

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

SCHEDULE 14A

(RULE 14a-101)  
INFORMATION REQUIRED IN PROXY STATEMENT

SCHEDULE 14A INFORMATION

Proxy Statement Pursuant to Section 14(a) of the  
Securities Exchange Act of 1934

- ☒ Filed by the Registrant
- ☐ Filed by a Party other than the Registrant

Check the appropriate box:

- ☐ Preliminary Proxy Statement
- ☐ Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))
- ☒ Definitive Proxy Statement
- ☐ Definitive Additional Materials
- ☐ Soliciting Material under §240.14a-12

**SYNTHETIC BIOLOGICS, INC.**

(Name of Registrant as Specified In Its Charter)

(Name of Person(s) Filing Proxy Statement, if other than the Registrant)

Payment of Filing Fee (Check the appropriate box):

- ☒ No fee required.
- ☐ Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.
  - (1) Title of each class of securities to which transaction applies:
  - (2) Aggregate number of securities to which transaction applies:
  - (3) Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (set forth the amount on which the filing fee is calculated and state how it was determined):
  - (4) Proposed maximum aggregate value of transaction:
  - (5) Total fee paid:
- ☐ Fee paid previously with preliminary materials.
- ☐ Check box if any part of the fee is offset as provided by Exchange Act Rule 0-11(a)(2) and identify the filing for which the offsetting fee was paid previously. Identify the previous filing by registration statement number, or the Form or Schedule and the date of its filing.
  - (1) Amount Previously Paid:
  - (2) Form, Schedule or Registration Statement No.:
  - (3) Filing Party:

(4) Date Filed:

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155 GIBBS STREET, SUITE 412  
ROCKVILLE, MD 20850  
(734) 332-7800

NOTICE OF ANNUAL MEETING OF STOCKHOLDERS

To the Stockholders of Synthetic Biologics, Inc.:

We hereby notify you that the 2013 annual meeting of stockholders of Synthetic Biologics, Inc., a Nevada corporation, will be held on October 22, 2013 at 9:00 a.m. (Eastern time), at the New York City office of Gracin & Marlow, LLP, Chrysler Building, 405 Lexington Avenue, 26<sup>th</sup> Floor, New York, New York, 10174, for the following purposes:

- (1) to elect five directors to our Board of Directors to hold office until our next annual meeting of stockholders and until their successors are elected;
- (2) to ratify the appointment of BDO USA, LLP as our independent registered public accounting firm for our fiscal year ending on December 31, 2013;
- (3) to approve an amendment to our 2010 Stock Option Plan to increase the number of shares of common stock that we will have authority to grant under the Plan from 3,000,000 to 6,000,000;
- (4) to approve, on advisory basis, our Named Executive Officers' compensation;
- (5) to recommend, on an advisory basis, a three year frequency for holding an advisory vote on executive compensation; and
- (6) to transact such other business as may properly come before the meeting or any adjournments or postponements of the meeting.

The matters listed in this notice of meeting are described in detail in the accompanying proxy statement. Our Board of Directors has fixed the close of business on September 3, 2013 as the record date for determining those stockholders who are entitled to notice of and to vote at the meeting or any adjournment or postponement of our 2013 annual meeting. The list of the stockholders of record as of the close of business on September 3, 2013 will be made available for inspection at the meeting.

IMPORTANT NOTICE REGARDING THE AVAILABILITY OF PROXY MATERIALS:

THE NOTICE OF ANNUAL MEETING OF STOCKHOLDERS, THE PROXY STATEMENT AND OUR ANNUAL REPORT ON FORM 10-K FOR THE YEAR ENDED DECEMBER 31, 2012 ARE AVAILABLE ELECTRONICALLY TO OUR STOCKHOLDERS OF RECORD AS OF THE CLOSE OF BUSINESS ON SEPTEMBER 3, 2013 AT [www.syntheticbiologics.com](http://www.syntheticbiologics.com).

Along with the attached proxy statement, we are sending to you our Annual Report on Form 10-K for our fiscal year ended December 31, 2012. Such annual report, which includes our audited financial statements, is not to be regarded as proxy solicitation material.

YOUR VOTE IS IMPORTANT

Even if you plan to attend the meeting, please sign, date, and return the enclosed proxy card in the envelope provided so that your vote will be counted if you later decide not to attend the meeting. No postage is required if the proxy card is mailed in the United States.

By order of the Board of Directors,

/s/ Jeffrey Riley  
Chief Executive Officer  
Rockville, Maryland  
September 24, 2013

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PROXY STATEMENT

This proxy statement is being furnished to holders of shares of common stock, \$0.001 par value per share, of Synthetic Biologics, Inc., a Nevada corporation ("we," "us," or the "Company"), in connection with the solicitation of proxies on behalf of our Board of Directors for use at our 2013 annual meeting of stockholders to be held on October 22, 2013 at 9:00 a.m. (Eastern time), at the New York City office of Gracin & Marlow, LLP, Chrysler Building, 405 Lexington Avenue, 26<sup>th</sup> Floor, New York, New York, 10174, and at any adjournment or postponement of our 2013 annual meeting. The purpose of the annual meeting and the matters to be acted on are stated in the accompanying notice of annual meeting of stockholders. The Board of Directors knows of no other business that will come before the annual meeting.

The notice of our 2013 annual meeting, this proxy statement, and a proxy card, together with our Annual Report on Form 10-K for our fiscal year ended December 31, 2012, are being mailed to our stockholders on or about September 24, 2013. (Such annual report, which includes our audited financial statements, is not to be regarded as proxy solicitation material.) We will bear the cost of our solicitation of proxies. The original solicitation of proxies by mail may be supplemented by personal interview, telephone, or facsimile by our directors, officers, or employees, who will receive no additional compensation for such services. Arrangements will be made with brokerage houses and other custodians, nominees, and fiduciaries for the forwarding of solicitation material to the beneficial owners of stock held by any such persons, and we will reimburse those custodians, nominees, and fiduciaries for the reasonable out-of-pocket expenses incurred by them in doing so.

Our Board of Directors is soliciting votes FOR each of the nominees for election to our Board of Directors, FOR the ratification of the appointment of BDO USA, LLP as our independent registered public accounting firm for our fiscal year ending on December 31, 2013, FOR the approval of the amendment to our 2010 Stock Option Plan to increase the number of shares of common stock that we will have authority to grant under the Plan from 3,000,000 to 6,000,000, FOR the approval, on advisory basis, of the compensation of our named executive officers, and FOR the recommendation, on an advisory basis, of a three year frequency for holding an advisory vote on executive compensation.

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### INFORMATION ABOUT VOTING

Q: *Why am I receiving these materials?*

A: The Board of Directors is providing these proxy materials for you in connection with our 2013 annual meeting of stockholders, which is scheduled to take place on October 22, 2013. As a stockholder of record as of September 3, 2013, you are invited to attend the annual meeting and to vote on the items of business described in this proxy statement.

Q: *What information is contained in these materials?*

A: The information included in this proxy statement relates to the proposals to be voted on at the annual meeting, the voting process, the compensation of our directors and executive officers, and other required information.

Q: *What items of business will be voted on at the annual meeting?*

A: The five items of business scheduled to be voted on at the annual meeting are: (1) the election of our directors; (2) the ratification of our independent registered public accounting firm; (3) the approval of an amendment to our 2010 Stock Option Plan to increase the number of shares of common stock that we will have authority to grant under the Plan from 3,000,000 to 6,000,000; (4) the approval, on advisory basis, of the compensation of our named executive officers; and (5) the recommendation, on an advisory basis, of a three year frequency for holding an advisory vote on executive compensation. We will also consider any other business that properly comes before the annual meeting.

Q: *How does the Board of Directors recommend that I vote?*

A: The Board of Directors recommends that you vote your shares FOR each of the nominees to our board, FOR the ratification of the appointment of BDO USA, LLP as our independent registered public accounting firm for our fiscal year ending on December 31, 2013, FOR the approval of the amendment to our 2010 Stock Option Plan to increase the number of shares of common stock that we will have authority to grant under the Plan from 3,000,000 to 6,000,000, FOR the approval, on advisory basis, of the compensation of our named executive officers, and FOR the recommendation, on an advisory basis, of a three year frequency for holding an advisory vote on executive compensation.

Q: *What shares can I vote?*

A: You may vote or cause to be voted all shares owned by you as of the close of business on September 3, 2013, the record date. These shares include: (1) shares held directly in your name as a stockholder of record; and (2) shares held for you, as the beneficial owner, through a broker or other nominee, such as a bank.

Q: *What is the difference between holding shares as a stockholder of record and as a beneficial owner?*

A: Most of our stockholders hold their shares through a broker or other nominee rather than directly in their own name. As summarized below, there are some distinctions between shares held of record and those owned beneficially.

If your shares are registered directly in your name with our transfer agent, Corporate Stock Transfer, Inc., you are considered, with respect to those shares, the stockholder of record and these proxy materials are being sent directly to you by us. As the stockholder of record, you have the right to grant your voting proxy directly to the Board of Directors or to vote in person at the meeting. The Board of Directors has enclosed a proxy card for you to use to grant a voting proxy to the Board of Directors.

If your shares are held in a brokerage account or by another nominee, you are considered the beneficial owner of shares held in "street name," and these proxy materials are being forwarded to you by your broker or nominee together with a voting instruction card. As the beneficial owner, you have the right to direct your broker or nominee how to vote and are also invited to attend the annual meeting. Since you are not the stockholder of record, however, you may not vote these shares in person at the meeting unless you obtain from the broker or nominee that holds your shares a valid proxy from them giving you the right to vote the shares. Your broker or nominee should have enclosed or provided voting instructions for

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you to use in directing the broker or nominee how to vote your shares. If you hold your shares through a broker and you do not give instructions to the record holder on how to vote, the record holder will be entitled to vote your shares in its discretion on certain matters considered routine, such as the ratification of the appointment of independent auditors. Because of recent rule changes, the uncontested election of directors is no longer considered a routine matter. Therefore, brokers do not have the discretion to vote on the election of directors. If you hold your shares in street name and you do not instruct your broker how to vote in these matters, no votes will be cast on your behalf. These "Broker non-votes" will be treated as shares that are present and entitled to vote for purposes of determining the presence of a quorum, but not as shares entitled to vote on a particular proposal.

Q: *May I attend the annual meeting?*

A: You are entitled to attend the annual meeting only if you were a stockholder as of the close of business on September 3, 2013, or you hold a valid proxy for the annual meeting. You should be prepared to present photo identification for admittance. If you are not a record holder but hold shares beneficially through a broker or nominee (that is, in "street name"), you should provide proof of beneficial ownership on the record date, such as your most recent account statement prior to September 3, 2013, a copy of the voting instruction card provided by your broker or nominee, or other similar evidence of ownership. If you do not provide photo identification or comply with the other procedures outlined above upon request, you may not be admitted to the annual meeting. The annual meeting will begin promptly at 9:00 a.m. (Eastern time). Check-in will begin at 8:30 a.m., and you should allow ample time for the check-in procedures.

Q: *How can I vote my shares in person at the annual meeting?*

A: You may vote by ballot in person at the annual meeting any shares that you hold as the stockholder of record. You may only vote in person shares held in street name if you obtain from the broker or nominee that holds your shares a valid proxy giving you the right to vote the shares.

Q: *How can I vote my shares without attending the annual meeting?*

A: Whether you hold shares directly as the stockholder of record or beneficially in street name, you may, without attending the meeting, direct how your shares are to be voted. If you are a stockholder of record, you may cause your shares to be voted as you instruct by granting a proxy to our Board of Directors. If you hold shares in street name, you may cause your shares to be voted as you instruct by submitting voting instructions to your broker or nominee. Each record holder of our common stock may appoint a proxy by completing, signing, and dating a proxy card and mailing it in the accompanying pre-addressed envelope. Each stockholder who holds shares in street name may vote by mail by completing, signing, and dating a voting instruction card provided by the broker or nominee and following the other instructions of your broker or nominee.

Q: *Can I change my vote?*

A: You may change your vote at any time prior to the vote at the annual meeting. For shares held directly in your name, you may accomplish this by granting a new proxy bearing a later date (which automatically revokes the earlier proxy) or by attending the annual meeting and voting in person. Attendance at the meeting will not cause your previously granted proxy to be revoked unless you specifically so request. For shares you hold beneficially, you may change your vote by submitting new voting instructions to your broker or nominee or, if you have obtained a valid proxy from your broker or nominee giving you the right to vote your shares, by attending the meeting and voting in person. You may also change your vote by sending a written notice of revocation to the Corporate Secretary, Synthetic Biologics, Inc., Administrative Office, 617 Detroit Street, Suite 100, Ann Arbor, Michigan 48104.

Q: *Can I revoke my proxy?*

A: You may revoke your proxy before it is voted at the meeting. To revoke your proxy, notify our corporate secretary in writing, or deliver to our corporate secretary a duly executed proxy bearing a later date. You may also revoke your proxy by appearing at the meeting in person and voting your shares. Attendance at the meeting will not, by itself, revoke a proxy.

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Q: *Who can help answer my questions?*

A: If you have any questions about the annual meeting or how to vote or revoke your proxy, or you need additional copies of this proxy statement or voting materials, you should contact the Corporate Secretary, Synthetic Biologics, Inc., Administrative Office, 617 Detroit Street, Suite 100, Ann Arbor, Michigan 48104 or by phone at (734) 332-7800.

Q: *How are votes counted?*

A: In the election of directors, you may vote FOR all of the five nominees or you may direct your vote to be WITHHELD with respect to any one or more of the five nominees.

With respect to the other four proposals, you may vote FOR, AGAINST, or ABSTAIN. On these proposals, if you vote ABSTAIN, it has the same effect as a vote AGAINST.

If you provide specific instructions, your shares will be voted as you instruct. If you sign your proxy card or voting instruction card with no further instructions, your shares will be voted in accordance with the recommendations of the Board of Directors, namely FOR all of the nominees, FOR ratification of our independent registered public accounting firm, FOR the approval of the amendment to our 2010 Stock Option Plan to increase the number of shares of common stock that we will have authority to grant under the Plan from 3,000,000 to 6,000,000, FOR the approval, on advisory basis, of the compensation of our named executive officers, and FOR the recommendation, on an advisory basis, of a three year frequency for holding an advisory vote on executive compensation. If any other matters properly arise at the meeting, your proxy, together with the other proxies received, will be voted at the discretion of the proxy holders.

Q: *What is a quorum and why is it necessary?*

A: Conducting business at the meeting requires a quorum. The presence, either in person or by proxy, of the holders of a majority of our shares of common stock outstanding on September 3, 2013 is necessary to constitute a quorum. Abstentions are treated as present for purposes of determining whether a quorum exists. Broker non-votes (which result when your shares are held in "street name" and you do not tell the nominee how to vote your shares) are relevant in determining whether a quorum is present at the meeting.

Q: *What is the voting requirement to approve each of the proposals?*

A: In the election of directors, the five persons receiving the highest number of FOR votes at the annual meeting will be elected. Accordingly, withheld votes and broker non-votes have no effect on the election of any nominee. You do not have the right to cumulate your votes.

The other four proposals require the affirmative FOR vote of a majority of those shares present in person or represented by proxy and entitled to vote on that proposal at the annual meeting. Accordingly, abstentions on these proposals will have the same effect as a vote against the proposal. Broker non-votes will have no effect on these proposals.

Q: *What should I do if I receive more than one set of voting materials?*

A: You may receive more than one set of voting materials, including multiple copies of this proxy statement and multiple proxy cards or voting instruction cards. For example, if you hold your shares in more than one brokerage account, you will receive a separate voting instruction card for each brokerage account in which you hold shares. If you are a stockholder of record and your shares are registered in more than one name, you will receive more than one proxy card. Please complete, sign, date, and return each proxy card and voting instruction card that you receive.

Q: *Where can I find the voting results of the annual meeting?*

A: We intend to announce preliminary voting results at the annual meeting and publish final results in a Current Report on Form 8-K which will be filed within four days of the meeting.

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Q: *What happens if additional matters are presented at the annual meeting?*

A: Other than the five items of business described in this proxy statement, we are not aware of any other business to be acted upon at the annual meeting. If you grant a proxy, the persons named as proxy holders, Mr. Jeffrey Riley, our Chief Executive Officer, and Mr. C. Evan Ballantyne, our Chief Financial Officer, will have the discretion to vote your shares on any additional matters properly presented for a vote at the meeting. If for any unforeseen reason any of our nominees are not available as a candidate for director, the persons named as proxy holders will vote your proxy for any one or more other candidates nominated by the Board of Directors.

Q: *How many shares are outstanding and how many votes is each share entitled?*

A: Each share of our common stock that is issued and outstanding as of the close of business on September 3, 2013, the record date, is entitled to be voted on all items being voted on at the annual meeting, with each share being entitled to one vote on each matter. On the record date, 44,735,896 shares of common stock were issued and 44,654,414 shares of common stock were outstanding.

Q: *Who will count the votes?*

A: One or more inspectors of election will tabulate the votes.

Q: *Is my vote confidential?*

A: Proxy instructions, ballots, and voting tabulations that identify individual stockholders are handled in a manner that protects your voting privacy. Your vote will not be disclosed, either within the Company or to anyone else, except: (1) as necessary to meet applicable legal requirements; (2) to allow for the tabulation of votes and certification of the vote; or (3) to facilitate a successful proxy solicitation.

