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: November 8, 2017
(Date of earliest event reported)

Oragenics, Inc.
(Exact name of registrant as specified in its charter)

FL	001-32188	59-3410522
(State or other jurisdiction of incorporation)	(Commission File Number)	(IRS Employer Identification Number)

4902 Eisenhower Boulevard, Suite 125
Tampa, FL **33634**
(Address of principal executive offices) **(Zip Code)**

813-286-7900
(Registrant's telephone number, including area code)

Not Applicable
(Former Name or Former Address, if changed since last report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the 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 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))

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Item 1.01 Entry into a Material Definitive Agreement

On November 8, 2017, Oragenics, Inc. (the "Company") completed a private placement of $3.3 million of Series B Non-Voting, Convertible Preferred Stock (the "Series B Convertible Preferred Stock") pursuant to a Securities Purchase Agreement with four existing shareholders who are accredited investors including an entity affiliated with a director of the Company (the "Series B Preferred Stock Financing"). Concurrently with the Series B Preferred Stock Financing, the Company also entered into a Debt Conversion Agreement (the "Intrexon Debt Conversion Agreement") with Intrexon Corporation ("Intrexon") pursuant to which Intrexon exchanged the $2.4 million unsecured non-convertible promissory note previously issued by the Company to Intrexon (the "Intrexon Note"), the accrued interest on the Intrexon Note and trade payables owed by the Company (collectively the "Debt") in the aggregate amount of approximately $3.4 million for equity in the form of shares of Series C, Non-Voting, Non-Convertible Preferred Stock (the "Series C Non-Convertible Preferred Stock") issued by the Company to Intrexon.

On November 8, 2017 the Company and Intrexon also amended (i) the Lantibiotic Exclusive Channel Collaboration Agreement (the "Lantibiotic ECC Amendment") and the related Stock Issuance Agreement (the "Lantibiotic Stock Issuance Agreement Amendment"); and (ii) the Oral Mucositis Exclusive Channel Collaboration Agreement (the "OM ECC Amendment") and the related Stock Issuance Agreement (the "OM Stock Issuance Agreement Amendment") (collectively, the "ECC Amendments") (the ECC Amendments together with the Debt Conversion and Series B Preferred Stock Financing are referred to herein as the "Transactions").

The Series B Preferred Stock Financing

In the Series B Preferred Stock Financing, the Company issued an aggregate of 6,600,000 shares of Series B Convertible Preferred Stock at a purchase price of $0.50 per share which are convertible into 13,200,000 shares of the Company's common stock, par value $0.001 per share ("Common Stock"), based on a conversion of one share of Series B Convertible Preferred Stock into two shares of Common Stock. The purchase price per share of the Series B Convertible Preferred Stock is represented by $0.25 per share of the Common Stock on an as converted basis. In addition, the Company issued to the investors in the private placement accompanying common stock purchase warrants to purchase an aggregate of 10,645,161 shares of Common Stock (the "Warrants"). The Warrants have a term of seven years from the date of issuance are non-exercisable until six (6) months after issuance, and have an exercise price of $0.31 per share. A copy of the form of Common Stock Purchase Warrant is attached hereto as Exhibit 4.1 and is incorporated by reference herein.

The Securities Purchase Agreement includes customary representations, warranties and covenants. A copy of the Securities Purchase Agreement is attached hereto as Exhibit 10.1 and is incorporated by reference herein.

The convertibility of Series B Convertible Preferred Stock into shares of Common Stock and the exercisability of the Warrants into shares of Common Stock are subject to shareholder approval as required under NYSE American LLC rules which shareholder approval will be obtained by written consent and its effectiveness is subject to the completion of the 20 day period after the filing of a definitive Information Statement on Schedule 14C. The Company has entered into voting agreements with the Koski Family Limited Partnership and Intrexon, holders of a majority of our outstanding common stock, pursuant to which they have agreed to vote all of their shares of common stock for approval. Proceeds from the Series B Preferred Stock Financing (including the exercise of any warrants for cash) will be used for general corporate purposes, including working capital.

In connection with the issuance and sale of the Series B Convertible Preferred Stock and Warrants, the Company granted certain demand registration rights and piggyback registration rights with respect to the shares of Common Stock issuable upon conversion of the Series B Convertible Preferred Stock and exercise of the Warrants, pursuant to an Amended and Restated Registration Rights Agreement. The Amended and Restated Registration Rights Agreement amended by the previous registration rights agreement entered into in connection with the Company's Series A Preferred financing in May 2017.

A copy of the forms of Voting Agreement and Registration Rights Agreement are attached hereto as Exhibits 9.1 and 10.2, respectively and are incorporated by reference herein.

The Intrexon Debt Conversion into Series C Non-Convertible Stock and ECC Amendments

Simultaneously with the Series B Preferred Stock Financing, Intrexon exchanged the Debt for equity in the form of 100 shares of Series C, Non-Voting, Non-Convertible Preferred Stock issued by the Company to Intrexon pursuant to the Debt Conversion Agreement which 100 shares have a stated value equal to the amount of the Debt.

The Intrexon Debt Conversion Agreement includes customary representations, warranties and covenants. A copy of the Intrexon Debt Conversion Agreement is attached hereto as Exhibit 10.3 and is incorporated by reference herein.

Simultaneously with the Intrexon Debt Conversion Agreement, the Company and Intrexon amended the Lantibiotic ECC, the Lantibiotic Stock Issuance Agreement, the OM ECC, and the OM Stock Issuance Agreement. The ECC Amendment for our Oral Mucositis product candidate, AG013, provides for a single milestone payment within six months after receiving Food and Drug Administration (the "FDA") approval of $27,500,000 and revised the field in which the Company has exclusive rights to its Oral Mucositis product candidate for the treatment of Oral Mucositis to clarify the Company has an exclusive for the treatment of Oral Mucositis in humans regardless of etiology. The ECC Amendment for our Lantibiotic product candidate provides for a single milestone payment within six months after FDA approval of $25,000,000. Each ECC was modified to reduce the sublicense revenue percentage it would have had to pay from 50% to 25%. The Lantibiotic ECC royalty rate was also revised from 25% of Positive Product Profit to 10% of Net Sales. A copy of the Lantibiotic ECC Amendment, the Lantibiotic Stock Issuance Agreement Amendment, the OM ECC Amendment and the OM Stock Issuance Agreement Amendment are attached hereto as Exhibit 10.6, 10.8, 10.11 and 10.14, respectively and are incorporated by reference herein.

The foregoing descriptions of the material terms of the Transactions set forth above is qualified in its entirety by reference to the documents attached hereto as Exhibits 3.1, 4.1, 9.1, 10.1, 10.2, 10.3, 10.6, 10.8, 10.11 and 10.14 to this Current Report on Form 8-K and is incorporated by reference herein.

Item 1.02 Amendment to Material Agreement.

The information in 1.01 of this current report with respect to the ECC Amendments is incorporated herein by reference. The Company's Amendment to amend and restate its Series A Preferred Stock is qualified in its entirety by reference to the document attached hereto as Exhibits 3.2. The Information in 5.03 of the current report with respect to the Series A Preferred is incorporated herein by reference.

Item 3.02 Unregistered Sales of Equity Securities

Pursuant to the Series B Preferred Stock Financing and conversion of the Intrexon Debt into Series C Non-Convertible Preferred Stock described in Item 1.01 of this Current Report on Form 8-K, which description is incorporated into this Item 3.02 by reference, on November 8, 2017 under the Securities Act and in reliance on the exemption from registration afforded by Section 4(2) and Regulation D (Rule 506) under the Securities Act of 1933, as amended (the "Securities Act") and corresponding provisions of state securities laws. The Series B Convertible Non-Voting, Preferred Stock, the Series C Non-Voting, Non-Convertible Preferred Stock, the Warrants and the Common Stock issuable upon the conversion of the Series B Convertible Preferred Stock and the exercise of the Warrants have not been registered under the Securities Act and may not be offered or sold in the United States absent registration with the SEC or an applicable exemption from such registration requirements.

