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Synthetic Biologics Announces Granting of European and U.S. Composition of Matter Patents for Ribaxamase

-- First Granted Patent in Europe Directly Related to Ribaxamase, intended to Prevent C. difficile Infection, Antibiotic-Associated Diarrhea and the Emergence of Antibiotic-Resistant Organisms --

ROCKVILLE, Md., July 12, 2016 /PRNewswire/ --Synthetic Biologics, Inc. (NYSE MKT: SYN), a clinical stage company focused on developing therapeutics to protect the gut microbiome announced today that the European Patent Office has granted European Patent No. 2576776 which provides composition of matter coverage for ribaxamase, the Company's Phase 2 drug candidate designed to degrade certain IV beta-lactam antibiotics within the GI tract and maintain the natural balance of the gut microbiome for the prevention of *Clostridium difficile* infection (CDI), antibiotic-associated diarrhea (AAD) and the emergence of antibiotic-resistant organisms. This is Synthetic Biologics' first patent directly pertaining to ribaxamase in Europe and adds to the Company's established and extensive patent estate.

In addition, the U.S. Patent and Trademark Office (USPTO) has granted US Patent No. 9,376,673, and issued a Notice of Allowance for another application (US 15/160,669), with composition of matter claims for various beta-lactamase candidates related to ribaxamase. These new patent assets further strengthen the Company's coverage of its novel proprietary candidate, ribaxamase, which is also covered by a previously granted composition of matter patent in the U.S.

"The successful granting of this composition of matter patent in Europe, alongside our continued patent successes in the U.S., further strengthens Synthetic Biologics' role as a leader in the development of microbiome-focused programs intended to address largely unmet medical needs," said Jeffrey Riley, President and Chief Executive Officer. "As we continue to enjoy momentum in the clinic, our progress is further complimented by our well established and reinforced patent estate for ribaxamase."

Ribaxamase is designed to degrade certain intravenous (IV) beta-lactam antibiotics excreted into the gastrointestinal (GI) tract to maintain the natural balance of the gut microbiome. *C. difficile* is associated with approximately 453,000 CDIs and > 29,000 *C. difficile*-related deaths in the United States each year[i]. Upon issuance, these newly allowed applications reinforce Synthetic Biologics' extensive *C. difficile*-related patent estate, which includes approximately 40 U.S. and foreign patents and approximately 30 U.S. and foreign patent pending applications, and patents and patent applications with terms that extend from at least 2031 to 2036.

About Synthetic Biologics, Inc.

Synthetic Biologics, Inc. (NYSE MKT: SYN) is a clinical stage company developing therapeutics to protect the gut microbiome while targeting pathogen-specific diseases. The Company's lead candidates in Phase 2 development are: (1) 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), and (2) 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, antibiotic-associated diarrhea (AAD) and the emergence of antibiotic-resistant organisms. The Company is also developing preclinical stage 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 include statements regarding the further strengthening of the patent estate, the continued success in the U.S., the continued momentum in the clinic and the intended benefit of SYN-010 and ribaxamase. 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' product candidates demonstrating safety and effectiveness, as well as results that are consistent with prior results, Synthetic Biologics' ability to initiate clinical trials and if initiated, to complete them on time and achieve desired results and benefits, Synthetic Biologics' clinical trials continuing enrollment as expected, Synthetic Biologics' ability to obtain regulatory approvals for commercialization of product candidates or to comply with ongoing regulatory requirements, regulatory limitations relating to Synthetic Biologics' ability to promote or

commercialize its product candidates for specific indications, 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, Synthetic Biologics' ability to maintain its license agreements, the continued maintenance and growth of Synthetic Biologics' patent estate, Synthetic Biologics becoming and remaining profitable, Synthetic Biologics' ability to establish and maintain collaborations, 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' Annual Report on Form 10-K for the year ended December 31, 2015 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.

[i] Leffler DA et al. N Engl J Med 2015; 372:1539-1548.

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