Q: *Who will bear the cost of soliciting votes for the annual meeting?*

A: The Board of Directors is making this solicitation on behalf of the Company, which will pay the entire cost of preparing, assembling, printing, mailing, and distributing these proxy materials. Certain of our directors, officers, and employees, without any additional compensation, may also solicit your vote in person, by telephone, or by electronic communication. On request, we will reimburse brokerage houses and other custodians, nominees, and fiduciaries for their reasonable out-of-pocket expenses for forwarding proxy and solicitation materials to stockholders.

Q: *May I propose actions for consideration at next year's annual meeting of stockholders?*

A: You may submit proposals for consideration at future stockholder meetings. In order for a stockholder proposal to be considered for inclusion in the proxy statement for our annual meeting next year, however, the written proposal must be received by us by May 27, 2014. Those proposals also will need to be received by us a reasonable time before we begin to print and send our proxy materials for that meeting and must comply with Securities and Exchange Commission regulations under Rule 14a-8 regarding the inclusion of stockholder proposals in company-sponsored Proxy materials.

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PROPOSAL 1

ELECTION OF DIRECTORS

The Board of Directors, based on the recommendation of the nominations committee of the Board of Directors, has nominated for annual election as director each of the individuals identified below, all of whom are incumbent directors.

THE NOMINEES

Name	Age	Position	Director Since
Steve H. Kanzer, C.P.A., J.D.	49	Director	2001
Jeffrey J. Kraws <sup>(2)(3)</sup>	49	Chairman	2006
Jeffrey Riley	50	Chief Executive Officer, President and Director	2010
Scott L. Tarriff <sup>(1)</sup>	54	Director	2012
Jeffrey Wolf, J.D. <sup>(1)(2)(3)</sup>	50	Director	2006

(1) Member of the audit committee

(2) Member of the compensation committee

(3) Member of the nominations committee

THE BOARD OF DIRECTORS RECOMMENDS THAT YOU VOTE YOUR SHARES FOR THE ELECTION OF EACH OF THESE NOMINEES.

It is the intention of the persons named in the accompanying proxy card to vote all shares of common stock for which they have been granted a proxy for the election of each of the nominees, each to serve as a director until the next annual meeting of stockholders and until his successor shall have been duly elected and qualified. All the nominees have consented to being named in this proxy statement and to serve as a director if elected. At the time of the annual meeting, if any of the nominees named above is not available to serve as director (an event that the Board of Directors does not currently have any reason to anticipate), all proxies will be voted for any one or more other persons that the Board of Directors designates. The Board of Directors believes that it is in the best interests of the Company to elect the above-described nominees.

DIRECTOR INDEPENDENCE

No director or executive officer of the Company is related to any other director or executive officer. A majority of our board members are independent in compliance with the applicable listing standards of the NYSE MKT stock exchange. The independent directors and nominees are Jeffrey J. Kraws, Scott L. Tarriff, and Jeffrey Wolf.

## INFORMATION ABOUT THE NOMINEES

Stated below is the principal occupation of each nominee, the business experience of each nominee for at least the past five years, and certain other information relating to the nominees.

*Steve H. Kanzer, C.P.A., J.D.* Mr. Kanzer is a co-founder and served as our President from our inception in February of 2001 until May of 2006. Since October 2012, Mr. Kanzer has served as our Licensing Associate, and from January 2012 through September 2012, he served as our Interim Director of our Biologics Division. Mr. Kanzer previously served as our Chief Executive Officer from September of 2004 until November of 2008, Chairman of the Board until February 6, 2010 and currently serves as a director. Mr. Kanzer has also been a director and officer of our subsidiaries, including Solovax, Inc., Effective Pharmaceuticals, Inc., Putney Drug Corp., Epitope Pharmaceuticals, Inc. and CD4 Biosciences, Inc. Since December 2000, he has served as co-founder and Chairman of Accredited Ventures Inc. and Accredited Equities Inc., a venture capital firm and investment bank, respectively, which both specialize in the biotechnology industry. Prior to founding Accredited Ventures and Accredited Equities in December 2000, Mr. Kanzer served as Senior Managing Director-Head of Venture Capital at Paramount Capital from 1991 until December of 2000. While at Paramount Capital, Mr. Kanzer was involved in the formation and financing of a number of biotechnology companies and held various positions in these companies. Prior to joining Paramount Capital in 1992, Mr. Kanzer was an attorney at the law firm of Skadden, Arps, Slate, Meagher & Flom in New York where he specialized in mergers and acquisitions. Mr. Kanzer received a J.D. from New York University School of Law in 1988 and a B.B.A. in Accounting from Baruch College in 1985, where he was a Baruch Scholar. Mr. Kanzer is active in university-based pharmaceutical technology licensing and has served as Co-Chair of the New York Chapter of the Licensing Executives Society.

Mr. Kanzer has been associated with Synthetic Biologics since inception, initiated and negotiated our collaborations with Intrexon and brings to the Board extensive knowledge about our business operations and in particular our licenses and products. Mr. Kanzer also brings to the Board significant executive leadership and operational experience. Mr. Kanzer's legal background provides him with a broad understanding of the legal issues facing Synthetic Biologics, the financial markets and the financing opportunities available to Synthetic Biologics.

*Jeffrey J. Kraws.* Mr. Kraws has been a director since January of 2006, and was appointed independent, non-executive Chairman of the Board in May 2012. Since 2003, Mr. Kraws has served Chief Executive Officer and co-founder of Crystal Research Associates, and since February 2012, he has served as partner and co-founder of TopHat Capital, LLC. Well known and respected on Wall Street, Mr. Kraws has received some of the most prestigious awards in the industry. Among other awards, he was given a "5-Star Rating" in 2001 by Zacks and was ranked the number one analyst among all pharmaceutical analysts for stock performance in 2001 by Starmine.com. Prior to founding Crystal Research Associates, Mr. Kraws served as co-president of The Investor Relations Group (IRG), a firm representing primarily under-followed, small-capitalization companies. Previously, Mr. Kraws served as a managing director of healthcare research for Ryan Beck & Co. and as director of research/senior pharmaceutical analyst and managing director at Gruntal & Co., LLC (prior to its merger with Ryan Beck & Company). Mr. Kraws served as managing director of the healthcare research group and senior pharmaceutical analyst at First Union Securities (formerly EVEREN Securities); as senior U.S. pharmaceutical analyst for the Swedish-Swiss conglomerate Asea Brown Boveri; and as managing director and president of the Brokerage/Investment Banking operation of ABB Aros Securities, Inc. He also served as senior pharmaceutical analyst at Nationsbanc Montgomery Securities, BT Alex Brown & Sons, and Buckingham Research. Mr. Kraws also has industry experience, having been responsible for competitive analysis within the treasury group at Bristol-Myers-Squibb Company. He holds an M.B.A. from Cornell University and a B.S. degree from State University of New York-Buffalo. During 2006 through February of 2007, Mr. Kraws served as our Vice President of Business Development, on a part-time basis.

Mr. Kraws brings a strong business background to Synthetic Biologics, having worked as a pharmaceutical analyst for over 22 years. Mr. Kraws brings to the Board significant strategic, business and financial experience related to the business and financial issues facing pharmaceutical companies. Mr. Kraws has a broad understanding of the operational, financial and strategic issues facing pharmaceutical companies. Through his services as our Vice President of Business Development during 2006 and a part of 2007, he developed extensive knowledge of our business.

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*Jeffrey Riley.* Mr. Riley, a member of the Synthetic Biologics' Board of Directors since March 2010 and Chairman of the Board from November 2011 to May 2012, was appointed as the Company's President and Chief Executive Officer in February 2012. Since November 2009 until January 2012, Mr. Riley served as the Managing Director of 526 Ventures, a life science-focused consulting firm with a commercial and transactional focus, and from April 2009 until February 2012 he was the business officer of Ruga Corporation, a Stanford University spin-out oncology drug discovery company focused on targeting tumor adaptive responses. From January 2005 until January 2010, Mr. Riley was a member of the advisory board and a venture partner of Queensland Biocapital Fund, an Australia-based venture fund. Mr. Riley has held senior corporate and commercial development positions with multiple venture-backed biotech companies. In these positions, he was responsible for raising equity and negotiating alliances including in-licensing, out-licensing, distribution agreements, technology acquisitions and research agreements with large pharmaceutical companies and government agencies. Mr. Riley's pharmaceutical experience includes commercial management and mergers and acquisition roles for Pfizer and SmithKline Beecham. Additionally, Mr. Riley served as CFO and VP Corporate Development for Nichols Institute Diagnostics, later acquired by Corning and spun out as Quest Diagnostics. Mr. Riley's education includes: a B.S. degree from Boise State University, coursework at UCSF/Berkeley in drug discovery/development and participation in a dual-degree graduate program, an M.B.A./M.I.M. sponsored by Arizona State University and the Thunderbird School of Global Management.

Mr. Riley brings to the Board extensive knowledge of the pharmaceutical industry. Having served in senior corporate positions in biotech and pharmaceutical companies he has a vast knowledge of the industry. His business experience provides him with a broad understanding of the operational, financial and strategic issues facing public companies.

*Scott L. Tarriff.* Mr. Tarriff has been a director since February 3, 2012. Since January 2007 he has served as a director and Chief Executive Officer of Eagle Pharmaceuticals, Inc., a hospital specialty company. Eagle Pharmaceuticals, Inc. is focused on developing branded parenteral products through the application of various in-licensed drug delivery technologies. Prior to forming Eagle Pharmaceuticals, Inc., Mr. Tarriff was president and chief executive officer of Par Pharmaceutical Companies, Inc. Mr. Tarriff joined Par Pharmaceutical Companies, Inc., in 1998 as executive vice president. Mr. Tarriff was named president and Chief Executive Officer of Par Pharmaceutical, Inc., the company's principal operating subsidiary, in 2001, and was elected to the company's Board of Directors in 2002. In September 2003, he was appointed President and Chief Executive Officer of Par Pharmaceutical Companies, Inc. Mr. Tarriff joined Par Pharmaceutical Companies, Inc. following a 12-year career at Bristol-Myers Squibb. From 2009 until 2011, Mr. Tarriff served as a director of Clinical Data, Inc. He received an M.B.A. from Rider College and an undergraduate degree from Pennsylvania State University.

Mr. Tarriff brings to our Board of Directors significant knowledge of and experience in the pharmaceutical and medical industries. He has extensive business, managerial, executive and leadership experience that further qualify him to serve as a member of the Board and a valuable understanding of the role played by the Board of Directors acquired through service on the boards of many companies. He has had a long and successful career in top executive leadership positions with leading, publicly traded pharmaceutical companies including Par Pharmaceuticals Companies, Inc. and Bristol-Myers Squibb.

*Jeffrey Wolf, J.D.* Mr. Wolf, a director since 2006, has substantial experience in creating, financing, nurturing and growing new ventures based upon breakthrough research and technology. In August 2008, Mr. Wolf founded Heat Biologics, Inc., a publicly traded company engaged in research and development of drugs focused on combating cancer and other diseases. Since April 2010, Mr. Wolf has served as the Chief Executive Officer of Heat Biologics, Inc. From 2006 until April 2010, Mr. Wolf served as the Chairman and Chief Executive Officer of GenerationOne, a company that was focused on mobile-based collaborative care. Mr. Wolf is the founding partner of Seed-One Ventures, LLC, a venture capital group formed in 1997 and focused on seed-stage technology-based investments. Mr. Wolf has been a founder of Elusys Therapeutics, Inc., an antibody-based therapeutic company, Tyrx Pharma, Inc., a biopolymer-based company, Sensatex, Inc., a medical device company and Generation Mobile, Inc. a telecommunications company. Prior to founding Seed-One Ventures, Mr. Wolf served as the Managing Director of The Castle Group, Ltd., a biomedical venture capital firm. At both organizations, Mr. Wolf was responsible for supervising the formation and funding of new technology, biomedical, and service oriented ventures. Mr. Wolf currently sits on the board

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of Heat Biologics, Inc. (NASDAQ: HTBX), Elusys Therapeutics and Netli, Inc. Mr. Wolf received an M.B.A. from Stanford Business School, a J.D. from New York University School of Law and a B.A. with honors in Economics from the University of Chicago.

Mr. Wolf has extensive knowledge of the industry and in particular research and development. His legal and business background provide him with a broad understanding of the legal, operational, financial and strategic issues facing Synthetic Biologics. Having served as a board member on other public company boards, Mr. Wolf has an extensive understanding of the operational, financial and strategic issues facing public companies.

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### INFORMATION REGARDING THE COMMITTEES OF THE BOARD OF DIRECTORS

We formed an audit committee, compensation committee and nominations committee of our Board of Directors in 2007.

#### *Audit Committee*

The members of the audit committee are Mr. Wolf (Chairman) and Mr. Tarriff. The primary purpose of the audit committee is to act on behalf of the Board of Directors in its oversight of all material aspects of our accounting and financial reporting processes, internal controls and audit functions, including our compliance with Section 404 of the Sarbanes-Oxley Act of 2002.

The duties of the audit committee include the hiring and retaining of our independent registered public accounting firm, which reports to the audit committee. The committee reviews with our independent registered public accounting firm the scope and results of the audit engagement and the system of internal controls and procedures. The Committee also reviews the effectiveness of procedures intended to prevent violations of laws. The committee also reviews, prior to publication, our quarterly earnings releases and our reports to the Securities and Exchange Commission on Forms 10-K and 10-Q. The formal report of the audit committee for fiscal year 2012 is set forth under the caption "Report of the Audit Committee" in Proposal 2.

Our Board of Directors has determined that each of the members of its audit committee are independent and that Mr. Wolf and Mr. Tarriff are each an audit committee "financial expert" within the meaning of the regulations of the United States Securities and Exchange Commission.

The audit committee has adopted a formal written charter, a copy of which is available on our website at [www.syntheticbiologics.com](http://www.syntheticbiologics.com) in the Investors section of the site.

#### *Compensation Committee*

The members of the compensation committee are Mr. Wolf (Chairman) and Mr. Kraws. This committee determines, approves, and reports to the Board of Directors on all elements of compensation of our executive officers. The compensation committee also has the power to prescribe, amend, and rescind rules relating to our stock incentive plans, to grant options and other awards under the stock incentive plans, and to interpret the stock incentive plans.

Each of Mr. Wolf and Mr. Kraws are "independent" under the applicable rules of the NYSE MKT, LLC.

The compensation committee operates under a formal charter that governs its duties and standards of performance. A copy of the charter is available on our website at [www.syntheticbiologics.com](http://www.syntheticbiologics.com) in the Investors section of the site.

Our compensation committee annually reviews the compensation program for our Chief Executive Officer and other members of senior management and then makes recommendations to the full board for determination. In each case, the committee takes into account the results achieved by the executive, his future potential, and his scope of responsibilities and experience. During our fiscal year ended December 31, 2012, the committee evaluated the performance of our executives and considered the compensation levels and equity programs at comparable companies and related industries before it made its compensation recommendations to the full board, including recommendations regarding salary increases, awards of cash bonuses and awards of stock options.

The committee administers our stock plan, including review and recommendation of long-term incentive compensation for each executive, director and employee, including grants of stock options. The committee believes that this long-term incentive compensation aligns the interests of our executives with those of our stockholders and furthers executive retention.

The committee also reviews and recommends to the Board of Directors appropriate director compensation programs for service as directors, committee chairs and committee members.

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### *Nominations Committee*

The members of the nominations committee are Mr. Kraws (Chairman) and Mr. Wolf. This committee performs the following functions:

- It considers and recommends to the Board of Directors, individuals for appointment or election as directors;
- It recommends to the Board of Directors individuals for appointment to vacancies on any committee of the Board of Directors;
- It makes recommendations to the Board of Directors regarding any changes to the size of the Board of Directors or any committee;
- It reports to the Board of Directors on a regular basis, not less than once a year; and
- It performs any other duties or responsibilities expressly delegated to the committee by the Board of Directors relating to board or committee members.

Candidates for director should have certain minimum qualifications, including the ability to understand basic financial statements, being over 21 years of age, having relevant business experience (taking into account the business experience of the other directors), and having high moral character. The committee retains the right to modify these minimum qualifications from time to time.

In evaluating an incumbent director whose term of office is set to expire, the nominations committee reviews such director's overall service to the Company during such director's term, including the number of meetings attended, level of participation, quality of performance, and any transactions with the Company engaged in by such director during his term.

When selecting a new director nominee, the committee first determines whether the nominee must be independent for NYSE MKT, LLC purposes or whether the candidate must qualify as an Audit Committee Financial Expert. The committee then uses its network of contacts to compile a list of potential candidates, but may also engage, if it deems appropriate, a professional search firm to assist in the identification of qualified director candidates. The nominations committee also will consider nominees recommended by our stockholders. The nominations committee does not distinguish between nominees recommended by our stockholders and those recommended by other parties. The nominations committee evaluates the suitability of potential nominees, taking into account the current board composition, including expertise, diversity and the balance of inside and independent directors. The nominations committee endeavors to establish a diversity of background and experience in a number of areas of core competency, including business judgment, management, accounting, finance, knowledge of our industry, strategic vision, research and development and other areas relevant to our business.

