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UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, DC 20549

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**SCHEDULE 13D**

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

**SYNTHETIC BIOLOGICS, INC.**

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(Name of Issuer)

Common Stock, par value \$0.001 per share

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(Title of Class of Securities)

87163U102

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(CUSIP Number)

Third Security, LLC  
1881 Grove Avenue  
Radford, Virginia 24141  
Attention: Marcus E. Smith, Esq.  
(540) 633-7900

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(Name, Address and Telephone Number of Person  
Authorized to Receive Notices and Communications)

Copy to:  
Intrexon Corporation  
Attention: Legal  
20374 Seneca Meadows Parkway  
Germantown, Maryland 20876  
(301) 556-9809

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April 1, 2019

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(Date of Event which Requires Filing of this Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition which is the subject of this Schedule 13D, and is filing this schedule because of Rule 13d-1(b)(3) or (4), check the following box ☐.

NOTE: Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See §240.13d-7 for other parties to whom copies are to be sent.

\* 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 disclosures provided in a prior cover page.

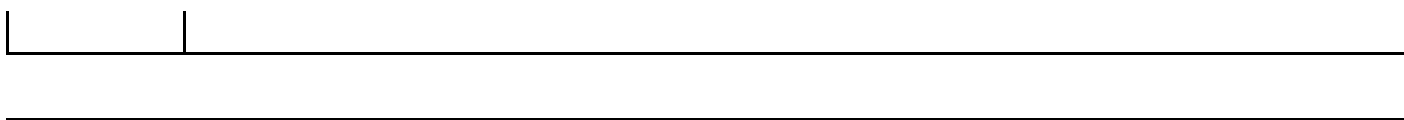
The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however,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

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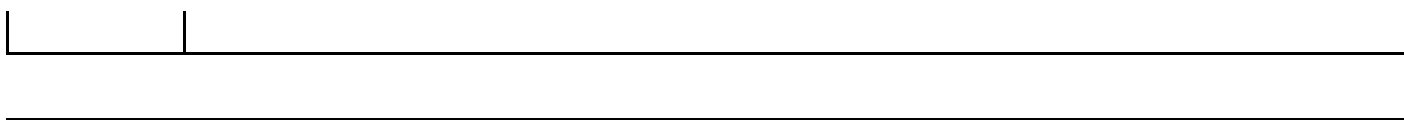
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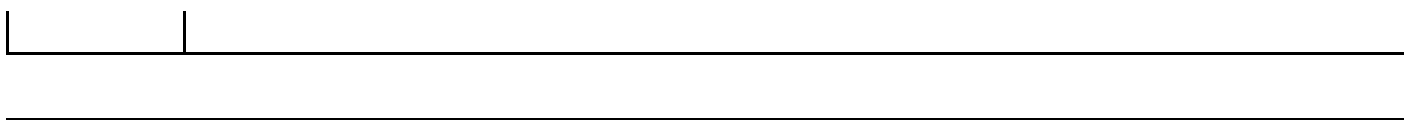
1	NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY) RANDAL J. KIRK		
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>		
3	SEC USE ONLY		
4	SOURCE OF FUNDS (SEE INSTRUCTIONS) PF		
5	CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(D) OR 2(E) <input type="checkbox"/>		
6	CITIZENSHIP OR PLACE OF ORGANIZATION United States		
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER 62,342	
	8	SHARED VOTING POWER 165,332	
	9	SOLE DISPOSITIVE POWER 62,342	
	10	SHARED DISPOSITIVE POWER 165,332	
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 227,674		
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES (SEE INSTRUCTIONS) <input type="checkbox"/>		
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11) 1.5%		
14	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS) IN		