Item 3.03. Material Modification to Rights of Security Holders.

See Item 5.03 herein for a discussion of the terms of the Series B Convertible Preferred Stock and Series C Non-Convertible Preferred Stock and Registration Rights Agreement.

Item 5.03 Amendments to Articles of Incorporation or Bylaws; Change in Fiscal Year.

The Company filed an Amendment to its Amended and Restated Articles of Incorporation containing the Certificates of Designation and Rights of Series B Convertible Preferred Stock and Series C Non-Convertible Preferred Stock with the Secretary of State of the State of Florida, to be effective November 8, 2017. The number of shares of Preferred Stock designated as Series B Convertible Preferred Stock is 6,600,000 and the number of shares of Preferred Stock designated as Series C Non-Convertible Preferred Stock is 1000, of which 100 shares are initially being issued. The Company also filed an Amendment to amend and restate the prior Certificate of Designation and Rights of Series A Convertible Preferred Stock as a result of adding clarification language with respect to limitations on conversion. The Amendment was filed with the Secretary of State of the State of Florida, to be effective November 8, 2017, and is attached hereto as Exhibit 3.2 to this Current Report on Form 8-K and incorporated by reference herein.

Series C Non-Voting, Non-Convertible, Preferred Stock Dividends.

From and after the Date of Issuance, each issued and outstanding share of Series C Non-Voting, Non-Convertible, Preferred Stock shall entitle the holder of record thereof to receive dividends thereon at the annual rate of twelve percent (12%) (the "Initial Rate") of its Stated Value (as defined in Section 4(B)), payable by issuing additional shares of Series C Non-Voting, Non-Convertible, Preferred Stock within thirty days after the end of each calendar year pro-rata for partial years. The Initial Rate shall be subject to increase to twenty percent (20%) automatically after May 10, 2019.

Voting Rights.

Except as otherwise provided herein or as otherwise required by law, the Series B Convertible Preferred Stock and Series C Non-Convertible Preferred Stock shall have no voting rights.

Series B Convertible Preferred Stock

However, as long as any shares of Series B Convertible Preferred Stock are outstanding, the Company shall not, without the affirmative consent or vote of the holders of a majority of the then outstanding shares of the Series B Convertible Preferred Stock, (a) amend, alter, repeal, restate or supplement (in each case, whether by reclassification, merger, consolidation, reorganization or otherwise) the Certificate of Designation in any manner that would adversely affect the holders of the Series B Convertible Preferred Stock, (b) authorize or agree to authorize any increase in the number of shares of Series B Convertible Preferred Stock or issue any additional shares of Series B Convertible Preferred Stock, (c) amend, alter or repeal any provision of the Certificate of Incorporation or Bylaws of the Company which would adversely affect any right, preference, privilege or voting power of the Series B Convertible Preferred Stock or the holders thereof or (d) agree to take any of the foregoing actions. Notwithstanding the foregoing, no approval or consent is required to increase the number of shares of Series C Non-Convertible Preferred Stock for the purpose of paying the PIK dividends thereon.

Series C Non-Convertible Preferred Stock

However, as long as any shares of Series C Non-Convertible Preferred Stock are outstanding, the Company shall not, without the affirmative consent or vote of the holders of a majority of the then outstanding shares of the Series C Non-Convertible Preferred Stock, (a) amend, alter, repeal, restate or supplement (in each case, whether by reclassification, merger, consolidation, reorganization or otherwise) the Certificate of Designation in any manner that would adversely affect the holders of the Series C Non-Convertible Preferred Stock, (b) authorize or agree to authorize any increase in the number of shares of Series C Non-Convertible Preferred Stock or issue any additional shares of Series C Non-Convertible Preferred Stock, (c) amend, alter or repeal any provision of the Certificate of Incorporation or Bylaws of the Company which would adversely affect any right, preference, privilege or voting power of the Series C Non-Convertible Preferred Stock or the holders thereof or (d) agree to take any of the foregoing actions.

Liquidation.

Series B Convertible Preferred Stock

Upon liquidation, dissolution or winding up of the Company (any such event, a "Liquidation"), whether voluntary or involuntary, each holder of shares of Series B Convertible Preferred Stock shall be entitled to receive, after payment to the Series C Non-Convertible Preferred Stock as provided in the Certificate of Designation of Series C Non-Convertible Preferred Stock, but on par with Series A Convertible Preferred Stock and in preference to the holders of Common Stock, an amount of cash equal to the greater of (i) the product of the number of shares of Series B

Convertible Preferred Stock then held by such holder, multiplied by the Series B Original Issue Price; and (ii) the amount that would be payable to such holder in the Liquidation in respect of Common Stock issuable upon conversion of such shares of Series B Convertible Preferred Stock if all outstanding shares of Series B Convertible Preferred Stock were converted into Common Stock immediately prior to the Liquidation.

Series C Non-Convertible Preferred Stock

Upon Liquidation of the Company, whether voluntary or involuntary, each holder of shares of Series C Non-Convertible Preferred Stock shall be entitled to receive, in preference to the holders of Common Stock, Series A Convertible Preferred Stock, Series B Convertible Preferred Stock and to all other equity securities issued by the Company from time to time (the "Junior Securities"), an amount of cash equal to the product of the number of shares of Series C Non-Convertible Preferred Stock then held by such holder, multiplied by the Stated Value per share of Series C Non-Convertible Preferred Stock plus any accrued but unpaid dividends (the "Series C Liquidation Amount") and no distributions or payments shall be made in respect of any Junior Securities unless all Series C Liquidation Amounts, if any, are first paid in full. The "Stated Value" shall mean $33,847.9874 per share.

Series B Convertible Preferred Stock Conversion Rights.

Each share of Series B Convertible Preferred Stock shall be convertible, at the option of the holder thereof, at any time (except only after shareholder approval if the Company's common stock is listed on the NYSE MKT and such approval is required under NYSE listing rules) and from time to time thereafter, and without the payment of additional consideration by the holder thereof, into such number of fully paid and non-assessable shares of Common Stock as is determined by dividing the Series B Original Issue Price by the Series B Conversion Price (as defined below) in effect at the time of conversion and then multiplying such product by two (2) and surrendering the Series B Convertible Preferred Stock to be converted. The "Series B Original Issue Price" shall mean $0.50 per share. The "Series B Conversion Price" with respect to shares of Series B Convertible Preferred Stock will initially be equal to the Series B Original Issue Price (as defined above), subject to adjustment as described in the Certificate of Designation.

The foregoing description of the Series B Convertible Preferred Stock and Series C Non-Convertible Preferred Stock is not complete and is qualified in its entirety by reference to the full text of the Amendment to Amended and Restated Articles of Incorporation containing the Certificates of Designation and Rights of Series B Convertible Preferred Stock and Series C Non-Convertible Preferred Stock, which is filed herewith as Exhibit 3.1 to this Current Report on Form 8-K and is incorporated by reference herein.

Item 8.01 Other Events

On November 9, 2017, the Company issued the press release attached hereto as Exhibit 99.1 regarding the Transactions described herein.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit No.	Description
3.1	Amendment to Amended and Restated Articles of Incorporation containing Certificates of Designation and Rights of Series B Convertible Preferred Stock and Series C Non-Convertible Preferred Stock
3.2	Amendment to Amended and Restated Articles of Incorporation containing Amended and Restated Certificate of Designation and Rights of Series A Convertible Preferred Stock
4.1	Form of Common Stock Purchase Warrant
9.1	Voting Agreement dated November 8, 2017.

