
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549**

FORM 8-A

**FOR REGISTRATION OF CERTAIN CLASSES OF SECURITIES
PURSUANT TO SECTION 12(B) OR (G) OF
THE SECURITIES EXCHANGE ACT OF 1934**

Calithera Biosciences, Inc.

(Exact Name of Registrant as Specified in its Charter)

Delaware
(State of Incorporation or Organization)

27-2366329
(I.R.S. Employer Identification No.)

**343 Oyster Point Blvd. Suite 200
South San Francisco, California**
(Address of principal executive offices)

94080
(Zip code)

Securities to be registered pursuant to Section 12(b) of the Act:

Title of each class
to be so registered
Common Stock, \$0.0001 par value per share

Name of exchange on which
each class is to be registered
The NASDAQ Stock Market LLC

If this form relates to the registration of a class of securities pursuant to Section 12(b) of the Exchange Act and is effective pursuant to General Instruction A. (c), please check the following box.

If this form relates to the registration of a class of securities pursuant to Section 12(g) of the Exchange Act and is effective pursuant to General Instruction A. (d), check the following.

Securities Act registration statement number to which the form relates: 333-198355

Securities to be registered pursuant to Section 12(g) of the Act: None

Item 1. Description of Registrant's Securities to be Registered.

Calithera Biosciences, Inc. (the "**Registrant**") hereby incorporates by reference the description of its common stock, par value \$0.0001 per share, to be registered hereunder contained under the heading "Description of Capital Stock" in the Registrant's Registration Statement on Form S-1 (File No. 333-198355), as originally filed with the Securities and Exchange Commission (the "**Commission**") on August 25, 2014, as subsequently amended (the "**Registration Statement**"), and in the prospectus included in the Registration Statement to be filed separately by the Registrant with the Commission pursuant to Rule 424(b) under the Securities Act of 1933, as amended, which prospectus shall be deemed to be incorporated by reference herein.

Item 2. Exhibits.

Pursuant to the Instructions as to Exhibits with respect to Form 8-A, no exhibits are required to be filed as part of this registration statement because no other securities of the Registrant are registered on The NASDAQ Stock Market LLC and the securities registered hereby are not being registered pursuant to Section 12(g) of the Securities Exchange Act of 1934, as amended.

SIGNATURE

Pursuant to the requirements of Section 12 of the Securities Exchange Act of 1934, the Company has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized.

CALITHERA BIOSCIENCES, INC.

Date: September 25, 2014

By: /s/ Susan M. Molineaux, Ph.D.

Name: Susan M. Molineaux, Ph.D.

Title: President and Chief Executive Officer