

INITIAL STATEMENT OF BENEFICIAL OWNERSHIP OF SECURITIES

OMB APPROVAL

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Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934
or Section 30(h) of the Investment Company Act of 1940

1. Name and Address of Reporting Person* <u>KIRK RANDAL J</u> <hr/> (Last) (First) (Middle) <u>C/O THIRD SECURITY, LLC</u> <u>1881 GROVE AVENUE</u> <hr/> (Street) <u>RADFORD VA 24141</u> <hr/> (City) (State) (Zip)	2. Date of Event Requiring Statement (Month/Day/Year) 10/16/2012	3. Issuer Name and Ticker or Trading Symbol <u>Synthetic Biologics, Inc. [SYN]</u>	4. Relationship of Reporting Person(s) to Issuer (Check all applicable) Director <input checked="" type="checkbox"/> 10% Owner Officer (give title below) Other (specify below)	5. If Amendment, Date of Original Filed (Month/Day/Year) 6. Individual or Joint/Group Filing (Check Applicable Line) Form filed by One Reporting Person <input checked="" type="checkbox"/> Form filed by More than One Reporting Person
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Table I - Non-Derivative Securities Beneficially Owned

1. Title of Security (Instr. 4)	2. Amount of Securities Beneficially Owned (Instr. 4)	3. Ownership Form: Direct (D) or Indirect (I) (Instr. 5)	4. Nature of Indirect Beneficial Ownership (Instr. 5)
Common Stock	6,675,768 ⁽¹⁾	I	by Intrexon ⁽²⁾

Table II - Derivative Securities Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)

1. Title of Derivative Security (Instr. 4)	2. Date Exercisable and Expiration Date (Month/Day/Year)		3. Title and Amount of Securities Underlying Derivative Security (Instr. 4)		4. Conversion or Exercise Price of Derivative Security	5. Ownership Form: Direct (D) or Indirect (I) (Instr. 5)	6. Nature of Indirect Beneficial Ownership (Instr. 5)
	Date Exercisable	Expiration Date	Title	Amount or Number of Shares			

1. Name and Address of Reporting Person* <u>KIRK RANDAL J</u> <hr/> (Last) (First) (Middle) <u>C/O THIRD SECURITY, LLC</u> <u>1881 GROVE AVENUE</u> <hr/> (Street) <u>RADFORD VA 24141</u> <hr/> (City) (State) (Zip)

1. Name and Address of Reporting Person* <u>INTREXON CORP</u> <hr/> (Last) (First) (Middle) <u>C/O LEGAL DEPARTMENT</u> <u>20358 SENECA MEADOWS PARKWAY</u> <hr/> (Street) <u>GERMANTOWN MD 20876</u> <hr/> (City) (State) (Zip)
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Explanation of Responses:

1. Pursuant to an Exclusive Channel Collaboration Agreement entered into between Intrexon Corporation ("Intrexon") and Synthetic Biologics, Inc. ("Synthetic Biologics") on November 18, 2011 ("Channel Agreement #1"), Synthetic Biologics agreed to issue to Intrexon 3,123,558 shares of common stock of the issuer as partial consideration for the execution and delivery of Channel Agreement #1. The closing date of Channel Agreement #1 was December 7, 2011. In connection with a subsequent Exclusive Channel Collaboration Agreement between Intrexon and Synthetic Biologics on August 6, 2012 ("Channel Agreement #2"), Synthetic Biologics agreed to issue to Intrexon 3,552,210 shares of common stock of the issuer as partial consideration for the execution and delivery of Channel Agreement #2. The closing date of Channel Agreement #2 was October 16, 2012.

2. Randal J. Kirk, directly and through certain affiliates, has voting and dispositive power over a majority of the outstanding capital stock of Intrexon. Mr. Kirk may therefore be deemed to have voting and dispositive power over the shares of the issuer owned by Intrexon. Shares held by Intrexon may be deemed to be indirectly beneficially owned (as defined under Rule 13d-3 promulgated under the Securities Exchange Act of 1934, as amended) by Mr. Kirk. Mr. Kirk disclaims beneficial ownership of such shares, except to the extent of any pecuniary interest therein.

Remarks:

/s/ Randal J. Kirk

10/19/2012

/s/ Randal J. Kirk, CEO

10/19/2012

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 5 (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.