May 8, 2018

Synthetic Biologics Reports First Quarter 2018 Operational Highlights and Financial Results

-- Preliminary Agreement Reached with FDA on Proposed Phase 3 Clinical Trial Synopsis for SYN-004 (ribaxamase) --

-- Conference Call Today, May 8, 2018, at 4:30 p.m. (EDT) --

ROCKVILLE, Md., May 8, 2018 /PRNewswire/ --Synthetic Biologics, Inc. (NYSE American: SYN), a late-stage clinical company developing therapeutics that preserve the microbiome to protect and restore the health of patients, today provided an operational update and reported financial results for the three months ended March 31, 2018.

"During the first quarter, we held several collaborative and productive meetings with the U.S. Food and Drug Administration (FDA) and have reached preliminary agreement on a clinical trial synopsis for our planned Phase 3 clinical program for ribaxamase, our first-in-class therapeutic intervention designed to prevent the onset of primary *C. difficile* infection (CDI) by protecting the gut microbiome from antibiotic-mediated dysbiosis," stated Steven A. Shallcross, Interim Chief Executive Officer and Chief Financial Officer.

"The establishment of key components of our planned Phase 3 clinical trial, including the important distinction of evaluating efficacy and safety as separate, co-primary endpoints, is a significant milestone in ribaxamase's clinical development. Looking ahead, we plan to continue to work closely with the FDA to define the remaining elements of our trial protocol

and intend to share these outcomes following the completion of our End-of-Phase 2 meeting, expected during the second half of 2018. Antibiotic exposure is the major risk factor for CDI, and there are more than 450,000 cases of CDI each year in the U.S. If approved, ribaxamase will be the first intervention specifically designed to prevent CDI associated with the most commonly used IV antibiotics," concluded Shallcross.

Clinical Development and Operational Update

- The proposed Phase 3 clinical trial synopsis for SYN-004 (ribaxamase) is expected to include two separate and decoupled co-primary endpoints designed to evaluate efficacy and safety in a patient population being treated with a representative selection of intravenous (IV) beta-lactam antibiotics, and is expected to:
    - Comprise a global, event driven clinical trial with a fixed maximum number of patients for total enrollment
    - Evaluate the potential efficacy and safety of ribaxamase in a broader patient population by the inclusion of additional IV beta-lactam antibiotics in addition to ceftriaxone and by enrolling patients with a variety of underlying infections
    - Evaluate the ability of ribaxamase to reduce the incidence of*Clostridium difficile* infection (CDI) in the ribaxamase treatment group compared to placebo as the primary efficacy endpoint
    - Evaluate mortality risk as the co-primary safety endpoint which will be separate from the primary efficacy endpoint of reduction in the incidence of CDI
- Anticipate End-of-Phase 2 meeting with the FDA in 2H 2018 to solidify the remaining elements of the planned SYN-004 (ribaxamase) Phase 3 clinical trial;
    - Plan to initiate SYN-004 (ribaxamase) Phase 3 clinical trial in 2H 2019;
    - Issued U.S. Patent No. 9,956,292 from the United States Patent and Trademark Office (USTPO), which includes claims related to composition of matter for the use of anti-methanogenic compositions to treat IBS-C and expires no later than 2035, providing key intellectual property protection in the U.S. for SYN-010; and
    - Continue efforts to solidify clinical infrastructure, including exploring international regulatory and market access structures to support advancement of SYN-010, designed to treat an underlying cause of the symptoms associated with irritable bowel syndrome with constipation (IBS-C).

Quarter Ended March 31, 2018 Financial Results

General and administrative expenses decreased to $1.6 million for the three months ended March 31, 2018, compared to $2.1 million for the same period in 2017. This decrease is primarily the result of lower salary expense, stock compensation, and related benefits costs incurred in 2018 due to the resignation of the Chief Executive Officer, along with the reduction of travel, consulting fees, and legal expenses in 2018 offset by higher registration fees. The charge related to stock-based compensation expense was $349,000 for the three months ended March 31, 2018, compared to $698,000 for the same period in 2017.