10.1	Securities Purchase Agreement dated November 8, 2017.
10.2	Registration Rights Agreement dated November 8, 2017.
10.3	Debt Conversion Agreement-Intrexon dated November 8, 2017.
10.4	Exclusive Channel Collaboration Agreement by and between Oragenics, Inc. and Intrexon Corporation dated as of June 5, 2012.* (1)
10.5	Amendment No. 1 to the Exclusive Channel Collaboration Agreement between Oragenics, Inc. and Intrexon Corporation dated July 21, 2016. (2)
10.6	Amendment No. 2 to the Exclusive Channel Collaboration Agreement between Oragenics, Inc. and Intrexon Corporation dated November 8, 2017.
10.7	Stock Issuance Agreement by and between Oragenics, Inc. and Intrexon Corporation dated as of June 5, 2012. (1)
10.8	Amendment to Stock Issuance Agreement between Oragenics, Inc. and Intrexon Corporation dated November 8, 2017.
10.9	Exclusive Channel Collaboration Agreement by and between Oragenics, Inc. and Intrexon Corporation dated as of June 9, 2015.* (3)
10.10	Amendment No. 1 to the Exclusive Channel Collaboration Agreement between Oragenics, Inc. and Intrexon Corporation dated May 10, 2017. (4)
10.11	Amendment No. 2 to the Exclusive Channel Collaboration Agreement between Oragenics, Inc. and Intrexon Corporation dated November 8, 2017
10.12	Stock Purchase and Issuance Agreement by and between Oragenics, Inc. and Intrexon Corporation dated as of June 9, 2015.* (3)
10.13	Amendment to Stock Issuance Agreement between Oragenics, Inc. and Intrexon Corporation dated May 10, 2017. (4)
10.14	Second Amendment to Stock Issuance Agreement between Oragenics, Inc. and Intrexon Corporation dated November 8, 2017.
99.1	Press Release dated November 9, 2017.

* Confidential treatment has been granted as to certain portions of this exhibit pursuant to Rule 406 of the Securities Act of 1933, as amended, or Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

(1) Incorporated by reference to Form 8-K filed on June 11, 2012.

(2) Incorporated by reference to Form 10-Q filed on August 15, 2016.

(3) Incorporated by reference to Form 8-K filed on June 11, 2015.

(4) Incorporated by reference to Form 8-K filed on May 11, 2017.

SIGNATURES

In accordance with the requirements of the Exchange Act, the registrant caused this report to be signed on its behalf by the undersigned, thereunto duly authorized on this 9th day of November 2017.

ORAGENICS, INC.
(Registrant)

BY: /s/ Michael Sullivan
Michael Sullivan
Chief Financial Officer

Exhibit 3.1

ARTICLES OF AMENDMENT
TO
ARTICLES OF INCORPORATION
OF
ORAGENICS, INC.

CERTIFICATE OF DESIGNATION AND RIGHTS OF
SERIES B CONVERTIBLE PREFERRED STOCK

Pursuant to Section 607.0602 of the Florida Business Corporation Act

Oragenics, Inc., a corporation organized and existing under the laws of the State of Florida (the "**Corporation**"), does hereby certify:

FIRST: That pursuant to authority conferred upon the Board of Directors of the Corporation (the "**Board**") by the Articles of Incorporation of the Corporation, as amended, the Board adopted the following resolutions on November 3, 2017 pursuant to the Corporation's Articles of Incorporation, as amended and Sections 607.0602, 607.1002 and 607.1006 of the Florida Business Corporation Act, authorizing a new series of the Corporation's previously authorized Preferred Stock, $0.001 par value per share designated as Series B Convertible Preferred Stock. Shareholder action was not required.

SECOND: The Series B Convertible Preferred Stock shall have the following designation, number of shares, rights, qualifications, limitations and other terms and conditions:

Section 1. Designation and Amount. The shares of such series shall have a par value of $0.001 per share and shall be designated as "Series B Convertible Preferred Stock" (the "**Series B Preferred Stock**") and the number of shares constituting such series shall be 6,600,000.

Section 2. Dividends. Except for stock dividends or distributions for which adjustments are to be made pursuant to Section 5, holders of Series B Preferred Stock shall be entitled to receive, and the Corporation shall pay, dividends on shares of Series B Preferred Stock equal (on an as-if-converted-to-Common-Stock basis) to and in the same form as dividends actually paid on shares of the common stock of the Corporation, par value $.001 per share (the "**Common Stock**") when, as and if such dividends are paid on shares of the Common Stock. No other dividends shall be paid on shares of Series B Preferred Stock.

Section 3. Voting Rights. Except as otherwise provided herein or as otherwise required by law, the Series B Preferred Stock shall have no voting rights.

Section 4. Liquidation.

(A) The Series B Preferred Stock shall rank (i) on par with the Common Stock and Series A Preferred Stock and junior to Series C Preferred Stock as to dividend rights and (ii) junior to Series C Preferred Stock, on par with Series A Preferred Stock and senior to the Common Stock as to distributions of assets upon liquidation, dissolution or winding up of the Corporation, whether voluntarily or involuntarily.

(B) Upon liquidation, dissolution or winding up of the Corporation (any such event, a "**Liquidation**"), whether voluntary or involuntary, each holder of shares of Series B Preferred Stock shall be entitled to receive, after payment to the Series C Preferred Stock as provided in the Certificate of Designation of Series C Preferred Stock, but on par with Series A Preferred Stock and in preference to the holders of Common Stock, an amount of cash equal to the greater of (i) the product of the number of shares of Series B Preferred Stock then held by such holder, multiplied by the Series B Original Issue Price; and (ii) the amount that would be payable to such holder in the Liquidation in respect of Common Stock issuable upon conversion of such shares of Series B Preferred Stock if all outstanding shares of Series B Preferred Stock were converted into Common Stock immediately prior to the Liquidation (disregarding for this purpose any and all limitations of any kind on such conversion).

Section 5. Conversion.

(A) Conversion Rights. Subject to and upon compliance with the provisions of this Section 5, each share of Series B Preferred Stock shall be convertible, at the option of the holder thereof, at any time and from time to time thereafter, and without the payment of additional consideration by the holder thereof, into such number of fully paid and non-assessable shares of Common Stock as is determined by dividing the Series B Original Issue Price by the Series B Conversion Price (as defined below) in effect at the time of conversion and then multiplying such product by two (2) and surrendering the Series B Preferred Stock to be converted. Such surrender shall be made in the manner provided in paragraph (B) of this Section 5; provided that, if the Common Stock is listed on the NYSE MKT and shareholder approval of the issuance of the Common Stock issuable upon conversion of the Series B Preferred Stock is required under NYSE listing rules, then, until such shareholder approval is obtained, the holder of any Series B Preferred Stock may convert only a number of shares of Series B Preferred Stock that would not cause a violation of such listing rules. The "**Series B Original Issue Price**" shall mean $0.50 per share. The "**Series B Conversion Price**" with respect to shares of Series B Preferred Stock will initially be equal to the Series B Original Issue Price (as defined above), subject to adjustment as described below.

(B) Manner of Conversion.

(i) In order to exercise the conversion right, the holder of each share of Series B Preferred Stock to be converted shall surrender to the Corporation the certificate representing such share, duly endorsed or assigned to the Corporation or in blank, accompanied by written notice to the Corporation that the holder thereof elects to convert such Series B Preferred Stock. Unless the shares of Common Stock issuable on conversion are to be issued in

the same name as the name in which such Series B Preferred Stock is registered, each share of Series B Preferred Stock surrendered for conversion shall be accompanied by instruments of transfer, in form satisfactory to the Corporation, duly executed by the holder or such holder's duly authorized attorney and an amount sufficient to pay any transfer or similar tax that the Corporation is not required to pay pursuant to Section 5(D) hereof (or evidence reasonably satisfactory to the Corporation demonstrating that such taxes have been paid).

(ii) As promptly as practicable after the surrender of certificates of Series B Preferred Stock as aforesaid, and in any event within three (3) days thereafter, the Corporation shall issue and shall deliver at such office to such holder, or to such other location as such holder may direct, (x) a certificate or certificates for the number of full shares of Common Stock issuable upon the conversion of such Series B Preferred Stock in accordance with the provisions of this Section 5, (y) if less than the full number of shares of Series B Preferred Stock evidenced by the surrendered certificate or certificates are being converted, a new certificate or certificates for the number of shares evidenced by such surrendered certificate or certificates less the number of shares converted and (z) payment of all amounts to which such holder is entitled pursuant to paragraph (C) of this Section 5.

