Synthetic Biologics, Inc.
Form 424B3
August 09, 2012

Filed Pursuant to Rule 424(b)(3)

Registration Statement No. 333-180562

August 9, 2012

PROSPECTUS SUPPLEMENT NO. 1

SYNTHETIC BIOLOGICS, INC.

112,573 Shares of Common Stock

This prospectus supplement amends and supplements our prospectus, dated July 26, 2012, relating to the resale, from time to time, of up to 112,573 shares of common stock of Synthetic Biologics, Inc. upon the exercise of warrants issued in July 2011 at an exercise price of $1.00 per share and warrants sold in our July 2010 offering at an exercise price of $1.32 per share. We will receive proceeds if the warrants are exercised for cash; to the extent we receive such proceeds, they will be used for working capital purposes.

Our common stock became eligible for trading on the NYSE MKT October 16, 2008. Our common stock is eligible for quotation on the NYSE MKT under the symbol “SYN”. The closing price of our stock on August 8, 2012 was $2.03.

This prospectus supplement is being filed to include the information set forth in the Current Report on Form 8-K filed on August 9, 2012, which is set forth below. This prospectus supplement should be read in conjunction with the prospectus dated July 26, 2012, which is to be delivered with this prospectus supplement.

Investing in our securities involves a high degree of risk. See " Risk Factors " beginning on page 4 of the original prospectus for more information.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus or the prospectus to which it relates is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this Prospectus Supplement No. 1 is August 9, 2012.

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (date of earliest event reported): **August 6,** 2012

Synthetic Biologics, Inc.

(Exact name of registrant as specified in charter)

Nevada

(State or other jurisdiction of incorporation)

01-12584	13-3808303
(Commission File Number)	(IRS Employer Identification No.)

617 Detroit Street, Suite 100

Ann Arbor, MI 48104

(Address of principal executive offices and zip code)

(734) 332-7800

(Registrant's telephone number including area code)

N/A

(Former Name and Former Address)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of registrant under any of the following provisions:

¨Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

¨Soliciting material pursuant to Rule 14a-12(b) under the Exchange Act (17 CFR 240.14a-12)

¨Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

¨Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Item 1.01 Entry into a Material Definitive Agreement.

Exclusive Channel Collaboration Agreement

On August 6, 2012, Synthetic Biologics, Inc. (the "Company") expanded its relationship with Intrexon Corporation ("Intrexon") and entered into an Exclusive Channel Collaboration Agreement (the "Channel Agreement") with Intrexon that governs a "channel collaboration" arrangement in which the Company will use Intrexon's technology relating to the identification, design and production of human antibodies and DNA vectors for the development and commercialization of a series of monoclonal antibody therapies for the treatment of certain serious infectious diseases (collectively, the "Program"). The Channel Agreement establishes committees comprised of Company and Intrexon representatives that will govern activities related to the Program in the areas of project establishment, chemistry, manufacturing and controls, clinical and regulatory matters, commercialization efforts and intellectual property.

The Channel Agreement grants the Company a worldwide exclusive license to use specified patents and other intellectual property of Intrexon in connection with the research, development, use, importing, manufacture, sale, and offer for sale of monoclonal antibody therapies for the treatment of eight specific target infectious disease indications (the "Field"). Initially, the Company's development efforts will target three infectious diseases within the Field. Within the first two years of the collaboration, the Company has the right to exchange its initial three targets on a one-for-one basis with any of the other five targeted infectious diseases in the Field at no additional cost. The Company also has the option, within such two year period, to choose to develop any or all of the other five target diseases in the Field, upon payment of the additional consideration described below. Such license is exclusive with respect to any clinical development, selling, offering for sale or other commercialization of the Company's products within the Field ("Synthetic Products"), and otherwise is non-exclusive. The Company may not sublicense the rights described without Intrexon's written consent.

Under the Channel Agreement, and subject to certain exceptions, the Company is responsible for, among other things, the performance of the Program including the development, commercialization and manufacturing of products.

Subject to certain expense allocations and other offsets provided in the Channel Agreement, the Company will pay Intrexon royalties on annual net sales of the Synthetic Products, calculated on a Synthetic Product-by-Synthetic Product basis. The Company has likewise agreed to pay Intrexon a percentage of quarterly revenue obtained from a sublicensor in the event of a sublicensing arrangement. In addition, in partial consideration for each party's execution and delivery of the Channel Agreement, the Company entered into the Stock Issuance Agreement (as defined below) and the First Amendment to Registration Rights Agreement (as defined below). The Channel Agreement, Stock Issuance Agreement and First Amendment to Registration Rights Agreements shall collectively be referred as the "Agreements".

If any shareholder, exchange, board or member approvals of the issuance of the securities under the Stock Issuance Agreement is not received by 120 days after the effective date of the agreement, Intrexon has the right to terminate the Agreements. During the first 18 months, the Company may not terminate the Channel Agreement, except under limited circumstances. Following the first 18 months, the Company may voluntarily terminate the Channel Agreement upon 90 days written notice to Intrexon. Intrexon may also terminate the Channel Agreement if the Company elects not to pursue the development of a Program identified by Intrexon that is a "Superior Therapy" as defined in the Channel Agreement upon 60 days notice unless the Company remedies the circumstances giving rise to the termination during such notice period. Each party has the right to terminate the agreement upon 60 days notice if the other party commits a material breach of the Channel Agreement, subject to certain cure periods.

Upon termination of the Channel Agreement, the Company may continue to develop and commercialize any Synthetic Product that, at the time of termination satisfies one of the following:

- is being commercialized by the Company,

- has received regulatory approval,
- is a subject of an application for regulatory approval that is pending before the applicable regulatory authority,
- is a subject of at least a Phase 2 or Phase 3 clinical trial if such termination is by Intrexon due to a material breach by the Company of the Channel Agreement or by the Company upon 60 days notice after the first 18 months.

The Company's obligation to pay the royalties described above with respect to these "retained" products will survive termination of the Channel Agreement.

Stock Issuance Agreement and Registration Rights Agreement

On August 6, 2012, the Company entered into a Stock Issuance Agreement with Intrexon pursuant to which the Company has agreed to issue to Intrexon a number of shares of Company common stock equal to the difference between (i) 19.99% of the number of shares of Common Stock of Company outstanding as of the date of the closing prior to the issuance of such shares, and (ii) the number of shares of Common Stock of Company held by Intrexon immediately prior to the Closing (the "Technology Access Shares"), which issuance will be deemed paid in partial consideration for the execution and delivery of the Channel Agreement.

The Company has also agreed upon the filing of an Investigational New Drug application with the U.S. Food and Drug Administration for a Synthetic Product, or alternatively the filing of the first equivalent regulatory filing with a foreign regulatory agency (both as applicable, the "IND Milestone Event"), to pay Intrexon either (i) two million dollars ($2M) in cash, or (ii) that number of shares of Common Stock (the "IND Milestone Shares") having a fair market value equaling two million dollars ($2M) where such fair market value is determined using published market data of the share price for Common Stock at the close of market on the business day immediately preceding the date of public announcement of attainment of the IND Milestone Event.

The Company has also agreed upon the first to occur of either first commercial sale of a Synthetic Product in a country or the granting of the regulatory approval of that Synthetic Product (both as applicable, the "Approval Milestone Event"), to pay to Intrexon either (i) three million dollars ($3M) in cash, or (ii) that number of shares of Common Stock (the "Approval Milestone Shares") having a fair market value equaling three million dollars ($3M) where such fair market value is determined using published market data of the share price for Common Stock at the close of market on the business day immediately preceding the date of public announcement of attainment of the Approval Milestone Event.

The Company has also agreed that it will pay an optional and varying fee whereby the Company remits a payment, in cash or equity at the Company's sole discretion, to Intrexon calculated as a multiple of the number of targets in excess of three (3) total that the Company desires to elect (the "Field Expansion Fee"). The Field Expansion Fee must be paid completely in either Common Stock or cash, and will comprise either (i) two million dollars ($2M) in cash for each target in excess of three (3) total that the Company will elect, or (ii) that number of shares of Common Stock (the "Field Expansion Fee Shares") having a fair market value equaling two million dollars ($2M) for each such target that Company will elect in excess of three where such fair market value is determined using published market data establishing the volume-weighted average price for a share of Common Stock over the thirty (30) day period immediately preceding the date of the Field Expansion Fee Closing.

In connection with the transactions contemplated by the Stock Issuance Agreement, and pursuant to the First Amendment to Registration Rights Agreement executed and delivered by the parties at the closing, the Company agreed to file a "resale" registration statement (the "Registration Statement") registering the resale of the shares issued and to be issued under the Stock Issuance Agreement. None of the shares to be issued under the Stock Issuance Agreement need to be registered until April 30, 2013. Under that agreement, the Company will be obligated to use its reasonable best efforts to cause the "resale" registration statement to be declared effective as promptly as practicable after filing and to maintain the effectiveness of the registration statement until all securities therein are sold or are otherwise can be sold pursuant to Rule 144, without any restrictions.

The foregoing description of each of the Channel Agreement, the Stock Issuance Agreement and the First Amendment to Registration Rights Agreement is qualified in its entirety by reference to such agreements, which are filed as Exhibits 10.1, 10.2 and 10.3 to this Current Report, respectively, and are incorporated herein by reference. The benefits of the representations and warranties set forth in the Channel Agreement, the Stock Issuance Agreement and the First Amendment to Registration Rights Agreement are intended to be relied upon by the parties to such

agreements only and, except as otherwise expressly provided therein, do not constitute continuing representations and warranties to any other party or for any other purpose. The press release dated August 8, 2012 announcing the transactions described above is filed as Exhibit 99.1 to this Current Report on Form 8-K and incorporated herein by reference.

Item 3.02 Unregistered Sales of Equity Securities.

The disclosure in Item 1.01 is incorporated herein by reference thereto. The offer and issuance of the Technology Access Shares, IND Milestone Shares, Approval Milestone Shares and Field Expansion Fee Shares will not be registered under the Securities Act of 1933 at the time of issuance, and therefore may not be offered or sold in the United States absent registration or an applicable exemption from registration requirements. For these issuances, the Company intends to rely on the exemption from federal registration under Section 4(2) of the Securities Act, based on the Company's belief that the offer and sale of the Technology Access Shares, IND Milestone Shares, Approval Milestone Shares and Field Expansion Fee Shares has not and will not involve a public offering as Intrexon is an "accredited investor" as defined under Section 501 promulgated under the Securities Act and no general solicitation has been involved in the offering.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit No.	Description
10.1	Exclusive Channel Collaboration Agreement by and between Synthetic Biologics, Inc. and Intrexon Corporation dated as of August 6, 2012 **
10.2	Stock Issuance Agreement by and between Synthetic Biologics, Inc. and Intrexon Corporation dated as of August 6, 2012
10.3	First Amendment to Registration Rights Agreement by and between Synthetic Biologics, Inc. and Intrexon Corporation dated as of August 6, 2012
99.1	Press Release dated August 8, 2012

** Confidential treatment has been requested as to certain portions of this exhibit pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Dated: August 9, 2012

SYNTHETIC BIOLOGICS, INC.
(Registrant)

By: /s/ Jeffrey Riley
Name: Jeffrey Riley
Title: President and Chief Executive Officer

INDEX OF EXHIBITS

Exhibit No.	Description
10.1	Exclusive Channel Collaboration Agreement by and between Synthetic Biologics, Inc. and Intrexon Corporation dated as of August 6, 2012 **
10.2	Stock Issuance Agreement by and between Synthetic Biologics, Inc. and Intrexon Corporation dated as of August 6, 2012
10.3	First Amendment to Registration Rights Agreement by and between Synthetic Biologics, Inc. and Intrexon Corporation dated as of August 6, 2012
99.1	Press Release dated August 8, 2012

** Confidential treatment has been requested as to certain portions of this exhibit pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

Exclusive Channel Collaboration Agreement

This Exclusive Channel Collaboration Agreement (the "**Agreement**") is made and entered into effective as of August 6, 2012 (the "**Effective Date**") by and between **Intrexon Corporation**, a Virginia corporation with offices at 20358 Seneca Meadows Parkway, Germantown, MD 20876 ("**Intrexon**"), and **Synthetic Biologics, Inc.,** a Nevada corporation having its principal place of business at 617 Detroit Street, Suite 100, Ann Arbor, MI 48104 ("**Synthetic**"). Intrexon and Synthetic may be referred to herein individually as a "**Party**", and collectively as the "**Parties**."

Recitals

Whereas, Intrexon has expertise in and owns or controls proprietary technology relating to the identification, design and production of human antibodies and DNA vectors; and

Whereas, Synthetic now desires to become Intrexon's exclusive channel collaborator with respect to such technology for the purpose of developing the Anti-Infectives Program (as defined herein), and Intrexon is willing to appoint Synthetic as a channel collaborator in the Field (as defined herein, and subject to amendments to the definition as permitted herein) under the terms and conditions of this Agreement.

Now Therefore, in consideration of the foregoing and the covenants and promises contained herein, the Parties agree as follows:

ARTICLE 1

Definitions

As used in this Agreement, the following capitalized terms shall have the following meanings:

1.1 "**Affiliate**" means, with respect to a particular Party, any other person or entity that directly or indirectly controls, is controlled by, or is in common control with such Party. As used in this Section 1.1, the term "controls" (with correlative meanings for the terms "controlled by" and "under common control with") means the ownership, directly or indirectly, of more than fifty percent (50%) of the voting securities or other ownership interest of an entity, or the possession, directly or indirectly, of the power to direct the management or policies of an entity, whether through the ownership of voting securities, by contract, or otherwise. Notwithstanding the foregoing, any person, corporation, partnership, or other entity that would be an Affiliate of a Party solely because it and such Party are under common control by Third Security or Randal J. Kirk shall not be deemed to be an Affiliate of such Party solely by reason of such common control, with the caveat that, notwithstanding the foregoing, any entity other than Synthetic affiliated with Third Security or Randal J. Kirk shall be deemed to be an Affiliate of Intrexon solely for purposes of Article 9.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

1.2 "**Applicable Laws**" has the meaning set forth in Section 8.2(d)(xii).

1.3 **"Anti-Infectives Program**" has the meaning set forth in Section 2.1(a).

1.4 "**Authorizations**" has the meaning set forth in Section 8.2(d)(xii).

1.5 "**CC**" has the meaning set forth in Section 2.2(b).

1.6 "**Channel-Related Program IP**" has the meaning set forth in Section 6.1(c).

1.7 "**Claims**" has the meaning set forth in Section 9.1.

1.8 "**CMCC**" has the meaning set forth in Section 2.2(b).

1.9 "**Committees**" has the meaning set forth in Section 2.2(a).

1.10 "**Commercialize**" or "**Commercialization**" means any activities directed to marketing, promoting, distributing, importing for sale, offering to sell and/or selling Synthetic Products.

1.11 "**Commercial Sale**" means for a given product and country the sale for value of that product by a Party (or, as the case may be, by an Affiliate or permitted sublicensee of a Party), to a Third Party after regulatory approval (and any pricing or reimbursement approvals, if necessary) has been obtained for such product in such country.

1.12 **"Complementary In-Licensed Third Party IP**" has the meaning set forth in Section 3.9(a).

1.13 "**Confidential Information**" means each Party's confidential Information, inventions, non-public know-how or non-public data disclosed pursuant to this Agreement or any other confidentiality agreement between the Parties and shall include, without limitation, manufacturing, technical, marketing, financial, personnel and other business information and plans, whether in oral, written, graphic or electronic form.

1.14 "**Control**" means, with respect to Information, a Patent or other intellectual property right, that a Party owns or has a license from a Third Party to such right and has the ability to grant a license or sublicense as provided for in this Agreement under such right without violating the terms of any agreement or other arrangement with any Third Party.

1.15 "**CRC**" has the meaning set forth in Section 2.2(b).

1.16 "**Diligent Efforts**" means, with respect to a Party's obligation under this Agreement, the level of efforts and resources reasonably required to diligently develop, manufacture, and/or Commercialize (as applicable) each Synthetic Product in a sustained manner, consistent with the efforts and resources a similarly situated company working in the Field would typically devote to a product of similar market potential, profit potential, strategic value and/or proprietary protection, based on market conditions then prevailing. With respect to a particular task or obligation, Diligent Efforts requires that the applicable Party promptly assign responsibility for such task and consistently make and implement decisions and allocate resources designed to advance progress with respect to such task or obligation.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

1.17 "**Equity Agreements**" has the meaning set forth in Section 5.1.

1.18 "**Excess Product Liability Costs**" has the meaning set forth in Section 9.3.

1.19 "**Executive Officer**" means : (i) the Chief Executive Officer of the applicable Party, or (ii) another senior executive officer of such Party who has been duly appointed by the Chief Executive Officer to act as the representative of the Party to resolve, as the case may be, (a) a Committee dispute, provided that such appointed officer is not a member of the applicable Committee and occupies a position senior to the positions occupied by the applicable Party's members of the applicable Committee, or (b) a dispute described in Section 11.1.

1.20 "**FDA**" has the meaning set forth in Section 8.2(d)(xiii).

1.21 "**Field Infringement**" has the meaning set forth in Section 6.3(b)

1.22 "**Field**" means the exogenous production and use of human recombinant monoclonal antibodies, and mixes thereof, for the treatment of the following eight (8) target toxins and/or diseases in humans (irespective of whether such requires regulatory approval) : [*****]. The Field as defined in the previous sentence is subject to amendment according to the mechanisms described in Sections 2.1(b), 2.1(c) and 2.1(d) of this Agreement. Unless context or usage for a particular reference herein to Field dictates otherwise, each particular reference to Field in this Agreement should be interpreted as meaning the definition of the Field that is in effect at the particular point in time that is relevant to that particular reference.

1.23 "**Fully Loaded Cost**" means the direct cost of the applicable good, product or service plus indirect charges and overheads reasonably allocable to the provision of such good, product or service in accordance with US GAAP. Subject to the approval of a project and its associated budget by the JSC and the terms of Sections 4.6 and 4.7 (as

appropriate), Intrexon will bill for its internal direct costs incurred through the use of annualized standard full-time equivalents; such rate shall be based upon the actual fully loaded costs of those personnel directly involved in the provision of such good, product or service. Intrexon may, from time to time, adjust such full-time equivalent rate based on changes to its actual fully loaded costs and will review the accuracy of its full-time equivalent rate at least quarterly. Intrexon shall provide Synthetic with reasonable documentation indicating the basis for any direct and indirect charges, any allocable overhead, and any such adjustment in full-time equivalent rate.

1.24 "**In-Licensed Program IP**" has the meaning set forth in Section 3.9(a).

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

1.25 "**Information**" means information, results and data of any type whatsoever, in any tangible or intangible form whatsoever, including without limitation, databases, inventions, practices, methods, techniques, specifications, formulations, formulae, knowledge, know-how, skill, experience, test data including pharmacological, biological, chemical, biochemical, toxicological and clinical test data, analytical and quality control data, stability data, studies and procedures, and patent and other legal information or descriptions.

1.26 "**Infringement**" has the meaning set forth in Section 6.3(a).

1.27 "**Intrexon Channel Technology**" means Intrexon's current and future technology directed towards the design, identification, and/or production of recombinant monoclonal antibodies, including without limitation the technology embodied in the Intrexon Materials and the Intrexon IP, and specifically including without limitation the following of Intrexon's platform areas and capabilities: (1) UltraVector®, (2) mAbLogix™ (3) DNA and RNA MOD engineering, (4) protein engineering, (5) transcription control chemistry, (6) genome engineering, (7) LEAP™, and (8) cell system engineering.

1.28 "**Intrexon Indemnitees**" has the meaning set forth in Section 9.2.

1.29 "**Intrexon IP**" means the Intrexon Patents and Intrexon Know-How.

1.30 "**Intrexon Know-How**" means all Information (other than Intrexon Patents) that (a) is Controlled by Intrexon as of the Effective Date or during the Term and (b) is reasonably required or useful for Synthetic to conduct the Anti-Infectives Program. For the avoidance of doubt, the Intrexon Know-How shall include any Information (other than Intrexon Patents) in the Channel-Related Program IP.

1.31 "**Intrexon Materials**" means the genetic code and associated amino acids and gene constructs used alone or in combination and such other proprietary reagents including but not limited to plasmid vectors, virus stocks, cells and cell lines, antibodies, and ligand-related chemistry, in each case that are reasonably required or provided to Synthetic to conduct the Anti-Infectives Program.

1.32 "**Intrexon Patents**" means all Patents that (a) are Controlled by Intrexon as of the Effective Date or during the Term; and (b) are reasonably required or useful for Synthetic to conduct the Anti-Infectives Program. For the avoidance of doubt, the Intrexon Patents shall include any Patent in the Channel-Related Program IP.

1.33 "**Intrexon Trademarks**" means those trademarks related to the Intrexon Channel Technology that are established from time to time by Intrexon for use across its channel partnerships or collaborations.

1.34 "**Inventions**" has the meaning set forth in Section 6.1(b).

1.35 "**IPC**" has the meaning set forth in Section 2.2(b).

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

1.36 "**JSC**" has the meaning set forth in Section 2.2(b).

1.37 "**Losses**" has the meaning set forth in Section 9.1.

1.38 "**Net Sales**" means, with respect to any Synthetic Product, the net sales of such Synthetic Product by Synthetic or an Affiliate of Synthetic (including without limitation net sales of Synthetic Product to a non-Affiliate sublicensee but not including net sales by such non-Affiliate sublicensee), as determined in accordance with US GAAP as the gross amount invoiced on account of sales of Synthetic Product less the usual and customary discounts as determined in accordance with US GAAP. In the case of any sale for value, such as barter or counter-trade other than in an arm's length transaction exclusively for cash, Net Sales shall be deemed to be the net sales at which substantially similar quantities of the product are sold for cash in an arm's length transaction in the relevant country. If Synthetic Product is sold to any third party together with other products or services, the price of such product, solely for purposes of the calculation of Net Sales, shall be deemed to be no less than the price at which such product would be sold in a similar transaction to a third party not also purchasing the other products or services.

1.39 "**Patents**" means (a) all patents and patent applications (including provisional applications), (b) any substitutions, divisions, continuations, continuations-in-part, reissues, renewals, registrations, requests for continued examination, confirmations, re-examinations, extensions, supplementary protection certificates and the like of the foregoing, and (c) any foreign or international equivalents of any of the foregoing.

1.40 "**Primary Program Targets**" has the meaning as set forth in Section 2.1(b).

1.41 "**Product-Specific Program Patent**" means any issued Intrexon Patent where all the claims are directed to Inventions that relate solely and specifically to Synthetic Products. In the event of a disagreement between the Parties as to whether a particular Intrexon Patent is or is not a Product-Specific Program Patent, the Parties shall seek to resolve the issue through discussions at the IPC, provided that if the Parties are unable to resolve the disagreement, the issue shall be submitted to arbitration pursuant to Section 11.2. Any Intrexon Patent that is subject to such a

dispute shall be deemed not to be a Product-Specific Program Patent unless and until (a) Intrexon agrees in writing that such Patent is a Product-Specific Program Patent or (b) an arbitrator or arbitration panel determines, pursuant to Article 11, that such Intrexon Patent is a Product-Specific Program Patent.

1.42 "**Proposed Terms**" has the meaning set forth in Section 11.2.

1.43 "**Prosecuting Party**" has the meaning set forth in Section 6.2(c).

1.44 "**Recovery**" has the meaning set forth in Section 6.3(f).

1.45 "**Retained Product**" has the meaning set forth in Section 10.4(a).

1.46 "**Reverted Product**" has the meaning set forth in Section 10.4(c).

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

1.47 "**SEC**" means the United States Securities and Exchange Commission.

1.48 "**Sublicensing Revenue**" means any cash consideration, or the cash equivalent value of non-cash consideration, regardless of whether in the form of upfront payments, milestones, or royalties, actually received by Synthetic or its Affiliate from a Third Party in consideration for a grant of a sublicense under the Intrexon IP or any rights to develop or commercialize Synthetic Products, but excluding: (a) any amounts paid as bona fide reimbursement for research and development costs to the extent incurred following such grant; (b) bona fide loans or any payments in consideration for a grant of equity of Synthetic to the extent that such consideration is equal to or less than fair market value (i.e. any amounts in excess of fair market value shall be Sublicensing Revenue); and (d) amounts received from sublicensees in respect of any Synthetic Product sales that are included in Net Sales.

1.49 "**Superior Therapy**" means a therapy in the Field that, based on the data then available, (a) demonstrably appears to offer either superior efficacy or safety or significantly lower cost of therapy, as compared with both (i) those therapies that are marketed (either by Synthetic or others) at such time for the indication and (ii) those therapies that are being actively developed by Synthetic for such indication; (b) demonstrably appears to represent a substantial improvement over such existing therapies; and (c) has intellectual property protection and a regulatory approval pathway that, in each case, would not present a significant barrier to commercial development.

1.50 "**Supplemental In-Licensed Third Party IP**" has the meaning set forth in Section 3.8(a).

1.51 "**Support Memorandum**" has the meaning set forth in Section 11.2.

1.52 "**Synthetic Indemnitees**" has the meaning set forth in Section 9.1.