Stockholders wishing to directly recommend candidates for election to the Board of Directors at our next annual meeting to be included in our proxy statement must do so by giving written notice to: Chairman of the Nominations Committee, Synthetic Biologics, Inc., Administrative Office, 617 Detroit Street, Suite 100, Ann Arbor, Michigan 48104. Any such notice must be delivered to the Chairman by May 27, 2014. The notice must state: (1) the name and address of the stockholder making the recommendations; (2) the name, age, business address, and residential address of each person recommended; (3) the principal occupation or employment of each person recommended; (4) the class and number of shares of the Company's stock that are beneficially owned by each person recommended and by the recommending stockholder; (5) any other information concerning the persons recommended that must be disclosed in nominee and proxy solicitations in accordance with Regulation 14A of the Securities Exchange Act of 1934, as amended; and (6) a signed consent of each person recommended stating that he or she consents to serve as a director of the Company if elected.

In considering any person recommended by one of our stockholders, the committee will look for the same qualifications that it looks for in any other person that it is considering for a position on the Board of Directors. Any stockholder nominee recommended by the committee and proposed by the Board of Directors for election at the next annual meeting of stockholders will be included in the Company's proxy statement for that annual meeting.

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The nominations committee operates under a formal charter that governs its duties and standards of performance. A copy of the charter is available on our website at [www.syntheticbiologics.com](http://www.syntheticbiologics.com) in the Investors section of the site.

### Board Leadership Structure

We currently have two separate people serving as our Chairman of the Board and as our Chief Executive Officer and we do not have a formal policy on whether the same person should (or should not) serve as both the Chief Executive Officer and Chairman of the Board. Due to the size of our Company, we believe that this structure is appropriate in recognition of the time commitment and activities required to function effectively as a Chairman and as a Chief Executive Officer. Mr. Kraws has served as the Chairman of the Board since May 2012. Mr. Riley has served as our Chief Executive Officer since February 2012. In serving as Chairman of the Board, Mr. Kraws serves as a significant resource for our Chief Executive Officer, other members of management and the Board of Directors. We believe that the division of duties and additional avenues of communication between the board and management with Mr. Kraws serving as Chairman of the Board provides a basis for the proper functioning of our board and oversight of management.

We do not have a separate lead director. We believe the combination of Mr. Kraws as our Chairman of the Board and Mr. Riley as our Chief Executive Officer is an effective structure for us. Our current structure is operating effectively to foster productive, timely and efficient communication among the independent directors and management. We do have active participation in our committees by our independent directors, who comprise all of the members of all of our committees. Each committee performs an active role in overseeing our management and there are complete and open lines of communication with the management and independent directors.

### Oversight of Risk Management

The Board of Directors has an active role, as a whole and also at the committee level, in overseeing management of our risks. The board regularly reviews information regarding our strategy, finances and operations, as well as the risks associated with each. The audit committee is responsible for oversight of our risks relating to accounting matters, financial reporting and legal and regulatory compliance. The audit committee undertakes, at least annually, a review to evaluate these risks. Individual members of the audit committee are each assigned an area of risk to oversee. The members then meet separately with management responsible for such area, including our Chief Financial Officer, internal auditor and counsel, and report to the audit committee on any matters identified during such discussions with management. Our compensation committee is responsible for overseeing the management of risks relating to our executive compensation plans and arrangements. While each committee is responsible for evaluating certain risks and overseeing the management of such risks, the entire Board of Directors is regularly informed through committee reports about such risks.

## STOCKHOLDER COMMUNICATIONS WITH THE BOARD OF DIRECTORS

Stockholders may direct any communications intended for the Board of Directors to our Corporate Secretary, by telephone to (734) 332-7800, by facsimile to (734) 332-7878, or by mail to Synthetic Biologics, Inc., Administrative Office, 617 Detroit Street, Suite 100, Ann Arbor, Michigan 48104.

This centralized process assists the Board of Directors in reviewing and responding to stockholder communications in an appropriate manner. If a stockholder wishes to direct any communication to a specific board member, the name of that board member should be noted in the communication. The Board of Directors has instructed the corporate secretary to forward stockholder correspondence only to the intended recipients, and has also instructed the corporate secretary to review all stockholder correspondence and, in the corporate secretary's discretion, refrain from forwarding any items deemed to be of a commercial or frivolous nature or otherwise inappropriate for the Board of Directors' consideration. Any such items may be forwarded elsewhere in the Company for review and possible response.

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### BOARD AND COMMITTEE MEETINGS

During our fiscal year ended December 31, 2012, our Board of Directors held 11 meetings. During our fiscal year ended December 31, 2012, our audit, compensation and nominations committees met 11 times, 4 times, and 3 times, respectively. Each of our incumbent directors that were directors during our fiscal year ended December 31, 2012 attended all of the board meetings. Each director attended all of the committee meetings for the committees on which he serves.

### DIRECTOR ATTENDANCE AT ANNUAL MEETINGS

Our directors are encouraged, but not required, to attend the annual meeting of stockholders. All of our directors attended the 2012 annual meeting of stockholders.

### SECTION 16(A) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Section 16(a) of the Securities Exchange Act of 1934 requires our executive officers, directors and persons who beneficially own more than 10 percent of a registered class of the Synthetic Biologics' equity securities, to file with the SEC initial reports of ownership and reports of changes in ownership of our common stock. Such officers, directors and persons are required by SEC regulation to furnish us with copies of all Section 16(a) forms that they file with the SEC.

Based solely on a review of the copies of such forms that were received by us, or written representations from certain reporting persons that no Form 5s were required for those persons, we are not aware of any failures to file reports or report transactions in a timely manner during the year ended December 31, 2012.

### CORPORATE GOVERNANCE

We operate according to a comprehensive plan of corporate governance for the purpose of defining responsibilities, setting high standards of professional and personal conduct, and assuring compliance with those responsibilities and standards. We regularly monitor developments in the area of corporate governance and will continue to monitor developments and make adjustments from time to time to ensure compliance in this area. Information regarding our corporate governance that is not provided below is described elsewhere in this proxy statement.

#### *Code of Conduct*

We adopted a Code of Conduct that applies to all of our directors, officers and employees. This Code is intended to promote honest and ethical conduct, full, accurate and timely disclosure, and compliance with all applicable laws and government regulations. A copy of the Code of Conduct is available on our website at [www.syntheticbiologics.com](http://www.syntheticbiologics.com) in the Investors section of the site.

#### *Code of Ethics for Financial Management*

We adopted a Code of Ethics for Financial Management that applies to all the persons at the Company that are responsible for our financial management. This Code is intended to promote professional conduct in our financial management. A copy of our Code of Ethics for Financial Management is available on our website at [www.syntheticbiologics.com](http://www.syntheticbiologics.com) in the Investors section of the site. Violations of the Code of Ethics for Financial Management may be reported anonymously to our audit committee and may result in disciplinary action.

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# DIRECTOR COMPENSATION

## GENERAL

### Compensation of Directors

The following table sets forth information for the fiscal year ended December 31, 2012 regarding the compensation of our directors who at December 31, 2012 were not also named executive officers.

Name	Fees Earned or Paid in Cash	Option Awards <sup>(1)(3)</sup>	Other Compensation	Total
Steve H. Kanzer	\$ 2,000	\$ —	\$ —	\$ 2,000
Jeffrey J. Kraws <sup>(2)</sup>	\$ 100,000	\$ 169,000	\$ —	\$ 269,000
Scott L. Tarriff	\$ 14,000	\$ 57,000 <sup>(4)</sup>	\$ —	\$ 71,000
Jeffrey Wolf	\$ 24,000	\$ — <sup>(4)</sup>	\$ —	\$ 24,000

(1) The amounts in the “Option awards” column reflect the dollar amounts of the grant date fair value for the financial statement reporting purposes for stock options for the fiscal year ended December 31, 2012 in accordance with ASC 718. The fair value of the options was determined using the Black-Scholes model.

(2) Mr. Kraws was appointed as our independent, non-executive Chairman of the Board in May 2012. Pursuant to his agreement he will receive annual compensation of \$150,000 and received a one-time grant of stock options exercisable for an additional 100,000 shares of our common stock.

(3) As of December 31, 2012, the following are the outstanding aggregate number of option awards held by each of our directors who were not also named executive officers:

(4) Does not include options exercisable for 25,000 shares of common stock issued in March 2013 for director services provided during 2012.

Name	Option Awards (#)
Steve H. Kanzer	304,391
Jeffrey J. Kraws	387,105
Scott L. Tarriff	25,000
Jeffrey Wolf	83,332

During 2007, director compensation for independent members was approved at \$2,000 per board meeting that they attend in person, \$1,000 per telephonic board meeting and \$500 per committee meeting. In addition, we grant independent members of the Board of Directors upon appointment 25,000 stock options to purchase shares of our common stock at an exercise price equal to the fair market value of the our common stock on the date of grant, and typically an additional 25,000 stock options each year. Directors who are employees, or who are compensated for board service pursuant to a separate agreement or arrangement, do not receive additional compensation for attending board, committee and stockholder meetings. We also reimburse directors for travel and other out-of-pocket expenses incurred in attending Board of Director and committee meetings.

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### LIMITS ON LIABILITY AND INDEMNIFICATION

Our articles of incorporation eliminate the personal liability of our directors to the Company and its stockholders for monetary damages for breach of their fiduciary duties in certain circumstances. Our articles of incorporation further provide that we will indemnify its officers and directors to the fullest extent permitted by law. We believe that this indemnification covers at least negligence and gross negligence on the part of the indemnified parties. Insofar as indemnification for liabilities under the Securities Act of 1933 may be permitted to directors, officers, and controlling persons of the Company under the foregoing provisions or otherwise, we have been advised that in the opinion of the Securities and Exchange Commission that indemnification is against public policy as expressed in the Securities Act of 1933, as amended, and is therefore unenforceable. We entered into an indemnification agreement with each of our directors and officers. The agreement confirms our obligation to indemnify the directors and officers to the fullest extent authorized by our Amended and Restated Bylaws and supplements the indemnification otherwise available to the covered person under the Company's Charter and Amended and Restated Bylaws. The form of indemnification agreement was described and filed as an exhibit to the Form 8-K filed by the Company with the Securities and Exchange Commission on January 6, 2009.

### COMPENSATION COMMITTEE INTERLOCKS

During the last fiscal year ended December 31, 2012, none of our executive officers served on the Board of Directors or compensation committee of any other entity whose officers served either on our Board of Directors or compensation committee.

### SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth information, as of September 1, 2013, or as otherwise set forth below, with respect to the beneficial ownership of our common stock (i) all persons known to us to be the beneficial owners of more than 5% of the outstanding shares of our common stock, (ii) each of our directors and our executive officer named in the Summary Compensation Table, and (iii) all of our directors and our executive officer as a group.

Principal Stockholders Table

Name and Address of Beneficial Ownership <sup>(2)</sup>	Shares Owned <sup>(1)</sup>	
	Number of Shares	Percentage of Shares <sup>(3)</sup>
Accredited Venture Capital, LLC <sup>(4)</sup>	7,086,380	15.87%
Intrexon Corporation <sup>(5)</sup>	6,675,768	14.95%
NRM VII Holding I, LLC	3,125,000	7.00%
C. Evan Ballantyne <sup>(6)</sup>	236,111	*
Steve H. Kanzer <sup>(7)</sup>	7,766,017	17.27%
Jeffrey J. Kraws <sup>(8)</sup>	362,105	*
Jeffrey Riley <sup>(9)</sup>	606,233	1.34%
Scott L. Tarriff <sup>(10)</sup>	50,000	*
Jeffrey Wolf <sup>(11)</sup>	108,332	*
Randal J. Kirk <sup>(12)</sup>	9,800,768	21.95%
All officers and directors as a group (6 persons)	9,128,798	19.71%

\* represents less than 1% of our common stock

(1) The address for each beneficial owner except Intrexon Corporation, NRM VII Holdings I, LLC and Randal J. Kirk is 155 Gibbs Street, Suite 412, Rockville, Maryland 20850. The address for Intrexon Corporation and NRM VII Holdings I, LLC is 20358 Seneca Meadows Pkwy, Germantown, Maryland 20876 and the address for Mr. Kirk is The Governor Tyler, 1881 Grove Avenue, Radford, Virginia 24141.

(2) Beneficial ownership is determined in accordance with SEC rules and generally includes voting or investment power with respect to securities. Except as indicated in the footnotes to the table, to our knowledge, the persons named in the table have sole voting and investment power with respect to all



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shares of common stock shown as beneficially owned by them, subject to community property laws, where applicable. Pursuant to the rules of the SEC, the number of shares of our common stock deemed outstanding includes shares issuable pursuant to options held by the respective person or group that are currently exercisable or may be exercised within 60 days of September 1, 2013.

- (3) As of September 1, 2013, we had 44,654,414 shares of common stock outstanding.
- (4) Consists of 7,086,380 shares of common stock issued to Accredited Venture Capital, LLC. Pharmainvestors, LLC is the managing member of Accredited Venture Capital, LLC, and Mr. Kanzer is the managing member of Pharmainvestors, LLC. As such, Mr. Kanzer may be considered to have control over the voting and disposition of the shares registered in the name of Accredited Venture Capital, LLC, and therefore, such shares are also included in the shares listed as held by Mr. Kanzer. Mr. Kanzer disclaims beneficial ownership of those shares, except to the extent of his pecuniary interest.
- (5) Does not include additional shares that have not yet been earned but may in the future be earned under the terms of agreements with Intrexon Corporation.
- (6) Includes 236,111 shares issuable upon exercise of options held by Mr. Ballantyne that are exercisable within the 60-day period following September 1, 2013. Does not include an additional 188,889 shares issuable upon exercise of options held by Mr. Ballantyne that are not exercisable within the 60-day period following September 1, 2013.
- (7) Includes 7,086,380 shares of common stock issued to Accredited Venture Capital, LLC and 304,391 shares issuable upon exercise of options held by Mr. Kanzer that are exercisable within the 60-day period following September 1, 2013.
- (8) Includes 362,105 shares issuable upon exercise of options held by Mr. Kraws that are exercisable within the 60-day period following September 1, 2013. Does not include an additional 25,000 shares issuable upon exercise of options held by Mr. Kraws that are not exercisable within the 60-day period following September 1, 2013.
- (9) Includes 595,833 shares issuable upon exercise of options held by Mr. Riley that are exercisable within the 60-day period following September 1, 2012. Does not include an additional 312,500 shares issuable upon exercise of options held by Mr. Riley that are not exercisable within the 60-day period following September 1, 2012.
- (10) Includes 50,000 shares issuable upon exercise of options held by Mr. Tarriff that are exercisable within the 60-day period following September 1, 2012.
- (11) Includes 108,332 shares issuable upon exercise of options held by Mr. Wolf that are exercisable within the 60-day period following September 1, 2012.
- (12) All such shares are held by Intrexon Corporation and NRM VII Holdings I, LLC. Mr. Kirk, directly and through certain affiliates, has voting and dispositive power over a majority of the outstanding capital of Intrexon Corporation, and controls NRM VII Holdings I, LLC. Mr. Kirk disclaims beneficial ownership of the shares held by Intrexon Corporation and NRM VII Holdings I, LLC, except to the extent of any pecuniary interest therein.

## PROPOSAL 2

### RATIFICATION OF APPOINTMENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

BDO USA, LLP was our independent registered public accounting firm for the year ended December 31, 2012.

Ratification of the selection of BDO USA, LLP by our stockholders is not required by law. As a matter of policy, however, the selection is being submitted to our stockholders for ratification at the annual meeting.

We anticipate that representatives of BDO USA, LLP will attend the annual meeting for the purpose of responding to appropriate questions. At the annual meeting, the representatives of BDO USA, LLP will be afforded an opportunity to make a statement if they so desire and are expected to be available to respond to appropriate questions. Upon recommendation of the audit committee and unanimous approval by our Board of Directors, on July 3, 2012, we dismissed Berman & Company, P.A. as our independent registered public accounting firm. On July 16, 2012, we retained BDO USA, LLP as our new independent registered public accounting firm responsible for auditing our financial statements.

Berman & Company, P.A.'s reports on our financial statements as of and for the two years ended December 31, 2011 and 2010, did not contain an adverse opinion or disclaimer of opinion, and were not qualified or modified as to uncertainty, audit scope, or accounting principles; however, after being filed with the Securities and Exchange Commission ("SEC") on March 30, 2012, the original audit opinion included in our Annual Report on Form 10-K for the year ended December 31, 2011, was withdrawn due to the failure of Berman & Company, P.A. to follow proper partner rotation procedures. On May 11, 2012, a new audit opinion for the year ended December 31, 2011 and an amended Annual Report on Form 10-K/A for such year was filed with the SEC.

During the years ended December 31, 2011 and 2010, and in the subsequent interim period through July 3, 2012: (i) there were no disagreements with Berman & Company on any matter of accounting principles or practices, financial statement disclosure, or auditing scope or procedure, which disagreements, if not resolved to the satisfaction of Berman & Company, P.A., would have caused it to make reference to the subject matter of the disagreement in connection with its reports on our financial statements for such years and (ii) there were no events otherwise reportable under Item 304(a)(1)(v) of Regulation S-K other than the following which was previously reported by us: the failure of Berman & Company, P.A. to follow proper partner rotation procedures that resulted in the withdrawal of Berman & Company, P.A.'s audit opinion included in our Annual Report on Form 10-K for the year ended December 31, 2011 and our being unable to rely upon such audit opinion. Such matters have been discussed by both our audit committee and Board of Directors with Berman & Company, P.A., and Berman & Company, P.A. is authorized to fully respond to inquiries of BDO USA, LLP concerning such matter.