(iii) Each conversion shall be deemed to have been effected immediately prior to the close of business on the date on which certificates for the Series B Preferred Stock have been surrendered and such notice received by the Corporation as aforesaid, and the person or persons in whose name or names any certificate or certificates for shares of Common Stock shall be issuable upon such conversion shall be deemed to have become the holder or holders of record of the shares represented thereby at such time on such date, and such conversion shall be at the Conversion Price in effect at such time on such date unless the stock transfer books of the Corporation shall be closed on that date, in which event such conversion shall have been deemed to have been effected and such person or persons shall be deemed to have become the holder or holders of record at the close of business on the next succeeding day on which such stock transfer books are open, but such conversion shall be at the Conversion Price in effect on the date on which such shares shall have been surrendered and such notice received by the Corporation.

(C) Fractional Shares. No fractional shares or scrip representing fractions of shares of Common Stock shall be issued upon conversion of the Series B Preferred Stock. As to any fraction of a share which the Holder would otherwise be entitled to purchase upon such conversion, the Corporation shall at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Market Price on the date of conversion or round up to the next whole share. "Market Price" means, with respect to the Common Stock, on any given day, the closing sale price or, if no closing sale price is reported, the last reported sale price of the shares of the Common Stock on the New York Stock Exchange on such date. If the Common Stock is not traded on the New York Stock Exchange on any date of determination, the Market Price of the Common Stock on such date of determination means the closing sale price as reported in the composite transactions for the principal U.S. national or regional securities exchange on which the Common Stock is so listed or quoted, or, if no closing sale price is reported, the last reported sale price on the principal U.S. national or regional securities exchange on which the Common Stock is so listed or quoted, or if the Common Stock

is not so listed or quoted on a U.S. national or regional securities exchange, the last quoted bid price for the Common Stock in the over-the-counter market as reported by the OTC Markets Group or similar organization, or, if that bid price is not available, the market price of the Common Stock on that date as determined by a nationally recognized independent investment banking firm retained by the Corporation for this purpose.

(D) Transfer Taxes Upon Conversion. The Corporation shall pay any and all issuance and other taxes that may be payable in respect of any issuance or delivery of Common Stock upon conversion of Series B Preferred Stock. The Corporation shall not, however, be required to pay any tax that may be payable in respect of any transfer involved in the issuance and delivery of shares of Common Stock in a name other than that in which the Series B Preferred Stock so converted shall have been registered, and no such issuance or delivery shall be made unless and until the person or entity requesting such issuance shall have paid to the Corporation the amount of any such tax or shall have established, to the reasonable satisfaction of the Corporation, that such tax had been paid.

(E) Adjustment for Stock Splits and Combinations. If the Corporation shall at any time after November 8, 2017 (the "**Original Issue Date**") effect a subdivision of the outstanding Common Stock, the Conversion Price shall be proportionately decreased. If the Corporation shall at any time on or after the Original Issue Date combine the outstanding shares of Common Stock, the Conversion Price shall be proportionately increased. Any adjustment under this paragraph shall become effective at the close of business on the date the subdivision or combination becomes effective.

(F) Adjustment for Certain Dividends and Distributions. If the Corporation at any time on or after the Original Issue Date shall make or issue, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable in additional shares of Common Stock, the Conversion Price shall be decreased as of the time of such issuance or, in the event such a record date shall have been fixed, as of the close of business on such record date, by multiplying the Conversion Price then in effect by a fraction,

(1) the numerator of which shall be the total number of shares of Common Stock issued and outstanding immediately prior to the time of such issuance or the close of business on such record date, and

(2) the denominator of which shall be the total number of shares of Common Stock issued and outstanding immediately prior to the time of such issuance or the close of business on such record date plus the number of shares of Common Stock issuable in payment of such dividend or distribution;

provided, however, if such record date shall have been fixed and such dividend shall not be fully paid or if such distribution shall not be fully made on the date fixed therefor, the Conversion Price shall be recomputed accordingly as of the close of business on such record date, and thereafter the Conversion Price shall be adjusted pursuant to this subsection (F) as of the time of actual payment of such dividends or distributions.

(G) Provisions for Other Dividends and Distributions. If the Corporation at any time on or after the Original Issue Date shall make or issue to holders of Common Stock, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable in securities of the Corporation other than shares of Common Stock, then, and in each such event, provision shall be made so that the holders of the Series B Preferred Stock shall receive upon conversion thereof in addition to the number of shares of Common Stock receivable thereupon, the amount of securities of the Corporation that they would have received had such Series B Preferred Stock been converted in full into Common Stock on the date of such event (notwithstanding the conversion limitation set forth in clause (N) below) and had they thereafter, during the period from the date of such event to and including the Conversion Date, retained such securities receivable by them as aforesaid during such period.

(H) Adjustment for Reclassification, Exchange or Substitution. If, at any time on or after the Original Issue Date, the Common Stock shall be changed into the same or a different number of shares of any class or classes of stock, whether by capital reorganization, reclassification, or otherwise (other than a subdivision or combination of shares or stock dividend provided for above, or a reorganization, merger, consolidation, or sale of assets provided for below), the holders of the Series B Preferred Stock shall have the right thereafter to convert such shares into the kind and amount of shares of stock and other securities and property receivable upon such reorganization, reclassification, or other change, as would be received by holders of the number of shares of Common Stock into which such shares of the Series B Preferred Stock might have been converted immediately prior to such reorganization, reclassification, or change.

(I) Adjustment for Merger or Reorganization, etc. In case of any consolidation or merger of the Corporation with or into another corporation or the sale of all or substantially all of the assets of the Corporation to another corporation at any time on or after the Original Issue Date (each, a "**Transaction**"), each share of Series B Preferred Stock shall thereafter be convertible (or shall be converted into a security which shall be convertible) into the kind and amount of shares of stock or other securities or property to which a holder of the number of shares of Common Stock of the Corporation issuable upon conversion of such share would have been entitled upon such consolidation, merger or sale; and, in such case, appropriate adjustment (as determined in good faith by the Board) shall be made in the application of the provisions in this subsection 5(I) with respect to the rights and interest thereafter of the holders of Series B Preferred Stock, to the end that the provisions set forth in this subsection 5(I) (including provisions with respect to changes in and other adjustments of the Conversion Price applicable to such series) shall thereafter be applicable, as nearly as reasonably may be, in relation to any shares of stock or other property thereafter issuable upon the conversion of the Series B Preferred Stock. Notwithstanding anything contained herein to the contrary, the Corporation will not effect any Transaction unless, prior to the consummation thereof, the surviving person, if other than the Corporation, shall agree to assume the obligation to deliver to the holders of Series B Preferred Stock such shares of stock or other securities or property to which, in accordance with the foregoing provisions, such holders are entitled.

(J) Certificate as to Adjustments. Upon the occurrence of each adjustment or readjustment of the Conversion Price, the Corporation at its expense shall promptly compute

such adjustment or readjustment in accordance with the terms hereof and furnish to each holder of Series B Preferred Stock a certificate setting forth such adjustment or readjustment and showing in detail the facts upon which such adjustment or readjustment is based. The Corporation shall, upon the written request at any time of any holder of Series B Preferred Stock, furnish or cause to be furnished to such holder a similar certificate setting forth (i) such adjustments and readjustments, (ii) the Conversion Price applicable to such series then in effect, and (iii) the number of shares of Common Stock and the amount, if any, of other property that then would be received upon the conversion.