1.53 "**Synthetic Product**" means any product in the Field that is created, produced, developed, or identified in whole or in part, directly or indirectly, by or on behalf of Synthetic during the Term through use or practice of Intrexon Channel Technology, Intrexon IP, or the Intrexon Materials.

1.54 "**Synthetic Program Patent**" has the meaning set forth in Section 6.2(b).

1.55 "**Synthetic Termination IP**" means all Patents or other intellectual property that Synthetic or any of its Affiliates Controls as of the Effective Date or during the Term that cover, or is otherwise necessary or useful for, the development, manufacture or commercialization of a Reverted Product or necessary or useful for Intrexon to operate in the Field.

1.56 "**Term**" has the meaning set forth in Section 10.1.

1.57 "**Territory**" means the entire world.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

1.58 **"Third Party**" means any individual or entity other than the Parties or their respective Affiliates.

1.59 "**Third Security**" means Third Security, LLC.

1.60 "**US GAAP**" means generally accepted accounting principles in the United States.

ARTICLE 2

Scope of Channel Collaboration; Management

2.1 **Scope.**

(a) **Generally**. The general purpose of the channel collaboration described in this Agreement will be to use the Intrexon Channel Technology to research, develop and commercialize products for use in the Field (collectively, the "**Anti-Infectives Program**"). As provided below, the JSC shall establish, monitor, and govern projects for the Anti-Infectives Program. Either Party may propose potential projects in the Field for review and consideration by the JSC.

(b) **Initial Project for Immediate Commencement**. The Parties as of the Effective Date have identified three specific targets in the Field as being desirable projects for immediate development under the Anti-Infectives Program (the "**Primary Program Targets**"), and the JSC will be directed upon its creation to produce, and thereafter initiate performance of, an initial research project for the production of Synthetic Products for each of the Primary Program Targets. The Primary Program Targets are : [*****]. Synthetic will review data derived from these research projects for the Primary Program Targets via the JSC and will use such to consider the scientific and commercial viability of the Primary Program Targets. The JSC, consistent with its authority herein and subject to Synthetic's

agreement to reimburse Intrexon for expenses relating thereto in accord with Section 4.7 below, may also authorize additional research projects for any of the five (5) other targets in the Field that are not Primary Program Targets. Such additional research projects may be authorized by the JSC prior to Synthetic making its election in accord with Section 2.1(c) below. Further, at any time prior to the two-year anniversary of the Effective Date and prior to the election by Synthetic under Section 2.1(c), Synthetic at its sole discretion may suspend the initial research project for one or more of the Primary Program Targets, and swap for such, on a one-for-one basis, any of the five (5) other targets in the Field that are not Primary Program Targets. In the event that Synthetic swaps out a Primary Program Target as set forth in the previous sentence, or in the event that Synthetic otherwise suspends or terminates the initial research project for a Primary Program Target prior to making its election under Section 2.1(c), the definition of Field under Section 1.21 above will be automatically amended such that the suspended, terminated, or swapped-out Primary Program Target will be removed automatically, immediately and irrevocably from the Field, and thereby all obligations and rights

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

of the Parties as set forth herein which are defined at least in part by or in conjunction with the Field will likewise be immediately amended as such from that time forward. In the event that Synthetic swaps out a Primary Program Target as set forth in the previous sentence, the Primary Program Targets will be automatically amended such that any swapped-out Primary Program Target is removed and replaced with the other target in the Field chosen to be swapped-in by Synthetic, and thereby all obligations and rights of the Parties as set forth herein which are defined at least in part by or in conjunction with the Primary Program Targets will likewise be immediately amended as such from that time forward. Any Synthetic Products corresponding to these suspended, terminated, or swapped-out Primary Program Targets will be treated as Reverted Products in accord with Section 10.4.

(c) Field Election. On or before the two-year anniversary of the Effective Date, Synthetic must notify Intrexon in writing of Synthetic's final and binding election, which election identifies up to three (3) target toxins or diseases in the Field (as the Field is defined at the point in time of the notification, taking into account any amendments to its definition caused by operation of Section 2.1(b)). Such election must reference this Section 2.1(c), will be effective immediately upon receipt by Intrexon, and will cause the definition of Field under this agreement to be amended immediately and permanently such that the Field from that time forward shall include only those three (3) elected toxins or diseases (and not any of the toxins or diseases not elected). All rights and obligations of the Parties under this Agreement within and without the Field will be permanently altered accordingly from the date of receipt of that election forward for the remaining Term. For any of the target toxins or diseases in the Field that are not elected by Synthetic under this Section 2.1(c), Synthetic (i) shall immediately cease, and shall cause its Affiliates and, if applicable, (sub)licensees to immediately cease, all development and Commercialization of Synthetic Products pertaining thereto; (ii), shall not use or practice, nor shall it cause or permit any of its Affiliates or, if applicable, (sub)licensees to use or practice, directly or indirectly, any Intrexon IP with respect to such; and (iii) shall return to Intrexon, or destroy all copies thereto at Intrexon's option, all data and materials relating to such not-elected indications. Any Synthetic Products corresponding to these not-elected indications will be treated as Reverted Products in accord with Section 10.4.

(d) Effect of No Election. In the event that Synthetic does not communicate an election to Intrexon under Section 2.1(c) on or before the two-year anniversary of the Effective Date, the definition of Field will be amended automatically, immediately and permanently such that on the day after the two-year anniversary of the Effective Date the Field shall include only the Primary Program Targets and not any of the other target toxins or diseases that are not Primary Program Targets. All rights and obligations of the Parties under this Agreement which are defined at least in part by or in conjunction with the Field will thereby be permanently altered accordingly for the remaining Term from that time forward.

(e) Option to Expand Field Election. Synthetic, at its sole option, may expand its election rights under Section 2.1(c) to enable it to elect up to five (5) additional indications from the list of items (a) through (h) in Section 1.21 if : (i) prior to or concurrent with making an election under Section 2.1(c) Synthetic notifies Intrexon in writing of its intent to expand its election rights in accord with this Section 2.1(e), and (ii) Synthetic remits a payment, in cash or equity at Synthetic's sole discretion, to Intrexon

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

of two million dollars ($2M) for each target in excess of three (3) that it desires to elect under Section 2.1(c). Any payment under this section made by Synthetic in equity must be made in compliance with the terms of the Equity Agreements. Any expansion of Synthetic's election rights under Section 2.1(c) hereunder shall not be effective until the appropriate payment required under this Section 2.1(e) is received by Intrexon, and cannot be used to enable Synthetic to elect any targets that were already permanently removed from the Field under Section 2.1(b). Upon successful execution of the option to expand under this Section 2.1(e), all rights and obligations of the Parties under this Agreement within and without the Field will be permanently altered accordingly from the date of receipt of that option forward for the remaining Term.

2.2 Committees.

(a) Generally. The Parties desire to establish several committees (collectively, "**Committees**") to oversee the Anti-Infectives Program and to facilitate communications between the Parties with respect thereto. Each of such Committees shall have the responsibilities and authority allocated to it in this Article 2. Each of the Committees shall have the obligation to exercise its authority consistent with the respective purpose for such Committee as stated herein and any such decisions shall be made in good faith.

(b) Formation and Purpose. Promptly following the Effective Date, the Parties shall confer and then create the Committees listed in the chart below, each of which shall have the purpose indicated in the chart. To the extent that after conferring both Parties agree that a given Committee need not be created until a later date, the Parties may agree to defer the creation of the Committee until one Party informs the other Party of its then desire to create the so-deferred Committee, at which point the Parties will thereafter promptly create the so-deferred Committee and schedule a meeting of such Committee within one (1) month.

Committee	Purpose
Joint Steering Committee ("**JSC**")	Establish projects for the Anti-Infectives Program and establish the priorities, as well as approve budgets for such projects. Approve all subcommittee projects and plans. The JSC shall establish budgets not less than on a quarterly basis.

Chemistry, Manufacturing and Controls Committee ("**CMCC**")	Establish project plans and review and approve activities and budgets for chemistry, manufacturing, and controls under the Anti-Infectives Program.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

Committee	Purpose
Clinical/Regulatory Committee ("**CRC**")	Review and approve all research and development plans, clinical projects and publications, and regulatory filings and correspondence under the Anti-Infectives Program; review and approve itemized budgets with respect to the foregoing.
Commercialization Committee ("**CC**")	Establish project plans and review and approve activities and budgets for commercialization activities under the Anti-Infectives Program.
Intellectual Property Committee ("**IPC**")	Evaluate intellectual property issues in connection with the Anti-Infectives Program; review and approve itemized budgets with respect to the foregoing.

2.3 General Committee Membership and Procedure.

(a) Membership. For each Committee, each Party shall designate an equal number of representatives (not to exceed four (4) for each Party) with appropriate expertise to serve as members of such Committee. For the JSC the representatives must all be employees of such Party or an Affiliate of such Party, and for Committees other than the JSC the representatives must all be employees of such Party or an Affiliate of such Party with the caveat that each Party may designate for each such other Committee up to one (1) representative who is not an employee if : (i) such non-employee representative agrees in writing to be bound to the terms of this Agreement for the treatment and ownership of Confidential Information and Inventions of the Parties, and (ii) the other Party consents to the designation of such non-employee representative, which consent shall not be unreasonably withheld. Each representative as qualified above may serve on more than one Committee as appropriate in view of the individual's expertise. Each Party may replace its Committee representatives at any time upon written notice to the other Party. Each Committee shall have a chairperson; the chairperson of each committee shall serve for a two-year term and the right to designate which representative to the Committee will act as chairperson shall alternate between the Parties, with Synthetic selecting the chairperson first for the JSC, CRC and CC, and Intrexon selecting the chairperson first for the CMCC and IPC. The chairperson of each Committee shall be responsible for calling meetings, preparing and circulating an agenda in advance of each meeting of such Committee, and preparing and issuing minutes of each meeting within fifteen (15) days thereafter.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(b) **Meetings**. Each Committee shall hold meetings at such times as it elects to do so, but in no event shall such meetings be held less frequently than once every six (6) months, with the caveat that both Parties may agree to suspend activities of a given Committee other than the JSC until such time as one Party informs the other Party of its then desire to reactivate the so-suspended Committee, at which point the Parties will thereafter schedule and hold the next meeting for the reactivated Committee within one (1) month. Meetings of any Committee may be held in person or by means of telecommunication (telephone, video, or web conferences). To the extent that a Committee holds any meetings in person, the Parties will alternate in designating the location for such in-person meetings, with Synthetic selecting the first meeting location for each Committee. A reasonable number of additional representatives of a Party may attend meetings of a Committee in a non-voting capacity. Each Party shall be responsible for all of its own expenses of participating in any Committee excepting that an Intrexon employee or agent serving on a Committee shall not prevent Intrexon from recouping the Fully Loaded Costs otherwise derived from the labor of that employee or agent in the course of providing manufacturing or support services as set forth in Sections 4.6 and 4.7 below.

(c) **Meeting Agendas**. Each Party will disclose to the other proposed agenda items along with appropriate information at least three (3) business days in advance of each meeting of the applicable Committee; provided, that a Party may provide its agenda items to the other Party within a lesser period of time in advance of the meeting, or may propose that there not be a specific agenda for a particular meeting, so long as such other Party consents to such later addition of such agenda items or the absence of a specific agenda for such Committee meeting..

(d) **Limitations of Committee Powers**. Each Committee shall have only such powers as are specifically delegated to it hereunder or from time to time as agreed to in writing by the mutual consent of the Parties and shall not be a substitute for the rights of the Parties. Without limiting the generality of the foregoing, no Committee shall have any power to amend this Agreement. Any amendment to the terms and conditions of this Agreement shall be implemented pursuant to Section 12.7 below.

2.4 **Committee Decision-Making**. If a Committee is unable to reach unanimous consent on a particular matter within thirty (30) days of its initial consideration of such matter, then either Party may provide written notice of such dispute to the Executive Officer of the other Party. The Executive Officers of each of the Parties will meet at least once in person or by means of telecommunication (telephone, video, or web conferences) to discuss the dispute and use their good faith efforts to resolve the dispute within thirty (30) days after submission of such dispute to the Executive Officers. If any such dispute is not resolved by the Executive Officers within thirty (30) days after

submission of such dispute to such officers, then the Executive Officer of the Party specified in the applicable subsection below shall have the authority to finally resolve such dispute acting in good faith.

(a) Casting Vote at JSC. If a dispute at the JSC is not resolved pursuant to Section 2.4 above, then the Executive Officer of Synthetic shall have the authority to finally resolve such dispute.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(b) Casting Vote at CMCC. If a dispute at the CMCC is not resolved pursuant to Section 2.4 above, then (i) in the case of any disputes relating to the Intrexon Materials or controls regarding the dissemination of Intrexon IP or Intrexon Materials, the Executive Officer of Intrexon shall have the authority to finally resolve such dispute; and (ii) in the case of any other disputes, including the manufacture of a Synthetic Product active pharmaceutical ingredient, the Executive Officer of Synthetic shall have the authority to finally resolve such dispute.

(c) Casting Vote at CRC. If a dispute at the CRC is not resolved pursuant to Section 2.4 above, then the Executive Officer of Synthetic shall have the authority to finally resolve such dispute.

(d) Casting Vote at CC. If a dispute at the CC is not resolved pursuant to Section 2.4 above, then the Executive Officer of Synthetic shall have the authority to finally resolve such dispute.

(e) Casting Vote at IPC. If a dispute at the IPC is not resolved pursuant to Section 2.4 above, then the Executive Officer of Intrexon shall have the authority to finally resolve such dispute, provided that such authority shall be shared by the Parties with respect to Product-Specific Program Patents (i.e., neither Party shall have the casting vote on such matters, and any such disputes shall be resolved pursuant to Article 11).

(f) Other Committees. If any additional Committee other than those set forth in Section 2.2(b) is formed, then the Parties shall, at the time of such formation, agree on which Party shall have the authority to finally resolve a dispute that is not resolved pursuant to Section 2.4 above.

(g) Restrictions. Neither Party shall exercise its right to finally resolve a dispute at a Committee in accordance with this Section 2.4 in a manner that (i) excuses such Party from any of its obligations specifically enumerated under this Agreement; (ii) expands the obligations of the other Party under this Agreement; (iii) negates any consent rights or other rights specifically allocated to the other Party under this Agreement; (iv) purports to resolve any dispute involving the breach or alleged breach of this Agreement; (v) resolves a matter if the provisions of this Agreement specify that mutual agreement is required for such matter; or (vi) would require the other Party to

perform any act that is inconsistent with applicable law.

ARTICLE 3

License Grants

3.1 Licenses to Synthetic.

(a) Subject to the terms and conditions of this Agreement, Intrexon hereby grants to Synthetic a license under the Intrexon IP to research, develop, use, import, export, make, have made, sell, and offer for sale Synthetic Products in the Field in the Territory. Such license shall be exclusive (even as to Intrexon) with respect to any clinical development, selling, offering for sale or other Commercialization of Synthetic Products in the Field, and shall be otherwise non-exclusive.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(b) Subject to the terms and conditions of this Agreement, Intrexon hereby grants to Synthetic a non-exclusive, royalty-free license to use and display the Intrexon Trademarks, solely in connection with the Commercialization of Synthetic Products, in the promotional materials, packaging, and labeling for Synthetic Products, as provided under and in accordance with Section 4.9.

(c) For purposes of clarity, the licenses from Intrexon to Synthetic under Sections 3.1(a) and 3.1(b) will automatically change in conjunction with any amendments to the definition of Field in accord with Sections 2.1(c) through 2.1(e).

3.2 Sublicensing. Except as provided below, Synthetic shall not sublicense the rights granted under Section 3.1 to any Third Party, or transfer the Intrexon Materials to any Third Party, or otherwise grant any Third Party the right to research, develop, use, or Commercialize Synthetic Products or use or display the Intrexon Trademarks, in each case except with Intrexon's written consent, which written consent may be withheld in Intrexon's sole discretion. Notwithstanding the foregoing, Synthetic shall have a limited right to sublicense under the circumstances described in Sections 3.2(a) and 3.2(b).

(a) Synthetic may transfer, to the extent reasonably necessary, Intrexon Materials that are or express active pharmaceutical ingredients to a Third Party contractor performing contract manufacturing, fill, and/or finish responsibilities for Synthetic Products, and may in connection therewith grant limited sublicenses necessary to enable such Third Party to perform such activities. If Synthetic transfers any Intrexon Materials under this Section 3.2(a), Synthetic will remain obligated to ensure that the rights of Intrexon in and to the Intrexon Materials and Intrexon IP and under the provisions of Articles 6 and 7 of this Agreement are not violated by any such Third Party contractor.

(b) Synthetic may, with Intrexon's written consent, which consent cannot be unreasonably withheld, sublicense the rights granted under Section 3.1 to an Affiliate, or transfer the Intrexon Materials to an Affiliate, or grant an Affiliate the right to research, develop, use, or Commercialize Synthetic Products or use or display the Intrexon Trademarks. In the event that Intrexon consents to any such grant or transfer to an Affiliate, Synthetic shall remain responsible for, and be guarantor of, the performance by any such Affiliate and shall cause such Affiliate to comply with the provisions of this Agreement in connection with such performance (as though such Affiliate were

Synthetic), including any payment obligations owed to Intrexon hereunder.

3.3 Limitation on Sublicensees. None of the enforcement rights under the Intrexon Patents that are granted to Synthetic pursuant to Section 6.3 shall be transferred to, or exercised by, a sublicensee except with Intrexon's prior written consent, which may be withheld in Intrexon's sole discretion.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

3.4 **No Non-Permitted Use**. Synthetic hereby covenants that it shall not, nor shall it permit any Affiliate or, if applicable, (sub)licensee, to use or practice, directly or indirectly, any Intrexon IP, Intrexon Channel Technology, or Intrexon Materials for any purposes other than those expressly permitted by this Agreement.

3.5 **Exclusivity**. Intrexon and Synthetic mutually agree that, under the channel collaboration established by this Agreement, it is intended that the Parties will be exclusive to each other in the Field. To this end, neither Intrexon nor its Affiliates shall make the Intrexon Channel Technology or Intrexon Materials available to any Third Party for the purpose of developing or Commercializing products in the Field (except as set forth in Section 3.2), and neither Intrexon nor any Affiliate shall pursue (either by itself or with a Third Party or Affiliate) the research, development or Commercialization of any product for purpose of sale in the Field, outside of the Anti-Infectives Program. Further, other than Synthetic's activities within the Anti-Infectives Program, neither Synthetic nor its Affiliates shall pursue (either by itself or with a Third Party or Affiliate) the research, development or Commercialization of any product for purpose of sale in the Field.

3.6 **Off Label Use**. For purpose of clarity, (a) following the Commercial Sale of a Synthetic Product, the use by direct or indirect purchasers or other users of Synthetic Products outside the Field (i.e. "off label use") shall not constitute a breach by Synthetic of the terms of Section 3.3, 3.4 or 3.5, provided that neither Synthetic nor its Affiliate (nor any Third Party under contract with either of them) marketed or promoted Synthetic Products for such off-label use; and (b) following the Commercial Sale of a product by Intrexon, an Intrexon Affiliate, or a Third Party sublicensee, collaborator, or partner of Intrexon, the use by direct or indirect purchasers or other users of such products in the Field (i.e. "off label use") shall not constitute a breach by Intrexon of the terms of Section 3.5, provided that neither Intrexon nor its Affiliate (nor any Third Party under contract with either of them) marketed or promoted such products for such off-label use.

3.7 **No Prohibition on Intrexon**. Except as explicitly set forth in Sections 3.1 and 3.5, nothing in this Agreement shall prevent Intrexon from practicing or using the Intrexon Materials, Intrexon Channel Technology, and Intrexon IP for any purpose, and to grant to Third Parties the right to do the same. Without limiting the generality of the foregoing, Synthetic acknowledges that Intrexon has all rights, in Intrexon's sole discretion, to make the Intrexon Materials, Intrexon Channel Technology (including any active pharmaceutical ingredient used in a Synthetic Product), and Intrexon IP available to Third Party channel partners or collaborators for use in fields outside the Field.

14

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

3.8 Rights to Clinical and Regulatory Data. Synthetic shall own and control all clinical data and regulatory filings relating to Commercialization of Synthetic Products during the Term. Synthetic shall provide at Intrexon's request full copies of all clinical and non-clinical data and reports, regulatory filings, and communications from regulatory authorities that relate specifically and solely to Synthetic Products. To the extent that there exist any clinical and non-clinical data and reports, regulatory filings, and communications from regulatory authorities owned by Synthetic that relate both to Synthetic Products and other products produced by Synthetic outside the Field, Synthetic shall provide to Intrexon upon Intrexon's request copies of the portions of such data, reports, filings, and communications that relate to Synthetic Products. Subject to its ongoing obligations of exclusivity under Section 3.5 and regarding off label use under 3.6, Intrexon shall be permitted, directly or in conjunction with or through partners or other channel collaborators, to reference this data, reports, filings, and communications relating to Synthetic Products in regulatory filings made to obtain regulatory approval for products indicated for use in fields outside the Field. Intrexon shall have the right to use any such information in developing and Commercializing products outside the Field and to license any Third Parties to do so. Notwithstanding the provisions of this Section 3.8, Intrexon shall not, outside of the Anti-Infectives Program, utilize knowingly any Synthetic clinical and non-clinical data or reports in support of obtaining regulatory approval for a product for use in the Field.

3.9 Third Party Licenses.

(a) [*****]shall obtain, [*****], any licenses from Third Parties that are required in order to practice the Intrexon Channel Technology in the Field where the licensed intellectual property is reasonably necessary for Intrexon to identify and characterize human antibodies (but specifically excluding intellectual property directed to any processes or methods for expressing monoclonal antibodies from cloned cells or methods of treating humans with antibodies for purposes of therapy) ("**Supplemental In-Licensed Third Party IP**"). Other than with respect to Supplemental In-Licensed Third Party IP, [*****] shall be solely responsible for obtaining, [*****], any licenses from Third Parties that [*****] determines, in its sole discretion, are required in order to lawfully make, use, sell, offer for sale, or import Synthetic Products ("**Complementary In-Licensed Third Party IP**"). Supplemental In-Licensed Third Party IP and Complementary In-Licensed Third Party IP are collectively referred to as "**In-Licensed Program IP**".

(b) In the event that either Party desires to license from a Third Party any Supplemental In-Licensed Third Party IP or Complementary In-Licensed Third Party IP, such Party shall so notify the other Party, and the IPC shall

discuss such In-Licensed Program IP and its applicability to the Synthetic Products and to the Field. As provided above in Section 3.9(a), [*****] shall have the sole right and responsibility to pursue a license under Supplemental In-Licensed Third Party IP, and [*****] hereby covenants that it shall not itself directly license such Supplemental In-Licensed Third Party IP at any time, provided that [*****] may (but shall not be obligated to) obtain such a license directly if the Third Party owner or licensee of such Supplemental In-Licensed Third Party IP brings an infringement action against [*****] or its Affiliates and, after written notice to [*****] of such action, [*****] fails to obtain a license to such Supplemental In-Licensed Third Party IP using Diligent Efforts within ninety (90) days after such notice. Following the IPC's discussion of any Complementary In-Licensed Third Party IP, subject to Section 3.8(c), [*****] shall have the right to pursue a license under Complementary In-Licensed Third Party IP, [*****]. For the avoidance of doubt, [*****] may at any time obtain a license under Complementary In-Licensed Third Party IP outside the Field, [*****], provided that if [*****] decides to seek to obtain such a license, it shall use reasonable efforts to coordinate its licensing activities in this regard with [*****].

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(c) [*****] shall provide the proposed terms of any license under Complementary In-Licensed Third Party IP and the final version of the definitive license agreement for any Complementary In-Licensed Third Party IP to the IPC for review and discussion prior to signing, and shall consider [*****] comments thereto in good faith. To the extent that [*****] obtains a license under Supplemental In-Licensed Third Party IP, [*****] shall provide the final version of the definitive license agreement for such Supplemental In-Licensed Third Party IP to the IPC. If [*****] acquires rights under any In-Licensed Program IP outside the Field, it will do so on a non-exclusive basis unless it obtains the prior written consent of [*****] for such license outside the Field to be exclusive. For purposes of clarity, the foregoing requirement shall not restrict [*****]ability with respect to licensing intellectual property owned by a Third Party that is not required in order for [*****]to lawfully make, use, sell, offer for sale, or import Synthetic Products. Any Party that is pursuing a license to any In-Licensed Program IP with respect to the Field under this Section 3.9 shall keep the other Party reasonably informed of the status of any negotiations relating thereto. For purposes of clarity, (i) any costs incurred by [*****]in obtaining and maintaining licenses to Supplemental In-Licensed Third Party IP shall be borne solely by [*****], and (ii) any costs incurred by [*****]in obtaining and maintaining licenses to Complementary In-Licensed Third Party IP (and, to the limited extent provided in subsection (b), Supplemental In-Licensed Third Party IP) shall be borne solely by [*****].