Research and development expenses decreased to $3.4 million for the three months ended March 31, 2018, compared to $6.1 million for the same period in 2017. This decrease is primarily the result of lower SYN-004 (ribaxamase) and SYN-010 program costs for 2018 since no clinical trials were ongoing during the quarter. The research and development costs incurred during the quarter were primarily related to planning for future Phase 3 (SYN-004) and Phase 2b/3 (SYN-010) clinical programs as we seek to secure the financial resources

necessary for the completion of these clinical trials. The charge related to stock-based compensation expense was $326,000 for the three months ended March 31, 2018, compared to $437,000 for the same period in 2017.

Other income was $2.7 million for the three months ended March 31, 2018, compared to other income of $5.1 million for the same period in 2017. Other income for the three months ended March 31, 2018 is primarily comprised of non-cash income of $2.7 million from the change in fair value of warrants. The decrease in the fair value of the warrants was due to the decrease in our stock price from the prior quarter.

Cash and cash equivalents as of March 31, 2018 was $11.0 million, a decrease of $6.1 million from December 31, 2017.

Conference Call

Synthetic Biologics will hold a conference call today, Tuesday, May 8, 2018, at 4:30 p.m. (EDT). The dial-in information for the call is as follows, U.S. toll free: +1 888-347-5280 or International: +1 412-902-4280. Participants are asked to dial in 15 minutes before the start of the call to register. The call will also be webcast over the Internet at https://www.webcaster4.com/Webcast/Page/1096/25579. An archive of the call will be available for replay at the same URL, https://www.webcaster4.com/Webcast/Page/1096/25579, for 90 days after the call.

About Synthetic Biologics, Inc.

Synthetic Biologics, Inc. (NYSE American: SYN) is a late-stage clinical company developing therapeutics that preserve the microbiome to protect and restore the health of patients. The Company's lead candidates poised for Phase 3 development are: (1) SYN-004 (ribaxamase) which is designed to protect the gut microbiome from the effects of certain commonly used intravenous (IV) beta-lactam antibiotics for the prevention of *C. difficile* infection (CDI), overgrowth of pathogenic organisms and the emergence of antimicrobial resistance (AMR), and (2) SYN-010 which is intended to reduce the impact of methane producing organisms in the gut microbiome to treat an underlying cause of irritable bowel syndrome with constipation (IBS-C). The Company's preclinical pursuits include an oral formulation of the enzyme intestinal alkaline phosphatase (IAP) to treat both local GI and systemic diseases as well as monoclonal antibody therapies for the prevention and treatment of pertussis, and novel discovery stage biotherapeutics for the treatment of phenylketonuria (PKU). For more information, please visit Synthetic Biologics' website at www.syntheticbiologics.com.

This release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. In some cases forward-looking statements can be identified by terminology such as "may," "should," "potential," "continue," "expects," "anticipates," "intends," "plans," "believes," "estimates," and similar expressions, and includes statements regarding our plan to continue to work closely with the FDA to define the remaining elements of the Phase 3 clinical trial protocol, expectations that the Phase 3 clinical trial for SYN-004 will include two separate and decoupled co-primary endpoints, comprise a global, event-driven clinical trial with a fixed maximum number of patients for total enrollment, evaluate the potential efficacy and safety of ribaxamase in a broader patient population by the inclusion of additional IV beta-lactam antibiotics in addition to ceftriaxone and by enrolling patients with a variety of underlying infections, have as the primary efficacy