(K) Notice of Record Date. If:

(i) the Corporation shall declare a dividend (or any other distribution) on its Common Stock payable in Common Stock or other securities of the Corporation;

(ii) the Corporation shall subdivide or combine its outstanding shares of Common Stock;

(iii) there shall be any reclassification of the Common Stock of the Corporation (other than a subdivision or combination of its outstanding shares of Common Stock or a stock dividend or stock distribution thereon), consolidation or merger of the Corporation into or with another Corporation, sale of all or substantially all of the assets of the Corporation, or involuntary or voluntary dissolution, liquidation or winding up of the Corporation;

then the Corporation shall cause to be filed at its principal office or at the office of the transfer agent of the Series B Preferred Stock, and shall cause to be mailed to the holders of Series B Preferred Stock at their last addresses as shown on the records of the Corporation or such transfer agent, at least seventy-five days prior to the date specified in (a) below, ten days prior to the date specified in (b) below or twenty days before the date specified in (c) below, a notice stating:

(a) the record date of such dividend or distribution, or, if a record is not to be taken, the date as of which the holders of Common Stock of record to be entitled to such dividend or distribution are to be determined,

(b) the record date of such subdivision or combination, or, if a record is not to be taken, the date as of which the holders of Common Stock of record to be entitled to such subdivision or combination are to be determined, or

(c) the date on which such reclassification, consolidation, merger, sale, dissolution, liquidation or winding up is expected to become effective, and the date as of which it is expected that holders of Common Stock of record shall be entitled to exchange their shares of Common Stock for securities or other property deliverable upon such reclassification, consolidation, merger, sale, dissolution or winding up.

(L) No Duplication of Adjustments. If any action or transaction would require adjustment of the Conversion Price pursuant to more than one paragraph of this Section 5, only

one adjustment shall be made and such adjustment shall be the amount of adjustment that results in the lowest Conversion Price. Notwithstanding the foregoing, the provisions of this Section 5 shall apply to successive transactions giving rise to any such adjustment.

(M) Reservation and Listing of Shares of Common Stock.

(i) The Corporation shall at all times reserve and keep available, free from preemptive rights, out of the aggregate of its authorized but unissued shares of Common Stock for the purpose of effecting conversion of the Series B Preferred Stock, the full number of shares of Common Stock deliverable upon the conversion of all outstanding shares of Series B Preferred Stock not theretofore converted. Before taking any action that would cause an adjustment in the Conversion Price such that Common Stock issuable upon the conversion of Series B Preferred Stock would be issued below par value of the Common Stock, the Corporation shall take any corporate action that may, in the opinion of its counsel, be reasonably necessary in order that the Corporation may validly and legally issue fully-paid and nonassessable shares of Common Stock at such adjusted Conversion Price.

(ii) The Corporation shall, at its sole cost and expense, in good faith and as expeditiously as possible and prior to such delivery, cause the shares of Common Stock required to be delivered upon conversion of the Series B Preferred Stock to be listed upon each national securities exchange, if any, upon which the outstanding Common Stock is listed at the time of such delivery.

(N) Beneficial Ownership Limitation. Notwithstanding anything to the contrary contained herein, no holder shall be entitled to receive shares of Common Stock or other securities of the Corporation (together with Common Stock, "**Equity Interests**") upon conversion of Series B Preferred Stock to the extent (but only to the extent) that such exercise or receipt would cause such holder's Holder Group to become, directly or indirectly, a "beneficial owner" (within the meaning of Section 13(d) of the Securities Exchange Act of 1934, as amended from time to time, and the rules and regulations promulgated thereunder from time to time in effect (the "**Exchange Act**")) of a number of Equity Interests of a class that is registered under the Exchange Act which exceeds the Maximum Percentage (as defined below) of the Equity Interests of such class that are outstanding at such time. This limitation on beneficial ownership (a) may be increased, decreased or terminated with respect to any Holder, in such holder's sole discretion, upon 61 days' written notice to the Corporation by such holder and (b) shall terminate automatically on the date that a Redemption Notice is delivered to such holder. Any purported delivery of Equity Interests in connection with the conversion of Series B Preferred Stock prior to the termination of this restriction in accordance herewith shall be void and have no effect to the extent (but only to the extent) that such delivery would result in a Holder Group becoming the beneficial owner of more than the Maximum Percentage of the Equity Interests of a class that is registered under the Exchange Act that is outstanding at such time. If any delivery of Equity Interests owed to a holder following a conversion of Series B Preferred Stock is not made, in whole or in part, as a result of this limitation, the Corporation's obligation to make such delivery shall not be extinguished and the Corporation shall deliver such Equity Interests as promptly as practicable after such holder gives notice to the Corporation that such delivery would not result in such limitation being triggered or upon termination of the

restriction in accordance with the terms hereof. For purposes of this Section 5(O), (i) unless modified by a holder pursuant to the second sentence of this Section 5(O), the term "**Maximum Percentage**" shall mean 4.99%; provided, that if at any time after the date hereof such holder's Holder Group beneficially owns in excess of 4.99% of any class of Equity Interests in the Corporation that is registered under the Exchange Act (excluding any Equity Interests deemed beneficially owned by virtue of any Series of Preferred Stock and any warrant exercisable for Common Stock), then the Maximum Percentage shall automatically increase to 9.99% so long as such Holder Group owns in excess of 4.99% of such class of Equity Interests (and shall, for the avoidance of doubt, automatically decrease to 4.99% upon such Holder Group ceasing to own in excess of 4.99% of such class of Equity Interests); and (ii) the term "**Holder Group**" shall mean, with respect to each holder, such holder plus any other Person with which such holder is considered to be part of a group under Section 13 of the Exchange Act or with which such holder otherwise files reports under Sections 13 and/or 16 of the Exchange Act. In determining the number of Equity Interests of a particular class outstanding at any point in time, a holder may rely on the number of outstanding Equity Interests of such class as reflected in (x) the Corporation's most recent Annual Report on Form 10-K or Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission, as the case may be, (y) a more recent public announcement by the Corporation or (z) a more recent notice by the Corporation or its transfer agent to such holder setting forth the number of Equity Interests of such class then outstanding. For any reason at any time, upon written or oral request of a holder, the Corporation shall, within two days of such request, confirm orally and in writing to such holder the number of Equity Interests of any class then outstanding. The provisions of this Section 5(O) shall be construed, corrected and implemented in a manner so as to effectuate the intended beneficial ownership limitation herein contained.

(O) Antitrust Notification. If any Holder determines, in its sole judgment upon the advice of counsel, that a conversion of any Series B Preferred Stock pursuant to the terms hereof would be subject to the provisions of the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended (the "**HSR Act**"), the Corporation shall file, within seven days after receiving notice from such Holder of the applicability of the HSR Act and a request to so file, with the United States Federal Trade Commission (the "**FTC**") and the United States Department of Justice (the "**DOJ**") the notification and report form and any supplemental information required to be filed by it pursuant to the HSR Act in connection with the conversion of Series B Preferred Stock. Any such notification and report form and supplemental information will be in full compliance with the requirements of the HSR Act. The Corporation will furnish to such Holder promptly (but in no event more than five days) such information and assistance as such Holder may reasonably request in connection with the preparation of any filing or submission required to be filed by such Holder under the HSR Act. The Corporation shall respond promptly after receiving any inquiries or requests for additional information from the FTC or the DOJ (and in no event more than three days after receipt of such inquiry or request). The Corporation shall keep such Holder apprised periodically and at such Holder's request of the status of any communications with, and any inquiries or requests for additional information from, the FTC or the DOJ. The Corporation shall bear all filing or other fees required to be paid by the Corporation and such Holder (or the "ultimate parent entity" of such Holder, if any) under the HSR Act or any other applicable law in connection with such filings and all costs and expenses (including, without limitation, reasonable attorneys' fees and

expenses) incurred by the Corporation and such Holder in connection with the preparation of such filings and responses to inquiries or requests. In the event that this Section 5(O) is applicable to any conversion of any Series B Preferred Stock, the receipt by the Holder of the Common Stock subject to such exercise shall be subject to the expiration or earlier termination of the waiting period under the HSR Act (with the conversion date being deemed to be the date immediately following the date of such expiration or early termination).

