

Steven A. Shallcross

**Interim Chief Executive Officer and Chief Financial Officer
9605 Medical Center Drive, Suite 270**

Rockville, Maryland 20850

(Name and address of agent for service)

(301) 417-4364

(Telephone number, including area code, of agent for service)

Copy to:

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Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer
Non-accelerated filer Smaller reporting company
Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

CALCULATION OF REGISTRATION FEE

Title of securities to be registered (1)	Amount to be Registered (2)	Proposed maximum offering price per share (3)	Proposed maximum aggregate offering price (1)	Amount of registration fee (4)
Common Stock, par value \$0.001 per share	500,000 shares	\$ 2.42	\$1,210,000	\$ 146.65

(1) The securities to be registered include options and rights to acquire the common stock of Synthetic Biologics, Inc.

(2) Pursuant to Rule 416(a) under the Securities Act of 1933, as amended (the “Securities Act”), this registration statement also covers any additional securities that may be offered or issued in connection with any stock split, stock dividend or similar transaction.

(3) Estimated pursuant to Rule 457(c) and 457(h) of the Securities Act solely for purposes of calculating the registration fee. The price for the shares under the plan is based upon the average of the high and low sale prices of the Common Stock on September 29, 2018, as reported by the NYSE American.

(4) Calculated pursuant to Section 6(b) of the Securities Act as .00012120 of the proposed maximum aggregate offering price.

Explanatory Note

Reverse Stock Split

On July 31, 2018, the Board of Directors of Synthetic Biologics, Inc., a Nevada corporation (the “Registrant”), approved a reverse stock split of the Registrant’s authorized, issued and outstanding shares of common stock, par value \$0.001 per share (the “Common Stock”), at a ratio of one (1) share of Common Stock for every thirty-five (35) shares of Common Stock (the “Reverse Stock Split”). The Registrant filed a Certificate of Change with the Secretary of State of the State of Nevada to effectuate the Reverse Stock Split, which was effective as of 11:00 p.m. (Eastern Time) on August 10, 2018 and the Common Stock began trading on the NYSE American on a post-split basis when the market opened on August 13, 2018. Where noted herein, the number of shares reflected in this Registration Statement on Form S-8 give effect to the Reverse Stock Split.

Registration Statements on Form S-8

The Registrant filed with the Securities and Exchange Commission (the “SEC”) its Registration Statement on Form S-8 (Registration No. 333-170858) on November 29, 2010 (the “2010 Registration Statement”) pursuant to and in accordance with the requirements of General Instruction E to Form S-8 for the purpose of registering under the Securities Act of 1933, as amended (the “Securities Act”), 3,000,000 shares of the Registrant’s Common Stock (85,714 shares post-Reverse Stock Split) to be offered and sold under the Registrant’s 2010 Stock Incentive Plan (the “Plan”). Pursuant to General Instruction E to Form S-8, the contents of the 2010 Registration Statement are incorporated into this Registration Statement by reference.

The Registrant filed with the SEC its Registration Statement on Form S-8 (Registration No. 333-192355) on November 15, 2013 (the “2013 Registration Statement”) pursuant to and in accordance with the requirements of General Instruction E to Form S-8 for the purpose of registering under the Securities Act an additional 3,000,000 shares of Common Stock (85,714 shares post-Reverse Stock Split) to be offered and sold under the Plan. Pursuant to General Instruction E to Form S-8, the contents of the 2013 Registration Statement are incorporated into this Registration Statement by reference.

The Registrant also filed with the SEC its Registration Statement on Form S-8 (Registration No. 333-206268) on August 10, 2015 (the “2015 Registration Statement”) pursuant to and in accordance with the requirements of General Instruction E to Form S-8 for the purpose of registering under the Securities Act an additional 2,000,000 shares of Common Stock (57,143 shares post-Reverse Stock Split) to be offered and sold under the Plan. Pursuant to General Instruction E to Form S-8, the contents of the 2015 Registration Statement are incorporated into this Registration

Statement by reference.

The Registrant also filed with the SEC its Registration Statement on Form S-8 (Registration No. 333-213388) on August 31, 2016 (the “2016 Registration Statement”) pursuant to and in accordance with the requirements of General Instruction E to Form S-8 for the purpose of registering under the Securities Act an additional 6,000,000 shares of Common Stock (171,429 shares post-Reverse Stock Split) to be offered and sold under the Plan. Pursuant to General Instruction E to Form S-8, the contents of the 2016 Registration Statement are incorporated into this Registration Statement by reference.

The Registrant also filed with the SEC its Registration Statement on Form S-8 (Registration No. 333-220401) on September 8, 2017 (the “2017 Registration Statement”) pursuant to and in accordance with the requirements of General Instruction E to Form S-8 for the purpose of registering under the Securities Act an additional 3,500,000 shares of Common Stock (100,000 shares post-Reverse Stock Split) to be offered and sold under the Plan. Pursuant to General Instruction E to Form S-8, the contents of the 2017 Registration Statement are incorporated into this Registration Statement by reference.

This Registration Statement on Form S-8 has been prepared and filed pursuant to and in accordance with the requirements of General Instruction E to Form S-8 for the purpose of registering under the Securities Act 500,000 additional shares of Common Stock (after giving effect to the Reverse Stock Split) to be offered and sold under the Plan. These shares represented 500,000 shares of Common Stock that were added to the Plan as of August 8, 2018 upon the approval of the Registrant’s Board of Directors, subject to stockholder approval, which approval was obtained by a vote of the Registrant’s stockholders at the 2018 Annual Meeting of Stockholders and which, in accordance with the terms of the Plan, are to be assigned to and made available for grant under the Plan.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents By Reference.

