
**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**

Sunesis Pharmaceuticals, Inc.

(Exact Name of Registrant as Specified in its Charter)

Delaware
(State of Incorporation
or Organization)

94-3295878
(I.R.S. Employer
Identification No.)

341 Oyster Point Boulevard, South San Francisco, California
(Address of Principal Executive Offices)

94080
(Zip Code)

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), please check the following box.

Securities Act registration statement file number to which this form relates: **333-121646**

Securities to be registered pursuant to Section 12(b) of the Act: **None.**

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

Common Stock, par value \$0.0001
(Title of Class)

Item 1.

Description of Registrant's Securities to be Registered.

The description of the Common Stock of Registrant set forth under the caption "Description of Capital Stock" in Registrant's Registration Statement on Form S-1 (File No. 333-121646) as originally filed with the Securities and Exchange Commission on December 23, 2004, as amended (the "Registration Statement"), and in the prospectus included in the Registration Statement, is hereby incorporated by reference in response to this item.

Item 2.

The following exhibits are filed herewith or are incorporated by reference as indicated below.

<u>Exhibit Number</u>	<u>Description</u>
3.3*	Amended and Restated Certificate of Incorporation of the Registrant (Delaware) to be effective prior to the closing of the offering.
3.5*	Amended and Restated Bylaws of the Registrant to be effective upon the closing of the offering.
4.1*	Specimen Common Stock certificate of the Registrant.
10.17*	Eighth Amended and Restated Investor Rights Agreement, dated August 30, 2004, by and among the Registrant and certain stockholders and warrant holders.
10.39**	Amendment to Eighth Amended and Restated Investor Rights Agreement, dated April 27, 2005, by and among the Registrant and Investors listed on the signature pages thereto.
10.40***	Amendment to Eighth Amended and Restated Investor Rights Agreement, dated August 25, 2005, by and among the Registrant and Investors listed on the signature pages thereto.

* Incorporated by reference to the identically numbered exhibit to the Registration Statement on Form S-1 of Sunesis Pharmaceuticals, Inc. filed by Sunesis Pharmaceuticals, Inc. on December 23, 2004 (File No. 333-121646).

** Incorporated by reference to the identically numbered exhibit to Amendment No. 2 to the Registration Statement on Form S-1 of Sunesis Pharmaceuticals, Inc. filed by Sunesis Pharmaceuticals, Inc. on April 29, 2005 (File No. 333-121646).

*** Incorporated by reference to Exhibit 10.39 to Amendment No. 4 to the Registration Statement on Form S-1 of Sunesis Pharmaceuticals, Inc. filed by Sunesis Pharmaceuticals, Inc. on September 1, 2005 (File No. 333-121646).

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, thereunto duly authorized.

Date: September 19, 2005

Sunesis Pharmaceuticals, Inc.

By: /s/ Daryl B. Winter, Ph.D.
Daryl B. Winter, Ph.D.
Senior Vice President, General Counsel and
Corporate Secretary