Section 6. Amendment. Without the affirmative consent or vote of the holders of 66.66% of the Series B Preferred Stock outstanding at the time, the Corporation shall not (a) amend, alter, repeal, restate or supplement (in each case, whether by reclassification, merger, consolidation, reorganization or otherwise) this Certificate of Designation in any manner that would adversely affect the holders of the Series B Preferred Stock, (b) authorize or agree to authorize any increase in the number of shares of Series B Preferred Stock or issue any additional shares of Series B Preferred Stock, (c) amend, alter or repeal any provision of the Certificate of Incorporation or Bylaws of the Corporation which would adversely affect any right, preference, privilege or voting power of the Series B Preferred Stock or the holders thereof or (d) agree to take any of the foregoing actions. Notwithstanding the foregoing, no approval or consent is required to increase the number of shares of Series C Non-Convertible Preferred Stock for the purpose of paying the PIK dividends thereon.

Section 7. Impairment. The Corporation shall not amend the Articles of Incorporation or participate in any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action for the purpose of avoiding or seeking to avoid the observance or performance of any of the terms to be observed or performed hereunder by the Corporation, but shall at all times act in good faith in carrying out all such action as may he reasonably necessary or appropriate in order to protect the conversion rights of the holders of Series B Preferred Stock against dilution or other impairment, as set forth herein.

Section 8. Redemption. To the extent the Corporation shall have funds legally available therefor, at any time after the fifth anniversary of the Original Issue Date, the Corporation shall have the right to redeem all or any portion of the outstanding shares of Series B Preferred Stock at the Series B Original Issue Price by providing at least seventy five (75) days written notice of such redemption to all holders of the then outstanding shares of Series B Preferred Stock (a "**Redemption Notice**"); provided that if less than all outstanding shares of Series B Preferred Stock are redeemed pursuant to this section, then such portion redeemed must result in proceeds to the holders of Series B Preferred Stock of at least $1,000,000. For the purposes of clarity, the Corporation may exercise its right to redemption under this Section 8 one or more times. The Redemption Notice shall specify the number of shares of Series B Preferred Stock to be redeemed from the holder of Series B Preferred Stock, the date fixed for redemption (the "**Redemption Date**"), and the time and place of redemption. If the Redemption Notice shall have been given as hereinbefore provided, each holder of Series B Preferred Stock called for redemption shall surrender the certificates evidencing such shares to the Corporation against payment therefor. Any shares of Series B Preferred Stock that are redeemed or otherwise acquired by the Corporation shall be automatically and immediately cancelled and retired and shall not be reissued, sold or transferred.

THIRD: The effective date of these Articles of Amendment shall be November 8, 2017.

CERTIFICATE OF DESIGNATION AND RIGHTS OF SERIES C NON-CONVERTIBLE PREFERRED STOCK

Pursuant to Section 607.0602 of the Florida Business Corporation Act

Oragenics, Inc., a corporation organized and existing under the laws of the State of Florida (the "**Corporation**"), does hereby certify:

FIRST: That pursuant to authority conferred upon the Board of Directors of the Corporation (the "**Board**") by the Articles of Incorporation of the Corporation, as amended, the Board adopted the following resolutions on November 3, 2017 pursuant to the Corporation's Articles of Incorporation, as amended and Sections 607.0602, 607.1002 and 607.1006 of the Florida Business Corporation Act, authorizing a new series of the Corporation's previously authorized Preferred Stock, $0.001 par value per share designated as Series C Non-Convertible Preferred Stock. Shareholder action was not required.

SECOND: The Series C Non-Convertible Preferred Stock shall have the following designation, number of shares, rights, qualifications, limitations and other terms and conditions:

Section 1. Designation and Amount. The shares of such series shall have a par value of $0.001 per share and shall be designated as "Series C Non-Convertible Preferred Stock" (the "**Series C Preferred Stock**") and the number of shares constituting such series shall be One Thousand (1,000).

Section 2. Dividends. From and after the Date of Issuance, each issued and outstanding share of Series C Preferred Stock shall entitle the holder of record thereof to receive dividends thereon at the annual rate of twelve percent (12%) (the "**Initial Rate**") of its Stated Value (as defined in Section 4(B)), payable by issuing additional shares of Series A Preferred Stock within thirty days after the end of each calendar year pro-rata for partial years. The Initial Rate shall be subject to increase to twenty percent (20%) automatically after May 10, 2019. The holders of Series C Preferred Stock shall not be entitled to any dividends other than the dividends provided for in this Section 2.

Section 3. Voting Rights. Except as otherwise provided herein or as otherwise required by law, the Series C Preferred Stock shall have no voting rights.

Section 4. Liquidation.

(A) The Series C Preferred Stock shall rank senior to Common Stock, Series A Preferred Stock, Series B Preferred Stock and to all other equity securities issued by the Corporation from time to time (the "**Junior Securities**") as to rights upon liquidation, dissolution or winding up of the Corporation, whether voluntarily or involuntarily.

(B) Upon liquidation, dissolution or winding up of the Corporation (any such event, a "**Liquidation**"), whether voluntary or involuntary, each holder of shares of Series C Preferred Stock shall be entitled to receive, in preference to the holders of Junior Securities, an amount of cash equal to the product of (i) the sum of (a) the number of shares of Series C Preferred Stock then held by such holder plus (b) the number of shares of Series C Preferred Stock issuable to such holder in connection with any accrued but unpaid dividends, multiplied by (ii) the Stated Value per share of Series C Preferred Stock (the "**Series C Liquidation Amount**") and no distributions or payments shall be made in respect of any Junior Securities unless all Series C Liquidation Amounts, if any, are first paid in full. The "**Stated Value**" shall mean $33,847.9874 per share.

(C) If upon any such liquidation, dissolution or winding up of the Corporation, there are not sufficient assets available to permit the payment in full of the Series C Liquidation Amount, then such remaining assets shall be distributed ratably to the holders of Series C Preferred Stock. After payment of the full amount of the liquidating distribution to which any holder of Series C Preferred Stock is entitled pursuant to Section 4(B), the holder of such share or shares shall not be entitled to any further participation in any distribution of assets of the Corporation.

Section 5. Amendment. Without the affirmative consent or vote of the holders of a majority of the Series C Preferred Stock outstanding at the time, the Corporation shall not (a) amend, alter, repeal, restate or supplement (in each case, whether by reclassification, merger, consolidation, reorganization or otherwise) this Certificate of Designation in any manner that would adversely affect the holders of the Series C Preferred Stock, (b) authorize or agree to authorize any increase in the number of shares of Series C Preferred Stock or issue any additional shares of Series C Preferred Stock, (c) amend, alter or repeal any provision of the Certificate of Incorporation or Bylaws of the Corporation which would adversely affect any right, preference, or privilege of the Series C Preferred Stock or the holders thereof or (d) agree to take any of the foregoing actions.

Section 6. Impairment. The Corporation shall not amend the Articles of Incorporation or participate in any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action for the purpose of avoiding or seeking to avoid the observance or performance of any of the terms to be observed or performed hereunder by the Corporation, but shall at all times act in good faith in carrying out all such action as may he reasonably necessary or appropriate in order to protect the conversion rights of the holders of Series C Preferred Stock against dilution or other impairment, as set forth herein.

Section 7. Redemption. To the extent the Corporation shall have funds legally available therefor, at any time after November 8, 2017, the Corporation shall have the right to redeem all or any portion of the outstanding shares of Series C Preferred Stock at the Stated Value by providing at least thirty (30) days written notice of such redemption to all holders of the then outstanding shares of Series C Preferred Stock (a "**Redemption Notice**"). For the purposes of clarity, the Corporation may exercise its right to redemption under this Section 7 one or more times. The Redemption Notice shall specify the number of shares of Series C Preferred Stock to be redeemed from the holders of Series C Preferred Stock, the date fixed for redemption (the "**Redemption Date**"), and the time and place of redemption. If the Redemption Notice shall have been given as hereinbefore provided, each holder of Series C Preferred Stock called for redemption shall surrender the certificates evidencing such shares to the Corporation against payment therefor. Any shares of Series C Preferred Stock that are redeemed or otherwise acquired by the Corporation shall be automatically and immediately cancelled and retired and shall not be reissued, sold or transferred.