(d) For any Third Party license under which Synthetic or its Affiliates obtain a license under Patents claiming inventions or know-how specific to or used or incorporated into the development, manufacture, and/or Commercialization of Synthetic Products, Synthetic shall use commercially reasonable efforts to ensure that Synthetic will have the ability, pursuant to Section 10.4(h), to assign such agreement to Intrexon or grant a sublicense to Intrexon thereunder (having the scope set forth in Section 10.4(h)).

(e) The licenses granted to Synthetic under Section 3.1 may include sublicenses under Intrexon IP that has been licensed to Intrexon by one or more Third Parties. Any such sublicenses are subject to the terms and conditions set forth in the applicable upstream license agreement, subject to the cost allocation set forth in Section 3.9(c), provided that Intrexon shall either provide unredacted copies of such upstream license agreements to Synthetic or shall disclose in writing to Synthetic all of such terms and conditions that are applicable to Synthetic. Synthetic shall not be responsible for complying with any provisions of such upstream license agreements unless, and to the extent that, such provisions have been disclosed to Synthetic as provided in the preceding sentence.

(f) If either Party receives notice from a Third Party concerning activities of a Party taken in conjunction with performance of obligations under this Agreement, which notice alleges infringement by a Party of, or offers license under, Patents or other intellectual property rights owned or controlled by that Third Party, the receiving Party shall inform the other party thereof within five (5) business days.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

3.10 Licenses to Intrexon. Subject to the terms and conditions of this Agreement, Synthetic hereby grants to Intrexon a non-exclusive, worldwide, fully-paid, royalty-free license, under any applicable Patents or other intellectual property Controlled by Synthetic or its Affiliates, solely to the extent necessary for Intrexon to conduct those responsibilities assigned to it under this Agreement, which license shall be sublicensable solely to Intrexon's Affiliates or to any of Intrexon's permitted subcontractors.

3.11 Restrictions Relating to Intrexon Materials. Synthetic and its permitted sublicensees shall use the Intrexon Materials solely for purposes of the Anti-Infectives Program and not for any other purpose without the prior written consent of Intrexon. With respect to the Intrexon Materials comprising Intrexon's vector assembly technology, Synthetic shall not, and shall ensure that Synthetic personnel and permitted sublicensees do not, except as otherwise permitted in this Agreement (a) distribute, sell, lend or otherwise transfer such Intrexon Materials to any Third Party; (b) co-mingle such Intrexon Materials with any other proprietary biological or chemical materials without Intrexon's written consent; or (c) analyze such Intrexon Materials or in any way attempt to reverse engineer or sequence such Intrexon Materials.

ARTICLE 4

Other Rights and Obligations

4.1 Development and Commercialization. Subject to Sections 4.6 and 4.7, Synthetic shall be solely responsible for the performance of the Anti-Infectives Program and the development and Commercialization of Synthetic Products in the Field. Synthetic shall be responsible for all costs incurred in connection with the Anti-Infectives Program except that Intrexon shall be responsible for the following: (a) costs of basic research with respect to the Intrexon Channel Technology and Intrexon Materials (i.e., platform improvements) but, for clarity, excluding research described in Section 4.7 or research requested by the JSC for the development of a Synthetic Product (which research costs shall be reimbursed by Synthetic); (b) [*****]; and (c) costs of filing, prosecution and maintenance of Intrexon Patents. The costs encompassed within subsection (a) above shall include the scale-up of Intrexon Materials and related active pharmaceutical ingredients for clinical trials and commercialization of Synthetic Products undertaken pursuant to Section 4.6, which shall be at Intrexon's cost whether it elects to conduct such efforts internally or through Third Party contractors retained by either Intrexon or Synthetic (with Intrexon's consent).

4.2 Transfer of Technology and Information. The JSC shall develop a plan and protocol for each project and timing for the transfer of relevant data and materials between the Parties.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

4.3 Information and Reporting. Synthetic will keep Intrexon informed about Synthetic's efforts to develop and commercialize Synthetic Products, including reasonable and accurate summaries of Synthetic's (and its Affiliates' and, if applicable, (sub)licensees') global development plans (as updated), including preclinical, clinical and regulatory plans, global marketing plans (as updated), progress towards meeting the goals and milestones in such plans and explanations of any material deviations, and significant developments in the development and/or commercialization of the Synthetic Products, including initiation or completion of a clinical trial, submission of a United States or international regulatory filing, receipt of a response to such United States or international regulatory filing, clinical safety event, receipt of Regulatory Approval, or commercial launch. As set forth in Section 3.8 above, Synthetic shall also provide to Intrexon copies of all final preclinical protocols and reports, final clinical protocols and reports, and regulatory correspondence and filings generated by Synthetic as soon as practical after they become available. Intrexon will keep Synthetic informed about Intrexon's efforts (a) to establish manufacturing capabilities and facilities for Synthetic Products (and Intrexon Materials relevant thereto) and otherwise perform its manufacturing responsibilities under Section 4.6 and (b) to undertake discovery-stage research for the Anti-Infectives Program with respect to the Intrexon Channel Technology and Intrexon Materials. Unless otherwise provided herein, such disclosures by Synthetic and Intrexon will be made in the course of JSC meetings at least once every six (6) months while Synthetic Products are being developed or commercialized anywhere in the world, and shall be reflected in the minutes of such meetings.

4.4 Regulatory Matters. At all times after the Effective Date, Synthetic shall own and maintain, at its own cost, all regulatory filings and regulatory approvals for Synthetic Products that Synthetic is developing or Commercializing pursuant to this Agreement. As such, Synthetic shall be responsible for reporting all adverse events related to such Synthetic Products to the appropriate regulatory authorities in the relevant countries, in accordance with the applicable laws and regulations of such countries. To the extent that Intrexon will itself develop, or in collaboration with other third parties develop, Intrexon Materials outside of the Field, Intrexon may request that Synthetic and Intrexon establish and execute a separate safety data exchange agreement, which agreement will address and govern the timely exchange of safety information generated by Synthetic, Intrexon, and relevant third parties with respect to specific Intrexon Materials. The decision to list or not list Patents in any regulatory filing for a Synthetic Product (for example, as required by 21 C.F.R. § 314.53(b)), add or delete a Patent from a regulatory filing, or to otherwise identify a Patent to a third party in compliance with laws or regulations relating to regulatory approvals (for example, in compliance with 42 U.S.C. § 262(a)(1)(A)(k) et seq.) shall be determined by Intrexon, after consultation with Synthetic, except with respect to Product Specific Program Patents, which will be mutually determined by the Parties.

4.5 Diligence.

(a) Synthetic shall use, and shall require its sublicensees to use, Diligent Efforts to develop and commercialize Synthetic Products.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(b) Without limiting the generality of the foregoing, Intrexon may, from time to time, notify Synthetic that it believes it has identified a Superior Therapy, and in such case Intrexon shall provide to Synthetic its then-available information about such therapy and reasonable written support for its conclusion that the therapy constitutes a Superior Therapy. Synthetic shall have the following obligations with respect to such proposed Superior Therapy: (i) within sixty (60) days after such notification, Synthetic shall prepare and deliver to the JSC for review and approval a development plan detailing how Synthetic will pursue the Superior Therapy (including a proposed budget); (ii) Synthetic shall revise the development plan as directed by the JSC; and (iii) following approval of the development plan by the JSC, Synthetic shall use Diligent Efforts to pursue the development of the Superior Therapy under the Anti-Infectives Program in accordance with such development plan. If Synthetic fails to comply with the foregoing obligations, or if Synthetic unreasonably exercises its casting vote at the JSC to either (x) prevent the approval of a development plan for a Superior Therapy; (y) delay such approval more than sixty (60) days after delivery of the development plan to the JSC; or (z) approve a development plan that is insufficient in view of the nature and magnitude of the opportunity presented by the Superior Therapy, then Intrexon shall have the termination right set forth in Section 10.2(c) (subject to the limitation set forth therein). For clarity, any dispute arising under this 4.5, including any dispute as to whether a proposed project constitutes a Superior Therapy (as with any other dispute under this Agreement) shall be subject to dispute resolution in accordance with Article 11.

(c) The activities of Synthetic's Affiliates and any permitted sublicensees shall be attributed to Synthetic for the purposes of evaluating Synthetic's fulfillment of the obligations set forth in this Section 4.5.

4.6 Manufacturing.

(a) As part of the Therapeutic Program, Intrexon shall be tasked with the development of one or more cell lines and may be asked by the JSC or CMCC to research and develop processes, and may thereafter validate such processes, for manufacturing one or more Synthetic Products hereunder. In connection with such research and development, a Third Party selected by Synthetic and approved by the JSC, which approval cannot be unreasonably withheld, may manufacture and supply pre-clinical quantities of each Synthetic Product. Intrexon shall provide, subject to reasonable controls concerning protecting all provided Intrexon Materials, to Synthetic or the selected Third Party such quantities of cells or other Intrexon Materials reasonable necessary for the pre-commercial development activities hereunder, at Synthetic expense, said expense approved in advance by written confirmation of the JSC.

(b) Intrexon shall have the option to present a proposal for consideration to the JSC to be the manufacturer of the Synthetic Product, or component thereof, either in bulk form or as finished product, for Synthetic for clinical and/or commercialization use. Synthetic will determine whether Intrexon, or Synthetic's or Intrexon's proposed Third Party, is a manufacturer of a Synthetic Product. Synthetic shall make their determination as to the manufacturer of each Synthetic Product based on the commercially reasonable consideration of their standards and criteria, as applied in a manner consistent with that applied to the manufacture of other Synthetic products and in good faith. Upon Intrexon's request, Synthetic shall provide Intrexon with a reasonable explanation and summary of the criteria that Synthetic used in deciding upon the manufacturer(s). In the event Intrexon is chosen by Synthetic to manufacture Synthetic Product under this Agreement, such supply shall be carried out under the terms negotiated by the Parties in good faith and set forth in separate supply and quality agreements.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(c) In the event that Intrexon is not selected as the manufacturer for clinical and/or commercial quantities of a Synthetic Product, Synthetic will assume all responsibility and related expense for manufacturing and supply of clinical and/or commercial quantities of such Synthetic Product in accordance with a validation process. Intrexon shall work with Synthetic to coordinate the transfer to Synthetic, or Synthetic-designated contract manufacturer(s), any process developed to date, along with any additional Confidential Information or materials Controlled by Intrexon that is necessary for the manufacturing of such bulk drug substance and/or finished product for the sole purpose of manufacturing such bulk drug substance and/or finished product on behalf of Synthetic for use in connection with Synthetic's exercise of its rights in the Field. The reasonable costs and expenses incurred by Intrexon in carrying out such transfer shall be borne by Synthetic and shall be negotiated in good faith by the Parties at the time Synthetic exercises its rights under this Agreement. Synthetic, in consultation with Intrexon, will oversee process validation of such Synthetic Products at the Synthetic selected manufacturing site(s). The process, along with any additional manufacturing Information transferred hereunder to Synthetic or its contract manufacturer shall be deemed Confidential Information of Intrexon, and shall not be further transferred to any Third Party or Synthetic Affiliate without the prior written consent of Intrexon. Any such changes to the process provided by Intrexon to Synthetic are owned by Intrexon, with Synthetic having a non-exclusive license right (such non-exclusive right hereby granted to Synthetic by Intrexon) for purposes of exercising rights in the Field, pursuant to this Section 4.6.

4.7 Support Services. As set forth in Section 2.1(b), immediately following the Effective Date, Intrexon will begin providing support services to Synthetic by which Intrexon will conduct research and development of Synthetic Products on behalf of Synthetic for the Primary Program Targets. The JSC will meet promptly following the Effective Date and establish a plan for this research and development, and Synthetic will compensate Intrexon for such support services with cash payments equal to Intrexon's Fully Loaded Cost in connection with such services. Additionally, from time to time, on an ongoing basis, Synthetic shall request, or Intrexon may propose, that Intrexon perform certain additional support services with respect to the Anti-Infectives Program. To the extent that the Parties mutually agree that Intrexon should perform such additional services, the Parties shall negotiate in good faith the terms under which services would be performed, it being understood that Intrexon would be compensated for such services by cash payments equal to Intrexon's Fully Loaded Cost in connection with such services. The JSC from time to time may reasonably determine that specific experiments under the Anti-Infectives Program require special therapeutic or technical expertise and thus should be conducted by Third Parties having such capabilities. Upon agreement by the Parties, the billing for any such work conducted by Third Party under the previous sentence may be billed directly to Synthetic or passed through to Synthetic.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

4.8 Compliance with Law. Each Party shall comply, and shall ensure that its Affiliates, (sub)licensees and Third Party contractors comply, with all applicable laws, regulations, and guidelines applicable to the Anti-Infectives Program, including without limitation those relating to the transport, storage, and handling of Intrexon Materials and Synthetic Products.

4.9 Trademarks and Patent Marking. To the extent permitted by applicable law and regulations, Synthetic shall, and shall ensure that the packaging, promotional materials, and labeling for Synthetic Products shall carry, in a conspicuous location, the applicable Intrexon Trademark(s), subject to Synthetic's reasonable approval of the size, position, and location thereof. Consistent with the U.S. patent laws, Synthetic shall ensure that Synthetic Products, or its packaging or accompanying literature as appropriate, bear applicable and appropriate patent markings for Intrexon Patent numbers. Synthetic shall provide Intrexon with copies of any materials containing the Intrexon Trademarks or patent markings prior to using or disseminating such materials, in order to obtain Intrexon's approval thereof. Synthetic's use of the Intrexon Trademarks and patent markings shall be subject to prior review and approval of the IPC. Synthetic acknowledges Intrexon's sole ownership of the Intrexon Trademarks and agrees not to take any action inconsistent with such ownership. Synthetic covenants that it shall not use any trademark confusingly similar to any Intrexon Trademarks in connection with any products (including any Synthetic Product). From time to time during the Term, Intrexon shall have the right to obtain from Synthetic samples of Synthetic Product sold by Synthetic or its Affiliates or sublicensees, or other items which reflect public uses of the Intrexon Trademarks or patent markings, for the purpose of inspecting the quality of such Synthetic Products, the use of the Intrexon Trademarks, or the accuracy of the patent markings. In the event that Intrexon inspects under this Section 4.9, Intrexon shall notify the result of such inspection to Synthetic in writing thereafter. Synthetic shall comply with reasonable policies provided by Intrexon from time-to-time to maintain the goodwill and value of the Intrexon Trademarks.

4.10 Reporting Compliance. During the Term, in the event that Intrexon notifies Synthetic that Intrexon has reasonably concluded, after consultation with its outside advisors, that Intrexon will have to consolidate Synthetic's financial statements with its own, for so long as Intrexon reasonably believes that such consolidation is necessary, Synthetic shall use its best efforts to comply with the following additional obligations:

(a) Synthetic shall maintain at its principal place of business or, upon notice to Intrexon, at such other place as Synthetic shall determine:

(i) a copy of Synthetic's certificate of incorporation or organizational document and all amendments thereto, together with executed copies of any powers of attorney pursuant to which any amendment has been executed;

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(ii) a copy of this Agreement;

(iii) a copy of Synthetic's federal, state, and local income tax returns and reports, if any; and

(iv) minutes of meetings of Synthetic's board of directors and shareholders or actions by written consent in lieu thereof, redacted as necessary by Synthetic to exclude any sensitive or confidential information that Intrexon, by operation of law or contractual stipulation, is not permitted to receive.

(b) Synthetic shall use the accrual method of accounting in preparation of its annual reports and for tax purposes and shall keep its books and records accordingly, consistent with US GAAP.

(c) Intrexon at its own expense and upon reasonable notice, may examine any information it may reasonably request (including, to the extent Synthetic has the right to provide such, the work papers of Synthetic's internal and independent auditors) and make copies of and abstracts from the financial and operating records and books of account of Synthetic, and discuss the affairs, finances and accounts of Synthetic with Synthetic and independent auditors of Synthetic, all at such reasonable times and as often as Intrexon or any agents or representatives of Intrexon may reasonably request. The rights granted pursuant to this Section 4.10(c) are expressly subject to compliance by Intrexon with the safety, security and confidentiality procedures and guidelines of Synthetic, as such procedures and guidelines may be established from time to time.

(d) As soon as available but no later than ninety (90) days after the end of each fiscal year, Synthetic shall cause to be prepared and Intrexon to be furnished with an audited balance sheet as of the last day of such fiscal year and an audited income statement, a statement of stockholders' equity and statement of cash flows for Synthetic for such fiscal year and notes associated with each, in each case prepared in accordance with US GAAP, together with a report of Synthetic's independent auditor that such statements have been prepared in accordance with US GAAP and present fairly, in all material respects, the financial position, results of operations and cash flows of Synthetic.

(e) As soon as available but no later than forty five (45) days after the end of each calendar quarter, Synthetic shall furnish the following to Intrexon an unaudited balance sheet as of the last day of such period, and an unaudited income statement, a statement of cash flows and a statement of stockholders' equity for Synthetic for such period, in each case prepared in accordance with US GAAP.

(f) As requested by Intrexon on no more than a quarterly basis, a certificate, executed by the Executive Officer of Synthetic, certifying the following:

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(i) Synthetic maintains accurate books and records reflecting its assets and liabilities and maintains proper and adequate internal accounting controls that provide assurance that (1) transactions are executed with management's authorization; (2) transactions are recorded as necessary to permit preparation of the consolidated financial statements of Synthetic and to maintain accountability for Synthetic's consolidated assets; (3) access to the assets of Synthetic is permitted only in accordance with management's authorization; (4) the reporting of assets of Synthetic is compared with existing assets at regular intervals; and (5) accounts, notes and other receivables and inventory are recorded accurately, and proper and adequate procedures are implemented to effect the collection of accounts, notes and other receivables on a current and timely basis.

(ii) Synthetic maintains disclosure controls and procedures to the extent such would be required of a publicly registered company under the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder; any such controls and procedures are effective to ensure that all material information concerning Synthetic is made known on a timely basis to those individuals responsible for the preparation of any filings that may be required to be made by Intrexon with the SEC and other public disclosure documents.

(g) Synthetic shall promptly prepare and furnish to Intrexon any information, whether written or oral, requested by Intrexon that is reasonably necessary for purposes of Intrexon's ongoing compliance with applicable law.

4.11 Modification of Deadlines. The parties agree that the delivery deadlines in Section 4.10 will be modified to the extent necessary to ensure that such deliverables are provided by Synthetic no less than thirty (30) days prior (inclusive of any cure period set forth in Section 10.2(a)) to the date necessary for Intrexon to meet any disclosure obligation under rules or regulations to which Intrexon may be or become subject from time to time. Intrexon will provide Synthetic with notice as promptly as practicable regarding any changes in Intrexon's disclosure obligations that would require a change in delivery deadlines or cure periods under this Section 4.11.

ARTICLE 5

Compensation

5.1 **Technology Access Fee**. In partial consideration for Synthetic's appointment as an exclusive channel collaborator in the Field and the other rights granted to Synthetic hereunder, within ten days after receipt of approval from the NYSE Amex for the listing of the equity referred to below (including any extension should the NYSE Amex require shareholder approval of such issuance) but in no event later than one hundred twenty (120) days after the Effective Date, Synthetic shall issue to Intrexon certain equity interests in Synthetic, in accordance with the terms and conditions of that certain Equity Purchase Agreement and Registration Rights Agreement, each of even date herewith (collectively, the "**Equity Agreements**"). Provided that all closing conditions for the Technology Access Fee Shares (as defined in the Equity Agreements) that are within the reasonable control of Intrexon have been satisfied or waived, the issuance of the Technology Access Fee Shares (as set forth in the Equity Agreements) is a condition subsequent to the effectiveness of this Agreement.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

5.2 Milestones.

(a) Synthetic Equity-Based Milestones. Upon the attainment of certain milestone events by each different Synthetic Product, Synthetic has agreed to issue to Intrexon certain equity interests of Synthetic, or at Synthetic's election make a cash payment to Intrexon at the fair market value of the equity interests, as set forth in the Equity Agreements. The specific milestone events and respective amounts due to Intrexon upon achievement of the milestone events are set forth in the Equity Agreements.

5.3 Equity Agreements Control. All issuances of equity interests to Intrexon, or cash payments to Intrexon in lieu of equity, shall be in accordance with the terms and conditions of the Equity Agreements, which Equity Agreements shall control to the extent they may conflict with Sections 5.1 through 5.2 of this Agreement.

5.4 Revenue Sharing.

(a) No later than thirty (30) days after each calendar quarter in which there are positive Net Sales arising from the sale of any Synthetic Product in the Field in the Territory, Synthetic shall pay to Intrexon on a Synthetic Product-by-Synthetic Product basis a [xxxx] royalty on the first [xxxx] of annual Net Sales, and a [xxxx] royalty on the portion of annual Net Sales exceeding [xxxx.] Commencing with the Effective Date, in the event that are negative Net Sales for a particular Synthetic Product in any calendar quarter, neither Synthetic nor Intrexon shall owe any payments hereunder with respect to such Synthetic Product. Any negative Net Sales that results from Excess Product Liability Costs may be carried forward to future quarters and offset against positive Net Sales in such future quarters for the same Synthetic Product. Except as set forth in the preceding sentence, Synthetic shall not be permitted to carry forward any negative Net Sales to subsequent quarters.

(b) No later than thirty (30) days after each calendar quarter in which Synthetic or any Synthetic Affiliate receives Sublicensing Revenue, Synthetic shall pay to Intrexon fifty percent (50%) of such Sublicensing Revenue.

5.5 **Method of Payment**. Except for payments payable as and made in the form of equity interests, payments due to Intrexon under this Agreement shall be paid in United States dollars by wire transfer to a bank in the United States designated in writing by Intrexon. All references to "dollars" or "$" herein shall refer to United States dollars.

5.6 **Payment Reports and Records Retention**. Within thirty (30) days after the end of each calendar quarter during which Net Sales have been generated, during which Sublicensing Revenue has been received, or during which a negative Net Sales has occurred, Synthetic shall deliver to Intrexon a written report that shall contain at a minimum for the applicable calendar quarter:

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(a) gross sales of each Synthetic Product (on a country-by-country basis);

(b) itemized calculation of Net Sales, showing all applicable deductions;

(c) itemized calculation of Sublicensing Revenue;

(d) the amount of any negative Net Sales for the applicable calendar quarter, and any negative Net Sales amount carried forward from a prior quarter and applied during the present quarter (as per Section 5.4(a));

(e) the amount of the payment (if any) due pursuant to Section 5.4(a) and/or 5.4(b);

(f) the amount of taxes, if any, withheld to comply with any applicable law; and

(g) the exchange rates used in any of the foregoing calculations.

For three (3) years after each sale of Synthetic Product or after incurring any component item incorporated into a calculation of Net Sales, Synthetic shall keep (and shall ensure that its Affiliates and, if applicable, (sub)licensees shall keep) complete and accurate records of such sales or component item in sufficient detail to confirm the accuracy of the payment calculations hereunder.

5.7 Audits.

(a) Upon the written request of Intrexon, Synthetic shall permit an independent certified public accounting firm of internationally recognized standing selected by Intrexon, and reasonably acceptable to Synthetic, to have access to and to review, during normal business hours and upon no less than thirty (30) days prior written notice, the applicable records of Synthetic and its Affiliates to verify the accuracy and timeliness of the reports and payments made by Synthetic under this Agreement. Such review may cover the records for sales made in any calendar year ending not more than three (3) years prior to the date of such request. The accounting firm shall disclose to both Parties whether the royalty reports and/or know-how reports conform to the provisions of this Agreement and/or US GAAP, as applicable, and the specific details concerning any discrepancies. Such audit may not be conducted more than once in any calendar year.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(b) If such accounting firm concludes that additional amounts were owed during such period, Synthetic shall pay additional amounts, with interest from the date originally due as set forth in Section 5.9, within thirty (30) days of receipt of the accounting firm's written report. If the amount of the underpayment is greater than ten percent (10%) of the total amount actually owed for the period audited, then Synthetic shall in addition reimburse Intrexon for all costs related to such audit; otherwise, Intrexon shall pay all costs of the audit. In the event of overpayment, any amount of such overpayment shall be fully creditable against amounts payable for the immediately succeeding calendar quarter(s); provided, however, that such credit cannot be applied to reduce the amounts payable by Synthetic to Intrexon for any particular calendar quarter by more than [*****] of the amount otherwise due to Intrexon.

(c) Intrexon shall (i) treat all information that it receives under this Section 5.7 in accordance with the confidentiality provisions of Article 7 and (ii) cause its accounting firm to enter into an acceptable confidentiality agreement with Synthetic obligating such firm to retain all such financial information in confidence pursuant to such confidentiality agreement, in each case except to the extent necessary for Intrexon to enforce its rights under this Agreement.