We requested that Berman & Company, P.A. furnish us with a letter addressed to the SEC stating whether it agrees with the statements we made above. We filed a copy of such letter in which Berman & Company, P.A. stated such agreement, as an exhibit to a Current Report on Form 8-K filed with the SEC on July 10, 2012.

During our two most recent years and in the subsequent interim period through July 3, 2012, we did not consult with BDO USA, LLP regarding the application of accounting principles to a specified transaction, either contemplated or proposed, or the type of audit opinion that might be rendered on our financial statements, and neither a written report nor oral advice was provided that was an important factor considered by us in reaching a decision as to the accounting, auditing or financial reporting issue, or with any of the matters outlined in Item 304(a)(2)(ii) of Regulation S-K.

OUR BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT YOU VOTE FOR RATIFICATION OF THE SELECTION OF BDO USA, LLP AS OUR INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM FOR OUR FISCAL YEAR ENDING ON DECEMBER 31, 2013.

## REPORT OF THE AUDIT COMMITTEE OF THE BOARD OF DIRECTORS

Our audit committee reviews our financial reporting process on behalf of our Board of Directors. In January 2007, our Board of Directors adopted a written charter for our audit committee, which it re-evaluates annually in connection with the filing of our Annual Report on Form 10-K with the SEC. In fulfilling its responsibilities, the audit committee has reviewed and discussed the audited financial statements contained in the Annual Report on Form 10-K for our fiscal year ended December 31, 2012 with our management and our independent registered public accounting firm for such year, BDO USA, LLP. Our management is responsible for the financial statements and the reporting process, including the system of internal controls. The independent registered public accounting firm is responsible for expressing an opinion on the conformity of those audited financial statements with accounting principles generally accepted in the United States.

The audit committee (i) discussed with BDO USA, LLP the matters required to be discussed by AU 380, *Communication with Audit Committees*, (as adopted by the Public Company Accounting Oversight Board (PCAOB) in Rule 3200T), (ii) received the written disclosures and the letter from BDO USA, LLP required by PCAOB Ethics and Independence Rule 3526, *Communication with Audit Committees Concerning Independence*, and (iii) discussed with BDO USA, LLP its independence. The audit committee also considered whether, and determined that, the independent registered public accounting firm's provision of other non-audit services to us was compatible with maintaining BDO USA, LLP's independence.

You should note the members of our audit committee are not our employees and are not performing the functions of auditors or accountants. Accordingly, it is not the duty or responsibility of the audit committee or its members to conduct "field work" or other types of auditing or accounting reviews or procedures or to set auditor independence standards. Members of the audit committee necessarily rely on the information provided to them by management and the independent auditors. Accordingly, the audit committee's considerations and discussions referred to above do not constitute assurance that the audit of our financial statements has been carried out in accordance with generally accepted accounting principles or that our auditors are in fact independent.

Based on the review and discussions referred to above, the audit committee recommended to our Board of Directors (and our Board of Directors approved) that the audited financial statements be included in our Annual Report on Form 10-K for our fiscal year ended December 31, 2012, for filing with the SEC. In addition, the audit committee recommended to our Board of Directors and our Board of Directors approved, subject to stockholder ratification, that BDO USA, LLP be appointed as our independent registered public accounting firm for 2013.

Jeffrey Wolf  
Scott L. Tarriff

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### AUDIT FEES AND ALL OTHER FEES

The aggregate fees, including expenses, billed to us for the year ended December 31, 2012 for professional services by BDO USA, LLP, our independent registered public accounting firm were as follows:

	December 31, 2012
Audit Fees and Expenses <sup>(1)</sup>	\$ 123,000
	<u>\$ 123,000</u>

- (1) Audit fees and expenses were for professional services rendered for the audit and reviews of the consolidated financial statements of the Company, professional services rendered for issuance of consents and assistance with review of documents filed with the SEC.

#### Audit Committee Pre-Approval Policy

The audit committee has adopted procedures for pre-approving all audit and non-audit services provided by the independent registered public accounting firm, including the fees and terms of such services. These procedures include reviewing detailed back-up documentation for audit and permitted non-audit services. The documentation includes a description of, and a budgeted amount for, particular categories of non-audit services that are recurring in nature and therefore anticipated at the time that the budget is submitted. audit committee approval is required to exceed the pre-approved amount for a particular category of non-audit services and to engage the independent registered public accounting firm for any non-audit services not included in those pre-approved amounts. For both types of pre-approval, the audit committee considers whether such services are consistent with the rules on auditor independence promulgated by the SEC and the PCAOB. The audit committee also considers whether the independent registered public accounting firm is best positioned to provide the most effective and efficient service, based on such reasons as the auditor's familiarity with our business, people, culture, accounting systems, risk profile, and whether the services enhance our ability to manage or control risks and improve audit quality. The audit committee may form and delegate pre-approval authority to subcommittees consisting of one or more members of the audit committee, and such subcommittees must report any pre-approval decisions to the audit committee at its next scheduled meeting. All of the services provided by the independent registered public accounting firm were pre-approved by your audit committee.

### PROPOSAL 3

#### APPROVAL OF AN AMENDMENT TO OUR 2010 STOCK OPTION PLAN TO INCREASE THE NUMBER OF SHARES OF COMMON STOCK THAT WE WILL HAVE AUTHORITY TO GRANT UNDER THE PLAN FROM 3,000,000 TO 6,000,000

In November, 2010, the Board adopted, and our stockholders subsequently approved, the 2010 Stock Incentive Plan (the “Plan”). As of September 1, 2013, there were 533,474 shares of common stock available for grant under the Plan.

As of September 1, 2013, 2,650,000 awards had been granted under the Plan. In an effort to preserve cash and to attract, retain and motivate persons who make important contributions to our business, we would like to issue securities to our officers, directors and consultants. The Plan currently only has a limited number of shares of common stock reserved for issuance. Management believes that the number of shares of common stock currently available for issuance under the Plan is insufficient to meet its needs to provide for awards to the Plan participants for the next 12 months and insufficient in order to allow us the ability to compete successfully for talented employees and consultants as does the individuals who are eligible to receive awards under the Plan.

The Board of Directors has approved, subject to stockholder approval, the amendment to the Plan to increase by 3,000,000 the number of shares that may be granted under the Plan. The amendment to our Plan will increase the number of shares of common stock with respect to which awards may be granted under the Plan from 3,000,000 to 6,000,000.

The principal provisions of the Plan, as amended, are summarized below and the Plan, which incorporates the amendment to the Plan discussed above, is attached hereto as Appendix A. The following discussion is qualified in its entirety by reference to the Plan.

#### *Purpose of the Plan*

The Board of Directors believes that the Plan is necessary for us to attract, retain and motivate our employees, directors and consultants through the grant of stock options, stock appreciation rights, restricted stock and restricted stock units. We believe the Plan best designed to provide the proper incentives for our employees, directors and consultants, ensures our ability to make performance-based awards, and meets the requirements of applicable law. There are currently 17 individuals that would be eligible to participate in the Plan, of which 6 are directors or executive officers and 11 are employees.

#### *Administration*

The Plan generally will be administered by our Board of Directors, which may delegate administration of the Plan to the compensation committee of our Board of Directors. The administrator of the Plan will have full authority to establish rules and regulations for the proper administration of the Plan, to select the employees, directors and consultants to whom awards are granted, and to set the date of grant, the type of award and the other terms and conditions of the awards, consistent with the terms of the Plan. The administrator of the Plan may modify outstanding awards as provided in the Plan.

#### *Limitation on Awards and Shares Available*

As of the date of this proxy statement, there are 533,474 shares of our common stock available for grants that may be made under the Plan. This number will not be increased unless it is in connection with an amendment to the Plan that is approved by a majority of our stockholders.

#### *Eligibility*

Persons eligible to participate in the Plan include all of our employees, directors and consultants.

#### *Awards*

The Plan provides for the grant of: (i) incentive stock options; (ii) nonqualified stock options; (iii) stock appreciation rights; (iv) restricted stock; (v) restricted stock units; and (vi) other stock-based awards to eligible individuals. The terms of the awards will be set forth in an award agreement, consistent with the terms of the Plan. No stock option will be exercisable later than ten years after the date it is granted.

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The Plan administrator is authorized to grant awards intended to qualify as “performance-based compensation” under Section 162(m) of the Internal Revenue Code of 1986, as amended.

**Stock Options.** The Plan administrator may grant incentive stock options as defined in Section 422 of the Internal Revenue Code of 1986, as amended, and nonqualified stock options. Options shall be exercisable for such prices, shall expire at such times, and shall have such other terms and conditions as the Plan administrator may determine at the time of grant and as set forth in the award agreement; however, the exercise price must be at least equal to 100% of the fair market value at the date of grant. The option price is payable in cash or other consideration acceptable to the Company.

**Stock Appreciation Rights.** The Plan administrator may grant stock appreciation rights with such terms and conditions as the administrator may determine at the time of grant and as set forth in the award agreement. The grant price of a stock appreciation right shall be determined by the administrator and shall be specified in the award agreement; however, the grant price must be at least equal to 100% of the fair market value of a share on the date of grant. Stock appreciation rights may be exercised upon such terms and conditions as are imposed by the Plan administrator and as set forth in the stock appreciation right award agreement.

**Restricted Stock.** Restricted stock may be granted in such amounts and subject to the terms and conditions as determined by the Plan administrator at the time of grant and as set forth in the award agreement. The administrator may impose performance goals for restricted stock. The administrator may authorize the payment of dividends on the restricted stock during the restricted period.

**Other Awards.** The Plan administrator may grant other types of equity-based or equity-related awards not otherwise described by the terms of the Plan, in such amounts and subject to such terms and conditions, as the administrator shall determine. Such awards may be based upon attainment of performance goals established by the administrator and may involve the transfer of actual shares to participants, or payment in cash or otherwise of amounts based on the value of shares.

### *Amendment and Termination*

Our Board of Directors may amend the Plan at any time, subject to stockholder approval to the extent required by applicable law or regulation or the listing standards of the NYSE MKT, LLC or any other market or stock exchange on which the common stock is at the time primarily traded. Additionally, stockholder approval will be specifically required to (i) increase the number of shares available for issuance under the Plan, or (ii) decrease the exercise price of any outstanding option or stock appreciation right granted under the Plan.

Our Board of Directors may terminate the Plan at any time. Unless sooner terminated by the Board, the Plan will terminate on the close of business on September 27, 2020, ten years from the original effective date.

### *Miscellaneous*

The Plan also contains provisions with respect to payment of exercise prices, vesting and expiration of awards, treatment of awards upon the sale of the Company, transferability of awards, and tax withholding requirements. Various other terms, conditions, and limitations apply, as further described in the Plan.

### *Federal Income Tax Consequences*

The following is a brief description of the principal federal income tax consequences, as of the date of this proxy statement, associated with the grant of awards under the Plan. This summary is based on our understanding of present United States federal income tax law and regulations. The summary does not purport to be complete or applicable to every specific situation. Furthermore, the following discussion does not address state or local tax consequences.

#### *Options*

**Grant.** There is no federal income tax consequence to the participant solely by reason of the grant of incentive stock options or nonqualified stock options under the Plan.

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**Exercise.** The exercise of an incentive stock option is not a taxable event for regular federal income tax purposes if certain requirements are satisfied, including the requirement that the participant generally must exercise the incentive stock option no later than ninety days following the termination of the participant's employment with us. However, such exercise may give rise to alternative minimum tax liability (see "Alternative Minimum Tax" below).

Upon the exercise of a nonqualified stock option, the participant will generally recognize ordinary income in an amount equal to the excess of the fair market value of the shares at the time of exercise over the amount paid by the participant as the exercise price. The ordinary income recognized in connection with the exercise by a participant of a nonqualified stock option will be subject to both wage and employment tax withholding.

The participant's tax basis in the shares acquired pursuant to the exercise of an option will be the amount paid upon exercise plus, in the case of a nonqualified stock option, the amount of ordinary income, if any, recognized by the participant upon exercise thereof.

**Qualifying Disposition.** If a participant disposes of shares of our common stock acquired upon exercise of an incentive stock option in a taxable transaction, and such disposition occurs more than two years from the date on which the option was granted and more than one year after the date on which the shares were transferred to the participant pursuant to the exercise of the incentive stock option, the participant will realize long-term capital gain or loss equal to the difference between the amount realized upon such disposition and the participant's adjusted basis in such shares (generally the option exercise price).

**Disqualifying Disposition.** If the participant disposes of shares of our common stock acquired upon the exercise of an incentive stock option (other than in certain tax free transactions) within two years from the date on which the incentive stock option was granted or within one year after the transfer of shares to the participant pursuant to the exercise of the incentive stock option, at the time of disposition the participant will generally recognize ordinary income equal to the lesser of (i) the excess of each such share's fair market value on the date of exercise over the exercise price paid by the participant, or (ii) the participant's actual gain. If the total amount realized on a taxable disposition (including return on capital and capital gain) exceeds the fair market value on the date of exercise of the shares of our common stock purchased by the participant under the option, the participant will recognize a capital gain in the amount of the excess. If the participant incurs a loss on the disposition (the total amount realized is less than the exercise price paid by the participant), the loss will be a capital loss.

**Other Disposition.** If a participant disposes of shares of our common stock acquired upon exercise of a nonqualified stock option in a taxable transaction, the participant will recognize capital gain or loss in an amount equal to the difference between the participant's basis (as discussed above) in the shares sold and the total amount realized upon disposition. Any such capital gain or loss (and any capital gain or loss recognized on a disqualifying disposition of shares of our common stock acquired upon exercise of incentive stock options as discussed above) will be short-term or long-term depending on whether the shares of our common stock were held for more than one year from the date such shares were transferred to the participant.

**Alternative Minimum Tax.** Alternative minimum tax is payable if and to the extent the amount thereof exceeds the amount of the taxpayer's regular tax liability, and any alternative minimum tax paid generally may be credited against future regular tax liability (but not future alternative minimum tax liability). Alternative minimum tax applies to alternative minimum taxable income. Generally, regular taxable income as adjusted for tax preferences and other items is treated differently under the alternative minimum tax.

For alternative minimum tax purposes, the spread upon exercise of an incentive stock option (but not a nonqualified stock option) will be included in alternative minimum taxable income, and the taxpayer will receive a tax basis equal to the fair market value of the shares of our common stock at such time for subsequent alternative minimum tax purposes. However, if the participant disposes of the incentive stock option shares in the year of exercise, the alternative minimum tax income cannot exceed the gain recognized for regular tax purposes, provided that the disposition meets certain third party requirements for limiting the gain on a disqualifying disposition. If there is a disqualifying disposition in a year other than the year of exercise, the income on the disqualifying disposition is not considered alternative minimum taxable income.

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There are no federal income tax consequences to us by reason of the grant of incentive stock options or nonqualified stock options or the exercise of an incentive stock option (other than disqualifying dispositions). At the time the participant recognizes ordinary income from the exercise of a nonqualified stock option, we will be entitled to a federal income tax deduction in the amount of the ordinary income so recognized (as described above), provided that we satisfy our reporting obligations described below. To the extent the participant recognizes ordinary income by reason of a disqualifying disposition of the stock acquired upon exercise of an incentive stock option, and subject to the requirement of reasonableness, the provisions of Section 162(m) of the Internal Revenue Code of 1986, as amended, and the satisfaction of a tax reporting obligation, we generally will be entitled to a corresponding deduction in the year in which the disposition occurs. We are required to report to the Internal Revenue Service any ordinary income recognized by any participant by reason of the exercise of a nonqualified stock option. We are required to withhold income and employment taxes (and pay the employer's share of the employment taxes) with respect to ordinary income recognized by the participant upon exercise of nonqualified stock options.

### *Stock Appreciation Rights*

There are no tax consequences to the participant or us by reason of the grant of stock appreciation rights. In general, upon exercise of a stock appreciation rights award, the participant will recognize taxable ordinary income equal to the excess of the stock's fair market value on the date of exercise over the stock appreciation rights' base price, or the amount payable. Generally, with respect to employees, the Company is required to withhold from regular wages or supplemental wage payments an amount based on the ordinary income recognized. Subject to the requirement of reasonableness, the provisions of Section 162(m) of the Internal Revenue Code of 1986, as amended, and the satisfaction of a tax reporting obligation, the Company generally will be entitled to a business expense deduction equal to the taxable ordinary income realized by the participant.

### *Restricted Stock*

Unless a participant makes a Section 83(b) election, as described below, with respect to restricted stock granted under the Plan, a participant receiving such an award will not recognize income and we will not be allowed a deduction at the time such award is granted. While an award remains unvested or otherwise subject to a substantial risk of forfeiture, a participant will recognize compensation income equal to the amount of any dividends received and we will be allowed a deduction in a like amount. When an award vests or otherwise ceases to be subject to a substantial risk of forfeiture, the excess of the fair market value of the award on the date of vesting or the cessation of the substantial risk of forfeiture over the amount paid, if any, by the participant for the award will be ordinary income to the participant and will be claimed as a deduction for federal income tax purposes by us. Upon disposition of the shares received, the gain or loss recognized by the participant will be treated as capital gain or loss, and the capital gain or loss will be short-term or long-term depending upon whether the participant held the shares for more than one year following the vesting or cessation of the substantial risk of forfeiture.

