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UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 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

**NILE THERAPEUTICS, INC.**

(Exact name of registrant as specified in its charter)

**Delaware**

(State of incorporation or organization)

**88-0363465**

(I.R.S. Employer Identification No.)

**4 West 4th Avenue, Suite 400  
San Mateo, CA 94402**

(Address of principal executive offices/Zip Code)

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

**Title of Each Class  
To Be So Registered**

**Name of Each Exchange On Which  
Each Class Is To Be Registered**

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**Warrants (expiring April 21, 2015)**

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**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), 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 box.

Securities Act registration file number to which this form relates: **333-165167**

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

**None**  
(Title of Class)

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

The title of the class of securities to be registered hereunder is "Warrants (expiring April 21, 2015)" (the "Warrants"). A description of the Warrants is set forth under (i) the section captioned "Description of Warrants" in the Prospectus contained in the Registrant's Registration Statement on Form S-3 (File No. 333-165167) filed with the Securities and Exchange Commission (the "Commission") on March 3, 2010, as supplemented by (ii) the section captioned "Description of the Securities We Are Offering – Warrants to Be Issued In This Offering" in the Prospectus Supplement filed with the Commission on April 22, 2010, which are hereby incorporated by reference herein.

**Item 2. Exhibits.**

<b>Exhibit No.</b>	<b>Description</b>
4.1	Certificate of Incorporation of Nile Therapeutics, Inc. (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed February 9, 2007)
4.2	Bylaws of Nile Therapeutics, Inc. (incorporated by reference to Exhibit 3.2 to the Registrant's Current Report on Form 8-K filed February 9, 2007)
4.3	Specimen common stock certificate (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K filed September 21, 2007)
4.4	Warrant Agreement between Nile Therapeutics, Inc. and American Stock Transfer & Trust Company, LLC, as Warrant Agent, dated April 21, 2010 (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K filed April 22, 2010)
4.5	Form of Warrant (included as part of Exhibit 4.4 hereof).

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**SIGNATURE**

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

NILE THERAPEUTICS, INC.

April 22, 2010

By: /s/ Daron Evans  
Daron Evans  
Chief Financial Officer

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