5.8 **Taxes**. The Parties will cooperate in good faith to obtain the benefit of any relevant tax treaties to minimize as far as reasonably possible any taxes which may be levied on any amounts payable hereunder. Synthetic shall deduct or withhold from any payments any taxes that it is required by applicable law to deduct or withhold. Notwithstanding the foregoing, if Intrexon is entitled under any applicable tax treaty to a reduction of the rate of, or the elimination of, applicable withholding tax, it may deliver to Synthetic or the appropriate governmental authority (with the assistance of Synthetic to the extent that this is reasonably required and is expressly requested in writing) the prescribed forms necessary to reduce the applicable rate of withholding or to relieve Synthetic of its obligation to withhold tax, and Synthetic shall apply the reduced rate of withholding tax, or dispense with withholding tax, as the case may be, provided that Synthetic has received evidence of Intrexon's delivery of all applicable forms (and, if necessary, its receipt of appropriate governmental authorization) at least fifteen (15) days prior to the time that the payment is due. If, in accordance with the foregoing, Synthetic withholds any amount, it shall make timely payment to the proper taxing authority of the withheld amount, and send to Intrexon proof of such payment within forty-five (45) days following that latter payment.

5.9 **Late Payments**. Any amount owed by Synthetic to Intrexon under this Agreement that is not paid within the applicable time period set forth herein shall accrue interest at the lower of (a) two percent (2%) per month,

compounded, or (b) the highest rate permitted under applicable law.

ARTICLE 6

Intellectual Property

6.1 Ownership.

(a) Subject to the license granted under Section 3.1, all rights in the Intrexon IP shall remain with Intrexon.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(b) Synthetic and/or Intrexon may solely or jointly conceive, reduce to practice or develop discoveries, inventions, processes, techniques, and other technology, whether or not patentable, in the course of performing the Anti-Infectives Program (collectively "**Inventions**"). Each Party shall promptly provide the other Party with a detailed written description of any such Inventions that relate to the Field. Inventorship shall be determined in accordance with United States patent laws.

(c) Intrexon shall solely own all right, title and interest in all Inventions related to Intrexon Channel Technology, together with all Patent rights and other intellectual property rights therein (the "**Channel-Related Program IP**"). Synthetic hereby assigns all of its right, title and interest in and to the Channel-Related Program IP to Intrexon. Synthetic agrees to execute such documents and perform such other acts as Intrexon may reasonably request to obtain, perfect and enforce its rights to the Channel-Related Program IP and the assignment thereof.

(d) Notwithstanding anything to the contrary in this Agreement, any discovery, invention, process, technique, or other technology, whether or not patentable, that is conceived, reduced to practice or developed by Synthetic solely or jointly through the use of the Intrexon Channel Technology, Intrexon IP, or Intrexon Materials in breach of the terms and conditions of this Agreement, together with all patent rights and other intellectual property rights therein, shall be solely owned by Intrexon and shall be included in the Channel-Related Program IP.

(e) All information regarding Channel-Related Program IP shall be Confidential Information of Intrexon. Synthetic shall be under appropriate written agreements with each of its employees, contractors, or agents working on the Anti-Infectives Program, pursuant to which such person shall grant all rights in the Inventions to Synthetic (so that Synthetic may convey certain of such rights to Intrexon, as provided herein) and agree to protect all Confidential Information relating to the Anti-Infectives Program.

6.2 Patent Prosecution.

(a) Intrexon shall have the sole right, but not the obligation, to (a) conduct and control the filing, prosecution and maintenance of the Intrexon Patents, and (b) conduct and control the filing, prosecution, and maintenance of any applications for patent term extension and/or supplementary protection certificates that may be available as a result of the regulatory approval of any Synthetic Product. At the reasonable request of Intrexon, Synthetic shall cooperate with Intrexon in connection with such filing, prosecution, and maintenance, at Intrexon's expense. Under no circumstances shall Synthetic (a) file, attempt to file, or assist anyone else in filing, or attempting to file, any Patent application, either in the United States or elsewhere, that claims or uses or purports to claim or use or relies for support upon an Invention owned by Intrexon, (b) use, attempt to use, or assist anyone else in using or attempting to use, the Intrexon Know-How, Intrexon Materials, or any Confidential Information of Intrexon to support the filing of a Patent application, either in the United States or elsewhere, that contains claims directed to the Intrexon IP, Intrexon Materials, or the Intrexon Channel Technology, or (c) without prior approval of the IPC, file, attempt to file, or assist anyone else in filing, or attempting to file, any application for patent term extension or supplementary protection certificate, either in the United States or elsewhere, that relies upon the regulatory approval of a Synthetic Product.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(b) Synthetic shall have the sole right, but not the obligation, to conduct and control the filing, prosecution and maintenance of any Patents claiming Inventions that are owned by Synthetic or its Affiliates and not assigned to Intrexon under Section 6.1(c) ("**Synthetic Program Patents**"). At the reasonable request of Synthetic, Intrexon shall cooperate with Synthetic in connection with such filing, prosecution, and maintenance, at Synthetic's expense.

(c) The Prosecuting Party shall be entitled to use patent counsel selected by it and reasonably acceptable to the non-Prosecuting Party (including in-house patent counsel as well as outside patent counsel) for the prosecution of the Intrexon Patents and Synthetic Program Patents, as applicable. The Prosecuting Party shall:

(i) regularly provide the other Party in advance with reasonable information relating to the Prosecuting Party's prosecution of Patents hereunder, including by providing copies of substantive communications, notices and actions submitted to or received from the relevant patent authorities and copies of drafts of filings and correspondence that the Prosecuting Party proposes to submit to such patent authorities (it being understood that, to the extent that any such information is readily accessible to the public, the Prosecuting Party may, in lieu of directly providing copies of such information to such other Party, provide such other Party with sufficient information that will permit such other Party to access such information itself directly);

(ii) consider in good faith and consult with the non-Prosecuting Party regarding its timely comments with respect to the same; provided, however, that if, within fifteen (15) days after providing any documents to the non-Prosecuting Party for comment, the Prosecuting Party does not receive any written communication from the non-Prosecuting Party indicating that it has or may have comments on such document, the Prosecuting Party shall be entitled to assume that the non-Prosecuting Party has no comments thereon;

(iii) consult with the non-Prosecuting Party before taking any action that would reasonably be expected to have a material adverse impact on the scope of claims within the Intrexon Patents and Synthetic Program Patents, as applicable.

As used above "**Prosecuting Party**" means Intrexon in the case of Intrexon Patents and Synthetic in the case of Synthetic Program Patents.

6.3 Infringement of Patents by Third Parties.

28

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(a) Except as expressly provided in the remainder of this Section 6.3, Intrexon shall have the sole right to take appropriate action against any person or entity directly or indirectly infringing any Intrexon Patent (or asserting that an Intrexon Patent is invalid or unenforceable) (collectively, "**Infringement**"), either by settlement or lawsuit or other appropriate action.

(b) Notwithstanding the foregoing, Synthetic shall have the first right, but not the obligation, to take appropriate action to enforce Product-Specific Program Patents against any Infringement that involves a commercially material amount of allegedly infringing activities in the Field ("**Field Infringement**"), either by settlement or lawsuit or other appropriate action. If Synthetic fails to take the appropriate steps to enforce Product-Specific Program Patents against any Field Infringement within one hundred eighty (180) days of the date one Party has provided notice to the other Party pursuant to Section 6.3(g) of such Field Infringement, then Intrexon shall have the right (but not the obligation), at its own expense, to enforce Product-Specific Program Patents against such Field Infringement, either by settlement or lawsuit or other appropriate action.

(c) With respect to any Field Infringement that cannot reasonably be abated through the enforcement of Product-Specific Program Patents pursuant to Section 6.3(b) but can reasonably be abated through the enforcement of Intrexon Patent(s) (other than the Product-Specific Program Patents), Intrexon shall be obligated to choose one of the following courses of action: (i) enforce one or more of the applicable Intrexon Patent(s) in a commercially reasonable manner against such Field Infringement, or (ii) [*****]. Intrexon and Synthetic shall bear the costs and expenses of such enforcement equally. The determination of which Intrexon Patent(s) to assert shall be made by Intrexon in its sole discretion; provided, however, that Intrexon shall consult in good faith with Synthetic on such determination. For the avoidance of doubt, Intrexon has no obligations under this Agreement to enforce any Intrexon Patents against, or otherwise abate, any Infringement that is not a Field Infringement.

(d) In the event a Party pursues an action under this Section 6.3, the other Party shall reasonably cooperate with the enforcing Party with respect to the investigation and prosecution of any alleged, threatened, or actual Infringement, at the enforcing Party's expense (except with respect to an action under Section 6.3(c), where all costs and expenses will be shared equally in accordance with terms thereof).

(e) Synthetic shall not settle or otherwise compromise any action under this Section 6.3 in a way that diminishes the rights or interests of Intrexon outside the Field or adversely affects any Intrexon Patent without Intrexon's prior written consent, which consent shall not be unreasonably withheld. Intrexon shall not settle or otherwise compromise any action under this Section 6.3 in a way that diminishes the rights or interests of Synthetic in the Field or adversely affects any Intrexon Patent with respect to the Field without Synthetic's prior written consent, which consent shall not be unreasonably withheld.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(f) Except as otherwise agreed to by the Parties in writing, any settlements, damages or other monetary awards recovered pursuant to a suit, proceeding, or action brought pursuant to Section 6.3 will be allocated first to the costs and expenses of the Party controlling such action, and second, to the costs and expenses (if any) of the other Party (to the extent not otherwise reimbursed), and any remaining amounts (the **"Recovery"**) will be shared by the Parties as follows: In any action initiated by Intrexon pursuant to Section 6.3(a) that does not involve Field Infringement, or in any action initiated by Intrexon pursuant to Section 6.3(b), Intrexon shall retain one hundred percent (100%) of any Recovery. In any action initiated by Synthetic pursuant to Section 6.3(b), Synthetic shall retain one hundred percent (100%) of any Recovery, but such Recovery shall be shared with Intrexon as Sublicensing Revenue. In any action initiated by Intrexon or Synthetic pursuant to Section 6.3(c), the Parties shall share the Recovery equally, and such Recovery shall not be deemed to constitute Sublicensing Revenue.

(g) Synthetic shall promptly notify Intrexon in writing of any suspected, alleged, threatened, or actual Infringement of which it becomes aware, and Intrexon shall promptly notify Synthetic in writing of any suspected, alleged, threatened, or actual Field Infringement of which it becomes aware.

ARTICLE 7

Confidentiality

7.1 Confidentiality. Except to the extent expressly authorized by this Agreement or otherwise agreed in writing by the Parties, each Party agrees that it shall keep confidential and shall not publish or otherwise disclose and shall not use for any purpose other than as provided for in this Agreement any Confidential Information disclosed to it by the other Party pursuant to this Agreement, except to the extent that the receiving Party can demonstrate by competent evidence that specific Confidential Information:

(a) was already known to the receiving Party, other than under an obligation of confidentiality, at the time of disclosure by the other Party;

(b) was generally available to the public or otherwise part of the public domain at the time of its disclosure to the receiving Party;

(c) became generally available to the public or otherwise part of the public domain after its disclosure and other than through any act or omission of the receiving Party in breach of this Agreement;

(d) was disclosed to the receiving Party, other than under an obligation of confidentiality to a Third Party, by a Third Party who had no obligation to the disclosing Party not to disclose such information to others; or

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(e) was independently discovered or developed by the receiving Party without the use of Confidential Information belonging to the disclosing Party, as documented by the receiving Party's written records.

The foregoing non-use and non-disclosure obligation shall continue (i) indefinitely, for all Confidential Information that qualifies as a trade secret under applicable law; or (ii) for the Term of this Agreement and for seven (7) years thereafter, in all other cases.

7.2 Authorized Disclosure. Notwithstanding the limitations in this Article 7, either Party may disclose the Confidential Information belonging to the other Party to the extent such disclosure is reasonably necessary in the following instances:

(a) complying with applicable laws or regulations or valid court orders, *provided that* the Party making such disclosure provides the other Party with reasonable prior written notice of such disclosure and makes a reasonable effort to obtain, or to assist the other Party in obtaining, a protective order preventing or limiting the disclosure and/or requiring that the terms and conditions of this Agreement be used only for the purposes for which the law or regulation required, or for which the order was issued;

(b) to regulatory authorities in order to seek or obtain approval to conduct clinical trials, or to gain regulatory approval, of Synthetic Products or any products being developed by Intrexon or its other licensees and/or channel partners or collaborators, provided that the Party making such disclosure (i) provides the other Party with reasonable opportunity to review any such disclosure in advance and to suggest redactions or other means of limiting the disclosure of such other Party's Confidential Information and (ii) does not unreasonably reject any such suggestions;

(c) disclosure to investors and potential investors, acquirers, or merger candidates who agree to maintain the confidentiality of such information, *provided that* such disclosure is used solely for the purpose of evaluating such investment, acquisition, or merger (as the case may be);

(d) disclosure on a need-to-know basis to Affiliates, licensees, sublicensees, employees, consultants or agents (such as CROs and clinical investigators) who agree to be bound by obligations of confidentiality and non-use at least equivalent in scope to those set forth in this Article 7; and

(e) disclosure of the terms of this Agreement by Intrexon to collaborators and other channel partners or collaborators who agree to be bound by obligations of confidentiality and non-use at least equivalent in scope to those set forth in this Article 7.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

7.3 Publicity; Publications. The Parties agree that the public announcement of the execution of this Agreement shall be substantially in the form of a press release mutually agreed to by the Parties. Each Party will provide the other Party with the opportunity to review and comment, prior to submission or presentation, on external reports, publications and presentations (e.g., press releases, reports to government agencies, abstracts, posters, manuscripts and oral presentations) that refer to the Anti-Infectives Program or programs that are approved by the JSC. For such reports, publications, and presentations, the disclosing Party will provide the other Party at least fifteen (15) days for review of the proposed submission or presentation. For reports and manuscripts, the disclosing Party will provide the other Party at least thirty (30) days for review of the report or manuscript. The presenting Party will act in good faith to incorporate the comments of the other Party and shall, in any event, redact any Confidential Information of the other Party and cooperate with the other Party to postpone such submissions or presentations if necessary to provide the other Party with sufficient time to prepare and file any related Patent applications before the submission or presentation occurs, as appropriate.

7.4 Terms of the Agreement. Each Party shall treat the terms of this Agreement as the Confidential Information of other Party, subject to the exceptions set forth in Section 7.2. Notwithstanding the foregoing, each Party acknowledges that the other Party may be obligated to file a copy of this Agreement with the SEC, either as of the Effective Date or at some point during the Term. Each Party shall be entitled to make such a required filing, provided that it requests confidential treatment of certain commercial terms and sensitive technical terms hereof to the extent such confidential treatment is reasonably available to it. In the event of any such filing, the filing Party shall provide the other Party with a copy of the Agreement marked to show provisions for which the filing Party intends to seek confidential treatment and shall reasonably consider and incorporate the other Party's comments thereon to the extent consistent with the legal requirements governing redaction of information from material agreements that must be publicly filed. The other Party shall promptly provide any such comments.

7.5 Proprietary Information and Operational Audits.

(a) For the purpose of confirming compliance with the Field-limited licenses granted in Article 3, the diligence obligations of Article 4, and the confidentiality obligations under Article 7, Synthetic acknowledges that Intrexon's authorized representative(s), during regular business hours may (i) examine and inspect Synthetic's facilities and (ii) inspect all data and work products relating to this Agreement, subject to restrictions imposed by applicable laws. Any examination or inspection hereunder shall require five (5) business days written notice from Intrexon to

Synthetic. Synthetic will make itself and the pertinent employees and/or agents available, on a reasonable basis, to Intrexon for the aforementioned compliance review.

(b) For the purpose of confirming compliance with the diligence obligations of Section 4.6, and the confidentiality obligations under Article 7, Intrexon acknowledges that Synthetic authorized representative(s), during regular business hours may (i) examine and inspect Intrexon's facilities and (ii) inspect all data and work products relating to this Agreement. Any examination or inspection hereunder shall require five (5) business days written notice from Synthetic to Intrexon. Intrexon will make itself and the pertinent employees and/or agents available, on a reasonable basis, to Synthetic for the aforementioned compliance review.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(c) In view of the Intrexon Confidential Information, Intrexon Know-How, and Intrexon Materials transferred to Synthetic hereunder, Intrexon from time-to-time, but no more than quarterly, may request that Synthetic confirm the status of the Intrexon Materials at Synthetic (i.e. how much used, how much shipped, to whom and any unused amounts destroyed (by whom, when) as well as any amounts returned to Intrexon or destroyed). Within ten (10) business days of Synthetic's receipt of any such written request, Synthetic shall provide the written report to Intrexon.

7.6 Intrexon Commitment. Intrexon shall use reasonable efforts to obtain an agreement with its other licensees and channel partners or collaborators to enable Synthetic to disclose confidential information of such licensees and channel partners or collaborators to regulatory authorities in order to seek or obtain approval to conduct clinical trials, or to gain regulatory approval of, Synthetic Products, in a manner consistent with the provisions of Section 7.2(b).

ARTICLE 8

Representations And Warranties

8.1 Representations and Warranties of Synthetic. Synthetic hereby represents and warrants to Intrexon that, as of the Effective Date:

(a) Corporate Power. Synthetic is duly organized and validly existing under the laws of Nevada and has full corporate power and authority to enter into this Agreement and to carry out the provisions hereof.

(b) Due Authorization. Synthetic is duly authorized to execute and deliver this Agreement and to perform its obligations hereunder, and the person executing this Agreement on Synthetic's behalf has been duly authorized to do so by all requisite corporate action.

(c) Binding Agreement. This Agreement is a legal and valid obligation binding upon Synthetic and enforceable in accordance with its terms, except as such enforcement may be limited by applicable bankruptcy, insolvency, reorganization, arrangement, moratorium or other similar laws affecting creditors' rights, and subject to general equity principles and to limitations on availability of equitable relief, including specific performance. The execution, delivery and performance of this Agreement by Synthetic does not conflict with any agreement, instrument or understanding, oral or written, to which it is a party or by which it may be bound. Synthetic is aware of no action, suit or inquiry or investigation instituted by any governmental agency which questions or threatens the validity of this Agreement.

8.2 Representations and Warranties of Intrexon. Intrexon hereby represents and warrants to Synthetic that, as of the Effective Date:

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(a) **Corporate Power**. Intrexon is duly organized and validly existing under the laws of Virginia and has full corporate power and authority to enter into this Agreement and to carry out the provisions hereof.

(b) **Due Authorization**. Intrexon is duly authorized to execute and deliver this Agreement and to perform its obligations hereunder, and the person executing this Agreement on Intrexon's behalf has been duly authorized to do so by all requisite corporate action.

(c) **Binding Agreement**. This Agreement is a legal and valid obligation binding upon Intrexon and enforceable in accordance with its terms, except as such enforcement may be limited by applicable bankruptcy, insolvency, reorganization, arrangement, moratorium or other similar laws affecting creditors' rights, and subject to general equity principles and to limitations on availability of equitable relief, including specific performance. The execution, delivery and performance of this Agreement by Intrexon does not conflict with any agreement, instrument or understanding, oral or written, to which it is a party or by which it may be bound. Intrexon is aware of no action, suit or inquiry or investigation instituted by any governmental agency which questions or threatens the validity of this Agreement.

(d) **Additional Intellectual Property Representations**.

(i) Intrexon possesses sufficient rights to enable Intrexon to grant all rights and licenses it purports to grant to Synthetic with respect to the Intrexon Patents under this Agreement;

(ii) The Intrexon Patents existing as of the Effective Date constitute all of the Patents Controlled by Intrexon as of such date that are necessary for the development, manufacture and Commercialization of Synthetic Products;

(iii) Intrexon has not granted, and during the Term Intrexon will not grant, any right or license, to any Third Party under the Intrexon IP that conflicts with the rights or licenses granted or to be granted to Synthetic hereunder;

(iv) There is no pending litigation, and Intrexon has not received any written notice of any claims or litigation, seeking to invalidate or otherwise challenge the Intrexon Patents or Intrexon's rights therein;

(v) None of the Intrexon Patents is subject to any pending re-examination, opposition, interference or litigation proceedings;

(vi) All of the Intrexon Patents have been filed and prosecuted in accordance with all applicable laws and have been maintained, with all applicable fees with respect thereto (to the extent such fees have come due) having been paid;

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(vii) Intrexon has entered into agreements with each of its current and former officers, employees and consultants involved in research and development work, including development of the Intrexon's products and technology providing Intrexon, to the extent permitted by law, with title and ownership to patents, patent applications, trade secrets and inventions conceived, developed, reduced to practice by such person, solely or jointly with other of such persons, during the period of employment by Intrexon (except where the failure to have entered into such an agreement would not have a material adverse effect on the rights granted to Synthetic herein), and Intrexon is not aware that any of its employees or consultants is in material violation thereof;

(viii) To Intrexon's knowledge, there is no infringement, misappropriation or violation by third parties of any Intrexon Channel Technology or Intrexon IP in the Field;

(ix) There is no pending or, to Intrexon's knowledge, threatened action, suit, proceeding or claim by others against Intrexon that Intrexon infringes, misappropriates or otherwise violates any intellectual property or other proprietary rights of others in connection with the use of the Intrexon Channel Technology or Intrexon IP, and Intrexon has not received any written notice of such claim;

(x) To Intrexon's knowledge, no employee of Intrexon is the subject of any claim or proceeding involving a violation of any term of any employment contract, patent disclosure agreement, invention assignment agreement, non-competition agreement, non-solicitation agreement, non-disclosure agreement or any restrictive covenant to or with a former employer (A) where the basis of such violation relates to such employee's employment with Intrexon or actions undertaken by the employee while employed with Intrexon and (B) where such violation is relevant to the use of the Intrexon Channel Technology in the Field;

(xi) None of the Intrexon Patents owned by Intrexon or its Affiliates, and, to Intrexon's knowledge, the Intrexon Patents licensed to Intrexon or its Affiliates, have been adjudged invalid or unenforceable by a court of competent jurisdiction or applicable government agency, in whole or in part, and there is no pending or, to Intrexon's knowledge, threatened action, suit, proceeding or claim by others challenging the validity or scope of any such Intrexon Patents; and

35

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(xii) Except as otherwise disclosed in writing to Synthetic, Intrexon: (A) is in material compliance with all statutes, rules or regulations applicable to the ownership, testing, development, manufacture, packaging, processing, use, distribution, marketing, labeling, promotion, sale, offer for sale, storage, import, export or disposal of any product that is under development, manufactured or distributed by Intrexon in the Field ("**Applicable Laws**"); (B) has not received any FDA Form 483, notice of adverse finding, warning letter, untitled letter or other correspondence or notice from the United States Food and Drug Administration (the "**FDA**") or any other federal, state, local or foreign governmental or regulatory authority alleging or asserting material noncompliance with any Applicable Laws or any licenses, certificates, approvals, clearances, authorizations, permits and supplements or amendments thereto required by any such Applicable Laws ("**Authorizations**"), which would, individually or in the aggregate, result in a material adverse effect; (C) possesses all material Authorizations necessary for the operation of its business as described in the Field and such Authorizations are valid and in full force and effect and Intrexon is not in material violation of any term of any such Authorizations; and (D) since January 1, 2011, (1) has not received notice of any claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from the FDA or any other federal, state, local or foreign governmental or regulatory authority or third party alleging that any product operation or activity is in material violation of any Applicable Laws or Authorizations and has no knowledge that the FDA or any other federal, state, local or foreign governmental or regulatory authority or third party is considering any such claim, litigation, arbitration, action, suit investigation or proceeding; (2) has not received notice that the FDA or any other federal, state, local or foreign governmental or regulatory authority has taken, is taking or intends to take action to limit, suspend, modify or revoke any material Authorizations and has no knowledge that the FDA or any other federal, state, local or foreign governmental or regulatory authority is considering such action; (3) has filed, obtained, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Applicable Laws or Authorizations and that all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were materially complete and correct on the date filed (or were corrected or supplemented by a subsequent submission); and (4) has not, either voluntarily or involuntarily, initiated, conducted, or issued or caused to be initiated, conducted or issued, any recall, market withdrawal or replacement, safety alert, post sale warning, "dear doctor" letter, or other notice or action relating to the alleged lack of safety or efficacy of any product or any alleged product defect or violation and, to Intrexon's knowledge, no third party has initiated, conducted or intends to initiate any such notice or action.

except, in each of (ix) through (xii), for any instances which would not, individually or in the aggregate, result in a material adverse effect on the rights granted to Synthetic hereunder or Intrexon's ability to perform its obligations hereunder.

8.3 Warranty Disclaimer. EXCEPT FOR THE EXPRESS WARRANTIES PROVIDED IN THIS ARTICLE 8 OR IN THE EQUITY AGREEMENTS, EACH PARTY HEREBY DISCLAIMS ANY AND ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF TITLE, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NONINFRINGEMENT OF THE INTELLECTUAL PROPERTY RIGHTS OF THIRD PARTIES.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

ARTICLE 9

Indemnification

9.1 Indemnification by Intrexon. Intrexon agrees to indemnify, hold harmless, and defend Synthetic and its Affiliates and their respective directors, officers, employees, and agents (collectively, the "**Synthetic Indemnitees**") from and against any and all liabilities, damages, costs, expenses, or losses (including reasonable legal expenses and attorneys' fees) (collectively, "**Losses**") resulting from any claims, suits, actions, demands, or other proceedings brought by a Third Party (collectively, "**Claims**") to the extent arising from (a) the gross negligence or willful misconduct of Intrexon or any of its Affiliates, or their respective employees or agents, (b) the use, handling, storage or transport of Intrexon Materials by or on behalf of Intrexon or its Affiliates, licensees (other than Synthetic) or sublicensees; or (c) breach by Intrexon of any representation, warranty or covenant in this Agreement. Notwithstanding the foregoing, Intrexon shall not have any obligation to indemnify the Synthetic Indemnitees to the extent that a Claim arises from (i) the gross negligence or willful misconduct of Synthetic or any of its Affiliates, licensees, or sublicensees, or their respective employees or agents; or (ii) a breach by Synthetic of a representation, warranty, or covenant of this Agreement.