Section 8. No Conversion Rights. The shares of Series C Preferred Stock do not have any conversion rights and are not convertible into or exchangeable for any other property or securities of the Corporation.

THIRD: The effective date of these Articles of Amendment shall be November 8, 2017.

IN WITNESS WHEREOF, the undersigned has executed and subscribed these Articles of Amendment this 3rd day of November, 2017.

ORAGENICS, INC.

/s/ Alan Joslyn

Alan Joslyn
President and Chief Executive Officer

[Signature Page to Articles of Amendment to Articles of Incorporation]

Exhibit 3.2

ARTICLES OF AMENDMENT
TO
ARTICLES OF INCORPORATION
OF
ORAGENICS, INC.

AMENDED AND RESTATED CERTIFICATE OF DESIGNATION AND RIGHTS OF SERIES A CONVERTIBLE PREFERRED STOCK

Pursuant to Section 607.0602 of the Florida Business Corporation Act

Oragenics, Inc., a corporation organized and existing under the laws of the State of Florida (the "**Corporation**"), does hereby certify:

FIRST: The Corporation filed an Articles of Amendment to Articles of Incorporation on May 8, 2017 which contained a Certificate of Designation and Rights of Series A Convertible designated as Series A Preferred Stock (the "**Original Series A Certificate of Designation**").

SECOND: The Corporation desires to amend and restate the Original Series A Certificate of Designation.

THIRD: That pursuant to authority conferred upon the Board of Directors of the Corporation (the "**Board**") by the Articles of Incorporation of the Corporation, as amended, the Board adopted resolutions on November 3, 2017 pursuant to the Corporation's Articles of Incorporation, as amended and Sections 607.0602, 607.1002 and 607.1006 of the Florida Business Corporation Act, authorizing this Amendment. Shareholder action was not required.

FOURTH: The Original Series A Certificate of Designation is hereby amended and restated in its entirety and, as so amended and restated, the Series A Preferred Stock shall have the following designation, number of shares, rights, qualifications, limitations and other terms and conditions:

Section 1. Designation and Amount. The shares of such series shall have a par value of $0.001 per share and shall be designated as "Series A Convertible Preferred Stock" (the "**Series A Preferred Stock**") and the number of shares constituting such series shall be Twelve Million (12,000,000).

Section 2. Dividends. Except for stock dividends or distributions for which adjustments are to be made pursuant to Section 5, holders of Series A Preferred Stock shall be entitled to receive, and the Corporation shall pay, dividends on shares of Series A Preferred Stock equal (on an as-if-converted-to-Common-Stock basis) to and in the same form as dividends actually paid on shares of the common stock of the Corporation, par value $.001 per share (the "**Common Stock**") when, as and if such dividends are paid on shares of the Common Stock. No other dividends shall be paid on shares of Series A Preferred Stock.

Section 3. Voting Rights. Except as otherwise provided herein or as otherwise required by law, the Series A Preferred Stock shall have no voting rights.

Section 4. Liquidation.

(A) The Series A Preferred Stock shall rank (i) on par with the Common Stock as to dividend rights and (ii) senior to the Common Stock as to distributions of assets upon liquidation, dissolution or winding up of the Corporation, whether voluntarily or involuntarily.

(B) Upon liquidation, dissolution or winding up of the Corporation (any such event, a "**Liquidation**"), whether voluntary or involuntary, each holder of shares of Series A Preferred Stock shall be entitled to receive, in preference to the holders of Common Stock, an amount of cash equal to the greater of (i) the product of the number of shares of Series A Preferred Stock then held by such holder, multiplied by the Original Issue Price; and (ii) the amount that would be payable to such holder in the Liquidation in respect of Common Stock issuable upon conversion of such shares of Series A Preferred Stock if all outstanding shares of Series A Preferred Stock were converted into Common Stock immediately prior to the Liquidation (disregarding for this purpose any and all limitations of any kind on such conversion).

Section 5. Conversion.

(A) Conversion Rights. Subject to and upon compliance with the provisions of this Section 5, each share of Series A Preferred Stock shall be convertible, at the option of the holder thereof, at any time and from time to time, and without the payment of additional consideration by the holder thereof, into such number of fully paid and non-assessable shares of Common Stock as is determined by dividing the Series A Original Issue Price by the Series A Conversion Price (as defined below) in effect at the time of conversion and surrendering the Series A Preferred Stock to be converted. Such surrender shall be made in the manner provided in paragraph (B) of this Section 5. The "**Series A Original Issue Price**" shall mean $0.25 per share. The "**Series A Conversion Price**" with respect to shares of Series A Preferred Stock will initially be equal to the Series A Original Issue Price (as defined above), subject to adjustment as described below.

(B) Manner of Conversion.

(i) In order to exercise the conversion right, the holder of each share of Series A Preferred Stock to be converted shall surrender to the Corporation the certificate representing such share, duly endorsed or assigned to the Corporation or in blank, accompanied by written notice to the Corporation that the holder thereof elects to convert such Series A Preferred Stock. Unless the shares of Common Stock issuable on conversion are to be issued in the same name as the name in which such Series A Preferred Stock is registered, each share of Series A Preferred Stock surrendered for conversion shall be accompanied by instruments of transfer, in form satisfactory to the Corporation, duly executed by the holder or such holder's duly authorized attorney and an amount sufficient to pay any transfer or similar tax that the Corporation is not required to pay pursuant to Section 5(D) hereof (or evidence reasonably satisfactory to the Corporation demonstrating that such taxes have been paid).

(ii) As promptly as practicable after the surrender of certificates of Series A Preferred Stock as aforesaid, and in any event within three (3) days thereafter, the Corporation shall issue and shall deliver at such office to such holder, or to such other location as such holder may direct, (x) a certificate or certificates for the number of full shares of Common Stock issuable upon the conversion of such Series A Preferred Stock in accordance with the provisions of this Section 5, (y) if less than the full number of shares of Series A Preferred Stock evidenced by the surrendered certificate or certificates are being converted, a new certificate or certificates for the number of shares evidenced by such surrendered certificate or certificates less the number of shares converted and (z) payment of all amounts to which such holder is entitled pursuant to paragraph (C) of this Section 5.

(iii) Each conversion shall be deemed to have been effected immediately prior to the close of business on the date on which certificates for the Series A Preferred Stock have been surrendered and such notice received by the Corporation as aforesaid, and the person or persons in whose name or names any certificate or certificates for shares of Common Stock shall be issuable upon such conversion shall be deemed to have become the holder or holders of record of the shares represented thereby at such time on such date, and such conversion shall be at the Conversion Price in effect at such time on such date unless the stock transfer books of the Corporation shall be closed on that date, in which event such conversion shall have been deemed to have been effected and such person or persons shall be deemed to have become the holder or holders of record at the close of business on the next succeeding day on which such stock transfer books are open, but such conversion shall be at the Conversion Price in effect on the date on which such shares shall have been surrendered and such notice received by the Corporation.

(C) Fractional Shares. No fractional shares or scrip representing fractions of shares of Common Stock shall be issued upon conversion of the Series A Preferred Stock. As to any fraction of a share which the Holder would otherwise be entitled to purchase upon such conversion, the Corporation shall at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Market Price on the date of conversion or round up to the next whole share. “Market Price” means, with respect to the Common Stock, on any given day, the closing sale price or, if no closing sale price is reported, the last reported sale price of the shares of the Common Stock on the New York Stock Exchange on such date. If the Common Stock is not traded on the New York Stock Exchange on any date of determination, the Market Price of the Common Stock on such date of determination means the closing sale price as reported in the composite transactions for the principal U.S. national or regional securities exchange on which the Common Stock is so listed or quoted, or, if no closing sale price is reported, the last reported sale price on the principal U.S. national or regional securities exchange on which the Common Stock is so listed or quoted, or if the Common Stock is not so listed or quoted on a U.S. national or regional securities exchange, the last quoted bid price for the Common Stock in the over-the-counter market as reported by the OTC Markets Group or similar organization, or, if that bid price is not available, the market price of the Common Stock on that date as determined by a nationally recognized independent investment banking firm retained by the Corporation for this purpose.