1	NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY) THIRD SECURITY, LLC I.R.S. IDENTIFICATION NO.: 54-1923091		
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>		
3	SEC USE ONLY		
4	SOURCE OF FUNDS (SEE INSTRUCTIONS) WC		
5	CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(D) OR 2(E) <input type="checkbox"/>		
6	CITIZENSHIP OR PLACE OF ORGANIZATION Virginia		
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER 62,342	
	8	SHARED VOTING POWER 0	
	9	SOLE DISPOSITIVE POWER 62,342	
	10	SHARED DISPOSITIVE POWER 0	
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 62,342		
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES (SEE INSTRUCTIONS) <input type="checkbox"/>		
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11) 0.4%		
14	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS) OO – limited liability company		

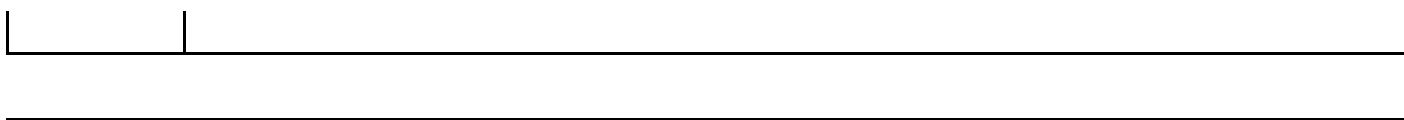


1	NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY) NRM VII HOLDINGS I, LLC I.R.S. IDENTIFICATION NO.: 27-1471440		
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>		
3	SEC USE ONLY		
4	SOURCE OF FUNDS (SEE INSTRUCTIONS) WC		
5	CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(D) OR 2(E) <input type="checkbox"/>		
6	CITIZENSHIP OR PLACE OF ORGANIZATION United States		
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER 62,342	
	8	SHARED VOTING POWER 0	
	9	SOLE DISPOSITIVE POWER 62,342	
	10	SHARED DISPOSITIVE POWER 0	
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 62,342		
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES (SEE INSTRUCTIONS) <input type="checkbox"/>		
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11) 0.4%		
14	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS) OO - Limited Liability Company		





1	NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY) INTREXON CORPORATION I.R.S. IDENTIFICATION NO.: 26-0084895		
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/>		
3	SEC USE ONLY		
4	SOURCE OF FUNDS (SEE INSTRUCTIONS) WC		
5	CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEM 2(D) OR 2(E) <input type="checkbox"/>		
6	CITIZENSHIP OR PLACE OF ORGANIZATION Virginia		
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	7	SOLE VOTING POWER 0	
	8	SHARED VOTING POWER 165,332	
	9	SOLE DISPOSITIVE POWER 0	
	10	SHARED DISPOSITIVE POWER 165,332	
11	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 165,332		
12	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES (SEE INSTRUCTIONS) <input type="checkbox"/>		
13	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11) 1.1%		
14	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS) CO		



This Amendment No. 5 (the "Amendment") amends and supplements the Statement on Schedule 13D, dated December 7, 2011 and filed on December 12, 2011 as amended by Amendment No. 1 dated October 16, 2012 and filed on October 19, 2012, as amended by Amendment No. 2 dated October 29, 2012 and filed on November 1, 2012, as amended by Amendment No. 3 dated December 17, 2013 and filed on December 19, 2013, and as amended by Amendment No. 4 dated September 2, 2015 and filed on September 4, 2015 (the "Original Schedule 13D"), relating to the Common Stock, par value \$0.001 per share (the "Common Stock"), of Synthetic Biologics, Inc. a Nevada corporation (the "Company"). Mr. Randal J. Kirk ("Mr. Kirk"), NRM VII Holdings I, LLC ("NRM VII Holdings"), a Virginia limited liability company that is managed by an affiliate that is managed by Third Security, LLC ("Third Security"), a Virginia limited liability company that is managed by Mr. Kirk, and Intrexon Corporation, a Virginia corporation ("Intrexon" and, together with Mr. Kirk, NRM VII Holdings and Third Security, the "Reporting Persons"), are filing this Amendment to disclose the sale of an aggregate of 150,565 shares of Common Stock held by the Reporting Persons in open market transactions between April 1, 2019 and April 3, 2019. The filing of this Amendment No. 5 represents the final amendment to the Original Schedule 13D and constitutes an exit filing for the Reporting Persons.