9.2 Indemnification by Synthetic. Synthetic agrees to indemnify, hold harmless, and defend Intrexon, its Affiliates and Third Security, and their respective directors, officers, employees, and agents (and any Third Parties which have licensed to Intrexon intellectual property rights within Intrexon IP on or prior to the Effective Date, to the extent required by the relevant upstream license agreement) (collectively, the "**Intrexon Indemnitees**") from and against any Losses resulting from Claims, to the extent arising from any of the following: (a) the gross negligence or willful misconduct of Synthetic or any of its Affiliates or their respective employees or agents; (b) the use, handling, storage, or transport of Intrexon Materials by or on behalf of Synthetic or its Affiliates, licensees, or sublicensees; (c) breach by Synthetic of any material representation, warranty or covenant in this Agreement; or (d) the design, development, manufacture, regulatory approval, handling, storage, transport, distribution, sale or other disposition of any Synthetic Product by or on behalf of Synthetic or its Affiliates, licensees, or sublicensees. Notwithstanding the foregoing, Synthetic shall not have any obligation to indemnify the Intrexon Indemnitees to the extent that a Claim arises from (i) the gross negligence or willful misconduct of Intrexon or any of its Affiliates, or their respective employees or agents; or (ii) a breach by Intrexon of a representation, warranty, or covenant of this Agreement.

9.3 Product Liability Claims. Notwithstanding the provisions of Section 9.2, any Losses arising out of any Third Party claim, suit, action, proceeding, liability or obligation involving any actual or alleged death or bodily injury arising out of or resulting from the development, manufacture or Commercialization of any Synthetic Products for use or sale in the Field, to the extent that such Losses exceed the amount (if any) covered by the applicable Party's product liability insurance ("**Excess Product Liability Costs**"), shall be paid by [*****], except to the extent such Losses arise out of any Third-Party Claim based on the gross negligence or willful misconduct of a Party, its Affiliates, or its Affiliates' Sublicensees, or any of the respective officers, directors, employees and agents of each of the foregoing entities, in the performance of obligations or exercise of rights under this Agreement.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

9.4 Control of Defense. As a condition precedent to any indemnification obligations hereunder, any entity entitled to indemnification under this Article 9 shall give written notice to the indemnifying Party of any Claims that may be subject to indemnification, promptly after learning of such Claim. If such Claim falls within the scope of the indemnification obligations of this Article 9, then the indemnifying Party shall assume the defense of such Claim with counsel reasonably satisfactory to the indemnified Party. The indemnified Party shall cooperate with the indemnifying Party in such defense. The indemnified Party may, at its option and expense, be represented by counsel of its choice in any action or proceeding with respect to such Claim. The indemnifying Party shall not be liable for any litigation costs or expenses incurred by the indemnified Party without the indemnifying Party's written consent, such consent not to be unreasonably withheld. The indemnifying Party shall not settle any such Claim if such settlement (a) does not fully and unconditionally release the indemnified Party from all liability relating thereto or (b) adversely impacts the exercise of the rights granted to the indemnified Party under this Agreement, unless the indemnified Party otherwise agrees in writing.

9.5 Insurance. Immediately prior to, and during marketing, Synthetic shall maintain in effect and good standing a product liability insurance policy issued by a reputable insurance company in amounts considered standard for the industry. Immediately prior to, and during the conduct of any clinical trials, Synthetic shall maintain in effect and good standing a clinical trials liability insurance policy issued by a reputable insurance company in amounts considered standard for the industry. At Intrexon's reasonable request, Synthetic shall provide Intrexon with all details regarding such policies, including without limitation copies of the applicable liability insurance contracts. Synthetic shall use reasonable efforts to include Intrexon as an additional insured on any such policies.

ARTICLE 10

Term; Termination

10.1 Term. The term of this Agreement shall commence upon the Effective Date and shall continue until terminated pursuant to Section 10.2 or 10.3 (the "**Term**").

10.2 Termination for Material Breach; Termination Under Section 4.5(b)

(a) Either Party shall have the right to terminate this Agreement upon written notice to the other Party if the other Party commits any material breach of this Agreement that such breaching Party fails to cure within sixty (60) days following written notice from the nonbreaching Party specifying such breach; provided, however, that if Synthetic commits any breach of the provisions of Section 4.10 of this Agreement, Intrexon shall have the right to terminate this Agreement if Synthetic fails after notice from Intrexon to cure such breach within thirty (30) days following written notice thereof.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(b) Intrexon shall have the right to terminate this Agreement, at its sole discretion, if any necessary shareholder, member, exchange, and/or board of director approvals of Synthetic have not been obtained, and the Technology Access Fee Shares (as defined in the Equity Agreements) have not been issued, within the time frames set forth in Section 5.1.

(c) Intrexon shall have the right to terminate this Agreement under the circumstances set forth in Section 4.5(b) upon written notice to Synthetic, such termination to become effective sixty (60) days following such written notice unless Synthetic remedies the circumstances giving rise to such termination within such sixty (60) day period.

(d) Intrexon shall have the right to terminate this Agreement should Synthetic execute any purported assignment of this Agreement contrary to the prohibitions in Section 12.8, such termination occurring upon Intrexon providing written notice to Synthetic and becoming effective immediately upon such written notice.

10.3 Termination by Synthetic. Synthetic shall have the right to voluntarily terminate this Agreement in its entirety upon ninety (90) days written notice to Intrexon at any time, provided that such notice may not be given during the eighteen (18) month period commencing on the Effective Date.

10.4 Effect of Termination. In the event of termination of this Agreement pursuant to Section 10.2 or Section 10.3, the following shall apply:

(a) Retained Products. Synthetic shall be permitted to continue the clinical development and Commercialization in the Field of any Synthetic Product that, at the time of termination, satisfies at least one of the following criteria (a "**Retained Product**"):

(i) the particular Synthetic Product is being sold by Synthetic triggering profit sharing payments therefor under Section 5.4(a) of this Agreement,

(ii) the particular Synthetic Product has received regulatory approval,

(iii) the particular Synthetic Product is a subject of an application for regulatory approval in the Field that is pending before the applicable regulatory authority,

(iv) the particular Synthetic Product is the subject of at least an ongoing Phase 2 or Phase 3 clinical trial in the Field (in the case of a termination by Intrexon due to a Synthetic uncured breach pursuant to Section 10.2(a) or a termination by Synthetic pursuant to Section 10.3).

Such right to continue development and commercialization shall be subject to Synthetic's full compliance with the payment provisions in Article 5, a continuing obligation for Synthetic to use in accord with Sections 4.5(a) and 4.5(c) Diligent Efforts to develop and commercialize any Retained Products, and all other provisions of this Agreement that survive termination.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(b) Termination of Licenses. Except as necessary for Synthetic to continue to obtain regulatory approval for, clinically develop, use, manufacture and Commercialize the Retained Products in the Field as permitted by Section 10.4(a), all rights and licenses granted by Intrexon to Synthetic under this Agreement shall terminate and shall revert to Intrexon without further action by either Intrexon or Synthetic. Synthetic's license with respect to Retained Products shall be exclusive or non-exclusive, as the case may be, on the same terms as set forth in Section 3.1.

(c) Reverted Products. All Synthetic Products other than the Retained Products shall be referred to herein as the "**Reverted Products**." Synthetic shall immediately cease, and shall cause its Affiliates and, if applicable, (sub)licensees to immediately cease, all development and Commercialization of the Reverted Products, and Synthetic shall not use or practice, nor shall it cause or permit any of its Affiliates or, if applicable, (sub)licensees to use or practice, directly or indirectly, any Intrexon IP with respect to the Reverted Products. Synthetic shall immediately discontinue making any representation regarding its status as a licensee or channel collaborator of Intrexon with respect to the Reverted Products.

(d) Intrexon Materials. Synthetic shall promptly return, or at Intrexon's request, destroy, any Intrexon Materials in Synthetic's possession or control at the time of termination other than any Intrexon Materials necessary for the continued development, regulatory approval, use, manufacture and Commercialization of the Retained Products in the Field.

(e) Licenses to Intrexon. Synthetic is automatically deemed to grant to Intrexon a worldwide, fully paid, royalty-free, exclusive (even as to Synthetic and its Affiliates), irrevocable, license (with full rights to sublicense) under the Synthetic Termination IP, to make, have made, import, use, offer for sale and sell Reverted Products and to use the Intrexon Channel Technology, the Intrexon Materials, and/or the Intrexon IP in the Field, subject to any exclusive rights held by Synthetic in Reverted Products pursuant to Section 10.4(c). The Parties shall also take such actions and execute such other instruments and documents as may be reasonably necessary to document such license to Intrexon.

(f) Regulatory Filings. Synthetic shall promptly assign to Intrexon, and will provide full copies of, all regulatory approvals and regulatory filings that relate specifically and solely to Reverted Products. Synthetic shall also

take such actions and execute such other instruments, assignments and documents as may be necessary to effect the transfer of rights thereunder to Intrexon. To the extent that there exist any regulatory approvals and regulatory filings that relate both to Reverted Products and other products, Synthetic shall provide copies of the portions of such regulatory filings that relate to Reverted Products and shall reasonably cooperate to assist Intrexon in obtaining the benefits of such regulatory approvals with respect to the Reverted Products.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(g) Data Disclosure. Synthetic shall provide to Intrexon copies of the relevant portions of all material reports and data, including clinical and non-clinical data and reports, obtained or generated by or on behalf of Synthetic or its Affiliates to the extent that they relate to Reverted Products, within sixty (60) days of such termination unless otherwise agreed, and Intrexon shall have the right to use any such Information in developing and commercializing Reverted Products and to license any Third Parties to do so.

(h) Third-Party Licenses. At Intrexon's request, Synthetic shall promptly provide to Intrexon copies of all Third-Party agreements under which Synthetic or its Affiliates obtained a license under Patents claiming inventions or know-how specific to or used or incorporated into the development, manufacture and/or commercialization of the Reverted Products. At Intrexon's request such that Intrexon may Commercialize the Reverted Products, Synthetic shall promptly work with Intrexon to either (A) assign to Intrexon the Third Party agreement(s), or (B) grant a sublicense (with an appropriate scope) to Intrexon under the Third Party agreement(s). Thereafter Intrexon shall be fully responsible for all obligations due for its actions under the sublicensed or assigned Third Party agreements. Notwithstanding the above, if Intrexon does not wish to assume any financial or other obligations associated with a particular Third Party agreement identified to Intrexon under this Section 10.4(h), then Intrexon shall so notify Synthetic and Synthetic shall not make such assignment or grant such sublicense (or cause it to be made or granted).

(i) Remaining Materials. At the request of Intrexon, Synthetic shall transfer to Intrexon all quantities of Reverted Product (including active pharmaceutical ingredient or work-in-process) in the possession of Synthetic or its Affiliates. Synthetic shall transfer to Intrexon all such quantities of Reverted Products without charge, except that Intrexon shall pay the reasonable costs of shipping.

(j) Third Party Vendors. At Intrexon's request, Synthetic shall promptly provide to Intrexon copies of all agreements between Synthetic or its Affiliates and Third Party suppliers, vendors, or distributors that relate to the supply, sale, or distribution of Reverted Products in the Territory. At Intrexon's request, Synthetic shall promptly: (A) with respect to such Third Party agreements relating solely to the applicable Reverted Products and permitting assignment, immediately assign (or cause to be assigned), such agreements to Intrexon, and (B) with respect to all other such Third Party agreements, Synthetic shall reasonably cooperate to assist Intrexon in obtaining the benefits of such agreements. Synthetic shall be liable for any costs associated with assigning a Third Party agreement to Intrexon or otherwise obtaining the benefits of such agreement for Intrexon, to the extent such costs are directly related to Synthetic's breach. For the avoidance of doubt, Intrexon shall have no obligation to assume any of Synthetic's

obligations under any Third Party agreement.

(k) Commercialization. Intrexon shall have the right to develop and commercialize the Reverted Products itself or with one or more Third Parties, and shall have the right, without obligation to Synthetic, to take any such actions in connection with such activities as Intrexon (or its designee), at its discretion, deems appropriate.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

(l) Confidential Information. Each Party shall promptly return, or at the other Party's request destroy, any Confidential Information of the other Party in such Party's possession or control at the time of termination; provided, however, that each Party shall be permitted to retain (i) a single copy of each item of Confidential Information of the other Party in its confidential legal files for the sole purpose of monitoring and enforcing its compliance with Article 7, (ii) Confidential Information of the other Party that is maintained as archive copies on the recipient Party's disaster recovery and/or information technology backup systems, or (iii) Confidential Information of the other Party necessary to exercise such Party's rights in Retained Products (in the case of Synthetic) or Reverted Products (in the case of Intrexon). The recipient of Confidential Information shall continue to be bound by the terms and conditions of this Agreement with respect to any such Confidential Information retained in accordance with this Section 10.4(l).

10.5 Surviving Obligations. Termination or expiration of this Agreement shall not affect any rights of either Party arising out of any event or occurrence prior to termination, including, without limitation, any obligation of Synthetic to pay any amount which became due and payable under the terms and conditions of this Agreement prior to expiration or such termination. The following portions of this Agreement shall survive termination or expiration of this Agreement: Sections 3.1 (as applicable with respect to 10.4(b), 5.5, 5.7, 6.1, 6.2 (with subsection (c) surviving only to the extent relating to Intrexon Patents that are relevant to Retained Products that, to Intrexon's knowledge, are being developed or commercialized at such time, if any), 7.1, 7.2, 7.4, 7.5, 10.4, and 10.5; Articles 9, 11, and 12; and any relevant definitions in Article 1. Further, Article 7 and Sections 4.5(a), 4.5(c), 5.2 through 5.8, and 9.5 will survive termination of this Agreement to the extent there are applicable Retained Products.

ARTICLE 11

Dispute Resolution

11.1 Disputes. It is the objective of the Parties to establish procedures to facilitate the resolution of disputes arising under this Agreement in an expedient manner by mutual cooperation and without resort to litigation. In the event of any disputes, controversies or differences which may arise between the Parties out of or in relation to or in connection with this Agreement (other than disputes arising from a Committee), including, without limitation, any alleged failure to perform, or breach, of this Agreement, or any issue relating to the interpretation or application of this Agreement, then upon the request of either Party by written notice, the Parties agree to meet and discuss in good faith a possible resolution thereof, which good faith efforts shall include at least one in-person meeting between the

Executive Officers of each Party. If the matter is not resolved within thirty (30) days following the written request for discussions, either Party may then invoke the provisions of Section 11.2. For the avoidance of doubt, any disputes, controversies or differences arising from a Committee pursuant to Article 2 shall be resolved solely in accordance with Section 2.4.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

11.2 Arbitration. Any dispute, controversy, difference or claim which may arise between the Parties and not from a Committee, out of or in relation to or in connection with this Agreement (including, without limitation, arising out of or relating to the validity, construction, interpretation, enforceability, breach, performance, application or termination of this Agreement) that is not resolved pursuant to Section 11.1 shall, subject to Section 11.10, be settled by binding "baseball arbitration" as follows. Either Party, following the end of the thirty (30) day period referenced in Section 11.1, may refer such issue to arbitration by submitting a written notice of such request to the other Party, with the arbitration to be held in the state where the other Party's principal office is located (or some other place as may be mutually agreed by the Parties). Promptly following receipt of such notice, the Parties shall meet and discuss in good faith and seek to agree on an arbitrator to resolve the issue, which arbitrator shall be neutral and independent of both Parties and all of their respective Affiliates, shall have significant experience and expertise in licensing and partnering agreements in the pharmaceutical and biotechnology industries, and shall have some experience in mediating or arbitrating issues relating to such agreements. If the Parties cannot agree on a single arbitrator within fifteen (15) days of request by a Party for arbitration, then each Party shall select an arbitrator meeting the foregoing criteria and the two (2) arbitrators so selected shall select within ten (10) days of their appointment a third arbitrator meeting the foregoing criteria. Within fifteen (15) days after an arbitrator(s) is selected (in the case of the three-person panel, when the third arbitrator is selected), each Party will deliver to both the arbitrator(s) and the other Party a detailed written proposal setting forth its proposed terms for the resolution for the matter at issue (the "**Proposed Terms**" of the Party) and a memorandum (the "**Support Memorandum**") in support thereof. The Parties will also provide the arbitrator(s) a copy of this Agreement, as it may be amended at such time. Within fifteen (15) days after receipt of the other Party's Proposed Terms and Support Memorandum, each Party may submit to the arbitrator(s) (with a copy to the other Party) a response to the other Party's Support Memorandum. Neither Party may have any other communications (either written or oral) with the arbitrator(s) other than for the sole purpose of engaging the arbitrator or as expressly permitted in this Section 11.2; provided that, the arbitrator(s) may convene a hearing if the arbitrator(s) so chooses to ask questions of the Parties and hear oral argument and discussion regarding each Party's Proposed Terms. Within sixty (60) days after the arbitrator's appointment, the arbitrator(s) will select one of the two Proposed Terms (without modification) provided by the Parties that he or she believes is most consistent with the intention underlying and agreed principles set forth in this Agreement. The decision of the arbitrator(s) shall be final, binding, and unappealable. For clarity, the arbitrator(s) must select as the only method to resolve the matter at issue one of the two sets of Proposed Terms, and may not combine elements of both Proposed Terms or award any other relief or take any other action.

11.3 Governing Law. This Agreement shall be governed by and construed under the substantive laws of the State of New York, excluding any conflicts or choice of law rule or principle that might otherwise refer construction or interpretation of this Agreement to the substantive law of another jurisdiction.

43

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

11.4 **Award**. Any award to be paid by one Party to the other Party as determined by the arbitrator(s) as set forth above under Section 11.2 shall be promptly paid in United States dollars free of any tax, deduction or offset; and any costs, fees or taxes incident to enforcing the award shall, to the maximum extent permitted by law, be charged against the losing Party. Each Party agrees to abide by the award rendered in any arbitration conducted pursuant to this Article 11, and agrees that, subject to the United States Federal Arbitration Act, 9 U.S.C. §§ 1-16, judgment may be entered upon the final award in any United States District Court located in New York and that other courts may award full faith and credit to such judgment in order to enforce such award. The award shall include interest from the date of any damages incurred for breach of the Agreement, and from the date of the award until paid in full, at a rate fixed by the arbitrator(s). With respect to money damages, nothing contained herein shall be construed to permit the arbitrator(s) or any court or any other forum to award consequential, incidental, special, punitive or exemplary damages. By entering into this agreement to arbitrate, the Parties expressly waive any claim for consequential, incidental, special, punitive or exemplary damages. The only damages recoverable under this Agreement are direct compensatory damages.

11.5 **Costs**. Each Party shall bear its own legal fees. The arbitrator(s) shall assess his or her costs, fees and expenses against the Party losing the arbitration.

11.6 **Injunctive Relief**. Nothing in this Article 11 will preclude either Party from seeking equitable relief or interim or provisional relief from a court of competent jurisdiction, including a temporary restraining order, preliminary injunction or other interim equitable relief, concerning a dispute either prior to or during any arbitration if necessary to protect the interests of such Party or to preserve the status quo pending the arbitration proceeding. Specifically, the Parties agree that a material breach by either Party of its obligations in Section 3.5 or Article 7 of this Agreement may cause irreparable harm to the other Party, for which damages may not be an adequate remedy. Therefore, in addition to its rights and remedies otherwise available at law, including, without limitation, the recovery of damages for breach of this Agreement, upon an adequate showing of material breach of such Section 3.5 or Article 7, and without further proof of irreparable harm other than this acknowledgement, such non-breaching Party shall be entitled to seek (a) immediate equitable relief, specifically including, but not limited to, both interim and permanent restraining orders and injunctions, without bond, and (b) such other and further equitable relief as the court may deem proper under the circumstances. For the avoidance of doubt, nothing in this Section 11.6 shall otherwise limit a breaching Party's opportunity to cure a material breach as permitted in accordance with Section 10.2.

11.7 Confidentiality. The arbitration proceeding shall be confidential and the arbitrator(s) shall issue appropriate protective orders to safeguard each Party's Confidential Information. Except as required by law, no Party shall make (or instruct the arbitrator(s) to make) any public announcement with respect to the proceedings or decision of the arbitrator(s) without prior written consent of the other Party. The existence of any dispute submitted to arbitration, and the award, shall be kept in confidence by the Parties and the arbitrator(s), except as required in connection with the enforcement of such award or as otherwise required by applicable law.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

11.8 Survivability. Any duty to arbitrate under this Agreement shall remain in effect and be enforceable after termination of this Agreement for any reason.

11.9 Jurisdiction. For the purposes of this Article 11, the Parties acknowledge their diversity and agree to accept the jurisdiction of any United States District Court located in New York for the purposes of enforcing or appealing any awards entered pursuant to this Article 11 and for enforcing the agreements reflected in this Article 11 and agree not to commence any action, suit or proceeding related thereto except in such courts.

11.10 Patent Disputes. Notwithstanding any other provisions of this Article 11, and subject to the provisions of Section 6.2, any dispute, controversy or claim relating to the scope, validity, enforceability or infringement of any Intrexon Patents shall be submitted to a court of competent jurisdiction in the country in which such Patent was filed or granted.

ARTICLE 12

General Provisions

12.1 Use of Name. No right, express or implied, is granted by this Agreement to either Party to use in any manner the name of the other or any other trade name or trademark of the other in connection with the performance of this Agreement, except that (a) either Party may use the name of the other Party as required by regulations and in press releases accompanying quarterly and annual earnings reports approved by the issuer's Board of Directors, and (b) Synthetic may use the Intrexon Trademarks in accord with licenses and restrictions set forth herein.

12.2 LIMITATION OF LIABILITY. NEITHER PARTY SHALL BE LIABLE TO THE OTHER FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, PUNITIVE, OR INDIRECT DAMAGES ARISING FROM OR RELATING TO ANY BREACH OF THIS AGREEMENT, REGARDLESS OF ANY NOTICE OF THE POSSIBILITY OF SUCH DAMAGES. NOTWITHSTANDING THE FOREGOING, NOTHING IN THIS

PARAGRAPH IS INTENDED TO LIMIT OR RESTRICT THE INDEMNIFICATION RIGHTS OR OBLIGATIONS OF ANY PARTY UNDER ARTICLE 9, OR DAMAGES AVAILABLE FOR BREACHES OF THE OBLIGATIONS SET FORTH IN ARTICLE 7.

12.3 Independent Parties. The Parties are not employees or legal representatives of the other Party for any purpose. Neither Party shall have the authority to enter into any contracts in the name of or on behalf of the other Party. This Agreement shall not constitute, create, or in any way be interpreted as a joint venture, partnership, or business organization of any kind.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

12.4 Notice. All notices, including notices of address change, required or permitted to be given under this Agreement shall be in writing and deemed to have been given when delivered if personally delivered or sent by facsimile (provided that the party providing such notice promptly confirms receipt of such transmission with the other party by telephone), on the business day after dispatch if sent by a nationally-recognized overnight courier and on the third business day following the date of mailing if sent by certified mail, postage prepaid, return receipt requested. All such communications shall be sent to the address or facsimile number set forth below (or any updated addresses or facsimile number communicated to the other Party in writing):

If to Intrexon:

Intrexon Corporation

20358 Seneca Meadows Parkway

Germantown, MD 20876

Attention: President, Protein Production Division

Fax: (301) 556-9901

with a copy to:

Intrexon Corporation

20358 Seneca Meadows Parkway

Germantown, MD 20876

Attention: Legal Department

Fax: (301) 556-9902

If to Synthetic: Synthetic Biologics, Inc.

617 Detroit Street, Suite 100

Ann Arbor, MI 48104

Attention: Chief Executive Officer

Fax: (734) 332-7878

with a copy to: Gracin & Marlow, LLP

405 Lexington Avenue

New York, NY 10174

Attn: Leslie Marlow, Esq.

Fax: (212) 208-4657

12.5 **Severability**. In the event any provision of this Agreement is held to be invalid or unenforceable, the valid or enforceable portion thereof and the remaining provisions of this Agreement will remain in full force and effect.

12.6 **Waiver**. Any waiver (express or implied) by either Party of any breach of this Agreement shall not constitute a waiver of any other or subsequent breach.

