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): May 11, 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 2.02 Results of Operations and Financial Condition.

On May 11, 2015, Mast Therapeutics, Inc. issued a press release announcing its financial results for the three months ended March 31, 2015. 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 2.02 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 thereunto duly authorized.

Mast Therapeutics, Inc.

Date: May 11, 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 May 11, 2015

Exhibit 99.1

MAST THERAPEUTICS REPORTS FIRST QUARTER 2015 FINANCIAL RESULTS

SAN DIEGO – May 11, 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, arterial disease and heart failure, today reported financial results for the quarter ended March 31, 2015.

"Our top priority in the first quarter of 2015 was to increase enrollment in EPIC, our Phase 3 trial in patients with sickle cell disease, and we were pleased to cross the halfway mark in that study last month. We continue to anticipate making top-line data available in the first quarter of 2016," stated Brian M. Culley, Chief Executive Officer.

"Last quarter, we also released nonclinical study data demonstrating that vepoloxamer reduced fragility, adhesiveness, and hemolysis of sickled red blood cells, which are believed to be causal pathologies underlying vaso-occlusive crisis. Beyond sickle cell disease, we announced positive data from nonclinical studies of vepoloxamer in advanced heart failure and embolic stroke. In a study of repeat treatment in a model of advanced heart failure, data showed vepoloxamer improved key parameters of heart function after both the initial administration and the second administration, with the treatment effect after the second administration sustained for at least three weeks to the end of the six-week study. In the embolic stroke study, vepoloxamer showed marked improvements relative to controls in reducing the amount of brain tissue loss, preserving neurologic function, and extending the tPA window without increasing the incidence of hemorrhage. Overall, we are pleased to have provided our shareholders with additional positive results from studies we have conducted with vepoloxamer and we look forward to completing the EPIC study, which will make us one step closer to our goal of becoming the first company to bring a new therapy to the market for sickle cell patients in more than 17 years," continued Mr. Culley.

First Quarter 2015 Operating Results

The Company's net loss for the first quarter of 2015 was $9.6 million, or $0.06 per share (basic and diluted), compared to a net loss of $6.4 million, or $0.06 per share (basic and diluted), for the same period in 2014.

Research and development (R&D) expenses for the first quarter of 2015 were $6.0 million, an increase of $1.7 million, or 41%, compared to $4.3 million for the same period in 2014. The increase was primarily due to increases of $1.2 million in external clinical study fees and expenses and $0.4 million in external nonclinical study fees and expenses. Increased enrollment in the EPIC study was the primary driver of the increase in R&D expenses.

Selling, general and administrative expenses for the first quarter of 2015 were $3.6 million, an increase of $1.3 million, or 58%, compared to $2.3 million for the same period in 2014. The increase resulted primarily from an increase of $1.0 million in personnel costs due, in large part, to severance and share-based compensation expenses resulting from the termination of employment of our former president and chief operating officer.

Balance Sheet Highlights

As of March 31, 2015, the Company had cash, cash equivalents and investment securities totaling $49.9 million. Stockholders' equity amounted to $50.1 million as of March 31, 2015.

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 (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 and in a Phase 2 study to evaluate whether vepoloxamer improves the effectiveness of recombinant tissue plasminogen activator therapy in patients with acute limb ischemia. The Company plans to initiate a Phase 2 study of vepoloxamer in chronic heart failure in the third quarter of this year. AIR001 is an investigational new drug being tested in multiple 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)

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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 prospects for successful development of the Company's product candidates, including vepoloxamer in sickle cell disease, heart failure and stroke, and anticipated timing of achievement of development milestones, including commencement and completion of clinical and nonclinical studies, 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 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 potential for additional nonclinical or clinical studies to be required prior to initiation of a planned clinical study; 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 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 and prevent competitors from duplicating or developing equivalent versions of its product candidates; 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.

Contact:
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[Tables to Follow]

Mast Therapeutics, Inc.
Condensed Consolidated Statements of Operations
(In thousands, except per share data)

	Three months ended March 31, (Unaudited)	
	2015	**2014**
Total net revenue	$ -	$ -
Operating expenses:		
Research and development	6,042	4,281
Selling, general and administrative	3,578	2,266
Transaction-related expenses	-	280
Depreciation and amortization	30	12
Total operating expenses	9,650	6,839
Loss from operations	(9,650)	(6,839)
Interest and other income, net	34	468
Net loss	$ (9,616)	$ (6,371)
Net loss per share – basic and diluted	$ (0.06)	$ (0.06)
Weighted average shares – basic and diluted	159,459	105,054

Mast Therapeutics, Inc.
Balance Sheet Data
(In thousands)

	March 31, 2015	December 31, 2014
Cash, cash equivalents and investment securities	$ 49,887	$ 57,289
Working capital	41,381	49,965
Total assets	62,720	70,500
Total liabilities	12,612	11,842
Stockholders' equity	50,108	58,658