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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 12(g) OF THE  
SECURITIES EXCHANGE ACT OF 1934**

**SYNTA PHARMACEUTICALS CORP.**

(Exact name of the Registrant as specified in its charter)

**Delaware**

(State of incorporation or organization)

**04-3508648**

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

**45 Hartwell Avenue**

**Lexington, Massachusetts 02421**

(Address of Principal Executive Offices) (Zip Code)

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

**Title of each class  
to be so registered**

Common Stock, \$0.0001 par value per share

**Name of each 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), 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 statement file number to which this form relates: File No. 333-138894

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

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

The description under the heading "Description of Capital Stock" relating to the Registrant's common stock, \$0.0001 par value per share, in the prospectus included in the Registrant's Registration Statement on Form S-1 (File No. 333-138894) as filed with the Securities and Exchange Commission (the "Registration Statement") is hereby incorporated by reference in response to this item.

**Item 2. Exhibits**

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

<b>Exhibit Number</b>	<b>Description</b>
3.2*	Restated Certificate of Incorporation of the Registrant to be filed upon the completion of the offering made under the Registration Statement.
3.4*	Restated Bylaws of the Registrant to be effective upon the completion of the offering made under the Registration Statement.
4.1*	Form of Common Stock Certificate.

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\* Incorporated by reference to the identically numbered exhibit to the Registration Statement.

## 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.

SYNTA PHARMACEUTICALS CORP.

By: /s/ Keith S. Ehrlich  
Keith S. Ehrlich  
Vice President, Finance and Administration, Chief  
Financial Officer

Date: January 25, 2007

## Exhibit Index

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