12.7 **Entire Agreement; Amendment**. This Agreement, including any exhibits attached hereto, constitute the entire, final, complete and exclusive agreement between the Parties and supersede all previous agreements or representations, written or oral, with respect to the subject matter of this Agreement (including any prior confidentiality agreement between the Parties). All information of Intrexon or Synthetic to be kept confidential by the other Party under any prior confidentiality agreement, as of the Effective Date, shall be maintained as Confidential Information by such other Party under the obligations set forth in Article 7 of this Agreement. This Agreement may not be modified or amended except in a writing signed by a duly authorized representative of each Party.

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

12.8 Non-assignability; Binding on Successors. Any attempted assignment of the rights or delegation of the obligations under this Agreement shall be void without the prior written consent of the non-assigning or non-delegating Party; provided, however, that either Party may assign its rights or delegate its obligations under this Agreement without such consent (a) to an Affiliate of such Party or (b) to its successor in interest in connection with any merger, acquisition, consolidation, corporate reorganization, or similar transaction, or sale of all or substantially all of its assets, provided that such assignee agrees in writing to assume and be bound by the assignor's obligations under this Agreement. This Agreement shall be binding upon, and inure to the benefit of, the successors, executors, heirs, representatives, administrators and permitted assigns of the Parties. Notwithstanding the foregoing, in the event that either Party assigns this Agreement to its successor in interest by way of merger, acquisition, consolidation, corporate reorganization, or similar transaction, or sale of all or substantially all of its assets (whether this Agreement is actually assigned or is assumed by such successor in interest or its affiliate by operation of law (e.g., in the context of a reverse triangular merger)), the intellectual property rights of such successor in interest or any of its Affiliates other than those licensed in this Agreement shall be automatically excluded from the rights licensed to the other Party under this Agreement.

12.9 Force Majeure. Neither Party shall be liable to the other for its failure to perform any of its obligations under this Agreement, except for payment obligations, during any period in which such performance is delayed because rendered impracticable or impossible due to circumstances beyond its reasonable control, including without limitation earthquakes, governmental regulation, fire, flood, labor difficulties, civil disorder, acts of terrorism and acts of God, provided that the Party experiencing the delay promptly notifies the other Party of the delay.

12.10 No Other Licenses. Neither Party grants to the other Party any rights or licenses in or to any intellectual property, whether by implication, estoppel, or otherwise, except to the extent expressly provided for under this Agreement.

12.11 Non-Solicitation. During the Term and for a period of one (1) year following the end of the Term, neither Synthetic nor Intrexon may directly or indirectly solicit in order to offer to employ, engage in any discussion regarding employment with, or hire any employee of the other Party or an individual who was employed by the other party with one (1) year prior to such solicitation, discussion, or hire, without the prior approval of such other Party. General employment solicitations or advertisements shall not be considered direct or indirect solicitations, and are not prohibited under this Agreement.

47

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

12.12 Legal Compliance. The Parties shall review in good faith and cooperate in taking such actions to ensure compliance of this Agreement with all applicable laws.

12.13 Counterparts. This Agreement may be executed in any number of counterparts (including by facsimile, PDF, or other means of electronic communication), each of which taken together will constitute one and the same instrument, and any of the Parties hereto may execute this Agreement by signing any such counterpart.

[Remainder of page intentionally left blank.]

EXECUTION COPY

CONFIDENTIAL

Portions herein identified by [*****] have been omitted pursuant to a request for confidential treatment under Rule 24b-2 of the Securities Exchange Act of 1934, as amended. A complete copy of this document has been filed separately with the Securities and Exchange Commission.

In Witness Whereof, the Parties hereto have duly executed this Exclusive Channel Collaboration Agreement.

Intrexon Corporation

By:/s/ Saiid Zarrabian

Name: Saiid Zarrabian

Title: President of Protein Production Division and Senior Vice President

Synthetic Biologics, Inc.

By:/s/Jeffrey Riley

Name: Jeffrey Riley

Title: Chief Executive Officer, President, and Director

SIGNATURE PAGE FOR EXCLUSIVE CHANNEL COLLABORATION AGREEMENT

49

EXECUTION COPY

CONFIDENTIAL

STOCK ISSUANCE AGREEMENT

This Agreement ("**Agreement**") is made and entered into as of August 6, 2012 (the "**Effective Date**"), by and among Synthetic Biologics, Inc., a Nevada corporation (the "**Company**"), and Intrexon Corporation, a Virginia corporation ("**Intrexon**").

A. Concurrently with the execution of this Agreement, the Company is entering into an Exclusive Channel Collaboration Agreement with Intrexon (the "**Channel Agreement**"), pursuant to which Intrexon is licensing the rights to certain technology to the Company; and

B. In partial consideration of Intrexon's license to the Company under the Channel Agreement, the Company has agreed to issue to Intrexon certain shares of the Company's common stock, par value $0.001 per share, (the "**Common Stock**") in accordance with the terms and conditions of this Agreement.

AGREEMENT

In consideration of the mutual covenants contained in this Agreement and for other good and valuable consideration, the receipt of which is hereby acknowledged, the Company and Intrexon hereby agree as follows:

sECTION 1. Authorization of Issuance of Shares.

1.1 Technology Access Fee. Subject to the terms and conditions of this Agreement, the Company has authorized the issuance to Intrexon of a certain number of shares of the Company's Common Stock at the Technology Access Fee Closing (as hereinafter defined) as a technology access fee (the "**Technology Access Fee Shares**"), which number of Technology Access Fee Shares is equal to the difference between (i) 19.99% of the number of shares of Common Stock of Company outstanding as of the date of the Technology Access Fee Closing prior to the issuance of such shares, and (ii) the number of shares of Common Stock of Company held by Intrexon immediately prior to the Technology Access Fee Closing.

1.2 Milestones. Subject to the terms and conditions of this Agreement and the Channel Agreement, upon the attainment of certain commercialization milestones as for each Synthetic Product (as that term is defined in the Channel Agreement) developed under the Channel Agreement that reach such milestones, the Company has agreed to make milestone payments (each, whether in cash or equity, a "**Milestone Payment**" and together "**Milestone Payments**") set forth below in Sections 1.2(a) and 1.2(b) to Intrexon, at the option of the Company, payable either in cash or in shares of Company Common Stock at the option of the Company, on certain dates following achievement of certain Milestone Events (as defined below).

EXECUTION COPY
CONFIDENTIAL

(a) Upon the filing of an Investigational New Drug application with the U.S. Food and Drug Administration for a Synthetic Product, or alternatively the filing of the first equivalent regulatory filing with a foreign regulatory agency (both as applicable, the "**IND Milestone Event**"), Company will pay to Intrexon either (i) two million dollars ($2M) in cash, or (ii) that number of shares of Common Stock (the "**IND Milestone Shares**") having a fair market value equaling two million dollars ($2M) where such fair market value for this Section 1.2(a) is determined using published market data of the share price for Common Stock at the close of market on the business day immediately preceding the date of public announcement of attainment of the IND Milestone Event.

(b) Upon the first to occur of either first commercial sale of a Synthetic Product in a country or the granting of the regulatory approval of that Synthetic Product (both as applicable, the "**Approval Milestone Event**"), Company will pay to Intrexon either (i) three million dollars ($3M) in cash, or (ii) that number of shares of Common Stock (the "**Approval Milestone Shares**") having a fair market value equaling three million dollars ($3M) where such fair market value for this Section 1.2(b) is determined using published market data of the share price for Common Stock at the close of market on the business day immediately preceding the date of public announcement of attainment of the Approval Milestone Event.

The number of shares of Common Stock to be issued under each of subsections (a) and (b) of this Section 1.2 shall be rounded down to the nearest whole share. The event giving rise to an issuance of shares under subsections (a) and (b) of this Section 1.2 shall be a "**Milestone Event**" and together, the "**Milestone Events**." A Milestone Payment shall be due within thirty days following the date of the occurrence of a Milestone Event.

1.3 Field Expansion Fee. As set forth in Section 2.1(e) of the Channel Agreement, Company has agreed that it will pay an optional and varying fee whereby Synthetic remits a payment, in cash or equity at Synthetic's sole discretion, to Intrexon for each additional indication elected under Section 2.1(e) of the Channel Agreement (the "**Field Expansion Fee**"). For clarity, if the Field, following the Field election by Synthetic required per Section 2.1(c) of the Channel Agreement, contains three (3) total or less targets, then neither this Section 1.3 nor Section 2.1(e) of the Channel Agreement will trigger any obligation for Synthetic to pay a Field Expansion Fee irrespective of whether any of such three (3) total or less targets have been previously swapped in by Synthetic for other targets in accord with Section 2.1(b) of the Channel Agreement. The Field Expansion Fee must be paid completely in either Common Stock or cash, and will comprise either (i) two million dollars ($2M) in cash for each such additional target elected under Section 2.1(e) of the Channel Agreement, or (ii) that number of shares of Common Stock (the "**Field Expansion Fee Shares**") having a fair market value equaling two million dollars ($2M) for each such target that Company will so elect where such fair market value for this Section 1.3 is determined using published market data establishing the volume-weighted average price for a share of Common Stock over the thirty (30) day period immediately preceding the date of the Field Expansion Fee Closing (as defined below).

EXECUTION COPY
CONFIDENTIAL

1.4 Capital Adjustments. If after the date hereof (i) the outstanding shares of the Company's Common Stock shall be subdivided or split into a greater number of shares or a dividend in Common Stock shall be paid in respect of such Common Stock or (ii) the outstanding shares of Common Stock are combined, then all share quantities in this Agreement not yet issued shall be appropriately adjusted to reflect such stock split, stock dividend or conjunction. If after the date hereof (i) the Company shall pay a dividend in securities of the Company (other than in Common Stock) or of other property (including cash) on the Common Stock, or (ii) there shall occur any merger, consolidation, capital reorganization or reclassification in which the Common Stock is converted or exchanged for securities, cash or other property, the class or series of stock constituting the Common Stock for purposes of this Agreement, shall be appropriately adjusted to reflect such other dividend, merger, consolidation, capital reorganization or reclassification. After any event referenced in clauses (i) through (ii) of the immediately preceding sentence is consummated, if applicable, all references herein to the Company's Common Stock shall be deemed to refer to the capital stock or property (including cash) into or for which the Common Stock was converted or exchanged, with the necessary changes in detail. Nothing contained in this Section 1.2 or elsewhere in this Agreement will prevent or prohibit the dilution of Intrexon's ownership interest in the Company or grant to Intrexon any preemptive rights.

1.5 Company Sale. In the event that the Company consummates a Company Sale (as defined below) prior to any one of the Subsequent Closings (as defined below), and the Channel Agreement is transferred or assigned to the buyer or assigned to the buyer in connection with such Company Sale, the Company and Intrexon agree that payments under Sections 1.2 and 1.3 of this Agreement shall be payable only in cash following the Company Sale.

sECTION 2. Closing and Delivery

2.1 Sale and Purchase Price of Shares**.** Subject to the terms and conditions of this Agreement and in reliance upon the representations, warranties and agreements contained herein, the Company will issue and sell to Intrexon, and Intrexon will purchase from the Company, at each of the Technology Access Fee Closing, the Milestone Closings (as hereinafter defined) if the Company has not elected to make the Milestone Payment in cash, and the Field Expansion Fee Closing (as hereinafter defined) if the Company has not elected to make the Field Expansion Fee payment in cash, the applicable number of shares as set forth above in Sections 1.1 through 1.3. The Parties agree that the consideration received by the Company hereunder shall be the execution and delivery by Intrexon of the Channel Agreement which consideration is at least equal to the par value of the shares issued or issuable under this Agreement.

2.2 Closings. The closings of the purchase and sale of the shares to be issued pursuant to this Agreement shall be held at the offices of Gracin & Marlow, LLP, Chrysler Building, 405 Lexington Avenue, 26th Floor, New York, New York 10174 or at such other place as the Company and Intrexon may agree, as follows:

(a) the closing of the purchase and sale of the Technology Access Fee Shares will occur, subject to the conditions set forth in Section 7.1 hereof and applicable to the Technology Access Fee Closing, subject to the timeframes set forth in Section 5.1 of the Channel Agreement, (i) on the fourth business day following approval of the Channel Agreement by NYSE Amex (the "**NYSE Amex Approval**"), or (ii) on such other date as Intrexon and the Company may agree upon (in either case, the "**Technology Access Fee Closing**");

52.

EXECUTION COPY
CONFIDENTIAL

(b) the closing of the purchase and sale of each occurrence of Milestone Shares or the payment of each Milestone Cash Payment will occur, subject to the conditions set forth in Section 7.2 hereof and applicable to the Milestone Closing, (A) if NYSE Amex approval (or approval of any other exchange upon which the Common Stock may be listed) is required, on the tenth (10^{th}) business day after such approval is received, but in no event later than one hundred twenty (120) days after the respective Milestone Event, or (B) if NYSE Amex approval (or approval of any other exchange upon which the Common Stock may be listed) is not required, on the earlier of (i) the thirtieth (30^{th}) day following the occurrence of the respective Milestone Event, and (ii) such other date as Intrexon and the Company may agree (the "**Milestone Closing**"); and

(c) the closing of the purchase and sale of the Field Expansion Fee Shares or the payment of the cash Field Expansion Fee Payment will occur, subject to the conditions set forth in Section 7.2 hereof and applicable to the Field Expansion Fee Closing, at a date and time set by Company and reasonably acceptable to Intrexon, but in no event shall that date be later than the one year anniversary of the Channel Agreement's effective date (the "**Field Expansion Fee Closing**").

The Technology Access Fee Closing, each of the Milestones Closing, and the Field Expansion Fee Closing may be collectively herein referred to as the "**Closings**" and individually as a "**Closing**". Further, each of the Milestones Closing and the Field Expansion Fee Closing may be collectively herein referred to as the "**Subsequent Closings**" and individually as a "**Subsequent Closing**".

2.3 Delivery of the Shares. Promptly following a Closing at which shares are issued to Intrexon, the Company shall deliver to Intrexon a certificate representing the number of shares purchased at such Closing, registered in the name of Intrexon.

sECTION 3. Representations and Warranties of the Company.

Subject to and except as set forth in the SEC Documents or on the Schedule of Exceptions which is arranged in sections corresponding to the sub-section numbered provisions contained below in this Section, the Company hereby represents and warrants to, and covenants with, Intrexon as of the date hereof as follows:

EXECUTION COPY
CONFIDENTIAL

3.1 Organization, Good Standing and Power.

(a) The Company is a corporation duly incorporated, validly existing and in good standing under the laws of the State of Nevada and has the requisite corporate power to own, lease and operate its properties and assets and to conduct its business as it is now being conducted and as described in the reports filed by the Company with the Securities and Exchange Commission (the "**Commission**") pursuant to the reporting requirements of the Securities Exchange Act of 1934, as amended (the "**Exchange Act**"), since the end of its most recently completed fiscal year through the date hereof, including, without limitation, its most recent report on Form 10-Q. The Company does not have any subsidiaries other than those identified in its most recent report on Form 10-Q. The Company is qualified to do business as a foreign corporation and is in good standing in every jurisdiction in which the nature of the business conducted or property owned by it makes such qualification necessary, except for any jurisdiction(s) (alone or in the aggregate) in which the failure to be so qualified will not have a Material Adverse Effect. For the purposes of this Agreement, "**Material Adverse Effect**" means any effect on the business, operations, properties or financial condition of the Company that is material and adverse to the Company, taken as a whole, and any condition, circumstance or situation that would prohibit the Company from entering into and performing any of its obligations hereunder.

3.2 Authorization; Enforcement. The Company has the requisite corporate power and authority to enter into and perform this Agreement and to issue and sell the shares in accordance with the terms hereof. The execution, delivery and performance of this Agreement by the Company and the consummation by it of the transactions contemplated hereby have been duly and validly authorized by all necessary corporate action, and no further consent or authorization of the Company, its board of directors or stockholders is required, except pursuant to Section 7. When executed and delivered by the Company, this Agreement shall constitute a valid and binding obligation of the Company enforceable against the Company in accordance with its terms, except as such enforceability may be limited by applicable bankruptcy, reorganization, moratorium, liquidation, conservatorship, receivership or similar laws relating to, or affecting generally the enforcement of, creditor's rights and remedies or by other equitable principles of general application. The Company's board of directors, at a meeting duly called and held, adopted resolutions approving the transactions contemplated hereby, including the issuance of the Technology Access Fee Shares, the Field Expansion Fee Shares, and the Milestone Shares issuable upon occurrence of the various Milestone Events in a manner consistent with and that meets the requirements of Nevada Corporate Code contained in Chapter 78 of the Nevada Revised Statutes.

3.3 Issuance of Shares. The shares to be issued and sold hereunder have been duly authorized by all necessary corporate action and, when paid for and issued in accordance with the terms hereof, will be validly issued, fully paid and nonassessable. In addition, such shares will be free and clear of all liens, claims, charges, security interests or agreements, pledges, assignments, covenants, restrictions or other encumbrances created by, or imposed by, the Company (collectively, "**Encumbrances**") and rights of refusal of any kind imposed by the Company (other than restrictions on transfer under applicable securities laws) and the holder of such shares shall be entitled to all rights accorded to a holder of Common Stock. As of the date hereof, 32,701,984 shares of the Company's Common Stock are issued and outstanding.

54.

EXECUTION COPY
CONFIDENTIAL

3.4 No Conflicts; Governmental Approvals. The execution, delivery and performance of the Agreement by the Company and the consummation by the Company of the transactions contemplated hereby do not and will not (i) violate any provision of the Company's Articles of Incorporation or Bylaws, each as amended to date, (ii) conflict with, or constitute a default (or an event which with notice or lapse of time or both would become a default) under, or give to others any rights of termination, amendment, acceleration or cancellation of, any agreement, mortgage, deed of trust, indenture, note, bond, license, lease agreement, instrument or obligation to which the Company is a party or by which the Company's properties or assets are bound, or (iii) result in a violation of any federal, state, local or foreign statute, rule, regulation, order, judgment or decree (including federal and state securities laws and regulations) applicable to the Company or by which any property or asset of the Company is bound or affected, except for such conflicts, defaults, terminations, amendments, acceleration, cancellations and violations as would not, individually or in the aggregate, have a Material Adverse Effect. The Company is not required under federal, state, foreign or local law, rule or regulation to obtain any consent, authorization or order of, or make any filing or registration with, any court or governmental agency in order for it to execute, deliver or perform any of its obligations under this Agreement or issue and sell the shares in accordance with the terms hereof (other than any filings, consents and approvals which may be required to be made by the Company under applicable state and federal securities laws, rules or regulations prior to or subsequent to the Closing). The sale and issuance of the shares hereunder will be required to be approved in advance by NYSE Amex.

3.5 SEC Documents, Financial Statements. The Common Stock of the Company is registered pursuant to Section 12(b) of the Exchange Act. During the two year period preceding the execution of this Agreement other than with respect to its Annual Report on Form 10-K for the year ended December 31, 2011, the Company has timely filed all reports, schedules, forms, statements and other documents required to be filed by it with the Commission pursuant to the reporting requirements of the Exchange Act (the "**SEC Documents**"). At the times of their respective filing other than with respect to its initial Annual Report on Form 10-K for the year ended December 31, 2011, all such reports, schedules, forms, statements and other documents complied in all material respects with the requirements of the Exchange Act and the rules and regulations of the Commission promulgated thereunder. At the times of their respective filings, such reports, schedules, forms, statements and other documents did not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading. As of their respective dates, other than with respect to its initial Annual Report on Form 10-K for the year ended December 31, 2011 the financial statements of the Company included in the SEC Documents complied in all material respects with applicable accounting requirements and the published rules and regulations of the Commission or other applicable rules and regulations with respect thereto. Such financial statements have been prepared in accordance with generally accepted accounting principles applied on a consistent basis during the periods involved (except (i) as may be otherwise indicated in such financial statements or the notes thereto or (ii) in the case of unaudited interim statements, to the extent they may not include footnotes or may be condensed or summary statements), and fairly present in all material respects the consolidated financial position of the Company as of the dates thereof and the results of operations and cash flows for the periods then ended (subject, in the case of unaudited statements, to normal year-end audit adjustments).

EXECUTION COPY
CONFIDENTIAL

3.6 Accountants. Berman & Company, P.A. whose report on the financial statements of the Company is filed with the SEC in the Company's Annual Report on Form 10-K/A for the year ended December 31, 2011 filed with the SEC on May 11, 2012, were, at the time such report was issued, independent registered public accountants as required by the Securities Act of 1933 and the rules and regulations promulgated thereunder (together, the "**Securities Act**"). Except as described in the SEC Documents and as preapproved in accordance with the requirements set forth in Section 10A of the Exchange Act, to the Company's knowledge, Berman & Company, P.A. has not engaged in any non-audit services prohibited by subsection (g) of Section 10A of the Exchange Act on behalf of the Company.

3.7 Internal Controls. The Company has established and maintains a system of internal accounting controls sufficient to provide reasonable assurances that: (i) transactions are executed in accordance with management's general or specific authorization; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles in the United States and to maintain accountability for assets; (iii) access to assets is permitted only in accordance with management's general or specific authorization; and (iv) the recorded accountability for assets is compared with existing assets at reasonable intervals and appropriate action is taken with respect to any differences.

3.8 Corporate Governance. The Company's board of directors meets the independence requirements of, and has established an audit committee that meets the independence requirements of, the rules and regulations of the Commission and the NYSE Amex (formerly the American Stock Exchange). The Audit Committee has reviewed the adequacy of its charter within the past 12 months.

3.9 Disclosure Controls. The Company has established and maintains disclosure controls and procedures (as such term is defined in Rules 13a-15 and 15d-15 under the Exchange Act). Since the date of the most recent evaluation of such disclosure controls and procedures, there have been no significant changes in internal controls or in other factors that could significantly affect internal controls, including any corrective actions with regard to significant deficiencies and material weaknesses. The Company is in compliance in all material respects with all provisions currently in effect and applicable to the Company of the Sarbanes-Oxley Act of 2002, and all rules and regulations promulgated thereunder or implementing the provisions thereof.

3.10 No Material Adverse Change. Except as disclosed in the SEC Documents, since March 31, 2012, the Company has not (i) experienced or suffered any Material Adverse Effect, (ii) incurred any material liabilities, obligations, claims or losses (whether liquidated or unliquidated, secured or unsecured, absolute, accrued, contingent or otherwise) other than those incurred in the ordinary course of the Company's business or (iii) declared, made or paid any dividend or distribution of any kind on its capital stock.

3.11 No Undisclosed Events or Circumstances. Except as disclosed in the SEC Documents, since March 31, 2012, except for the consummation of the transactions contemplated herein, to the Company's knowledge, no event or

circumstance has occurred or exists with respect to the Company or its businesses, properties, prospects, operations or financial condition, which, under applicable law, rule or regulation, requires public disclosure or announcement by the Company but which has not been so publicly announced or disclosed.

56.

EXECUTION COPY
CONFIDENTIAL

3.12 Litigation. No action, suit, proceeding or investigation is currently pending or, to the knowledge of the Company, has been threatened in writing against the Company that: (i) concerns or questions the validity of this Agreement; (ii) concerns or questions the right of the Company to enter into this Agreement; or (iii) is reasonably likely to have a Material Adverse Effect. The Company is neither a party to nor subject to the provisions of any material order, writ, injunction, judgment or decree of any court or government agency or instrumentality. There is no action, suit, proceeding or investigation by the Company currently pending or that the Company intends to initiate that would have a Material Adverse Effect.

3.13 Compliance. Except for defaults or violations which are not reasonably likely to have a Material Adverse Effect, the Company is not (i) in default under or in violation of (and no event has occurred that has not been waived that, with notice or lapse of time or both, would result in a default by the Company under), nor has the Company received notice of a claim that it is in default under or that it is in violation of, any indenture, loan or credit agreement or any other agreement or instrument to which it is a party or by which it or any of its properties is bound (whether or not such default or violation has been waived), (ii) is in violation of any order of any court, arbitrator or governmental body, or (iii) is or has been in violation of any statute, rule or regulation of any governmental authority, including without limitation all foreign, federal, state and local laws, applicable to its business, except in each case for such defaults or violations as would not have a Material Adverse Effect.

3.14 Intellectual Property

(a) To the best of its knowledge, the Company has entered into agreements with each of its current and former officers, employees and consultants involved in research and development work, including development of the Company's products and technology providing the Company, to the extent permitted by law, with title and ownership to patents, patent applications, trade secrets and inventions conceived, developed, reduced to practice by such person, solely or jointly with other of such persons, during the period of employment by the Company except where the failure to have entered into such an agreement would not have a Material Adverse Effect. The Company is not aware that any of its employees or consultants is in material violation thereof.

(b) To the Company's knowledge, the Company owns or possesses adequate rights to use all, if any, trademarks, service marks, trade names, domain names, copyrights, patents, patent applications, inventions, know how (including trade secrets and other unpatented and/or unpatentable proprietary or confidential information, systems or procedures), and other intellectual property rights ("**Intellectual Property**") as are necessary for the conduct of its business as described in the SEC Documents. Except as described in the SEC Documents, (i) to the knowledge of the Company, there is no infringement, misappropriation or violation by third parties of any such Intellectual Property; (ii) there is no pending or, to the knowledge of the Company, threatened action, suit, proceeding or claim by others against the Company challenging the Company's rights in or to any such Intellectual Property; (iii) the Intellectual Property owned by the Company and, to the knowledge of the Company, the Intellectual Property licensed to the

57.