endpoint the reduction of the incidence of Clostridium difficile infection (CDI) in the ribaxamase treatment group compared to placebo and evaluate mortality risk as the primary safety endpoint, which will be separate from the primary efficacy endpoint; ribaxamase if approved being the first intervention specifically designed to prevent CDI associated with the most commonly used IV antibiotics; the anticipated timing of the initiation of the Phase 3 clinical trial during the second half of 2019 following the end of Phase 2 meeting, which is anticipated to be held during the second half of 2018; and the potential benefits of SYN-004 and SYN-010. These forward-looking statements are based on management's expectations and assumptions as of the date of this press release and are subject to a number of risks and uncertainties, many of which are difficult to predict that could cause actual results to differ materially from current expectations and assumptions from those set forth or implied by any forward-looking statements. Important factors that could cause actual results to differ materially from current expectations include, among others, Synthetic Biologics' ability to design a Phase 3 trial with the co-primary endpoints and receive FDA approval for such design; Synthetic Biologics' ability to implement the Phase 3 program as a global, event-driven clinical trial, Synthetic Biologics' ability to initiate the Phase 3 clinical program in the second half of 2019 following an end of Phase 2 meeting with the FDA during the second half of 2018, Synthetic Biologics' ability to establish a path forward to develop ribaxamase and conduct a robust, controlled and well-designed clinical trial that may provide sufficient efficacy and safety data to support a pathway towards marketing approval for ribaxamase, Synthetic Biologics' ability to regain compliance with the continued listing standards of the NYSE American by September 2, 2019, Synthetic Biologics' ability to comply with other continued listing requirements of the NYSE American, the ability of its product candidates to demonstrate safety and effectiveness, as well as results that are consistent with prior results, Synthetic Biologics' clinical trials continuing enrollment as expected, a failure to receive the necessary regulatory approvals for commercialization of Synthetic Biologics' therapeutics, including approval of proposed trial designs, a failure of Synthetic Biologics' clinical trials, and those conducted by investigators, for SYN-004 and SYN-010 to be commenced or completed on time or to achieve desired results and benefits, a failure of Synthetic Biologics' clinical trials to continue enrollment as expected or receive anticipated funding, a failure of Synthetic Biologics to successfully develop, market or sell its products, Synthetic Biologics' inability to maintain its material licensing agreements, or a failure by Synthetic Biologics or its strategic partners to successfully commercialize products, Synthetic Biologics' ability to achieve acceptance of its product candidates in the marketplace and the successful development, marketing or sale of Synthetic Biologics' products by competitors that render Synthetic Biologics' products obsolete or non-competitive, the continued maintenance and growth of Synthetic Biologics' patent estate, Synthetic Biologics becoming and remaining profitable, Synthetic Biologics' ability to obtain or maintain the capital or grants necessary to fund its research and development activities, a loss of any of Synthetic Biologics' key scientists or management personnel and other factors described in Synthetic Biologics' Form 10-K for the year ended December 31, 2017 and its other filings with the SEC, including subsequent periodic reports on Forms 10-Q and 8-K. The information in this release is provided only as of the date of this release, and Synthetic Biologics undertakes no obligation to update any forward-looking statements contained in this release on account of new information, future events, or otherwise, except as required by law.

- Financial Tables Follow -

Synthetic Biologics, Inc. and Subsidiaries
(in thousands, except share and per share amounts)

Consolidated Balance Sheets

	March 31, 2018	December 31, 2017
Assets		
Cash and cash equivalents	$ 11,037	$ 17,116
Prepaid expenses and other current assets	606	827
Property and equipment, net	801	872
Deposits and other assets	23	23
Total Assets	$ 12,467	$ 18,838
Liabilities and Stockholder's Deficit		
Total liabilities	$ 5,464	$ 10,195
Series A Convertible Preferred Stock	12,112	12,053
Synthetic Biologics, Inc. and subsidiaries deficit	(5,109)	(3,410)
Total Liabilities and Stockholders' Deficit	$ 12,467	$ 18,838

Condensed Consolidated Statements of Operations

	March 31, 2018	December 31, 2017
Operating Costs and Expenses		
General and administrative	$ 1,620	$ 2,090
Research and development	3,370	6,059
Total Operating Costs and Expenses	4,990	8,149
Loss from Operations	(4,990)	(8,149)
Other Income		
Change in fair value of warrant liability	2,655	5,090
Interest income	9	1
Total Other Income	2,664	5,091
Net Loss	(2,326)	(3,058)
Net Loss Attributable to Non-controlling Interest	(10)	(212)
Net Loss Attributable to Synthetic Biologics, Inc. and Subsidiaries	$ (2,316)	$ (2,846)
Series A Preferred Stock Dividends	(59)	-
Net Loss Attributable to Common Stockholders	(2,375)	(2,846)
Net Loss Per Share - Basic and Dilutive	$ (0.02)	$ (0.02)
Weighted average number of common shares outstanding - Basic and Dilutive	128,566,883	117,447,260

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