Except as set forth below, there are no changes to the information set forth in the Original Schedule 13D.

Item 4. Purpose of Transaction.

Item 4 of the Original Schedule 13D is hereby amended and supplemented as follows:

The Reporting Persons are filing this Amendment to disclose the sale of 41,230 shares of Common Stock held by NRM VII Holdings, in open market transactions between April 1, 2019 and April 3, 2019, for gross proceeds of \$26,931. Additionally, the Reporting Persons are filing this Amendment to disclose the sale of 109,335 shares of Common Stock held by Intrexon, in open market transactions between April 1, 2019 and April 3, 2019, for gross proceeds of \$71,419. Pursuant to a joint selling program, NRM VII Holdings and Intrexon sold these shares on a pro rata basis.

Item 5. Interest in Securities of the Issuer.

Items 5(a) and (b) of the Original Schedule 13D are hereby amended and restated to read in its entirety as follows:

(a) and (b) See Items 11 and 13 of the cover pages to this Statement for the aggregate number of shares and percentage of issued and outstanding shares of Common Stock of the Company owned by the Reporting Persons. The percentage ownership is calculated based on 15,484,411 shares of Common Stock outstanding as of February 26, 2019 as disclosed in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2018 and filed on February 27, 2019.

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Reporting Person	Amount of Common Stock Beneficially Owned <sup>(1)</sup>	Percent of Class	Sole Power to Vote or Direct the Vote <sup>(1)</sup>	Shared Power to Vote or Direct the Vote <sup>(1)</sup>	Sole Power to Dispose or to Direct the Disposition <sup>(1)</sup>	Shared Power to Dispose or to Direct the Disposition <sup>(1)</sup>
Randal J. Kirk	227,674	1.5%	62,342	165,332	62,342	165,332
Third Security, LLC	62,342	0.4%	62,342	—	62,342	—
NRM VII Holdings I, LLC	62,342	0.4%	62,342	—	62,342	—
Intrexon Corporation	165,332	1.1%	—	165,332	—	165,332

<sup>(1)</sup> Reflects a 1:35 reverse stock split effected by the Company on August 10, 2018.

Mr. Kirk could be deemed to have indirect beneficial ownership of the shares of Common Stock directly beneficially owned by NRM VII Holdings and Intrexon.

(c) Except as set forth in this Item 5, none of the Reporting Persons have engaged in any transactions in the Common Stock in the past 60 days.

(d) Not applicable.

(e) Based upon the number of shares of Common Stock outstanding as of February 26, 2019, as disclosed by the Company in its Annual Report on Form 10-K for the period ended December 31, 2018, the Reporting Persons are no longer the owners of more than five percent (5%) of the Common Stock.

Item 7. Material to be Filed as Exhibits.

Exhibit 1 Joint Filing Agreement, dated as of April 3, 2019, by and among Mr. Kirk, Third Security, NRM VII Holdings and Intrexon

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SIGNATURES

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

Date: April 3, 2019

/s/ Randal J. Kirk

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Randal J. Kirk

THIRD SECURITY, LLC

By: /s/ Randal J. Kirk

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Randal J. Kirk

Manager

NRM VII HOLDINGS I, LLC

By: /s/ Randal J. Kirk

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Randal J. Kirk

Manager

INTREXON CORPORATION

By: /s/ Randal J. Kirk

\_\_\_\_\_  
Randal J. Kirk

Chief Executive Officer

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## EXHIBIT INDEX

[Exhibit 1](#) Joint Filing Agreement, dated as of April 3, 2019, by and among Mr. Kirk, Third Security, NRM VII Holdings and Intrexon

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