EXECUTION COPY
CONFIDENTIAL

Company has not been adjudged invalid or unenforceable by a court of competent jurisdiction or applicable government agency, in whole or in part, and there is no pending or, to the knowledge of the Company, threatened action, suit, proceeding or claim by others challenging the validity or scope of any such Intellectual Property; (iv) there is no pending or, to the knowledge of the Company, threatened action, suit, proceeding or claim by others against the Company that the Company infringes, misappropriates or otherwise violates any Intellectual Property or other proprietary rights of others, and the Company has not received any written notice of such claim; and (v) to the Company's knowledge, no employee of the Company is the subject of any claim or proceeding involving a violation of any term of any employment contract, patent disclosure agreement, invention assignment agreement, non-competition agreement, non-solicitation agreement, nondisclosure agreement or any restrictive covenant to or with a former employer where the basis of such violation relates to such employee's employment with the Company or actions undertaken by the employee while employed with the Company, in each of (i) through (v), for any instances which would not, individually or in the aggregate, result in a Material Adverse Effect.

3.15 FDA Compliance.

(a) Except as described in the SEC Documents, the Company: (i) is in material compliance with all statutes, rules or regulations applicable to the ownership, testing, development, manufacture, packaging, processing, use, distribution, marketing, labeling, promotion, sale, offer for sale, storage, import, export or disposal of any product that is under development, manufactured or distributed by the Company ("**Applicable Laws**"); (ii) has not received any FDA Form 483, notice of adverse finding, warning letter, untitled letter or other correspondence or notice from the U.S. Food and Drug Administration (the "**FDA**") or any other federal, state, local or foreign governmental or regulatory authority alleging or asserting material noncompliance with any Applicable Laws or any licenses, certificates, approvals, clearances, authorizations, permits and supplements or amendments thereto required by any such Applicable Laws ("**Authorizations**"), which would not, individually or in the aggregate, result in a Material Adverse Effect; (iii) possesses all material Authorizations necessary for the operation of its business as described in the SEC Documents and such Authorizations are valid and in full force and effect and the Company is not in material violation of any term of any such Authorizations; and (iv) since December 31, 2011: (A) has not received notice of any claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from the FDA or any other federal, state, local or foreign governmental or regulatory authority or third party alleging that any product operation or activity is in material violation of any Applicable Laws or Authorizations and the Company has no knowledge that the FDA or any other federal, state, local or foreign governmental or regulatory authority or third party is considering any such claim, litigation, arbitration, action, suit, investigation or proceeding; (B) has not received notice that the FDA or any other federal, state, local or foreign governmental or regulatory authority has taken, is taking or intends to take action to limit, suspend, modify or revoke any material Authorizations and has no knowledge that the FDA or any other federal, state, local or foreign governmental or regulatory authority is considering such action; (C) has filed, obtained, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Applicable Laws or Authorizations and that all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were materially complete and correct on the date filed (or were corrected or supplemented by a subsequent submission); and (D) has not, either voluntarily or involuntarily, initiated, conducted, or issued or caused to be initiated, conducted or issued, any recall, market withdrawal or replacement, safety alert, post sale warning, "dear doctor" letter, or other notice or action relating to the alleged lack of safety or efficacy of any product or any alleged product defect or violation and, to the Company's knowledge, no third party has initiated, conducted or intends to initiate any such notice or action.

58.

EXECUTION COPY
CONFIDENTIAL

(b) Since January 1, 2009, and except to the extent disclosed in the SEC Documents, the Company has not received any notices or correspondence from the FDA or any other federal, state, local or foreign governmental or regulatory authority requiring the termination, suspension or material modification of any studies, tests or preclinical or clinical trials conducted by or on behalf of the Company.

3.16 General Healthcare Regulatory Compliance.

(a) As used in this subsection:

(i) "**Governmental Entity**" means any national, federal, state, county, municipal, local or foreign government, or any political subdivision, court, body, agency or regulatory authority thereof, and any Person exercising executive, legislative, judicial, regulatory, taxing or administrative functions of or pertaining to any of the foregoing.

(ii) "**Law**" means any federal, state, local, national or foreign law, statute, code, ordinance, rule, regulation, order, judgment, writ, stipulation, award, injunction, decree or arbitration award or finding.

(b) The Company has not committed any act, made any statement or failed to make any statement that would reasonably be expected to provide a basis for the FDA or any other Governmental Entity to invoke its policy with respect to "Fraud, Untrue Statements of Material Facts, Bribery, and Illegal Gratuities", or similar policies, set forth in any applicable Laws. Neither the Company, nor, to the knowledge of the Company, any of its officers, key employees or agents has been convicted of any crime or engaged in any conduct that has resulted, or would reasonably be expected to result, in debarment under applicable Law, including, without limitation, 21 U.S.C. Section 335a. No claims, actions, proceedings or investigations that would reasonably be expected to result in such a material debarment or exclusion are pending, or to the knowledge of the Company, threatened, against the Company or any of its respective officers, employees or agents.

(c) Each of the Company and, to its knowledge, its directors, officers, employees, and agents (while acting in such capacity) is, and at all times has been, in material compliance with all health care Laws applicable to the Company or by which any of its properties, businesses, products or other assets is bound or affected, including, without limitation, the federal Anti-kickback Statute (42 U.S.C. § 1320a-7b(b)), the Anti-Inducement Law (42 U.S.C. § 1320a-7a(a)(5)), the civil False Claims Act (31 U.S.C. §§ 3729 et seq.), the administrative False Claims Law (42 U.S.C. § 1320a-7b(a)), the Health Insurance Portability and Accountability Act of 1996 (42 U.S.C. § 1320d et seq.), the exclusion laws (42 U.S.C. § 1320a-7), the Food Drug and Cosmetic Act (21 U.S.C. §§ 301 et seq.) (collectively, "**Health Care Laws**"). The Company has not received any notification, correspondence or any other written or oral communication from any Governmental Entity, including, without limitation, the FDA, the Centers for Medicare and

Medicaid Services, and the Department of Health and Human Services Office of Inspector General, of potential or actual material non-compliance by, or liability of, the Company under any Health Care Laws.

59.

EXECUTION COPY
CONFIDENTIAL

(d) The Company is not a party to any corporate integrity agreements, monitoring agreements, consent decrees, settlement orders, or similar agreements with or imposed by any Governmental Entity.

3.17 Application of Takeover Protections. The issuance of the shares hereunder and Intrexon's ownership thereof is not prohibited by the business combination statutes of the state of Nevada. The Company has not adopted any stockholder rights plan, "poison pill" or similar arrangement that would trigger any right, obligation or event as a result of the issuance of such shares and Intrexon's ownership of such shares and there are no similar anti-takeover provisions under the Company's charter documents.

3.18 Listing and Maintenance Requirements. The Company is in compliance with the requirements of the NYSE Amex (formerly the American Stock Exchange) for continued listing of the Company common stock thereon and has not received any notification that, and has no knowledge that NYSE Amex is contemplating terminating such listing. The issuance and sale of the shares hereunder does not contravene the rules and regulations of the NYSE Amex in any material respect, provided such sale and issuance is approved in advance by NYSE Amex.

3.19 Private Placement. Neither the Company nor its Affiliates, nor any Person acting on its or their behalf, (i) has engaged in any form of general solicitation or general advertising (within the meaning of Regulation D under the Securities Act) in connection with the offer or sale of the shares hereunder, (ii) has, directly or indirectly, made any offers or sales of any security or solicited any offers to buy any security, under any circumstances that would require registration of the sale and issuance by the Company of the Technology Access Fee Shares, the Milestone Shares, and Field Expansion Shares under the Securities Act or (iii) has issued any shares of Common Stock or shares of any series of preferred stock or other securities or instruments convertible into, exchangeable for or otherwise entitling the holder thereof to acquire shares of Common Stock which would be integrated with the sale of the Common Stock to Intrexon for purposes of the Securities Act or of any applicable stockholder approval provisions, including, without limitation, under the rules and regulations of any exchange or automated quotation system on which any of the securities of the Company are listed or designated, nor will the Company or any of its subsidiaries or affiliates take any action or steps that would require registration of any of the Common Stock under the Securities Act or cause the offering of the Common Stock to be integrated with other offerings. Assuming the accuracy of the representations and warranties of Intrexon, the offer and sale of the Common Stock by the Company to Intrexon pursuant to this Agreement will be exempt from the registration requirements of the Securities Act.

3.20 No Manipulation of Stock. The Company has not taken and will not, in violation of applicable law, take, any action outside the ordinary course of business designed to or that might reasonably be expected to cause or result in unlawful manipulation of the price of the Common Stock.

EXECUTION COPY
CONFIDENTIAL

3.21 Brokers. Neither the Company nor any of the officers, directors or employees of the Company has employed any broker or finder in connection with the transaction contemplated by this Agreement. The Company shall indemnify Intrexon from and against any broker's, finder's or agent's fees for which the Company is responsible.

sECTION 4. Representations, Warranties and Covenants of Intrexon.

Intrexon hereby represents and warrants to, and covenants with, the Company as of the date hereof as follows:

4.1 Purchaser Sophistication. Intrexon (a) is knowledgeable, sophisticated and experienced in making, and is qualified to make decisions with respect to, investments in shares presenting an investment decision like that involved in the purchase of the shares, including investments in securities issued by the Company and investments in comparable companies, and has requested, received, reviewed and considered all information it deemed relevant in making an informed decision to purchase the shares; (b) Intrexon, in connection with its decision to purchase the shares, relied only upon the SEC Documents, other publicly available information, and the representations and warranties of the Company contained herein; (c) Intrexon is an "accredited investor" pursuant to Rule 501 of Regulation D under the Securities Act; (d) Intrexon is acquiring the shares for its own account for investment only and with no present intention of distributing any of such shares or any arrangement or understanding with any other persons regarding the distribution of such shares; (e) Intrexon has not been organized, reorganized or recapitalized specifically for the purpose of investing in the shares; (f) Intrexon will not, directly or indirectly, offer, sell, pledge, transfer or otherwise dispose of (or solicit any offers to buy, purchase or otherwise acquire to take a pledge of) any of the shares except in compliance with the Securities Act and applicable state securities laws; (g) Intrexon understands that the shares are being offered and sold to it in reliance upon specific exemptions from the registration requirements of the Securities Act and state securities laws, and that the Company is relying upon the truth and accuracy of, and Intrexon's compliance with, the representations, warranties, agreements, acknowledgments and understandings of Intrexon set forth herein in order to determine the availability of such exemptions and the eligibility of Intrexon to acquire the shares; (h) Intrexon understands that its investment in the shares involves a significant degree of risk, including a risk of total loss of Intrexon's investment (provided that such acknowledgment in no way diminishes the representations, warranties and covenants made by the Company hereunder); and (i) Intrexon understands that no United States federal or state agency or any other government or governmental agency has passed upon or made any recommendation or endorsement of the shares.

EXECUTION COPY
CONFIDENTIAL

4.2 Authorization and Power. Intrexon has the requisite power and authority to enter into and perform this Agreement and to purchase the shares being sold to it hereunder. The execution, delivery and performance of this Agreement by Intrexon and the consummation by it of the transactions contemplated hereby have been duly authorized by all necessary corporate action, and no further consent or authorization of Intrexon or its board of directors or stockholders is required. When executed and delivered by Intrexon, this Agreement shall constitute a valid and binding obligation of Intrexon enforceable against Intrexon in accordance with its terms, except as such enforceability may be limited by applicable bankruptcy, insolvency, reorganization, moratorium, liquidation, conservatorship, receivership or similar laws relating to, or affecting generally the enforcement of, creditor's rights and remedies or by other equitable principles of general application.

4.3 No Conflict. The execution, delivery and performance of this Agreement by Intrexon and the consummation by Intrexon of the transactions contemplated hereby do not and will not (i) violate any provision of Intrexon's charter or organizational documents, (ii) conflict with, or constitute a default (or an event which with notice or lapse of time or both would become a default) under, or give to others any rights of termination, amendment, acceleration or cancellation of, any agreement, mortgage, deed of trust, indenture, note, bond, license, lease agreement, instrument or obligation to which Intrexon is a party or by which Intrexon's properties or assets are bound, or (iii) result in a violation of any federal, state, local or foreign statute, rule, regulation, order, judgment or decree (including federal and state securities laws and regulations) applicable to Intrexon or by which any property or asset of Intrexon are bound or affected, except, in all cases, other than violations (with respect to federal and state securities laws) above, for such conflicts, defaults, terminations, amendments, acceleration, cancellations and violations as would not, individually or in the aggregate, materially and adversely affect Intrexon's ability to perform its obligations under the Agreement.

4.4 Restricted Shares. Intrexon acknowledges that the Technology Access Fee Shares, the Milestone Shares, and the Field Expansion Shares are restricted securities and must be held indefinitely unless subsequently registered under the Securities Act or the Company receives an opinion of counsel reasonably satisfactory to the Company that such registration is not required. Intrexon is aware of the provisions of Rule 144 promulgated under the Securities Act which permit limited resale of stock purchased in a private placement subject to the satisfaction of certain conditions, including, among other things, the existence of a public market for the stock, the availability of certain current public information about the Company, the resale occurring not less than one year after a party has purchased and paid for the stock to be sold, the sale being through a "broker's transaction" or a transaction directly with a "market maker" and the number of shares of the stock being sold during any three-month period not exceeding specified limitations. Intrexon further acknowledges and understands that the Company may not be satisfying the current public information requirement of Rule 144 at the time Intrexon wishes to sell the shares and, if so, Intrexon would be precluded from selling the shares under Rule 144 even if the one year minimum holding period has been satisfied.

4.5 Ownership of Common Stock. As of the date hereof, excluding the shares, Intrexon and its Affiliates beneficially own no shares of Common Stock of the Company.

4.6 Stock Legends. Intrexon acknowledges that certificates evidencing the shares shall bear a restrictive legend in substantially the following form (and including related stock transfer instructions and record notations):

62.

EXECUTION COPY
CONFIDENTIAL

THESE SECURITIES HAVE NOT BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION OR THE SECURITIES COMMISSION OF ANY STATE IN RELIANCE UPON AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), AND, ACCORDINGLY, MAY NOT BE OFFERED OR SOLD EXCEPT PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT OR PURSUANT TO AN AVAILABLE EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND IN ACCORDANCE WITH APPLICABLE STATE SECURITIES LAWS OR BLUE SKY LAWS AS EVIDENCED BY A LEGAL OPINION OF COUNSEL REASONABLY SATISFACTORY TO THE COMPANY.

sECTION 5. Survival of Representations, Warranties and Agreements.

Notwithstanding any investigation made by any party to this Agreement, all representations and warranties made by the Company and Intrexon herein shall survive the execution of this Agreement and the issuance and sale to Intrexon of the shares and shall terminate two years after the later of Technology Access Fee Closing or the Field Expansion Shares Closing, provided, however, the representations and warranties in Sections 3.1, 3.2, 3.3, 4.1, 4.3, 4.4, 4.5 and 4.6 shall survive for so long as Intrexon continues to hold any of the shares issued hereunder.

sECTION 6. Covenants.

6.1 Notifications.

(a) During the period prior to the Technology Access Fee Closing, the Company will promptly advise Intrexon in writing of (i) any Material Adverse Effect, or (ii) any notice or other communication from any third person or entity alleging that the consent of the third person is required in connection with the transactions contemplated by this Agreement.

(b) During the period prior to the Field Expansion Shares Closings, each party shall promptly notify the other of any action, suit or proceeding that is instituted or specifically threatened in writing against such party to restrain, prohibit or otherwise challenge the legality of any transaction contemplated by this Agreement.

(c) During the period prior to each of the Milestone Closings, each party shall promptly notify the other of any action, suit or proceeding that is instituted or specifically threatened in writing against such party to restrain, prohibit or otherwise challenge the legality of any transaction contemplated by this Agreement.

(d) Information received by Intrexon pursuant to this Section 6.1 shall be considered "Confidential Information" as such term is defined in the Channel Agreement and Intrexon agrees to treat such information in accordance with the provisions of Article 7 of the Channel Agreement.

63.

EXECUTION COPY
CONFIDENTIAL

6.2 Compliance. The Company shall use commercially reasonable best efforts to (i) cause the Common Stock to continue to be registered under the Exchange Act, file all periodic reports thereunder and continue the listing or trading of the Common Stock on the NYSE Amex or any successor market (or other exchange upon which the Common Stock may be listed) in good standing and to comply in all material respects with all applicable rules and regulations of the Commission and all reporting requirements under the rules and regulations of the Exchange Act and (ii) to satisfy the current public information requirement of Rule 144, in each case for so long as and at all times during which Intrexon holds any shares.

6.3 Use of Proceeds. The Company shall apply the proceeds from the sale of the shares hereunder to ongoing operations, or for such other uses as determined by the Company's board of directors.

6.4 Best Efforts. Each party will use its reasonable best efforts to satisfy in a timely fashion each of the conditions to be satisfied by it under Section 8 of this Agreement.

6.5 Press Release. The Company shall issue a press release announcing the transaction contemplated by this Agreement and the Channel Agreement prior to the opening of the financial markets in New York City within four days immediately following the date hereof. The Company shall provide Intrexon with a reasonable opportunity to review and comment on the press release.

6.6 Approval. In each case where the Company determines that the approval of Company investors or any exchange or other listing upon which the Common Stock may be listed is required for the issuance of Common Stock to Intrexon, the Company shall use commercially reasonable efforts to secure such approval as promptly as possible. In the event, notwithstanding the foregoing obligation, the Company is unable to secure the approval with respect to the issuance of any shares to be issued hereunder, the Company shall negotiate the terms of an alternate form of consideration of equivalent value to such unissued shares.

6.7 Board Observer Rights.

(a) Upon the Technology Access Fee Closing, Intrexon will be entitled to maintain one person who is an employee, officer, or director of Intrexon who is appointed by Company as an observer to the board of directors of the Company (the "**Observer**"). If Intrexon does not already have an Observer on the board of directors of Company at or prior to the Technology Access Fee Closing, the Company shall cause the President of Intrexon's Human Therapeutics Division to be appointed as Observer. Intrexon may, upon written notice to Company, change the identity of the Observer, and the right of Intrexon to maintain one Observer on the board of directors of the Company shall continue until the Channel Agreement is terminated. The Observer shall be entitled to attend all meetings of the Company's

board of directors and committees thereof as an observer (with no power to vote on any matter before the board of directors) and shall be entitled to receive copies of all materials and receive all briefings provided to members of the Company's board of directors; provided that the Observer enters into a confidentiality agreement with the Company in a form reasonably satisfactory to the Company; and provided, further, that the Company reserves the right to (i) exclude the Observer from access to any board of directors' materials or meetings or portion thereof if the Company believes that such exclusion is reasonably necessary to preserve the attorney-client privilege, to protect highly confidential information or for other similar reasons, or if the Company believes in good faith that the Observer has a conflict of interest, (ii) at the discretion of the applicable committee, exclude the Observer from access to any meeting materials or meetings (or portion thereof) of the nominating committee of the Company's board of directors, compensation committee of the Company's board of directors, audit committee of the Company's board of directors and any other committee of the Company's board of directors performing similar functions or which the listing rules of the NYSE Amex require to have such discretion.

64.

EXECUTION COPY
CONFIDENTIAL

(b) Subject to Section 10.14, Intrexon's rights and the Company's obligations under this Section 6.6 shall continue so long as the Channel Agreement is in force and terminate upon the termination of the Channel Agreement.

6.8 No Poison Pill. The Company will not adopt any stockholder rights plan, "poison pill" or similar arrangement, or adopt any anti-takeover provisions under its Charter documents, that would trigger any right, obligation or event as a result of the issuance of the shares hereunder to Intrexon.

6.9 No Standstill. The parties agree that Intrexon's acquisition of Common Stock pursuant to this Agreement shall not trigger any standstill provisions set forth in any prior agreements between the parties including in the Stock Purchase Agreement executed November 18, 2011 by and between Intrexon and Adeona Pharmaceuticals, Inc., and that any such standstill provisions from prior agreements shall remain otherwise unaffected by this Agreement or the Channel Agreement.

6.10 Intrexon Proposals. Notwithstanding any of the foregoing provisions of Section 6.9, the Company further agrees that nothing herein shall limit the ability of the Observer or Intrexon to confidentially propose to the executive management of the Company and its board of directors, and/or advocate for, any transaction between the Company and any third party unaffiliated with Intrexon or its Affiliates.

6.11 NYSE Amex Approval. In each case where the Company determines that the approval of the NYSE Amex (or any other exchange upon which the Common Stock may be listed) is required for the issuance of Common Stock to Intrexon, the Company shall use commercially reasonable efforts to secure such approval as promptly as possible. In the event, notwithstanding the foregoing obligation, the Company is unable to secure the NYSE Amex (or any other exchange upon which the Common Stock may be listed) approval with respect to the issuance of any shares to be issued hereunder, the Company shall negotiate the terms of an alternate form of consideration of equivalent value to such unissued shares.

EXECUTION COPY
CONFIDENTIAL

sECTION 7. Conditions to Closing.

7.1 The obligation hereunder of the Company to issue and sell shares to Intrexon at each Closing is subject to the satisfaction or waiver, at or before the Closing of the conditions set forth below. These conditions are for the Company's sole benefit and may be waived by the Company at any time in its sole discretion.

(a) Accuracy of Intrexon's Representations and Warranties. The representations and warranties of Intrexon shall be true and correct as of the date when made and as of the Closing Date as though made at that time, except for representations and warranties that are expressly made as of a particular date, which shall be true and correct as of such date.

(b) No Injunction. No statute, rule, regulation, executive order, decree, ruling or injunction shall have been enacted, entered, promulgated or endorsed by any court or governmental authority of competent jurisdiction which prohibits the consummation of any of the transactions contemplated by this Agreement.

(c) Performance by Intrexon. Intrexon shall have performed, satisfied and complied in all material respects with all covenants, agreements and conditions required by this Agreement to be performed, satisfied or complied by Intrexon at or prior to the Closing Date.

(d) Channel Partnership Agreement. The Channel Agreement shall have been entered into by the Company and Intrexon and shall be in full force and effect.

(e) No Proceedings or Litigation. No action, suit or proceeding before any arbitrator or any governmental authority shall have been commenced, and no investigation by any governmental authority shall have been threatened in writing against Intrexon or any of the officers, directors or Affiliates of Intrexon seeking to restrain, prevent or change the transactions contemplated by this Agreement, or seeking damages in connection with such transactions.

(f) Officer's Certificate. On each Closing, Intrexon shall have delivered to the Company a certificate signed by its Chief Financial Officer or Secretary on behalf of Intrexon, dated as of such Closing, confirming on behalf of Intrexon the conditions precedent set forth in paragraphs (a), (b), (c) and (e) of this Section 7.1 as of such Closing; provided, however, if the Company has elected to make the Milestone Cash Payment, the officer's certificate to be delivered at the Milestone Closing by Intrexon will address only the conditions precedent set forth in paragraphs (b) and (e) of this Section 7.1.

7.2 The obligation hereunder of Intrexon to receive shares and consummate the transactions contemplated by this Agreement, other than the payment by the Company of cash in lieu of issuance of any of the Milestone Shares or in lieu of the Field Expansion Shares, is subject to the satisfaction or waiver, at or before each Closing, of each of the conditions set forth below. These conditions are for Intrexon's sole benefit and may be waived by Intrexon at any time in its sole discretion. For clarity, neither the satisfaction nor the waiver of any of the events, circumstances, deliveries or conditions set forth below is a condition precedent to the obligation of Intrexon to accept the any cash payments in lieu of the Company's issuing the Milestone Shares or the Field Expansion Shares to Intrexon.

66.

EXECUTION COPY
CONFIDENTIAL

(a) Accuracy of the Company's Representations and Warranties. Each of the representations and warranties of the Company in this Agreement shall be true and correct as of the Closing Date, except for representations and warranties that speak as of a particular date, which shall be true and correct as of such date.

(b) Performance by the Company. The Company shall have performed, satisfied and complied in all material respects with all covenants, agreements and conditions required by this Agreement to be performed, satisfied or complied with by the Company at or prior to the Closing Date.

(c) Channel Partnership Agreement. The Channel Agreement shall have been entered into by the Company and Intrexon and shall be in full force and effect.

(d) No Suspension, Etc. Trading in the common stock shall not have been suspended by the Commission or the NYSE Amex.

(e) No Injunction. No statute, rule, regulation, executive order, decree, ruling or injunction shall have been enacted, entered, promulgated or endorsed by any court or governmental authority of competent jurisdiction which prohibits the consummation of any of the transactions contemplated by this Agreement.

(f) No Proceedings or Litigation. No action, suit or proceeding before any arbitrator or any governmental authority shall have been commenced, and no investigation by any governmental authority shall have been threatened in writing against the Company or any of the officers, directors or Affiliates of the Company seeking to restrain, prevent or change the transactions contemplated by this Agreement, or seeking damages in connection with such transactions.

