing.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Mast Therapeutics, Inc.

Date: September 30, 2015

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

Exhibit Index

Exhibit Number	Description
99.1	Press release dated September 30, 2015

Exhibit 99.1

MAST ANNOUNCES AMENDMENT TO LOAN AND SECURITY AGREEMENT WITH HERCULES TECHNOLOGY GROWTH CAPITAL

- ***Hercules funds second advance of $10 million; total funding now $15 million***
- ***Amendment allows for deferral or elimination of additional capital raise requirement***

SAN DIEGO – September 30, 2015 – Mast Therapeutics, Inc. (NYSE MKT: MSTX), a clinical-stage biopharmaceutical company leveraging its molecular adhesion and sealant technology (MAST) platform to develop novel therapies for sickle cell disease, heart failure, and stroke, today announced that it signed an amendment to the Company's existing Loan and Security Agreement with Hercules Technology Growth Capital, Inc. (NYSE: HTGC). The agreement provides for a $15 million debt facility, $5 million of which was funded to the Company on August 11, 2015. Prior to the amendment, the Company was only able to access the second advance of $10 million if it achieved certain clinical development and financial milestones by December 31, 2015, which included receipt of $15 million in net cash proceeds from a strategic partnership and/or equity financing. The amendment removed those funding conditions and the Company drew the second advance on September 28, 2015. Under the amended agreement, the net cash proceeds condition is deferred until April 30, 2016, a date which is expected to follow top-line data from EPIC, and this requirement would be eliminated entirely upon achievement of positive data from EPIC. If the clinical and updated financial conditions are not met, the second advance of $10 million would be repaid on April 30, 2016, without any prepayment penalty.

Brandi Roberts, the Company's Chief Financial Officer, said: "We are pleased to have the ongoing support of Hercules, a highly recognized leader in growth financing. We believe that the accelerated funding underscores Hercules' confidence in Mast and our development programs. The funds received under the loan agreement provide us with additional financial resources and flexibility as we near the completion of enrollment in EPIC and prepare to submit a New Drug Application to the Food and Drug Administration."

About Mast Therapeutics

Mast Therapeutics, Inc. is a publicly traded biopharmaceutical company headquartered in San Diego, California. The Company is leveraging its MAST platform, derived from over two decades of clinical, nonclinical and manufacturing experience with purified and non-purified poloxamers, to develop vepoloxamer (also known as MST-188), its lead product candidate, for serious or life-threatening diseases and conditions typically characterized by impaired microvascular blood flow and damaged cell membranes. The Company is also developing AIR001, a sodium nitrite solution for inhalation via nebulizer, for the treatment of heart failure with preserved ejection fraction (HFpEF).

Vepoloxamer is an investigational new drug being tested in a pivotal Phase 3 study called EPIC for the treatment of vaso-occlusive crisis in patients with sickle cell disease. AIR001 is an investigational new drug being tested in two institution-sponsored Phase 2a studies in patients with HFpEF. More information can be found on the Company's web site at www.masttherapeutics.com. (Twitter: @MastThera)

About Hercules Technology Growth Capital, Inc.

Hercules Technology Growth Capital, Inc. (NYSE: HTGC) is the leading specialty finance company focused on providing senior secured venture growth loans to high-growth, innovative venture capital-backed and public companies in the technology, biotechnology, life sciences, healthcare, and energy & renewable technology

industries. Since inception (December 2003), Hercules has committed more than $5.5 billion to over 325 companies and is the lender of choice for entrepreneurs, venture capital firms and public companies seeking growth capital financing. Companies interested in learning more about financing opportunities should contact info@htgc.com, or call 650.289.3060.

Forward Looking Statements

Mast Therapeutics cautions you that statements included in this press release that are not a description of historical facts are forward-looking statements that are based on the Company's current expectations and assumptions. Such forward-looking statements include, but are not limited to, statements relating to the Company's future financial condition, prospects for successful development and commercialization of, the Company's investigational drugs, vepoloxamer and AIR001, and anticipated timing of achievement of development milestones, such as commencement and completion of clinical studies or regulatory activities, and of announcement of study data. Among the factors that could cause or contribute to material differences between the Company's actual results and the expectations indicated by the forward-looking statements are risks and uncertainties that include, but are not limited to: the risk that the Company will be required to repay $10 million of its debt significantly earlier than the scheduled maturity date if it does not achieve all of the clinical development and financial conditions required to avoid early repayment and the risk that it may be required to repay all $15 million of its debt upon occurrence of an event of default, which includes any event that the lender interprets as a material adverse effect; the uncertainty of outcomes in ongoing and future studies of the Company's product candidates and the risk that its product candidates, including vepoloxamer, may not demonstrate adequate safety, efficacy or tolerability in one or more such studies, including EPIC; delays in the commencement or completion of clinical studies, including as a result of difficulties in obtaining regulatory agency agreement on clinical development plans or clinical study design, opening trial sites, enrolling study subjects, manufacturing sufficient quantities of clinical trial material, being subject to a "clinical hold," and/or suspension or termination of a clinical study, including due to patient safety concerns or lack of funding; the risk that, even if planned clinical studies are successful, the FDA or other regulatory agencies may determine they are not sufficient to support a new drug application; the potential that, even if clinical studies of a product candidate in one indication are successful, clinical studies in another indication may not be successful; the potential for additional nonclinical or clinical studies to be required prior to initiation of a planned clinical study; the Company's reliance on contract research organizations (CROs), contract manufacturing organizations (CMOs), and other third parties to assist in the conduct of important aspects of development of its product candidates, including clinical studies, manufacturing, and regulatory activities for its product candidates, and that such third parties may fail to perform as expected; the Company's ability to obtain additional funding on a timely basis or on acceptable terms, or at all; the potential for the Company to delay, reduce or discontinue current and/or planned development activities, including clinical studies, partner its product candidates at inopportune times or pursue less expensive but higher-risk and/or lower return development paths if it is unable to raise sufficient additional capital as needed; the risk that, even if the Company successfully develops a product candidate in one or more indications, it may not realize commercial success and may never achieve profitability; the risk that the Company is not able to adequately protect its intellectual property rights, through patents or otherwise, and prevent competitors from duplicating or developing equivalent versions of its product candidates or that the use or manufacture of its products or product candidates infringe the proprietary rights of others; and other risks and uncertainties more fully described in the Company's press releases and periodic filings with the Securities and Exchange Commission. The Company's public filings with the Securities and Exchange Commission are available at www.sec.gov.

You are cautioned not to place undue reliance on forward-looking statements, which speak only as of the date when made. Mast Therapeutics does not intend to revise or update any forward-looking statement set forth in this press release to reflect events or circumstances arising after the date hereof, except as may be required by law.

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