However, by filing a Section 83(b) election with the Internal Revenue Service within 30 days after the date of grant, a participant's ordinary income and commencement of holding period and the deduction will be determined as of the date of grant. In such a case, the amount of ordinary income recognized by such a participant and deductible by us will be equal to the excess of the fair market value of the award as of the date of grant over the amount paid, if any, by the participant for the award. If such election is made and a participant thereafter forfeits his or her award, no refund or deduction will be allowed for the amount previously included in such participant's income.

Generally, with respect to employees, we are required to withhold from regular wages or supplemental wage payments an amount based on the ordinary income recognized. Subject to the requirement of reasonableness, the provisions of Section 162(m) of the Internal Revenue Code of 1986, as amended, and the satisfaction of a tax reporting obligation and any tax withholding condition, we generally will be entitled to a business expense deduction equal to the taxable ordinary income realized by the recipient. Upon disposition of stock, the recipient will recognize a capital gain or loss equal to the difference between the selling price and the sum of the amount paid for such stock, if any, plus any amount recognized as ordinary income upon acquisition (or vesting) of the stock. Such gain or loss will be long- or short-term depending on whether the stock was held for more than one year from the date ordinary income is measured.

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Beginning in November, 2010, we have granted 2,650,000 options with a weighted average exercise price of \$1.95 under the Plan. Of these options, 400,000 were granted to members of the board of directors and 2,250,000 were granted to employees.

If the amendment to the Plan is approved by our stockholders, the only additional grants that are currently determinable are the annual stock option awards of options exercisable for 25,000 shares of our common stock that we expect to make after our annual meeting of stockholders for our fiscal year ending December 31, 2013 to Messrs Kraws, Tarriff and Wolf, our independent directors.

### EQUITY COMPENSATION PLAN INFORMATION

The following table sets forth information about the securities authorized for issuance under our equity compensation plans for the fiscal year ended December 31, 2012.

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options	Weighted-Average Exercise Price of Outstanding Options	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans
Equity compensation plans approved by stockholders:			
2001 Stock Incentive Plan	1,066,007	\$ 1.38	60,190
2007 Stock Incentive Plan	872,739	\$ 1.62	283,101
2010 Stock Incentive Plan	2,515,000	\$ 2.01	481,530
Equity compensation plans not approved by stockholders	N/A	N/A	N/A
Total	<u>4,453,746</u>	<u>\$ 1.78</u>	<u>824,821</u>

OUR BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT YOU VOTE FOR THE AMENDMENT TO OUR 2010 STOCK OPTION PLAN TO INCREASE THE NUMBER OF SHARES OF COMMON STOCK AVAILABLE FOR ISSUANCE.

## PROPOSAL 4

### ADVISORY VOTE ON THE APPROVAL OF EXECUTIVE COMPENSATION

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 and Section 14A of the Securities Exchange Act of 1934 entitle the Company's stockholders to vote to approve, on an advisory basis, the compensation of our Named Executive Officers as disclosed in this Proxy Statement pursuant to the Securities and Exchange Commission's rules.

As described in detail in this Proxy Statement, our executive compensation program are designed to (1) align executive officers' interests with those of our stockholders (2) attract, motivate and retain executive officers, and (3) reward the achievement of our annual, long-term and strategic goals. Our executive officers are rewarded for the achievement of specific financial operating goals established by the compensation committee and the realization of increased stockholder value.

The compensation committee continually reviews the compensation programs for our executive officers to ensure they achieve the desired goals of aligning our executive compensation structure with our stockholders' interests and current market practices.

The Board of Directors is asking our stockholders to indicate their support for our Named Executive Officer's compensation as disclosed in this Proxy Statement. This proposal, commonly known as a "say-on-pay" proposal, gives our stockholders the opportunity to express their views on our executive compensation. This vote is not intended to address any specific item of compensation, but rather the overall compensation of our Named Executive Officers and the philosophy, policies and practices described in this Proxy Statement. Accordingly, the Board of Directors will ask its stockholders to vote "FOR" the following resolution at the Annual Meeting:

"RESOLVED, that the compensation paid to our Named Executive Officer, as disclosed in our Proxy Statement for the 2013 Annual Meeting of Stockholders pursuant to Item 402 of Regulation S-K, including the Compensation Discussion and Analysis, compensation tables and narrative discussion, is hereby APPROVED."

The say-on-pay vote is advisory, and therefore not binding on us, the compensation committee or our Board of Directors. Our Board of Directors and compensation committee value the opinions of our and to the extent there is any significant vote against the Named Executive Officer's compensation as disclosed in this Proxy Statement, we will consider our stockholders' concerns and the compensation committee will evaluate whether any actions are necessary to address those concerns.

OUR BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT YOU VOTE FOR APPROVAL OF THE COMPENSATION OF THE NAMED EXECUTIVE OFFICERS AS DESCRIBED UNDER THE HEADING "SUMMARY COMPENSATION TABLE," AND THE RELATED DISCLOSURES CONTAINED IN THIS PROXY STATEMENT

## PROPOSAL 5

### ADVISORY VOTE ON A THREE YEAR FREQUENCY FOR HOLDING AN ADVISORY VOTE ON EXECUTIVE COMPENSATION

In addition to the advisory approval of our executive compensation program, we are also holding a non-binding advisory vote by stockholders on the frequency with which stockholders would have an opportunity to hold an advisory vote on our executive compensation program. We have included this proposal among the items to be considered at the Annual Meeting pursuant to the requirements of Section 14A of the Securities Exchange Act of 1934. We are providing stockholders the option of selecting a frequency of one, two or three years, or abstaining. For the reasons described below, the Board of Directors recommend that our stockholders select a frequency of three years.

While our executive compensation program is designed to support long-term value creation, in recent years we have entered into three year employment agreements with each of our executive officers and prior to entering into such agreements have conducted in-depth reviews of our executive compensation. Accordingly, a vote every three years will coincide with this more detailed review and an every three year vote will allow for the highest level of accountability and direct communication between us and our stockholders. The Board of Directors therefore recommend that our stockholders select “Three Years” when voting on the frequency of the advisory vote on executive compensation. Although the advisory vote is non-binding, our Board of Directors will review the results of the vote and take them into account in making a determination concerning the frequency of future advisory votes on executive compensation.

The option of one year, two years or three years that receives the highest number of votes cast by stockholders will be the frequency of the advisory vote on executive compensation that has been selected by stockholders. However, because this vote is advisory and not binding on the Board of Directors or us, the Board of Directors may decide that it is in the best interests of our stockholders and us to hold an advisory vote on executive compensation more or less frequently than the option approved by our stockholders.

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## EXECUTIVE COMPENSATION

## SUMMARY COMPENSATION TABLE

## Summary Compensation Table

The following table summarizes all compensation awarded to, earned by or paid to Jeffrey Riley, C. Evan Ballantyne and James S. Kuo, M.D., during the fiscal years ended December 31, 2012 and 2011.

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Options Awards \$( <sup>(1)</sup> )	All Other Compensation \$( <sup>(2)</sup> )	Total (\$)
Jeffrey Riley, CEO and President <sup>(3)</sup>	2012	\$ 314,000	\$ 52,000	\$1,716,000	\$ 7,000	\$ 2,089,000
C. Evan Ballantyne, CFO <sup>(4)</sup>	2012	\$ 267,000	\$ 44,000	\$1,044,000	\$ 7,000	\$ 1,362,000
James S. Kuo, M.D., President, CEO and CFO <sup>(5)</sup>	2012	\$ 26,000	\$ —	\$ —	\$ 11,000	\$ 37,000
	2011	\$ 199,000	\$ —	\$ —	\$ 12,000	\$ 211,000

(1) Amount reflects the grant date fair value of the Named Executive Officer's stock options, calculated in accordance with FASB ASC Topic 718. For a discussion of the assumptions used in calculating these values, see Note 6 to our consolidated financial statements.

(2) The all other compensation column is comprised of the portion of medical, dental and vision premiums paid by us on behalf of our named executive officer. These benefits are offered to all full-time Synthetic Biologics employees.

(3) Mr. Riley was appointed as our President and Chief Executive Officer on February 3, 2012.

(4) Mr. Ballantyne was appointed as our Chief Financial Officer on February 6, 2012.

(5) Dr. Kuo resigned as our President, Chief Executive Officer and Chief Financial Officer on February 3, 2012. Dr. Kuo remained as a consultant to us until February 2013. Does not include \$135,000 of consulting fees paid to Dr. Kuo during the year ended December 31, 2012.

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OUTSTANDING EQUITY AWARDS AT FISCAL YEAR-END

The table below reflects all outstanding equity awards made to each of the Named Executive Officers that are outstanding at December 31, 2012. We currently grant stock-based awards pursuant to our 2010 Stock Incentive Plan (the "2010 Stock Plan") and have outstanding awards under our 2001 Stock Incentive Plan (the "2001 Stock Plan") and 2007 Stock Incentive Plan (the "2007 Stock Plan").

Name	Grant Date <sup>(1)</sup>	Number of Securities Underlying Unexercised Options Exercisable	Number of Securities Underlying Unexercised Options Unexercisable	Option Exercise Price (\$)	Option Expiration Date
Jeffrey Riley	02/03/12 <sup>(2)</sup>	208,333	541,667	\$ 2.30	02/03/22
	11/17/11 <sup>(3)</sup>	62,500	37,500	\$ 0.49	11/17/18
	01/05/11	25,000	—	\$ 1.50	01/05/18
	12/01/10	8,333	—	\$ 0.74	12/01/20
	03/03/10	25,000	—	\$ 0.87	03/03/20
C. Evan Ballantyne	02/06/12 <sup>(2)</sup>	118,056	306,944	\$ 2.47	02/06/22
James S. Kuo	02/06/10 <sup>(4)</sup>	260,000	—	\$ 0.82	02/06/20
	12/22/09	8,333	—	\$ 0.53	12/22/19
	10/02/08	8,333	—	\$ 0.53	10/02/18
	11/02/07	8,333	—	\$ 5.85	11/02/17
	02/07/07	25,000	—	\$ 3.87	02/07/17

(1) Unless otherwise noted, options vest immediately on the date of grant.

(2) These options will vest pro rata, on a monthly basis, over thirty-six months.

(3) These options vest 12,500 shares immediately and the remainder in equal quarterly installments for seven quarters commencing on February 17, 2012.

(4) These options vest 100,000 shares immediately and the remainder in equal monthly installments over a three-year period beginning on the date of grant.

## NARRATIVE DISCLOSURE TO SUMMARY COMPENSATION TABLE

### Overview of Our Compensation Program

#### A. Philosophy and Objectives

The compensation committee seeks to attract and retain executive talent by offering competitive base salaries, bonuses and long-term incentive. The committee's philosophy is to provide a compensation package that attracts and retains superior executive talent and delivers higher rewards for superior performance and consequences for underperformance. It is also the committee's practice to provide a balanced mix of cash and equity-based compensation that aligns both the short and long-term interests of our executives with that of our stockholders. Our executive compensation program is based on the following philosophies and objectives:

- *Compensation Should Align with Stockholders' Interests* — The compensation committee believes that executives' interests should be aligned with those of the stockholders. Executives are granted stock options so that their total compensation is tied directly to the same value realized by our stockholders. Executive bonuses are tied directly to the value that we gain from an executive's contribution to our success as a whole.
- *Compensation is Competitive* — The compensation committee seeks to provide a total compensation package that attracts, motivates and retains the executive talent that we need in order to maximize its return to stockholders. To accomplish this objective, executive compensation is reviewed annually to ensure that compensation levels are competitive and reasonable given our level of performance and other comparable companies with which we competes for talent.
- *Compensation Motivates and Rewards the Achievement of Goals* — Our executive compensation program is designed to appropriately reward both individual and collective performance that meets and exceeds our annual, long-term and strategic goals. To accomplish this objective, a substantial percentage of total compensation is variable, "at risk", both through annual incentive compensation and the granting of long-term incentive awards.

#### B. Compensation Administration

##### *Role of the Compensation Committee*

Pursuant to the terms of its charter, the compensation committee is responsible for the review of all aspects of our executive compensation program and makes decisions regarding the compensation of our Chief Executive Officer and Chief Financial Officer ("Named Executive Officers"). The compensation committee's responsibilities include but are not limited to the following:

- Establishing on an annual basis the performance goals and objectives for purposes of determining the compensation of our Chief Executive Officer and other senior executive officers.
- Evaluating the Chief Executive Officer's and other Named Executive Officer's performance at least annually in light of those goals and objectives, and based upon these evaluations setting the compensation level for those officers.
- Reviewing the competitive position of, and making recommendations to the Board of Directors with respect to the cash-based and equity-based compensation plans and our programs relating to compensation and benefits.
- Overseeing administration of our stock option plan and incentive compensation plans, making recommendations to the Board of Directors regarding the granting of options and incentives and otherwise assisting the Board in administering awards under these plans.
- Reviewing the financial performance and operations of our major benefit plans.

Additional information regarding the compensation committee's responsibilities is set forth in its charter, which is posted on our website at [www.syntheticbiologics.com](http://www.syntheticbiologics.com).

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### *Role of the Chief Executive Officer*

Our Chief Executive Officer, Jeffery Riley, makes recommendations to the compensation committee regarding the compensation of our other Named Executive Officers. Jeffrey Riley does not participate in any discussions or processes concerning his own compensation, and participates in a non-voting capacity in discussions or processes concerning the compensation of our Chief Financial Officer and other members of management.

### C. Program Design

The compensation committee uses a simple and straightforward approach in compensating our Named Executive Officers in which base salary, annual incentives and stock options are the principal components. In addition, executives generally participate in the same benefit programs as other full-time employees.

Our executive compensation program is are designed to provide executives with a reasonable level of fixed compensation through base salary and benefits, and an opportunity to earn incentive compensation through the annual and long-term incentive programs based on a mix of individual and corporate performance and increases in the value of our stock. The incentive plans are designed to pay well when performance meets or exceeds expectations and pay little or no incentive if performance is below expectations.

As an executive's level of responsibility increases, the compensation committee generally targets a greater portion of the executive's compensation to be contingent upon performance. For example, our Chief Executive Officer and Chief Financial Officer have a higher percentage of compensation at risk (and thus greater upside and downside potential) relative to our other employees. The compensation committee believes this is appropriate because the Chief Executive Officer and Chief Financial Officer have the greatest influence on our performance.

### D. Compensation Review Process

The compensation committee annually reviews compensation for our Named Executive Officers. The compensation committee considers the executive's role and responsibilities, corporate and individual performance, and industry-wide compensation practices and trends for other companies of similar size. This approach is used to set base salaries, bonuses, stock option award levels and the mix of compensation elements.

### E. Components of Compensation

We provide four compensation components to Named Executive Officers:

- Base salary,
- Bonuses based on the achievement of specified goals and objectives,
- Long-term incentives, and
- Benefits.

#### 1. Base Salaries

We provide our Named Executive Officers a base salary commensurate with their position, responsibilities and experience. In setting the base salary, the compensation committee considers the scope and accountability associated with each Named Executive Officer's position and such factors as performance and experience of each Named Executive Officer. The base salaries are targeted to be competitive with other similar biotechnology companies. Base salaries for the Named Executive Officers are set by their respective employment contracts and remain the same for the term of the agreement, which is currently three years for each Named Executive Officer. The committee therefore compares the compensation for our senior management with the compensation at several comparable companies, including those companies that are included in the S&P SmallCap 600 Pharmaceuticals index. The base salary is set at the commencement of the employment agreements and remains the same for each of the three years that the agreement is effective. The base salary for each of the first, second and third year of employment for the Named Executive Officers is as follows:

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Named Executive Officer	Base Salary
Jeffrey Riley, Chief Executive Officer and President	\$ 348,000
C. Evan Ballantyne, Chief Financial Officer, Treasurer and Secretary	\$ 298,000

### 2. Bonuses

The compensation committee also makes recommendations to the full board for determining bonuses. For the year ended December 31, 2012, the compensation committee approved a \$52,000 bonus for Jeffrey Riley and a \$44,000 bonus for C. Evan Ballantyne, each of which were fifteen percent (15%) of such individual's base salary. The compensation committee provided all full time employees with a bonus of fifteen percent (15%) of their base salary. The employment agreement with each of Jeffrey Riley and C. Evan Ballantyne provides that each is eligible for a bonus of up to fifty percent (50%) of his base salary in cash or equity. The bonuses are to be rewarded based on whether, in the discretion of the compensation committee and the Board of Directors, the Company and the Named Executive Officer met certain objectives established by the compensation committee or the Board of Directors. The compensation committee believed that the granting of a bonus is appropriate to motivate the Named Executive Officers to focus on expanding our business and managing financial resources. Although the compensation committee does not use any fixed formula in determining bonuses, it does link them to financial objectives of importance to us, including revenue and earnings growth, return on invested capital, and creation of stockholder value. The committee focuses on individual performance, which enables the committee to differentiate among executives and emphasize the link between personal performance and compensation. The following factors were among the reviewed in determining the bonus: successful execution of a financing raising substantial capital; successful acquisition and licensing of additional product candidates and expansion of existing programs; recruitment and retention of key members of management and scientific advisory board and compliance with the NYSE MKT, LLC and SEC rules and regulations. Actual levels of achievement were not assigned to any one factor and the performance objectives were looked at in totality.

### 3. Long-Term Incentives

The compensation committee has elected to grant stock options to the Named Executive Officers and other key employees as the primary long-term incentive vehicle. In making this determination, the compensation committee considered a number of factors including: the accounting impact, potential value of stock option grants versus other equity instruments and cash incentives, and the alignment of equity participants with stockholders. The compensation committee determined to grant stock options to:

- Enhance the link between the creation of stockholder value and executive compensation;
- Provide an opportunity for equity ownership;
- Act as a retention tool; and
- Provide competitive levels of total compensation.

