

Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. See Instruction 1(b).

**STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP**

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934, Section 17(a) of the Public Utility Holding Company Act of 1935 or Section 30(h) of the Investment Company Act of 1940

<b>1. Name and Address of Reporting Person *</b> <b>Barsoum James G</b>  (Last) (First) (Middle) <b>C/O SYNTA PHARMACEUTICALS</b> <b>CORP., 45 HARTWELL AVENUE</b>  (Street) <b>LEXINGTON MA 02421</b>  (City) (State) (Zip)	<b>2. Issuer Name and Ticker or Trading Symbol</b> <b>SYNTA PHARMACEUTICALS CORP [SNTA]</b>	<b>5. Relationship of Reporting Person(s) to Issuer</b> (Check all applicable) Director 10% Owner X Officer (give title below) Other (specify below) <b>Sr. VP, Research</b>
	<b>3. Date of Earliest Transaction</b> (Month/Day/Year) <b>02/27/2008</b>	
	<b>4. If Amendment, Date of Original Filed</b> (Month/Day/Year)	

**Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned**

1. Title of Security (Instr. 3)	2. Transaction Date (Month/Day/Year)	2A. Deemed Execution Date, if any (Month/Day/Year)	3. Transaction Code (Instr. 8)		4. Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5)			5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4)	6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	7. Nature of Indirect Beneficial Ownership (Instr. 4)
			Code	V	Amount	(A) or (D)	Price			

**Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned  
(e.g., puts, calls, warrants, options, convertible securities)**

1. Title of Derivative Security (Instr. 3)	2. Conversion or Exercise Price of Derivative Security	3. Transaction Date (Month/Day/Year)	3A. Deemed Execution Date, if any (Month/Day/Year)	4. Transaction Code (Instr. 8)		5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4, and 5)		6. Date Exercisable and Expiration Date (Month/Day/Year)		7. Title and Amount of Underlying Securities (Instr. 3 and 4)		8. Price of Derivative Security (Instr. 5)	9. Number of Derivative Securities Beneficially Owned Following Reported Transaction(s) (Instr. 4)	10. Ownership Form of Derivative Security: Direct (D) or Indirect (I) (Instr. 4)	11. Nature of Indirect Beneficial Ownership (Instr. 4)
				Code	V	(A)	(D)	Date Exercisable	Expiration Date	Title	Amount or Number of Shares				
Employee Stock Option (Right to Buy)	\$ 8.82	02/27/2008		A		37,440		(1)	02/27/2018	Common Stock	37,440	\$ 0	37,440	D	

**Explanation of Responses:**

1. The option vests as to 25% of the shares on February 27, 2009 and as to an additional 6.25% of the shares on the last day of each successive three-month period thereafter.

/s/ Ann Margaret Eames,  
Attorney-in-Fact

02/29/2008

\*\* Signature of Reporting  
Person Date

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

\* If the form is filed by more than one reporting person, see Instruction 4(b)(v).

\*\* Intentional misstatements or omissions of facts constitute Federal Criminal Violations See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, see Instruction 6 for procedure.

**Persons who respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB Number.**