The Registrant has filed the documents listed below with the SEC under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and these documents are incorporated into this registration statement by reference:

Our annual report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on February 22, 2018 (File No. 001-12584);

Our quarterly reports on Form 10-Q for the quarters ended March 31, 2018 and June 30, 2018 filed with the SEC on May 8, 2018 and August 8, 2018, respectively (File No. 001-12584);

Our current reports on Form 8-K (File No. 001-12584) filed with the SEC on January 8, 2018, March 7, 2018; April 23, 2018, May 7, 2018, May 22, 2018; August 1, 2018, August 13, 2018, September 6, 2018; September 6, 2018 and September 26, 2018;

Our definitive proxy statement on Schedule 14A filed with the SEC on August 14, 2018 (File No. 001-12584); and

The description of our common stock set forth in our registration statement on Form 8-A12B, filed with the SEC on June 20, 2007 (File No. 000-12584).

All documents filed by the Registrant pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act subsequent to the date hereof and prior to the filing of a post-effective amendment which indicates that all securities offered hereby have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated by reference in this registration statement and to be a part hereof from the date of filing of such documents.

Item 4. Description of Securities.

Not Applicable

Item 5. Interests of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

Section 78.138 of the Nevada Revised Statutes provides that a director or officer is not individually liable to the Registrant or its stockholders or creditors for any damages as a result of any act or failure to act in his capacity as a director or officer unless it is proven that (1) his act or failure to act constituted a breach of his fiduciary duties as a director or officer and (2) his breach of those duties involved intentional misconduct, fraud or a knowing violation of law.

This provision is intended to afford directors and officers protection against and to limit their potential liability for monetary damages resulting from suits alleging a breach of the duty of care by a director or officer. As a consequence of this provision, the Registrant's stockholders will be unable to recover monetary damages against directors or officers for action taken by them that may constitute negligence or gross negligence in performance of their duties unless such conduct falls within one of the foregoing exceptions. The provision, however, does not alter the applicable standards governing a director's or officer's fiduciary duty and does not eliminate or limit the right of the Registrant or any of its stockholders to obtain an injunction or any other type of non-monetary relief in the event of a breach of fiduciary duty.

The Registrant's Articles of Incorporation, as amended, and amended and restated bylaws provide for indemnification of directors, officers, employees or agents of the Registrant to the fullest extent permitted by Nevada law (as amended from time to time). Section 78.7502 of the Nevada Revised Statutes provides that such indemnification may only be provided if the person acted in good faith and in a manner he reasonably believed to be in, or not opposed to, the best interest of the Registrant and, with respect to any criminal action or proceeding, had no reasonable cause to believe his conduct was unlawful.

Item 7. Exemption from Registration Claimed.

Not applicable.

Item 8. Exhibits.

Exhibit No. Description

<u>4.1</u>	<u>Synthetic Biologics, Inc. 2010 Stock Incentive Plan (as amended on August 8, 2018)*</u>
<u>5.1</u>	<u>Opinion of Parsons Behle & Latimer as to the legality of securities being registered*</u>
<u>23.1</u>	<u>Consent of BDO USA, LLP*</u>
<u>23.2</u>	<u>Consent of Parsons Behle & Latimer (included in Exhibit 5.1 hereof)*</u>
<u>24.1</u>	<u>Power of Attorney (included on the signature page of this registration statement)*</u>

* Filed Herewith

Item 9. Undertakings.

(a) The undersigned Registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in this registration statement.

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in this registration statement;

Provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) of this section do not apply if the registration statement is on Form S-8 and the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Securities Exchange Commission by the Registrant pursuant to Section 13 or Section 15(d) of the Exchange Act that are incorporated by reference in the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for purposes of determining any liability under the Securities Act, each filing of the Registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in this registration statement shall be deemed to be a new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(5) Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Registrant pursuant to existing provisions or arrangements whereby the Registrant may indemnify a trustee, officer or controlling person of the Registrant against liabilities arising under the Securities Act, or otherwise, the Registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a trustee, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such trustee, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Rockville and State of Maryland, on the 2nd day of October, 2018.

SYNTHETIC BIOLOGICS, INC.

By: /s/ Steven A. Shallcross
Name: Steven A. Shallcross
Interim Chief Executive Officer and
Title: Chief Financial Officer

POWER OF ATTORNEY

Each of the undersigned, whose signature appears below, hereby constitutes and appoints Steven A. Shallcross as his true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution for him and in his name, place and stead, in any and all capacities, to sign any or all amendments to this Registration Statement, whether pre-effective or post-effective, and to file the same with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent, or his substitute full power and authority to do and perform each and every act and thing necessary or appropriate to be done with respect to this Registration Statement or any amendments hereto in the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or his substitute or substitutes, or any of them, may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Act, this Registration Statement has been signed below by the following persons, in the capacities and on the date or dates indicated:

Signature	Title	Date
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/s/ Steven A. Shallcross Steven A. Shallcross	Interim Chief Executive Officer and Chief Financial Officer (Principal Executive Officer and Principal Financial and Accounting Officer)	October 2, 2018
/s/ Jeffrey J. Kraws Jeffrey J. Kraws	Chairman of the Board	October 2, 2018
/s/ Scott L. Tarriff Scott L. Tarriff	Director	October 2, 2018
/s/ Jeffrey Wolf Jeffrey Wolf	Director	October 2, 2018

EXHIBIT INDEX

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* Filed Herewith