Each of Jeffrey Riley and C. Evan Ballantyne were granted options exercisable for 750,000 and 425,000 shares of common stock, respectively, upon hire. The stock options granted to Jeffrey Riley and C. Evan Ballantyne vest in equal monthly installments over a three year term.

The compensation committee reviews our performance, potential burn rates and dilution levels to create an option pool that may be awarded to employee participants. Grants to the Named Executive Officers were determined by the compensation committee after reviewing market data and considering each executive's performance, role and responsibilities.

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We do not seek to time equity grants to take advantage of information, either positive or negative, about the Company that has not been publicly disclosed. Option grants are effective on the date the award determination is made by the compensation committee and the exercise price of options is the closing market price of our common stock on the business day of the grant or, if the grant is made on a weekend or holiday, on the prior business day.

### 4. Benefits

Named Executive Officers are eligible to participate in our standard medical, dental, vision, disability insurance, life insurance plans and other health and welfare plans provided to other full time employees.

All of our Named Executive Officers are entitled to participate in our 401(k) program.

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### INFORMATION CONCERNING EXECUTIVE OFFICERS WHO ARE NOT DIRECTORS

Background information about our executive officers who are not nominees for election as directors is set forth below.

*C. Evan Ballantyne.* Mr. Ballantyne joined Synthetic Biologics as its Chief Financial Officer in February 2012. He also serves as our Corporate Secretary and Treasurer. From 2006 until its acquisition in April 2011, Mr. Ballantyne served as Executive Vice President and Chief Financial Officer of Clinical Data, Inc., a publicly-traded biopharmaceutical company which was acquired by Forest Laboratories, Inc. for \$1.3 billion. While at Clinical Data, he was instrumental in leading corporate financings totaling approximately \$220 million as well as a number of acquisition and divestitures totaling \$116 million. Mr. Ballantyne has also served as Chief Financial Officer of a number of private medical technology companies, including Avedro and ZymeQuest. Earlier in his career, he served as Vice President and Chief Operating Officer for ACNielsen Europe Middle East & Africa and held the Chief Financial Officer position as well for two years. There, Mr. Ballantyne was responsible for all aspects of operations, strategic planning and finance in more than 45 countries for a corporation with 9,700 employees. He also helped lead the company's successful ISO certification process. He began his career at the Dun & Bradstreet Corporation where he held several senior financial positions. Mr. Ballantyne earned a BA from the University of Western Ontario, and took a post-graduate degree in Business Administration with Honors from the University of Windsor.

#### Employment Agreements

On February 3, 2012, Jeffrey Riley was appointed to serve as our Chief Executive Officer and President, and on February 6, 2012, C. Evan Ballantyne was appointed to serve as our Chief Financial Officer. On February 3, 2012, James S. Kuo, M.D., resigned as our Chief Executive Officer, President and Chief Financial Officer. Dr. Kuo remained as a consultant until February 2013. The following are summaries of the agreements that were executed in connection with these changes.

#### *Jeffrey Riley Employment Agreement*

In connection with his appointment, Mr. Riley entered into a three year employment agreement with us (the "Riley Employment Agreement"). Pursuant to the Riley Employment Agreement, Mr. Riley will be entitled to an annual base salary of \$348,000 and will be eligible for discretionary performance and transactional bonus payments. Additionally, Mr. Riley was granted options to purchase 750,000 shares of our common stock with an exercise price equal to our per share market price on the date of issue. These options will vest pro rata, on a monthly basis, over thirty-six months. The Riley Employment Agreement also includes confidentiality obligations and inventions assignments by Mr. Riley.

If Mr. Riley's employment is terminated for any reason, he or his estate as the case may be, will be entitled to receive the accrued base salary, vacation pay, expense reimbursement and any other entitlements accrued by him to the extent not previously paid (the "Accrued Obligations"); provided, however, that if his employment is terminated (1) by us without Just Cause (as defined in the Riley Employment Agreement) or by Mr. Riley for Good Reason (as defined in the Riley Employment Agreement) then in addition to paying the Accrued Obligations, (x) we shall continue to pay his then current base salary and continue to provide benefits at least equal to those which were provided at the time of termination for a period of six months and (y) he shall have the right to exercise any vested options until the earlier of the expiration of the severance or the expiration of the term of the option, or (2) by reason of his death or Disability (as defined in the Riley Employment Agreement), then in addition to paying the Accrued Obligations, he would have the right to exercise any vested options until the expiration of the term of the option. In such event, if Mr. Riley commenced employment with another employer and becomes eligible to receive medical or other welfare benefits under another employer-provider plan, the medical and other welfare benefits to be provided by us as described herein will terminate.

#### *C. Evan Ballantyne Employment Agreement*

Effective February 6, 2012, C. Evan Ballantyne was appointed our Chief Financial Officer. In connection with his appointment, Mr. Ballantyne entered into a three-year employment agreement with us (the "Ballantyne Employment Agreement"). Pursuant to the Ballantyne Employment Agreement, Mr. Ballantyne

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will be entitled to an annual base salary of \$298,000 and will be eligible for discretionary performance and transactional bonus payments. Additionally, Mr. Ballantyne was granted options to purchase 425,000 shares of our common stock with an exercise price equal to our per share market price on the date of issue. These options will vest pro rata, on a monthly basis, over thirty-six months. The Ballantyne Employment Agreement also includes confidentiality obligations and inventions assignments by Mr. Ballantyne.

If Mr. Ballantyne's employment is terminated for any reason, he or his estate as the case may be, will be entitled to receive the accrued base salary, vacation pay, expense reimbursement and any other entitlements accrued by him to the extent not previously paid (the "Accrued Obligations"); provided, however, that if his employment is terminated (1) by us without Just Cause (as defined in the Ballantyne Employment Agreement) or by Mr. Ballantyne for Good Reason (as defined in the Ballantyne Employment Agreement) then in addition to paying the Accrued Obligations, (i) we shall continue to pay his then current base salary and continue to provide benefits at least equal to those which were provided at the time of termination for a period of six months and (ii) he shall have the right to exercise any vested options until the earlier of the expiration of the severance or the expiration of the term of the option, or (2) by reason of his death or Disability (as defined in the Ballantyne Employment Agreement), then in addition to paying the Accrued Obligations, he would have the right to exercise any vested options until the expiration of the term of the option. In such event, if Mr. Ballantyne, commenced employment with another employer and becomes eligible to receive medical or other welfare benefits under another employer-provider plan, the medical and other welfare benefits to be provided by us as described herein will terminate.

### *Dr. Kuo's Agreements*

Effective February 3, 2012, James S. Kuo, M.D., resigned from his positions as our President and Chief Executive Officer. In connection with his resignation, Dr. Kuo entered into a nine-month consulting agreement with us (the "Consulting Agreement"). Pursuant to the Consulting Agreement, Dr. Kuo was entitled to a consulting fee of \$16,666 per month during the term of the Consulting Agreement, receive health and dental benefits for one year and retain the right to exercise the stock options held by him that have vested as of the effective date of the Consulting Agreement for a period expiring on the date that is one (1) year from the effective date of the Consulting Agreement. The Consulting Agreement also includes confidentiality obligations and inventions assignments by Dr. Kuo.

In February 2010, Dr. Kuo had entered into a three-year employment agreement with us (the "Kuo Employment Agreement"). Pursuant to the Kuo Employment Agreement, Dr. Kuo was entitled to an annual base salary of \$199,000 and was eligible for discretionary performance and transactional bonus payments. Additionally, Dr. Kuo was granted an initial stock option to purchase 400,000 shares of our common stock (with an exercise price of \$0.82, the fair market value on February 6, 2010, which is the date of grant). Of this stock option grant, 300,000 shares vested prior to his resignation.

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### CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

Pursuant to our charter, our audit committee shall review on an on-going basis for potential conflicts of interest, and approve if appropriate, all our “Related Party Transactions” as required by Section 120 of the NYSE MKT Company Guide. For purposes of the Audit Committee Charter, “Related Party Transactions” shall mean those transactions required to be disclosed pursuant to SEC Regulation S-K, Item 404.

In February 2012, we entered into a Consulting Agreement with Dr. James Kuo. See Executive Compensation for additional information regarding such agreement.

From January 2, 2012 through September 30, 2012, Steve H. Kanzer was engaged as our Interim Director of our Biologics Division. In connection with his appointment, Mr. Kanzer entered into a six month employment agreement with us on a full time basis (the “Kanzer Employment Agreement”), which may be extended for an additional three (3) months upon consent of the parties. Pursuant to the Kanzer Employment Agreement, Mr. Kanzer will be entitled to a base salary of \$90,000 for the term, healthcare coverage pursuant to our healthcare insurance plan, reimbursement for certain relocation expenses and rent expense. The Kanzer Employment Agreement also includes confidentiality obligations and inventions assignments by Mr. Kanzer. Mr. Kanzer is not entitled to severance pay upon termination of his employment. On October 1, 2012, the Kanzer Employment Agreement was amended (the “Amended Kanzer Employment Agreement”) and Mr. Kanzer is engaged as our Licensing Associate. In connection with this appointment, Mr. Kanzer entered into a two year agreement with us on a part time basis (2.5 days per week). Pursuant to the Amended Kanzer Employment Agreement, Mr. Kanzer will be entitled to a base salary of \$150,000 for the term and healthcare coverage pursuant to our healthcare insurance plans.

In August 2012, we entered into an Exclusive Channel Agreement with Intrexon and issued 3,552,210 shares of common stock as consideration, having a fair value of \$7.8 million (\$2.20 per share), based on the quoted closing trading price on October 5, 2012 (date approved by our stockholders). In connection with the November 2011 and August 2012 Exclusive Channel Agreements, we paid Intrexon approximately \$2.9 million during 2012, including a prepayment of research and development expenses of \$2.5 million. In October 2012, we consummated our October 2012 Private Placement and entered into a stock purchase agreement with several investors, including NRM VII Holdings I, LLC, an entity affiliated with Intrexon. Randal J. Kirk may be deemed to indirectly beneficially own all of such shares. See Item 7 — Management’s Discussion and Analysis of Financial Conditions and Results of Operations for additional information regarding such issuance and agreements.

### AVAILABILITY OF REPORT ON FORM 10-K

Our audited consolidated financial statements are included in our Annual Report on Form 10-K for the fiscal year ending December 31, 2012 filed with the SEC, 100 F Street, N.E., Washington, D.C. 20549. Upon your written request, we will provide to you a complimentary copy of our 2012 Annual Report on Form 10-K as filed with the Securities and Exchange Commission. Your request should be mailed to Synthetic Biologics, Inc., Attention: Corporate Secretary, Synthetic Biologics, Inc., Administrative Office, 617 Detroit Street, Suite 100, Ann Arbor, Michigan 48104. A complimentary copy may also be obtained at the internet website maintained by the Securities and Exchange Commission at [www.sec.gov](http://www.sec.gov), and by visiting our internet website at [www.syntheticbiologics.com](http://www.syntheticbiologics.com) and clicking on “Investors,” then on “SEC Filings.”

### NOTICE REGARDING DELIVERY OF STOCKHOLDER DOCUMENTS (“HOUSEHOLDING” INFORMATION)

The SEC has adopted rules that permit companies and intermediaries (e.g., brokers) to satisfy the delivery requirements for proxy statements with respect to two or more stockholders sharing the same address by delivering a single proxy statement addressed to those stockholders. This process, which is commonly referred to as “householding,” potentially means extra convenience for stockholders and cost savings for companies and intermediaries. A number of brokers and other intermediaries with account holders who are our stockholders may be householding our stockholder materials, including this proxy statement. In that event, a single proxy statement will be delivered to multiple stockholders sharing an address unless contrary instructions have been received from the affected stockholders. Once you have received notice from your broker or other intermediary that it will be householding communications to your address, householding will continue until you are notified otherwise or until you revoke your consent, which is deemed to be given

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unless you inform the broker or other intermediary otherwise when you receive or received the original notice of householding. If, at any time, you no longer wish to participate in householding and would prefer to receive a separate proxy statement, please notify your broker or other intermediary to discontinue householding and direct your written request to receive a separate proxy statement to us at: Synthetic Biologics, Inc., Attention: Corporate Secretary, Synthetic Biologics, Inc., Administrative Office, 617 Detroit Street, Suite 100, Ann Arbor, Michigan 48104 or by calling us at (734) 332-7800. Stockholders who currently receive multiple copies of the proxy statement at their address and would like to request householding of their communications should contact their broker or other intermediary.

### STOCKHOLDER PROPOSALS

Stockholder proposals which are intended to be presented at the 2013 Annual Meeting of Stockholders pursuant to SEC Rule 14a-8 must be received by the Company by May 27, 2014 and must also be received a reasonable time before it begins to print and send its proxy materials for that meeting.

A stockholder who intends to present business, including the election of a director, at the 2013 Annual Meeting of Stockholders other than pursuant to Rule 14a-8, must comply with the requirements set forth in our Amended and Restated Bylaws. Stockholders should consult our Amended and Restated Bylaws to ensure that all of the specific requirements of such notice are met.

#### Available Information on Corporate Governance and SEC Filings

Through our website ([www.syntheticbiologics.com](http://www.syntheticbiologics.com)), we make available, free of charge, our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, all amendments to those reports, and other filings with the Securities and Exchange Commission, as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. We also make the following documents available on our website: the Audit Committee Charter; the Compensation Committee Charter; the Nominations Committee Charter; our Code of Conduct; and our Code of Ethics for Financial Management. You may also obtain a copy of any of the foregoing documents, free of charge, if you submit a written request to Synthetic Biologics, Inc., Attention: Corporate Secretary, Synthetic Biologics, Inc., Administrative Office, 617 Detroit Street, Suite 100, Ann Arbor, Michigan 48104.

No person is authorized to give any information or make any representation other than that contained in this proxy statement, and if given or made, such information may not be relied upon as having been authorized.

APPENDIX A

ADEONA PHARMACEUTICALS, INC.  
2010 STOCK INCENTIVE PLAN  
(as amended and restated September 17, 2013)

ARTICLE I  
GENERAL

1.1 Purpose

The purpose of the Adeona Pharmaceuticals, Inc. 2010 Stock Incentive Plan (the “Plan”) is to provide an incentive for the employees, directors, and consultants to Adeona, Pharmaceuticals, Inc. (the “Company” or Adeona”) and its subsidiaries an incentive (a) to enter into and remain in the service of the Company, (b) to enhance the long-term performance of the Company and (c) to acquire a proprietary interest in the success of the Company.

1.2 Administration

1.2.1 The Plan shall be administered by the Compensation Committee (the “Committee”) of the board of directors of the Company (the “Board”), which shall consist of not less than two directors. The members of the Committee shall be appointed by, and serve at the pleasure of, the Board. To the extent required for transactions under the Plan to qualify for the exemptions available under Rule 16b-3 (“Rule 16b-3”) promulgated under the Securities Exchange Act of 1934 (the “1934 Act”), all actions relating to awards to persons subject to Section 16 of the 1934 Act shall be taken by the Board unless each person who serves on the Committee is a “non-employee director” within the meaning of Rule 16b-3 or such actions are taken by a sub-committee of the Committee (or the Board) comprised solely of “non-employee directors”. To the extent required for compensation realized from awards under the Plan to be deductible by the Company pursuant to section 162(m) of the Internal Revenue Code of 1986 (the “Code”), the members of the Committee shall be “outside directors” within the meaning of section 162(m).

1.2.2 The Committee shall have the authority (a) to exercise all of the powers granted to it under the Plan, (b) to construe, interpret and implement the Plan and any Plan Agreements executed pursuant to Section 2.1, (c) to prescribe, amend and rescind rules and regulations relating to the Plan, including rules governing its own operations, (d) to make all determinations necessary or advisable in administering the Plan, (e) to correct any defect, supply any omission and reconcile any inconsistency in the Plan, (f) to amend the Plan to reflect changes in applicable law, (g) to determine whether, to what extent and under what circumstances awards may be settled or exercised in cash, shares of the Company’s common stock, par value \$.001 (the “Common Stock”), other securities, other awards or other property, or canceled, forfeited or suspended and the method or methods by which awards may be settled, canceled, forfeited or suspended, and (h) to determine whether, to what extent and under what circumstances cash, shares of the Common Stock, other securities, other awards or other property and other amounts payable with respect to an award shall be deferred either automatically or at the election of the holder thereof or of the Committee.

1.2.3 Actions of the Committee shall be taken by the vote of a majority of its members. Any action may be taken by a written instrument signed by a majority of the Committee members, and action so taken shall be fully as effective as if it had been taken by a vote at a meeting.

1.2.4 The determination of the Committee on all matters relating to the Plan or any Plan Agreement shall be final, binding and conclusive.

1.2.5 No member of the Committee shall be liable for any action or determination made in good faith with respect to the Plan or any award thereunder.

1.2.6 Notwithstanding anything to the contrary contained herein: (a) until the Board shall appoint the members of the Committee, the Plan shall be administered by the Board; and (b) the Board may, in its sole discretion, at any time and from time to time, grant awards or resolve to administer the Plan. In either of the foregoing events, the Board shall have all of the authority and responsibility granted to the Committee herein.

