
**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): February 27, 2014

Mast Therapeutics, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction
of incorporation)

001-32157
(Commission
File Number)

84-1318182
(IRS Employer
Identification No.)

12390 El Camino Real, Suite 150, San Diego, California
(Address of principal executive offices)

92130
(Zip Code)

(858) 552-0866
Registrant's telephone number, including area code

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:

- 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(b))
 - 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))
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Item 3.02. Unregistered Sales of Equity Securities.

On February 27, 2014 (the “Closing Date”), Mast Therapeutics, Inc. (the “Company”) completed its acquisition of Aires Pharmaceuticals, Inc., a privately-held Delaware corporation (“Aires”), pursuant to the terms of the Agreement and Plan of Merger, dated February 7, 2014, by and among the Company, AP Acquisition Sub, Inc., a wholly-owned subsidiary of the Company, Aires, and a stockholders’ representative (the “Merger Agreement”). Aires survived the merger transaction as a wholly-owned subsidiary of the Company. Aires’ lead product candidate, AIR001 (sodium nitrite) inhalation solution, has orphan drug designation in the United States and European Union for the treatment of pulmonary arterial hypertension. The Company previously disclosed the material terms of the Merger Agreement in a current report on Form 8-K it filed with the Securities and Exchange Commission on February 10, 2014.

Pursuant to the terms of the Merger Agreement, on the Closing Date, all outstanding shares of Aires capital stock were converted into the right to receive from the Company, in the aggregate, up to 5,248,536 unregistered shares of the Company’s common stock, par value \$0.001 (the “Merger Consideration”), 1,049,706 of which will be issued and delivered by the Company within ten business days of the Closing Date. In accordance with the terms of the Merger Agreement, the other 4,198,830 shares that comprise the Merger Consideration (the “Holdback Amount”) have been held back from issuance for a period of six months from the Closing Date for the benefit of the Company to satisfy the indemnification obligations of the former Aires stockholders.

The shares of common stock constituting the Merger Consideration are being issued by the Company in reliance on the exemptions provided by Section 4(a)(2) of the Securities Act of 1933, as amended (the “Securities Act”), and Regulation D promulgated thereunder and in reliance on similar exemptions under applicable state laws.

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.

February 28, 2014

By: /s/ Patrick L. Keran

Name: Patrick L. Keran

Title: President and Chief Operating Officer