(g) Execution of Rights Agreement. On the date of the Technology Access Fee Closing, each party shall have delivered its signature to the First Amendment to Registration Rights Agreement substantially in the form attached as Exhibit A to this Agreement to the other party, and such agreement shall be in full force and effect as of the Closing Date.

(h) Opinion. Counsel for the Company shall have delivered to Intrexon opinion letters containing legal opinions substantially in the form attached hereto as Exhibit B.

(i) Officer's Certificate. On each Closing, the Company shall have delivered to Intrexon a certificate signed by its Chief Financial Officer or Secretary on behalf of the Company (the "**Officer's Certificate**"), dated as of such Closing, confirming on behalf of the Company the conditions precedent set forth in paragraphs (a), (b), (d), (e), (i) and (j) of this Section 7.2 as of such Closing, and attaching and certifying a copy of the resolutions of the Company's board of directors referred to in the last sentence of Section 3.2.

(j) No Material Adverse Effect. Since the date of this Agreement, there shall not have occurred any Material Adverse Effect.

67.

EXECUTION COPY
CONFIDENTIAL

(k) Board Observer. The President of Intrexon's Protein Production Division, or someone else identified in advance by Intrexon, shall have been appointed as, or have been previously appointed as, Observer.

(l) Approvals. Any requisite shareholder, board, or exchange approvals relating to the issuance of the Milestone Shares or the Field Expansion Shares (as the case may be) have been obtained in advance by Company.

sECTION 8. Notices.

All notices or other communications which are required or permitted hereunder shall be in writing and addressed as follows:

If to the Company: Synthetic Biologics, Inc.
617 Detroit Street, Suite 100
Ann Arbor, MI 48104
Attention: Chief Executive Officer
Fax No.: (734) 332-7878

If to Intrexon: Intrexon Corporation
20358 Seneca Meadows Parkway
Germantown, MD 20876
Attention: Legal Department
Fax No.: (301) 556-9902

or to such other address as the party to whom notice is to be given may have furnished to the other party in writing in accordance herewith. Any such communication shall be deemed to have been given when delivered if personally delivered or sent by facsimile (provided that the party providing such notice promptly confirms receipt of such transmission with the other party by telephone), on the business day after dispatch if sent by a nationally-recognized overnight courier and on the third business day following the date of mailing if sent by certified mail, postage prepaid, return receipt requested.

sECTION 9. Miscellaneous.

9.1 Fees and Expenses. Each party shall pay the fees and expenses of its advisors, counsel, accountants and other experts, if any, and all other expenses, incurred by such party incident to the negotiation, preparation, execution, delivery and performance of this Agreement.

9.2 Waivers and Amendments. Neither this Agreement nor any provision hereof may be changed, waived, discharged, terminated, modified or amended except upon the written consent of the parties hereto.

EXECUTION COPY
CONFIDENTIAL

9.3 Headings. The headings of the various sections of this Agreement have been inserted for convenience of reference only and shall not be deemed to be part of this Agreement.

9.4 Severability. If any provision hereof should be held invalid, illegal or unenforceable in any respect, then, to the fullest extent permitted by law, (a) all other provisions hereof shall remain in full force and effect and shall be liberally construed in order to carry out the intentions of the Parties as nearly as may be possible and (b) the parties shall use their best efforts to replace the invalid, illegal or unenforceable provision(s) with valid, legal and enforceable provision(s) which, insofar as practical, implement the purposes of such provision(s) in this Agreement.

9.5 Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of New York as applied to contracts entered into and performed entirely in the State of New York by New York residents, without regard to conflicts of law principles.

9.6 Counterparts. This Agreement may be executed in two or more counterparts, each of which shall constitute an original, but all of which, when taken together, shall constitute but one instrument, and shall become effective when one or more counterparts have been signed by each party hereto and delivered to the other parties.

9.7 Successors and Assigns. Except as otherwise expressly provided herein, the provisions hereof shall inure to the benefit of, and be binding upon, the successors, assigns, heirs, executors and administrators of the parties hereto, provided that Intrexon shall not assign its rights or obligations hereunder unless Intrexon assigns such rights in whole and not in part to an assignee of such rights and obligations which shall agree in writing with the Company to be bound by this Agreement and that Intrexon's rights under Sections 6.3, 6.4, 6.5 and 7 shall not be assignable.

9.8 No Third Party Beneficiaries. This Agreement is intended for the benefit of the parties hereto and their respective permitted successors and assigns and is not for the benefit of, nor may any provision hereof be enforced by, any other person.

9.9 Expenses. Each party shall pay all costs and expenses that it incurs with respect to the negotiation, execution, delivery and performance of this Agreement.

9.10 Entire Agreement. This Agreement (including the Schedule of Exceptions), the Channel Agreement, the Rights Agreement and other documents delivered pursuant hereto and thereto, including the exhibits, constitute the full and entire understanding and agreement between the parties with regard to the subjects hereof and thereof. Except

as explicitly set forth herein, nothing in this Agreement is intended to alter the rights or obligations of the parties pursuant to the Stock Purchase Agreement executed November 18, 2011 by and between Intrexon and Adeona Pharmaceuticals, Inc.

9.11 Publicity. Except as otherwise provided herein or in the Channel Agreement, no party shall issue any press releases or otherwise make any public statement with respect to the transactions contemplated by this Agreement without the prior written consent of the other party, except as may be required by applicable law or regulations, in which case such party shall provide the other parties with reasonable notice of such publicity and/or opportunity to review such disclosure.

69.

EXECUTION COPY
CONFIDENTIAL

9.12 Waiver of Rule of Construction. Each Party has had the opportunity to consult with counsel in connection with the review, drafting and negotiation of this Agreement. Accordingly, the rule of construction that any ambiguity in this Agreement shall be construed against the drafting Party shall not apply.

9.13 Further Assurances. From and after the date of this Agreement, upon the reasonable request of Intrexon or the Company, the Company and Intrexon shall execute and deliver such instruments, documents and other writings as may be reasonably necessary or desirable to confirm and carry out and to effectuate fully the intent and purposes of this Agreement.

9.14 Company Sale. For purposes of this Agreement, a "**Company Sale**" shall mean the sale of the Company, whether in a single transaction or in a series of related transactions that are consummated contemporaneously (or consummated pursuant to contemporaneous agreements), to one or more unaffiliated third parties on an arm's-length basis, pursuant to which such unaffiliated third party or parties acquires (i) (whether by merger, consolidation, sale or transfer of capital stock, recapitalization, or otherwise) more than fifty percent (50%) of the Company's common stock or (ii) all or substantially all of the assets of the Company determined on a consolidated basis.

[Remainder of page intentionally left blank.]

EXECUTION COPY
CONFIDENTIAL

In Witness Whereof, the parties hereto have caused this Stock Issuance Agreement to be executed by their duly authorized representatives as of the day and year first above written.

SYNTHETIC BIOLOGICS, INC.

By: /s/ Jeffrey Riley

Name: Jeffrey Riley

Title: Chief Executive Officer, President, and Director

INTREXON CORPORATION

By: /s/Saiid Zarrabian

Name: Saiid Zarrabian

Title: President of Protein Production Division,

and Senior Vice President

Exhibit A

FORM OF FIRST AMENDMENT TO REGISTRATION RIGHTS AGREEMENT

72

Exhibit B

FORM OF LEGAL OPINION

1. The Company has been duly incorporated and is a validly existing corporation in good standing under the laws of the State of Nevada.

2. The Company has the requisite corporate power to own, lease and operate its property and assets, and to conduct its business as described in the SEC Documents.

3. The Company is duly qualified to do business as a foreign corporation and is in good standing in the State of Michigan.

4. The Company has the requisite corporate power to execute, deliver and perform its obligations under the Agreement, the Channel Agreement and the Rights Agreement (collectively, the "**Transaction Documents**"), including, without limitation, to issue, sell and deliver the shares as contemplated by the Agreement.

5. All corporate action on the part of the Company necessary for the authorization, execution and delivery of the Transaction Documents by the Company, the authorization, sale, issuance and delivery of the shares and the performance by the Company of its obligations to be performed at the Closing under the Transaction Documents has been taken. Each of the Transaction Documents has been duly and validly authorized, executed and delivered by the Company. The Agreement and the Rights Agreement (together, the "**Equity Documents**") each constitutes a valid and binding agreement of the Company enforceable against the Company in accordance with its respective terms.

6. The Company has the authorized capital stock as set forth in the SEC Documents. The shares have been duly authorized and, when issued, sold and delivered against payment therefor in accordance with the terms of the Agreement, will be validly issued, fully paid and nonassessable.

7. There are no pre-emptive rights or similar rights contained in the Company's Articles of Incorporation, as amended, or Bylaws, as amended, or any Material Agreement.

8. The execution and delivery of the Equity Documents and the issuance of the shares pursuant thereto do not violate any provision of the Company's Articles of Incorporation or Bylaws, do not constitute a default under or a material breach of any Material Agreement and do not (a) violate any U. S. Federal or state statute, rule or regulation which in the experience of such counsel is typically applicable to transactions of the nature contemplated by the Equity Documents or (b) violate any order, writ, judgment, injunction, decree, determination or award which has been entered against the Company and of which such counsel is aware, except, with respect to clauses (a) and (b), where

such violation would not materially and adversely affect the Company.

9. To the knowledge of such counsel, there is no action, proceeding or investigation pending or overtly threatened against the Company before any court or administrative agency that questions the validity of the Transaction Documents or that could reasonably be expected to result, either individually or in the aggregate, in a material adverse effect on the Company.

10. All consents, approvals, authorizations, or orders of, and filings, registrations and qualifications with any U.S. Federal or state regulatory authority or governmental body required for the issuance of the shares have been made or obtained, except (a) for the filing of a Form D pursuant to Securities and Exchange Commission Regulation D and (b) and any requisite blue sky filing(s).

11. Subject to the accuracy of Intrexon's representations in Section 4 of the Agreement and assuming (a) that neither the Company nor any person acting on behalf of the Company has offered or sold the shares by any form of general solicitation or general advertising within the meaning of Rule 502(c) of Regulation D promulgated (the "Regulation D") under the Securities Act; (b) that no offerings or sales of securities of the Company after the date hereof in a transaction can be "integrated" with any sales of the shares, the offer and sale of the shares in conformity with the terms of the Agreement constitute transactions that are exempt from the registration requirements of the Securities Act of 1933, as amended, subject to the timely filing of a Form D pursuant to Regulation D.

12. The Company is not, and, after giving effect to the offering and sale of the shares and the application of the proceeds thereof in accordance with the business plans of the Company to which such counsel is aware, will not be an "investment company" as defined in the Investment Company Act of 1940, as amended.

13. To the knowledge of such counsel, there are no written contracts, agreements or understandings between the Company and any person granting such person the right (other than rights which have been waived in writing or otherwise satisfied) to require the Company to include any securities of the Company in any registration statement contemplated by Section 2(a) of the Rights Agreement.

EXECUTION COPY

CONFIDENTIAL

FIRST AMENDMENT TO REGISTRATION RIGHTS AGREEMENT

This First Amendment to Registration Rights Agreement (this "**Amendment**") is made and entered into as of August 6, 2012, by and among Synthetic Biologics, Inc., a Nevada corporation, previously known as Adeona Pharmaceuticals, Inc. (the "**Company**"), and Intrexon Corporation, a Virginia corporation ("**Intrexon**") to amend the Registration Rights Agreement dated December 5, 2011, by and among the Company and Intrexon (the "**Registration Rights Agreement**").

WHEREAS, the Company and Intrexon entered into the Registration Rights Agreement and that certain Stock Purchase Agreement between the Company and Intrexon dated as of November 18, 2011 (the "**Purchase Agreement**") in connection with their execution and delivery of that certain Exclusive Channel Collaboration Agreement dated November 18, 2011, 2011, for the development and commercialization of products for the treatment of pulmonary arterial hypertension (the "**Original ECC**");

WHEREAS, concurrently with the execution and delivery of this Amendment, the Company and Intrexon will execute and deliver a Stock Issuance Agreement between the Company and Intrexon (the "**Issuance Agreement**") in connection with their execution and delivery of an exclusive channel collaboration with respect to the development and commercialization of products based on exogenous recombinant human antibodies for the treatment of certain toxins and infectious diseases (the "**Second ECC**");

WHEREAS, pursuant to the terms of the Issuance Agreement and the Second ECC, the Company will issue and sell to Intrexon, upon Intrexon's request to the Company, certain shares of the Company's common stock in exchange for rights to certain technology of Intrexon;

NOW THEREFORE, the Company and Intrexon hereby agree to amend the Registration Rights Agreement as follows:

1. The following defined terms shall be added to Section 1:

(a) "**Approval Milestone Shares**" shall have the meaning set forth in the Issuance Agreement.

(b) "**Field Expansion Fee Shares**" shall have the meaning set forth in the Issuance Agreement.

(c) "**IND Milestone Shares**" shall have the meaning set forth in the Issuance Agreement.

(d) **"Issuance Agreement**" shall mean that certain Stock Issuance Agreement, dated August 6, 2012, by and between the Company and Intrexon.

(e) "**Technology Access Fee Shares**" shall have the meaning set forth in the Issuance Agreement**.**

EXECUTION COPY
CONFIDENTIAL

2. The definition of "Filing Date" shall be amended and replaced in its entirety with the following:

(a) "**Filing Date**" means, with respect to the First Tranche Shares, April 4, 2012, and, with respect to the Second Tranche Shares, the Technology Access Fee Shares, the IND Milestone Shares, the Approval Milestone Shares, and the Field Expansion Shares, April 30, 2013..

3. The definition of "Registrable Securities" shall be amended and replaced in its entirety with the following:

(a) "**Registrable Securities**" means the First Tranche Shares and Second Tranche Shares (as such terms are defined in the Purchase Agreement) as well as the Technology Access Fee Shares, the IND Milestone Shares, the Approval Milestone Shares, and the Field Expansion Shares (as such terms are defined in the Issuance Agreement) issued or issuable to Intrexon and any securities issued with respect to, or in exchange for or in replacement of such shares of Common Stock upon any stock split, stock dividend, recapitalization, subdivision, merger or similar event; provided, however, that the applicable Holder has completed and delivered to the Company a Selling Stockholder Questionnaire; and provided further that such securities shall no longer be deemed Registrable Securities if such securities have been sold pursuant to a Registration Statement, or (ii) such shares have been sold in compliance with Rule 144 or all such shares may be sold without limitation pursuant to Rule 144.

4. Subsection (b) of Section 7 shall be amended and replaced in its entirety with the following:

(a) Entire Agreement; Amendment. This Agreement, the Purchase Agreement and the Issuance Agreement contain the entire understanding and agreement of the parties with respect to the matters covered hereby and, except as specifically set forth herein, in the Purchase Agreement, or in the Issuance Agreement, neither the Company nor any Holder make any representation, warranty, covenant or undertaking with respect to such matters, and they supersede all prior understandings and agreements with respect to said subject matter, all of which are merged herein. No provision of this Agreement may be waived or amended other than by a written instrument signed by the Company and the Holders of at least a majority of all Registrable Securities then outstanding. Any amendment or waiver effected in accordance with this Section 7(b) shall be binding upon each Holder (and their permitted assigns) and the Company.

5. All other provisions of the Registration Rights Agreement shall remain in effect.

[Remainder of page intentionally left blank.]

EXECUTION COPY
CONFIDENTIAL

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to Registration Rights Agreement to be duly executed by their respective authorized officers as of the date first above written.

SYNTHETIC BIOLOGICS, INC.

By: /s/ Jeffrey Riley

Name: Jeffrey Riley

Title: Chief Executive Office, President, and Director

INTREXON CORPORATION

By: /s/Saaid Zarrabian

Name: Saiid Zarrabian

Title: President of Protein Production Division, and

Senior Vice President

RIGHTS AGREEMENT

5

Synthetic Biologics and Intrexon Corporation Enter

Worldwide Exclusive Collaboration for Infectious Diseases

-- Collaboration Harnesses Monoclonal Antibodies to Address Unmet Medical Needs --

-- Joint Conference Call Scheduled for Today, Wednesday, August 8, 2012 at 5:00pm(ET)/2:00pm(PT) --

For Immediate Release

Rockville, MD, and San Francisco, CA, August 8, 2012 – Synthetic Biologics, Inc. (NYSE Amex: SYN), a developer of synthetic biologics and innovative medicines for unmet medical needs, and Intrexon Corporation (Intrexon), a synthetic biology company that utilizes its proprietary technologies to provide control over cellular function, today entered into a second worldwide exclusive channel collaboration through which Synthetic Biologics intends to develop and commercialize a series of monoclonal antibody (mAb) therapies for the treatment of certain infectious diseases not adequately addressed by existing therapies. Utilizing Intrexon's comprehensive suite of proprietary technologies, including the mAbLogix™ platform for rapid discovery of fully human mAbs, Synthetic Biologics' initial efforts will target three infectious disease indications. The collaboration may optionally be expanded to include up to an additional five infectious disease indications. Synthetic Biologics intends to disclose selected indications from time to time as business and commercial considerations dictate.

Jeffrey Riley, Chief Executive Officer of Synthetic Biologics, Inc., stated, "Through this second worldwide exclusive collaboration, we are pleased to strengthen our relationship with Intrexon and develop new therapeutics for unmet medical needs, in an effort to build value for our shareholders. Intrexon has state-of-the-art technologies and efficient processes that have tremendous potential for the production of a broad spectrum of fully human antibodies. This expanded relationship gives us access to this paradigm-changing platform."

Saiid Zarrabian, President of Intrexon's Protein Production Division, said, "We are very pleased to expand our relationship with Synthetic Biologics. Intrexon is committed to building a molecular toolkit and the scientific

expertise needed to take on the challenges of developing new treatments for unmet medical needs. Intrexon's collaboration with Synthetic Biologics represents the culmination of important acquired and internally developed technologies. Intrexon's core technology, the UltraVector® platform for design, construction, and testing of genetic components, integrated with the mAbLogix™ platform for *in vitro* B-cell library production and the LEAP™ cell processing station, will allow for the rapid end-to-end development from fully human antibody discovery to therapeutic."

Mr. Riley concluded, "We look forward to applying Intrexon's competencies to the development of a series of monoclonal antibodies for the treatment of infectious diseases that take a tremendous worldwide toll on human life, and to disclosing more about our discovery targets in the near future."

Under terms of the transaction agreements:

- Synthetic Biologics will have broad access within the target indications to Intrexon's comprehensive suite of proprietary technologies, including UltraVector®, DNA and RNA MOD engineering, protein engineering, transcription control chemistry, genome engineering, mAbLogix™ human antibodies, LEAP™-based cell processing and cell system engineering.
- Synthetic Biologics will issue to Intrexon approximately 3.6 million shares of its common stock as a technology access fee upon execution of the agreement; together with previously issued shares, immediately following this transaction Intrexon will own approximately 18% of Synthetic Biologics.
- Synthetic will pay to Intrexon an additional fee, in cash or additional shares of common stock, should it elect to broaden the collaboration beyond the three initial disease indications.
- Upon certain milestones (i.e., the filing of an Investigational New Drug application with the FDA and governmental approval/the initiation of commercial sales), Synthetic Biologics will pay Intrexon a milestone fee in cash or additional shares of common stock.
- Subject to certain expense allocations, Synthetic Biologics will pay Intrexon quarterly royalties in cash on annualized worldwide net sales.

If the NYSE Amex approval of the issuance of the securities described above is not received within 120 days of the date of the execution of the exclusive channel agreement, Intrexon has the right to terminate the exclusive channel collaboration.

Joint Synthetic Biologics/Intrexon Corporation Conference Call

Synthetic Biologics and Intrexon will hold a conference call this afternoon, Wednesday, August 8, 2012, at 5:00pm (ET)/2:00pm (PT). Jeffrey Riley, Chief Executive Officer of Synthetic Biologics and Saiid Zarrabian, President of Intrexon's Protein Production Division and Senior Vice President will host the call. Mr. Riley and Mr. Zarrabian will discuss the second worldwide exclusive channel collaboration through which Synthetic Biologics intends to develop and commercialize a platform of mAbs for the treatment of certain serious infectious diseases.

Interested parties should call toll free 1-800-860-2442 (U.S.) or 1-866-605-3852 (Canada), or from outside North America +1 412-858-4600, fifteen minutes before the start of the call to register and identify themselves as registrants of the 'Synthetic Biologics' Conference Call. Any registered caller on the toll free line may ask to be placed in the queue for the Question & Answer session. The call will be simulcast on the web at http://www.videonewswire.com/event.asp?id=88858. If you are unable to participate during the live conference call, the webcast will be available for replay at the same URL (http://www.videonewswire.com/event.asp?id=88858) for 30 days after the call.

About Monoclonal Antibodies

Acting as the body's army, antibodies are proteins generally found in the blood that detect and destroy invaders, such as viruses and bacteria and their associated toxins. Monoclonal antibodies (mAbs) are designed and made utilizing protein engineering and recombinant production technologies. The mAbs being developed under this collaboration are intended to supplement a patient's immune system by providing infected individuals with the means to specifically and rapidly neutralize and/or clear specific pathogens and toxins of interest in a process known as “passive immunity”. Many infectious diseases are innately resistant to, or over time have developed increased resistance to, antibiotics and other drugs. Synthetic Biologics intends to utilize Intrexon’s comprehensive suite of proprietary mAb design and recombinant protein production technologies to efficiently create potent candidate mAbs for human testing and use to specifically treat certain infectious diseases for which current therapies are unavailable or inadequate.

About Intrexon Corporation

Intrexon Corporation is a privately held biotechnology company focused on the industrial engineering of synthetic biology. Intrexon is deploying its extensive capabilities to rapidly design and produce novel and enhanced biological products and processes across multiple industry sectors, including: human therapeutics, protein production, industrial products, agricultural biotechnology, and animal science. The Company's advanced bioindustrial engineering platform enables Better DNA™ technology by combining revolutionary DNA control systems with corresponding advancements in modular transgene design, assembly, and optimization to enable unprecedented control over the function and output of living cells. More information about the Company is available at www.dna.com.

About Synthetic Biologics, Inc.

Synthetic Biologics is a biotechnology company focused on the development of product candidates to address serious diseases and unmet medical needs. Synthetic Biologics is developing the following synthetic biologic candidates: a series of monoclonal antibodies (mAbs) for the treatment of infectious diseases not adequately addressed by existing therapies and a synthetic DNA-based therapy for the treatment of pulmonary arterial hypertension (PAH) in collaboration with Intrexon. The Company is also developing drug candidates for the treatment of relapsing-remitting multiple sclerosis (MS), cognitive dysfunction in MS, amyotrophic lateral sclerosis (ALS) and fibromyalgia (partnered with Meda AB). For more information, please visit Synthetic Biologics' website at www.syntheticbiologics.com.

This release includes forward-looking statements on Synthetic Biologics' current expectations and projections about future events. In some cases forward-looking statements can be identified by terminology such as "may," "should," "potential," "continue," "expects," "anticipates," "intends," "plans," "believes," "estimates," and similar expressions. These statements are based upon current beliefs, expectations and assumptions and are subject to a number of risks and uncertainties, many of which are difficult to predict and include statements regarding Synthetic Biologics' intent to develop and commercialize multiclonal antibody therapies for infectious diseases and Synthetic Biologics' belief that the new product opportunity and collaboration will build shareholder value. The forward-looking statements are subject to risks and uncertainties that could cause actual results to differ materially from those set forth or implied by any forward-looking statements. Important factors that could cause actual results to differ materially from those reflected in Synthetic Biologics' forward-looking statements include, among others, a failure of Synthetic Biologics' monoclonal antibodies for the treatment of infectious diseases to be successfully developed or commercialized, a failure of the Intrexon's intellectual property to create potent candidate mAbs, an inability to obtain regulatory approval of the infectious disease product candidates, a failure of the results of clinical trials to support Synthetic Biologics' claims, a failure of the preclinical or clinical trials to proceed on schedules that are consistent with Synthetic Biologics' current expectations or at all, Synthetic Biologics' inability to protect its intellectual property

and freedom to operate without interference of the patents of others, inability to maintain the effectiveness of the exclusive collaboration agreement, its reliance on third parties to develop its product candidates, the insufficiency of existing capital reserves to fund continued operations for a particular amount of time and uncertainties regarding Synthetic Biologics' ability to obtain additional financing to support its operations thereafter and other factors described in Synthetic Biologics' report on Form 10-K/A for the year ended December 31, 2011 and any other filings with the SEC. The information in this release is provided only as of the date of this release, and Synthetic Biologics undertakes no obligation to update any forward-looking statements contained in this release on account of new information, future events, or otherwise, except as required by law.

For further information, please contact:

Synthetic Biologics, Inc.

Kris Maly

Vice President of Corporate Communication

(734) 332-7800, Ext. 22

Intrexon Corporation

Corporate Contact:	Investor Contact:
Donald P. Lehr	The Ruth Group
Chief Legal Officer	Stephanie Carrington / Nicole Greenbaum
Intrexon Corporation	Tel: 646-536-7017 / 7009
Tel: 301-556-9809	scarrington@theruthgroup.com
dlehr@intrexon.com	ngreenbaum@theruthgroup.com

###