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### 1.3 Persons Eligible for Awards

Awards under the Plan may be made to such directors, officers and other employees of the Company and its subsidiaries (including prospective employees conditioned on their becoming employees), and to such consultants to the Company and its subsidiaries (collectively, "key persons") as the Committee shall in its discretion select.

### 1.4 Types of Awards Under the Plan

Awards may be made under the Plan in the form of (a) incentive stock options (within the meaning of section 422 of the Code), (b) nonqualified stock options, (c) stock appreciation rights, (d) restricted stock, (e) restricted stock units and (f) other stock-based awards, all as more fully set forth in Article II. The term "award" means any of the foregoing. No incentive stock option may be granted to a person who is not an employee of the Company on the date of grant.

### 1.5 Shares Available for Awards

1.5.1 The total number of shares of the Common Stock which may be transferred pursuant to awards granted under the Plan shall not exceed 6,000,000. The 6,000,000 shares referred to in the immediately preceding sentence include 3,000,000 shares of common stock initially included in the Plan when the Plan was adopted on September 27, 2010 and 3,000,000 shares added to the Plan as of September 17, 2013. Such shares may be authorized but unissued shares of the Common Stock or authorized and issued shares of the Common Stock held in the Company's treasury or acquired by the Company for the purposes of the Plan. The Committee may direct that any stock certificate evidencing shares issued pursuant to the Plan shall bear a legend setting forth such restrictions on transferability as may apply to such shares pursuant to the Plan. If, after the effective date of the Plan, any award is forfeited or any award otherwise terminates or is cancelled without the delivery of shares of Stock, then the shares covered by such award or to which such award relates shall again become available for transfer pursuant to awards granted or to be granted under this Plan. Any shares of Stock delivered by the Company, any shares of Stock with respect to which awards are made by the Company and any shares of Stock with respect to which the Company becomes obligated to make awards, through the assumption of, or in substitution for, outstanding awards previously granted by an acquired entity, shall not be counted against the shares available for awards under this Plan.

1.5.2 Upon certain changes in Stock, the number of shares of Stock available for issuance with respect to awards under the Plan, as set forth in Sections 1.5.1 and 1.5.2, shall be adjusted pursuant to Section 3.7.1.

1.5.3 Except as provided in this Section 1.5 and in Section 2.3.7, there shall be no limit on the number or the value of the shares of Stock that may be subject to awards to any individual under the Plan.

### 1.6 Definitions of Certain Terms

1.6.1 The "Fair Market Value" of a share of Stock on any day shall be determined as follows.

(a) If the principal market for the Stock (the "Market") is a national securities exchange or the National Association of Securities Dealers Automated Quotation System ("NASDAQ") Market, the last sale price or, if no reported sales take place on the applicable date, the average of the high bid and low asked price of Stock as reported for such Market on such date or, if no such quotation is made on such date, on the next preceding day on which there were quotations, provided that such quotations shall have been made within the ten (10) business days preceding the applicable date;

(b) If the Market is the Over the Counter Bulletin Board or another market, the average of the high bid and low asked price for Stock on the applicable date, or, if no such quotations shall have been made on such date, on the next preceding day on which there were quotations, provided that such quotations shall have been made within the ten (10) business days preceding the applicable date; or

(c) In the event that neither paragraph (a) nor (b) shall apply, the Fair Market Value of a share of Stock on any day shall be determined in good faith by the Committee.

1.6.2 The term "incentive stock option" means an option that is intended to qualify for special federal income tax treatment pursuant to sections 421 and 422 of the Code, as now constituted or subsequently

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amended, or pursuant to a successor provision of the Code, and which is so designated in the applicable Plan Agreement. Any option that is not specifically designated as an incentive stock option shall under no circumstances be considered an incentive stock option. Any option that is not an incentive stock option is referred to herein as a "nonqualified stock option."

1.6.3 The term "employment" means, in the case of a grantee of an award under the Plan who is not an employee of the Company, the grantee's association with the Company or a subsidiary as a director, consultant or otherwise.

1.6.4 A grantee shall be deemed to have a "termination of employment" upon ceasing to be employed by the Company and all of its subsidiaries or by a corporation assuming awards in a transaction to which section 424(a) of the Code applies. The Committee may in its discretion determine (a) whether any leave of absence constitutes a termination of employment for purposes of the Plan, (b) the impact, if any, of any such leave of absence on awards theretofore made under the Plan, and (c) when a change in a non-employee's association with the Company constitutes a termination of employment for purposes of the Plan. The Committee shall have the right to determine whether the termination of a grantee's employment is a dismissal for cause and the date of termination in such case, which date the Committee may retroactively deem to be the date of the action that is cause for dismissal. Such determinations of the Committee shall be final, binding and conclusive.

1.6.5 The term "cause," when used in connection with termination of a grantee's employment, shall have the meaning set forth in any then-effective employment agreement between the grantee and the Company or a subsidiary thereof. In the absence, of or in addition to, as the case may be, such an employment agreement provision, "cause" means: (a) conviction of any crime (whether or not involving the Company) constituting a felony in the jurisdiction involved; (b) engaging in any substantiated act involving moral turpitude; (c) engaging in any act which, in each case, subjects, or if generally known would subject, the Company to public ridicule or embarrassment; (d) material violation of the Company's policies, including, without limitation, those relating to sexual harassment or the disclosure or misuse of confidential information; (e) serious neglect or misconduct in the performance of the grantee's duties for the Company or a subsidiary or willful or repeated failure or refusal to perform such duties; in each case as determined by the Committee, which determination shall be final, binding and conclusive.

## ARTICLE II AWARDS UNDER THE PLAN

### 2.1 Agreements Evidencing Awards

Each award granted under the Plan shall be evidenced by a written agreement ("Plan Agreement") which shall contain such provisions as the Committee in its discretion deems necessary or desirable. Such provisions may include, without limitation, a requirement that the grantee become a party to a shareholders' agreement with respect to any shares of Stock acquired pursuant to the award, a requirement that the grantee acknowledge that such shares are acquired for investment purposes only, and a right of first refusal exercisable by the Company in the event that the grantee wishes to transfer any such shares. The Committee may grant awards in tandem with or in substitution for any other award or awards granted under this Plan or any award granted under any other plan of the Company or any subsidiary. Payments or transfers to be made by the Company or any subsidiary upon the grant, exercise or payment of an award may be made in such form as the Committee shall determine, including cash, shares of Stock, other securities, other awards or other property and may be made in a single payment or transfer, in installments or on a deferred basis, in each case in accordance with rules established by the Committee. By accepting an award pursuant to the Plan, a grantee thereby agrees that the award shall be subject to all of the terms and provisions of the Plan and the applicable Plan Agreement.

### 2.2 No Rights as a Shareholder

No grantee of an option or stock appreciation right (or other person having the right to exercise such award) shall have any of the rights of a shareholder of the Company with respect to shares subject to such award until the issuance of a stock certificate to such person for such shares.

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### 2.3 Grant of Stock Options and Stock Appreciation Rights

2.3.1 The Committee may grant incentive stock options and nonqualified stock options (collectively, “options”) to purchase shares of the Common Stock from the Company, to such key persons, in such amounts and subject to such terms and conditions, as the Committee shall determine in its discretion, subject to the provisions of the Plan.

2.3.2 The Committee may grant stock appreciation rights to such key persons, in such amounts and subject to such terms and conditions, as the Committee shall determine in its discretion, subject to the provisions of the Plan. Stock appreciation rights may be granted in connection with all or any part of, or independently of, any option granted under the Plan. A stock appreciation right granted in connection with a nonqualified stock option may be granted at or after the time of grant of such option. A stock appreciation right granted in connection with an incentive stock option may be granted only at the time of grant of such option.

2.3.3 The grantee of a stock appreciation right shall have the right, subject to the terms of the Plan and the applicable Plan Agreement, to receive from the Company an amount equal to (a) the excess of the Fair Market Value of a share of the Common Stock on the date of exercise of the stock appreciation right over (b) the exercise price of such right as set forth in the Plan Agreement (or over the option exercise price if the stock appreciation right is granted in connection with an option), multiplied by (c) the number of shares with respect to which the stock appreciation right is exercised. Payment upon exercise of a stock appreciation right shall be in cash or in shares of the Common Stock (valued at their Fair Market Value on the date of exercise of the stock appreciation right) or both, all as the Committee shall determine in its discretion. Upon the exercise of a stock appreciation right granted in connection with an option, the number of shares subject to the option shall be correspondingly reduced by the number of shares with respect to which the stock appreciation right is exercised. Upon the exercise of an option in connection with which a stock appreciation right has been granted, the number of shares subject to the stock appreciation right shall be correspondingly reduced by the number of shares with respect to which the option is exercised.

2.3.4 Each Plan Agreement with respect to an option shall set forth the amount (the “option exercise price”) payable by the grantee to the Company upon exercise of the option evidenced thereby. The option exercise price per share shall be determined by the Committee in its discretion; provided, however, that the option exercise price of an incentive stock option shall be at least 100% of the Fair Market Value of a share of the Common Stock on the date the option is granted, and provided further that in no event shall the option exercise price be less than the par value of a share of the Common Stock.

2.3.5 Each Plan Agreement with respect to an option or stock appreciation right shall set forth the periods during which the award evidenced thereby shall be exercisable, whether in whole or in part. Such periods shall be determined by the Committee in its discretion; provided, however, that no incentive stock option (or a stock appreciation right granted in connection with an incentive stock option) shall be exercisable more than 10 years after the date of grant.

2.3.6 The Committee may in its discretion include in any Plan Agreement with respect to an option (the “original option”) a provision that an additional option (the “additional option”) shall be granted to any grantee who, pursuant to Section 2.4.3(b), delivers shares of the Common Stock in partial or full payment of the exercise price of the original option. The additional option shall be for a number of shares of the Common Stock equal to the number thus delivered, shall have an exercise price equal to the Fair Market Value of a share of the Common Stock on the date of exercise of the original option, and shall have an expiration date no later than the expiration date of the original option. In the event that a Plan Agreement provides for the grant of an additional option, such Agreement shall also provide that the exercise price of the original option be no less than the Fair Market Value of a share of Stock on its date of grant, and that any shares that are delivered pursuant to Section 2.4.3(b) in payment of such exercise price shall have been held for at least six months.

2.3.7 To the extent that the aggregate Fair Market Value (determined as of the time the option is granted) of the stock with respect to which incentive stock options granted under this Plan and all other plans of the Company and any subsidiary are first exercisable by any employee during any calendar year shall exceed the

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maximum limit (currently, \$100,000), if any, imposed from time to time under section 422 of the Code, such options shall be treated as nonqualified stock options.

2.3.8 Notwithstanding the provisions of Sections 2.3.4 and 2.3.5, to the extent required under section 422 of the Code, an incentive stock option may not be granted under the Plan to an individual who, at the time the option is granted, owns stock possessing more than 10% of the total combined voting power of all classes of stock of his employer corporation or of its parent or subsidiary corporations (as such ownership may be determined for purposes of section 422(b)(6) of the Code) unless (a) at the time such incentive stock option is granted the option exercise price is at least 110% of the Fair Market Value of the shares subject thereto and (b) the incentive stock option by its terms is not exercisable after the expiration of 5 years from the date it is granted.

### 2.4 Exercise of Options and Stock Appreciation Rights

Subject to the provisions of this Article II, each option or stock appreciation right granted under the Plan shall be exercisable as follows:

2.4.1 Unless the applicable Plan Agreement otherwise provides, an option or stock appreciation right may be exercised from time to time as to all or part of the shares as to which such award is then exercisable (but, in any event, only for whole shares). A stock appreciation right granted in connection with an option may be exercised at any time when, and to the same extent that, the related option may be exercised. An option or stock appreciation right shall be exercised by the filing of a written notice with the Company, on such form and in such manner as the Committee shall prescribe.

2.4.2 Any written notice of exercise of an option shall be accompanied by payment for the shares being purchased. Such payment shall be made: (a) by certified or official bank check (or the equivalent thereof acceptable to the Company) for the full option exercise price; or (b) unless the applicable Plan Agreement provides otherwise, by delivery of shares of the Common Stock (which, if acquired pursuant to exercise of a stock option, were acquired at least six months prior to the option exercise date) and having a Fair Market Value (determined as of the exercise date) equal to all or part of the option exercise price and a certified or official bank check (or the equivalent thereof acceptable to the Company) for any remaining portion of the full option exercise price; or (c) at the discretion of the Committee and to the extent permitted by law, by such other provision as the Committee may from time to time prescribe.

2.4.3 Promptly after receiving payment of the full option exercise price, or after receiving notice of the exercise of a stock appreciation right for which payment will be made partly or entirely in shares, the Company shall, subject to the provisions of Section 3.3 (relating to certain restrictions), deliver to the grantee or to such other person as may then have the right to exercise the award, a certificate or certificates for the shares of the Common Stock for which the award has been exercised. If the method of payment employed upon option exercise so requires, and if applicable law permits, an optionee may direct the Company to deliver the certificate(s) to the optionee's stockbroker.

### 2.5 Termination of Employment; Death

2.5.1 Except to the extent otherwise provided in Section 2.5.2 or 2.5.3 or in the applicable Plan Agreement, all options and stock appreciation rights not theretofore exercised shall terminate upon termination of the grantee's employment for any reason (including death).

2.5.2 If a grantee's employment terminates for any reason other than death or dismissal for cause, the grantee may exercise any outstanding option or stock appreciation right on the following terms and conditions: (a) exercise may be made only to the extent that the grantee was entitled to exercise the award on the date of employment termination; and (b) exercise must occur within 90 days after employment terminates, except that this 90 day period shall be increased to one year if the termination is by reason of disability, but in no event after the expiration date of the award as set forth in the Plan Agreement. In the case of an incentive stock option, the term "disability" for purposes of the preceding sentence shall have the meaning given to it by section 422(c)(6) of the Code.

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2.5.3 If a grantee dies while employed by the Company or any subsidiary, or after employment termination but during the period in which the grantee's awards are exercisable pursuant to Section 2.5.2, any outstanding option or stock appreciation right shall be exercisable on the following terms and conditions: (a) exercise may be made only to the extent that the grantee was entitled to exercise the award on the date of death; and (b) exercise must occur by the earlier of the first anniversary of the grantee's death or the expiration date of the award. Any such exercise of an award following a grantee's death shall be made only by the grantee's executor or administrator, unless the grantee's will specifically disposes of such award, in which case such exercise shall be made only by the recipient of such specific disposition. If a grantee's personal representative or the recipient of a specific disposition under the grantee's will shall be entitled to exercise any award pursuant to the preceding sentence, such representative or recipient shall be bound by all the terms and conditions of the Plan and the applicable Plan Agreement which would have applied to the grantee including, without limitation, the provisions of Sections 3.3 and 3.7 hereof.

### 2.6 Grant of Restricted Stock

2.6.1 The Committee may grant restricted shares of Stock to such key persons, in such amounts, and subject to such terms and conditions as the Committee shall determine in its discretion, subject to the provisions of the Plan. Restricted stock awards may be made independently of or in connection with any other award under the Plan. A grantee of a restricted stock award shall have no rights with respect to such award unless such grantee accepts the award within such period as the Committee shall specify by executing a Plan Agreement in such form as the Committee shall determine and, if the Committee shall so require, makes payment to the Company by certified or official bank check (or the equivalent thereof acceptable to the Company) in such amount as the Committee may determine.

2.6.2 Promptly after a grantee accepts a restricted stock award, the Company shall issue in the grantee's name a certificate or certificates for the shares of the Common Stock covered by the award. Upon the issuance of such certificate(s), the grantee shall have the rights of a shareholder with respect to the restricted stock, subject to the nontransferability restrictions and Company repurchase rights described in Sections 2.6.4 and 2.6.5 and to such other restrictions and conditions as the Committee in its discretion may include in the applicable Plan Agreement.

2.6.3 Unless the Committee shall otherwise determine, any certificate issued evidencing shares of restricted stock shall remain in the possession of the Company until such shares are free of any restrictions specified in the applicable Plan Agreement.

2.6.4 Shares of restricted stock may not be sold, assigned, transferred, pledged or otherwise encumbered or disposed of except as specifically provided in this Plan or the applicable Plan Agreement. The Committee at the time of grant shall specify the date or dates (which may depend upon or be related to the attainment of performance goals and other conditions) on which the nontransferability of the restricted stock shall lapse. Unless the applicable Plan Agreement provides otherwise, additional shares of Stock or other property distributed to the grantee in respect of shares of restricted stock, as dividends or otherwise, shall be subject to the same restrictions applicable to such restricted stock.

2.6.5 During the 120 days following termination of the grantee's employment for any reason, the Company shall have the right to require the return of any shares to which restrictions on transferability apply, in exchange for which the Company shall repay to the grantee (or the grantee's estate) any amount paid by the grantee for such shares.

### 2.7 Grant of Restricted Stock Units

2.7.1 The Committee may grant awards of restricted stock units to such key persons, in such amounts, and subject to such terms and conditions as the Committee shall determine in its discretion, subject to the provisions of the Plan. Restricted stock units may be awarded independently of or in connection with any other award under the Plan.

2.7.2 At the time of grant, the Committee shall specify the date or dates on which the restricted stock units shall become fully vested and nonforfeitable, and may specify such conditions to vesting as it deems appropriate. In the event of the termination of the grantee's employment by the Company and its subsidiaries

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for any reason, restricted stock units that have not become nonforfeitable shall be forfeited and cancelled. The Committee at any time may accelerate vesting dates and otherwise waive or amend any conditions of an award of restricted stock units.

