

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

**SCHEDULE 13G**

Under the Securities Exchange Act of 1934  
(Amendment No. 5)\*

**SYNTA PHARMACEUTICALS CORP.**

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(Name of Issuer)

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**Common Stock, par value \$0.0001 per share**

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(Title of Class of Securities)

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**87162T 20 6**

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(CUSIP Number)

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**December 31, 2012**

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(Date of Event Which Requires Filing of this Statement)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

- ☐ Rule 13d-1(b)  
☐ Rule 13d-1(c)  
☒ Rule 13d-1(d)

\*The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page.

The information required in the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

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1.	Names of Reporting Persons Safi R. Bahcall	
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2.	Check the Appropriate Box if a Member of a Group (See Instructions)	
(a)	<input type="checkbox"/>	
(b)	<input type="checkbox"/>	
<hr/>		
3.	SEC Use Only	
<hr/>		
4.	Citizenship or Place of Organization United States	
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Number of Shares Beneficially Owned by Each Reporting Person With	5.	Sole Voting Power 3,047,935
	<hr/>	
	6.	Shared Voting Power 15,000
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	7.	Sole Dispositive Power 3,047,935
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	8.	Shared Dispositive Power 15,000
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9.	Aggregate Amount Beneficially Owned by Each Reporting Person 3,062,935	
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10.	Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions) <input type="checkbox"/>	
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11.	Percent of Class Represented by Amount in Row (9) 4.41% (based on 68,930,082 shares outstanding on December 31, 2012).	
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12.	Type of Reporting Person (See Instructions) IN	
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**Item 1.**

- (a) Name of Issuer  
Synta Pharmaceuticals Corp.
- 
- (b) Address of Issuer's Principal Executive Offices  
45 Hartwell Avenue  
Lexington, MA 02421
- 

**Item 2.**

- (a) Name of Person Filing  
Safi R. Bahcall
- 
- (b) Address of Principal Business Office or, if none, Residence  
c/o Synta Pharmaceuticals Corp.  
45 Hartwell Avenue  
Lexington, MA 02421
- 
- (c) Citizenship  
United States
- 
- (d) Title of Class of Securities  
Common Stock, par value \$0.0001 per share
- 
- (e) CUSIP Number  
87162T 20 6
- 

**Item 3. If this statement is filed pursuant to §§240.13d-1(b) or 240.13d-2(b) or (c), check whether the person filing is a:**

- (a) ☐ Broker or dealer registered under section 15 of the Act (15 U.S.C. 78o).
- (b) ☐ Bank as defined in section 3(a)(6) of the Act (15 U.S.C. 78c).
- (c) ☐ Insurance company as defined in section 3(a)(19) of the Act (15 U.S.C. 78c).
- (d) ☐ Investment company registered under section 8 of the Investment Company Act of 1940 (15 U.S.C. 80a-8).
- (e) ☐ An investment adviser in accordance with §240.13d-1(b)(1)(ii)(E);
- (f) ☐ An employee benefit plan or endowment fund in accordance with §240.13d-1(b)(1)(ii)(F);
- (g) ☐ A parent holding company or control person in accordance with §240.13d-1(b)(1)(ii)(G);
- (h) ☐ A savings association as defined in Section 3(b) of the Federal Deposit Insurance Act (12 U.S.C. 1813);
- (i) ☐ A church plan that is excluded from the definition of an investment company under section 3(c)(14) of the Investment Company Act of 1940 (15 U.S.C. 80a-3);
- (j) ☐ A non-U.S. institution in accordance with § 240.13d-1(b)(1)(ii)(J);
- (k) ☐ Group, in accordance with § 240.13d-1(b)(1)(ii)(K). If filing as a non-U.S. institution in accordance with § 240.13d-1(b)(1)(ii)(J), please specify the type of institution: \_\_\_\_\_

**Item 4. Ownership**

Provide the following information regarding the aggregate number and percentage of the class of securities of the issuer identified in Item 1.

- (a) Amount beneficially owned:  
3,062,935 shares. Consists of 2,383,135 shares of common stock owned of record by Dr. Bahcall and 599,800 shares of common stock issuable upon the exercise of options exercisable within 60 days of December 31, 2012 held by Dr. Bahcall. The amount also includes 15,000 shares owned of record by the Safi R. Bahcall Irrevocable Trust, the co-trustees of which are Dr. Bahcall and Dr. Bahcall's mother and of which Dr. Bahcall is the beneficiary, and 65,000 shares owned of record by the Neta Bahcall 2012 Irrevocable Trust, of which Dr. Bahcall is the trustee and a beneficiary. Dr. Bahcall disclaims beneficial ownership of the shares held by these trusts except to the extent of any pecuniary interest therein.
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- (b) Percent of class:  
4.41% (based on 68,930,082 shares outstanding on December 31, 2012).
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- (c) Number of shares as to which the person has:
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- (i) Sole power to vote or to direct the vote  
3,047,935, including 599,800 shares of common stock issuable upon the exercise of options
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- (ii) Shared power to vote or to direct the vote  
15,000
- 
- (iii) Sole power to dispose or to direct the disposition of  
3,047,935, including 599,800 shares of common stock issuable upon the exercise of options
- 
- (iv) Shared power to dispose or to direct the disposition of  
15,000
- 

**Item 5. Ownership of Five Percent or Less of a Class**

If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than five percent of the class of securities, check the following ☒.

**Item 6. Ownership of More than Five Percent on Behalf of Another Person**

Not applicable.

**Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on By the Parent Holding Company or Control Person**

Not applicable.

**Item 8. Identification and Classification of Members of the Group**

Not applicable.

**Item 9. Notice of Dissolution of Group**

Not applicable.

**Item 10. Certification**

Not applicable.

**Signature**

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Date: February 14, 2013

/s/ Safi R. Bahcall  
Safi R. Bahcall