2.7.3 At the time of grant, the Committee shall specify the maturity date applicable to each grant of restricted stock units, which may be determined at the election of the grantee. Such date may be later than the vesting date or dates of the award. On the maturity date, the Company shall transfer to the grantee one unrestricted, fully transferable share of the Common Stock for each restricted stock unit scheduled to be paid out on such date and not previously forfeited. The Committee shall specify the purchase price, if any, to be paid by the grantee to the Company for such shares of the Common Stock.

### 2.8 Other Stock-Based Awards

The Committee may grant other types of stock-based awards (including the grant of unrestricted shares) to such key persons, in such amounts and subject to such terms and conditions, as the Committee shall in its discretion determine, subject to the provisions of the Plan. Such awards may entail the transfer of actual shares of the Common Stock to Plan participants, or payment in cash or otherwise of amounts based on the value of shares of the Common Stock.

## ARTICLE III MISCELLANEOUS

### 3.1 Amendment of the Plan; Modification of Awards

3.1.1 The Board may from time to time suspend, discontinue, revise or amend the Plan in any respect whatsoever, except that no such amendment shall materially impair any rights or materially increase any obligations under any award theretofore made under the Plan without the consent of the grantee (or, after the grantee's death, the person having the right to exercise the award). For purposes of this Section 3.1, any action of the Board or the Committee that alters or affects the tax treatment of any award shall not be considered to materially impair any rights of any grantee.

3.1.2 Stockholder approval of any amendment shall be obtained to the extent necessary to comply with section 422 of the Code (relating to incentive stock options) or other applicable law or regulation.

3.1.3 The Committee may amend any outstanding Plan Agreement, including, without limitation, by amendment which would accelerate the time or times at which the award becomes unrestricted or may be exercised, or waive or amend any goals, restrictions or conditions set forth in the Agreement. However, any such amendment (other than an amendment pursuant to Section 3.7.2, relating to change in control) that materially impairs the rights or materially increases the obligations of a grantee under an outstanding award shall be made only with the consent of the grantee (or, upon the grantee's death, the person having the right to exercise the award).

### 3.2 Tax Withholding

3.2.1 As a condition to the receipt of any shares of the Common Stock pursuant to any award or the lifting of restrictions on any award, or in connection with any other event that gives rise to a federal or other governmental tax withholding obligation on the part of the Company relating to an award (including, without limitation, FICA tax), the Company shall be entitled to require that the grantee remit to the Company an amount sufficient in the opinion of the Company to satisfy such withholding obligation.

3.2.2 If the event giving rise to the withholding obligation is a transfer of shares of the Common Stock, then, unless otherwise specified in the applicable Plan Agreement, the grantee may satisfy the withholding obligation imposed under Section 3.2.1 by electing to have the Company withhold shares of the Common Stock having a Fair Market Value equal to the amount of tax to be withheld. For this purpose, Fair Market Value shall be determined as of the date on which the amount of tax to be withheld is determined (and any fractional share amount shall be settled in cash).

### 3.3 Restrictions

3.3.1 If the Committee shall at any time determine that any consent (as hereinafter defined) is necessary or desirable as a condition of, or in connection with, the granting of any award under the Plan, the issuance or

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purchase of shares or other rights thereunder, or the taking of any other action thereunder (each such action being hereinafter referred to as a “plan action”), then such plan action shall not be taken, in whole or in part, unless and until such consent shall have been effected or obtained to the full satisfaction of the Committee.

3.3.2 The term “consent” as used herein with respect to any plan action means (a) any and all listings, registrations or qualifications in respect thereof upon any securities exchange or under any federal, state or local law, rule or regulation, (b) any and all written agreements and representations by the grantee with respect to the disposition of shares, or with respect to any other matter, which the Committee shall deem necessary or desirable to comply with the terms of any such listing, registration or qualification or to obtain an exemption from the requirement that any such listing, qualification or registration be made and (c) any and all consents, clearances and approvals in respect of a plan action by any governmental or other regulatory bodies.

### 3.4 Non-assignability

Except to the extent otherwise provided in the applicable Plan Agreement, no award or right granted to any person under the Plan shall be assignable or transferable other than by will or by the laws of descent and distribution, and all such awards and rights shall be exercisable during the life of the grantee only by the grantee or the grantee's legal representative.

### 3.5 Notification of Election Under Code Section 83(b)

If any grantee shall, in connection with the acquisition of shares of the Common Stock under the Plan, make the election permitted under section 83(b) of the Code (that is, an election to include in gross income in the year of transfer the amounts specified in section 83(b)), such grantee shall notify the Company of such election within 10 days of filing notice of the election with the Internal Revenue Service, in addition to any filing and notification required pursuant to regulations issued under the authority of Code section 83(b).

### 3.6 Notification Upon Disqualifying Disposition

If any grantee shall make any disposition of shares of the Common Stock issued pursuant to the exercise of an incentive stock option under the circumstances described in section 421(b) of the Code (relating to certain disqualifying dispositions), such grantee shall notify the Company of such disposition within 10 days thereof.

### 3.7 Adjustment Upon Changes in Stock

3.7.1 Shares Available for Grants. In the event of any change in the number of shares of Stock outstanding by reason of any stock dividend or split, reverse stock split, recapitalization, merger, consolidation, combination or exchange of shares or similar corporate change, the maximum number of shares of the Common Stock with respect to which the Committee may grant awards under Article II hereof, as described in Section 1.5.1, and the individual annual limit described in Section 1.5.2, shall be appropriately adjusted by the Committee. In the event of any change in the number of shares of the Common Stock outstanding by reason of any other event or transaction, the Committee may, but need not, make such adjustments in the number and class of shares of the Common Stock with respect to which awards: (i) may be granted under Article II hereof and (ii) granted to any one employee of the Company or a subsidiary during any one calendar year, in each case as the Committee may deem appropriate, unless such adjustment would cause any award that would otherwise qualify as performance based compensation with respect to a “162(m) covered employee” (as defined in Section 162 of the Code), to cease to so qualify.

3.7.2 Outstanding Restricted Stock and Restricted Stock Units. Unless the Committee in its absolute discretion otherwise determines, any securities or other property (including dividends paid in cash) received by a grantee with respect to a share of restricted stock, the issue date with respect to which occurs prior to such event, but which has not vested as of the date of such event, as a result of any dividend, stock split, reverse stock split, recapitalization, merger, consolidation, combination, exchange of shares or otherwise will not vest until such share of restricted stock vests, and shall be promptly deposited with the Company or otherwise treated as was the certificate for the underlying share of restricted stock, pursuant to Section 2.6.3 hereof.

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The Committee may, in its absolute discretion, adjust any grant of shares of restricted stock, the issue date with respect to which has not occurred as of the date of the occurrence of any of the following events, or any grant of restricted stock units, to reflect any dividend, stock split, reverse stock split, recapitalization, merger, consolidation, combination, exchange of shares or similar corporate change as the Committee may deem appropriate to prevent the enlargement or dilution of rights of grantees.

3.7.3 Outstanding Options and Stock Appreciation Rights — Increase or Decrease in Issued Shares Without Consideration. Subject to any required action by the stockholders of the Company, in the event of any increase or decrease in the number of issued shares of Stock resulting from a subdivision or consolidation of shares of Stock or the payment of a stock dividend (but only on the shares of Stock), or any other increase or decrease in the number of such shares effected without receipt of consideration by the Company, the Committee shall proportionally adjust the number of shares of the Common Stock subject to each outstanding option and stock appreciation right, and the exercise price-per-share of the Common Stock of each such option and stock appreciation right.

3.7.4 Outstanding Options and Stock Appreciation Rights — Certain Mergers. Subject to any required action by the stockholders of the Company, in the event that the Company shall be the surviving corporation in any merger or consolidation (except a merger or consolidation as a result of which the holders of shares of Stock receive securities of another corporation), each option and stock appreciation right outstanding on the date of such merger or consolidation shall pertain to and apply to the securities which a holder of the number of shares of the Common Stock subject to such option or stock appreciation right would have received in such merger or consolidation.

3.7.5 Outstanding Options and Stock Appreciation Rights — Certain Other Transactions. In the event of (i) a dissolution or liquidation of the Company, (ii) a sale of all or substantially all of the Company's assets, (iii) a merger or consolidation involving the Company in which the Company is not the surviving corporation or (iv) a merger or consolidation involving the Company in which the Company is the surviving corporation but the holders of shares of the Common Stock receive securities of another corporation and/or other property, including cash, the Committee shall, in its absolute discretion, have the power to:

- (i) cancel, effective immediately prior to the occurrence of such event, each option and stock appreciation right outstanding immediately prior to such event (whether or not then exercisable), and, in full consideration of such cancellation, pay to the grantee to whom such option or stock appreciation right was granted an amount in cash, for each share of the Common Stock subject to such option or stock appreciation right, respectively, equal to the excess of (x) the value, as determined by the Committee in its absolute discretion, of the property (including cash) received by the holder of a share of the Common Stock as a result of such event over (y) the exercise price of such option or stock appreciation right;
- (ii) cancel, effective immediately prior to the occurrence of such event, each option and stock appreciation right outstanding immediately prior to such event (whether or not then exercisable), and, in full consideration of such cancellation, pay to the grantee to whom such option or stock appreciation right was granted, for each share of the Common Stock subject to such option or stock appreciation right, respectively, the property (including cash) received by the holder of a share of the Common Stock as a result of such event; or
- (iii) provide for the exchange of each option and stock appreciation right outstanding immediately prior to such event (whether or not then exercisable) for an option on or stock appreciation right with respect to, as appropriate, some or all of the property which a holder of the number of shares of the Common Stock subject to such option or stock appreciation right would have received and, incident thereto, make an equitable adjustment as determined by the Committee in its absolute discretion in the exercise price of the option or stock appreciation right, or the number of shares or amount of property subject to the option or stock appreciation right or, if appropriate, provide for a cash payment to the grantee to whom such option or stock appreciation right was granted in partial consideration for the exchange of the option or stock appreciation right.

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**3.7.6 Outstanding Options and Stock Appreciation Rights — Other Changes.** In the event of any change in the capitalization of the Company or a corporate change other than those specifically referred to in Sections 3.7.3, 3.7.4 or 3.7.5 hereof, the Committee may, in its absolute discretion, make such adjustments in the number and class of shares subject to options and stock appreciation rights outstanding on the date on which such change occurs and in the per-share exercise price of each such option and stock appreciation right as the Committee may consider appropriate to prevent dilution or enlargement of rights. In addition, if and to the extent the Committee determines it is appropriate, the Committee may elect to cancel each option and stock appreciation right outstanding immediately prior to such event (whether or not then exercisable), and, in full consideration of such cancellation, pay to the grantee to whom such option or stock appreciation right was granted an amount in cash, for each share of the Common Stock subject to such option or stock appreciation right, respectively, equal to the excess of (i) the Fair Market Value of the Common Stock on the date of such cancellation over (ii) the exercise price of such option or stock appreciation right.

**3.7.7 No Other Rights.** Except as expressly provided in the Plan, no grantee shall have any rights by reason of any subdivision or consolidation of shares of stock of any class, the payment of any dividend, any increase or decrease in the number of shares of stock of any class or any dissolution, liquidation, merger or consolidation of the Company or any other corporation. Except as expressly provided in the Plan, no issuance by the Company of shares of stock of any class, or securities convertible into shares of stock of any class, shall affect, and no adjustment by reason thereof shall be made with respect to, the number of shares of the Common Stock subject to an award or the exercise price of any option or stock appreciation right. Except as otherwise provided in Section 3.7, no adjustment shall be made for dividends, distributions or other rights (whether ordinary or extraordinary, and whether in cash, securities or other property) for which the record date is prior to the date such stock certificate is issued.

### **3.8 Right of Discharge Reserved**

Nothing in the Plan or in any Plan Agreement shall confer upon any grantee the right to continue in the employ of the Company or affect any right which the Company may have to terminate such employment.

### **3.9 Nature of Payments**

3.9.1 Any and all grants of awards and issuances of shares of the Common Stock under the Plan shall be in consideration of services performed for the Company by the grantee.

3.9.2 All such grants and issuances shall constitute a special incentive payment to the grantee and shall not be taken into account in computing the amount of salary or compensation of the grantee for the purpose of determining any benefits under any pension, retirement, profit-sharing, bonus, life insurance or other benefit plan of the Company or under any agreement between the Company and the grantee, unless such plan or agreement specifically provides otherwise.

### **3.10 Non-Uniform Determinations**

The Committee's determinations under the Plan need not be uniform and may be made by it selectively among persons who receive, or are eligible to receive, awards under the Plan (whether or not such persons are similarly situated). Without limiting the generality of the foregoing, the Committee shall be entitled, among other things, to make non-uniform and selective determinations, and to enter into non-uniform and selective Plan agreements, as to (a) the persons to receive awards under the Plan, (b) the terms and provisions of awards under the Plan, and (c) the treatment of leaves of absence pursuant to Section 1.6.4.

### **3.11 Other Payments or Awards**

Nothing contained in the Plan shall be deemed in any way to limit or restrict the Company from making any award or payment to any person under any other plan, arrangement or understanding, whether now existing or hereafter in effect.

### **3.12 Section Headings**

The section headings contained herein are for the purpose of convenience only and are not intended to define or limit the contents of the sections.

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### 3.13 Effective Date and Term of Plan

3.13.1 The Plan was adopted by the Board on September 27, 2010, subject to approval by the Company's stockholders. The Plan was amended on September 17, 2013, subject to approval by the Company's stockholders to increase the number of shares of the Common Stock which may be transferred pursuant to awards granted under the Plan by 3,000,000 to 6,000,000. All awards under the Plan prior to such stockholder approval are subject in their entirety to such approval. If such approval is not obtained prior to the first anniversary of the date of adoption of the Plan, the Plan and all awards thereunder shall terminate on that date.

3.13.2 Unless sooner terminated by the Board, the Plan will terminate on the close of business on September 27, 2020, ten years from the original effective date. All awards made under the Plan prior to its termination shall remain in effect until such awards have been satisfied or terminated in accordance with the terms and provisions of the Plan and the applicable Plan Agreements.

### 3.14 Governing Law

All rights and obligations under the Plan shall be construed and interpreted in accordance with the laws of the State of Nevada, without giving effect to principles of conflict of laws.

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SYNTHETIC BIOLOGICS, INC.

THIS PROXY IS SOLICITED BY THE BOARD OF DIRECTORS  
IN CONNECTION WITH THE 2013 ANNUAL MEETING OF STOCKHOLDERS  
TO BE HELD AT 9:00 A.M. (EASTERN TIME) ON OCTOBER 22, 2013

PROXY: JEFFREY RILEY AND C. EVAN BALLANTYNE, or either of them, are hereby appointed by the undersigned as attorneys and proxies with full power of substitution, to vote at the 2013 Annual Meeting of Stockholders of Synthetic Biologics, Inc. and at any adjournment(s) or postponement(s) of that meeting.

WITH RESPECT TO ANY MATTER THAT SHOULD PROPERLY COME BEFORE THE ANNUAL MEETING THAT IS NOT SPECIFIED HEREIN, THIS PROXY, WILL BE VOTED IN THE DISCRETION OF THE PROXY HOLDER.

PLEASE SIGN AND DATE AND RETURN PROMPTLY

THE BOARD OF DIRECTORS OF SYNTHETIC BIOLOGICS, INC.  
RECOMMENDS THAT YOU VOTE  
FOR ALL NOMINEES LISTED IN PROPOSAL 1,  
FOR PROPOSALS 2, 3 and 4  
FOR 3 YEARS ON PROPOSAL 5

PROPOSAL 1. Election of the following director nominees to serve for the following year and until his successor is elected:

Nominees are: Steve H. Kanzer, Jeffrey J. Kraws, Jeffrey Riley, Scott L. Tarriff and Jeffrey Wolf.

FOR ALL NOMINEES

WITHHOLD AUTHORITY  
FOR ALL NOMINEES

WITHHELD FOR THE  
FOLLOWING ONLY:  
(WRITE THE NAME(S) OF  
THE NOMINEE(S) IN  
THE SPACE BELOW)

☐

☐

PROPOSAL 2. Ratification of the selection of BDO USA, LLP as our independent registered public accounting firm for our fiscal year ending December 31, 2013.

FOR

AGAINST

ABSTAIN

☐

☐

☐

PROPOSAL 3. Approval of an amendment to our 2010 Stock Option Plan to increase the number of shares of common stock that we will have authority to grant under the Plan from 3,000,000 to 6,000,000;

FOR

AGAINST

ABSTAIN

☐

☐

☐

PROPOSAL 4. Approval, on an advisory basis, of the Named Executive Officers' compensation.

FOR

AGAINST

ABSTAIN

☐

☐

☐

PROPOSAL 5. Approval, on an advisory basis, of the frequency of holding an advisory vote on executive compensation.

1 YEAR

2 YEARS

3 YEARS

ABSTAIN

☐

☐

☐

☐

Dated:

Signature(s) of Stockholder(s)

Title:

Please mark, date and sign exactly as your name appears on this proxy card and return in the enclosed envelope. If acting as executor, administrator, trustee, guardian, etc., you should so indicate when signing. If the signer is a corporation, please sign the full corporate name, by a duly authorized officer. If shares are held jointly, each stockholder named should sign.