(D) Transfer Taxes Upon Conversion. The Corporation shall pay any and all issuance and other taxes that may be payable in respect of any issuance or delivery of Common Stock upon conversion of Series A Preferred Stock. The Corporation shall not, however, be required to pay any tax that may be payable in respect of any transfer involved in the issuance and delivery of shares of Common Stock in a name other than that in which the Series A Preferred Stock so converted shall have been registered, and no such issuance or delivery shall be made unless and until the person or entity requesting such issuance shall have paid to the Corporation the amount of any such tax or shall have established, to the reasonable satisfaction of the Corporation, that such tax had been paid.

(E) Adjustment for Stock Splits and Combinations. If the Corporation shall at any time after May 10, 2017 (the "**Original Issue Date**") effect a subdivision of the outstanding Common Stock, the Conversion Price shall be proportionately decreased. If the Corporation shall at any time on or after the Original Issue Date combine the outstanding shares of Common Stock, the Conversion Price shall be proportionately increased. Any adjustment under this paragraph shall become effective at the close of business on the date the subdivision or combination becomes effective.

(F) Adjustment for Certain Dividends and Distributions. If the Corporation at any time on or after the Original Issue Date shall make or issue, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable in additional shares of Common Stock, the Conversion Price shall be decreased as of the time of such issuance or, in the event such a record date shall have been fixed, as of the close of business on such record date, by multiplying the Conversion Price then in effect by a fraction,

(1) the numerator of which shall be the total number of shares of Common Stock issued and outstanding immediately prior to the time of such issuance or the close of business on such record date, and

(2) the denominator of which shall be the total number of shares of Common Stock issued and outstanding immediately prior to the time of such issuance or the close of business on such record date plus the number of shares of Common Stock issuable in payment of such dividend or distribution;

provided, however, if such record date shall have been fixed and such dividend shall not be fully paid or if such distribution shall not be fully made on the date fixed therefor, the Conversion Price shall be recomputed accordingly as of the close of business on such record date, and thereafter the Conversion Price shall be adjusted pursuant to this subsection (F) as of the time of actual payment of such dividends or distributions.

(G) Provisions for Other Dividends and Distributions. If the Corporation at any time on or after the Original Issue Date shall make or issue to holders of Common Stock, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable in securities of the Corporation other than shares of

Common Stock, then, and in each such event, provision shall be made so that the holders of the Series A Preferred Stock shall receive upon conversion thereof in addition to the number of shares of Common Stock receivable thereupon, the amount of securities of the Corporation that they would have received had such Series A Preferred Stock been converted in full into Common Stock on the date of such event (notwithstanding the conversion limitation set forth in clause (N) below) and had they thereafter, during the period from the date of such event to and including the Conversion Date, retained such securities receivable by them as aforesaid during such period.

(H) Adjustment for Reclassification, Exchange or Substitution. If, at any time on or after the Original Issue Date, the Common Stock shall be changed into the same or a different number of shares of any class or classes of stock, whether by capital reorganization, reclassification, or otherwise (other than a subdivision or combination of shares or stock dividend provided for above, or a reorganization, merger, consolidation, or sale of assets provided for below), the holders of the Series A Preferred Stock shall have the right thereafter to convert such shares into the kind and amount of shares of stock and other securities and property receivable upon such reorganization, reclassification, or other change, as would be received by holders of the number of shares of Common Stock into which such shares of the Series A Preferred Stock might have been converted immediately prior to such reorganization, reclassification, or change.

(I) Adjustment for Merger or Reorganization, etc. In case of any consolidation or merger of the Corporation with or into another corporation or the sale of all or substantially all of the assets of the Corporation to another corporation at any time on or after the Original Issue Date (each, a "**Transaction**"), each share of Series A Preferred Stock shall thereafter be convertible (or shall be converted into a security which shall be convertible) into the kind and amount of shares of stock or other securities or property to which a holder of the number of shares of Common Stock of the Corporation issuable upon conversion of such share would have been entitled upon such consolidation, merger or sale; and, in such case, appropriate adjustment (as determined in good faith by the Board) shall be made in the application of the provisions in this subsection 5(I) with respect to the rights and interest thereafter of the holders of Series A Preferred Stock, to the end that the provisions set forth in this subsection 5(I) (including provisions with respect to changes in and other adjustments of the Conversion Price applicable to such series) shall thereafter be applicable, as nearly as reasonably may be, in relation to any shares of stock or other property thereafter issuable upon the conversion of the Series A Preferred Stock. Notwithstanding anything contained herein to the contrary, the Corporation will not effect any Transaction unless, prior to the consummation thereof, the surviving person, if other than the Corporation, shall agree to assume the obligation to deliver to the holders of Series A Preferred Stock such shares of stock or other securities or property to which, in accordance with the foregoing provisions, such holders are entitled.

(J) Certificate as to Adjustments. Upon the occurrence of each adjustment or readjustment of the Conversion Price, the Corporation at its expense shall promptly compute such adjustment or readjustment in accordance with the terms hereof and furnish to each holder of Series A Preferred Stock a certificate setting forth such adjustment or readjustment and showing in detail the facts upon which such adjustment or readjustment is based. The Corporation shall, upon the written request at any time of any holder of Series A Preferred Stock,

furnish or cause to be furnished to such holder a similar certificate setting forth (i) such adjustments and readjustments, (ii) the Conversion Price applicable to such series then in effect, and (iii) the number of shares of Common Stock and the amount, if any, of other property that then would be received upon the conversion.

(K) Notice of Record Date. If:

(i) the Corporation shall declare a dividend (or any other distribution) on its Common Stock payable in Common Stock or other securities of the Corporation;

(ii) the Corporation shall subdivide or combine its outstanding shares of Common Stock;

(iii) there shall be any reclassification of the Common Stock of the Corporation (other than a subdivision or combination of its outstanding shares of Common Stock or a stock dividend or stock distribution thereon), consolidation or merger of the Corporation into or with another Corporation, sale of all or substantially all of the assets of the Corporation, or involuntary or voluntary dissolution, liquidation or winding up of the Corporation;

then the Corporation shall cause to be filed at its principal office or at the office of the transfer agent of the Series A Preferred Stock, and shall cause to be mailed to the holders of Series A Preferred Stock at their last addresses as shown on the records of the Corporation or such transfer agent, at least seventy-five days prior to the date specified in (a) below, ten days prior to the date specified in (b) below or twenty days before the date specified in (c) below, a notice stating:

(a) the record date of such dividend or distribution, or, if a record is not to be taken, the date as of which the holders of Common Stock of record to be entitled to such dividend or distribution are to be determined,

(b) the record date of such subdivision or combination, or, if a record is not to be taken, the date as of which the holders of Common Stock of record to be entitled to such subdivision or combination are to be determined, or

(c) the date on which such reclassification, consolidation, merger, sale, dissolution, liquidation or winding up is expected to become effective, and the date as of which it is expected that holders of Common Stock of record shall be entitled to exchange their shares of Common Stock for securities or other property deliverable upon such reclassification, consolidation, merger, sale, dissolution or winding up.

(L) No Duplication of Adjustments. If any action or transaction would require adjustment of the Conversion Price pursuant to more than one paragraph of this Section 5, only one adjustment shall be made and such adjustment shall be the amount of adjustment that results in the lowest Conversion Price. Notwithstanding the foregoing, the provisions of this Section 5 shall apply to successive transactions giving rise to any such adjustment.

(M) Reservation and Listing of Shares of Common Stock.

(i) The Corporation shall at all times reserve and keep available, free from preemptive rights, out of the aggregate of its authorized but unissued shares of Common Stock for the purpose of effecting conversion of the Series A Preferred Stock, the full number of shares of Common Stock deliverable upon the conversion of all outstanding shares of Series A Preferred Stock not theretofore converted. Before taking any action that would cause an adjustment in the Conversion Price such that Common Stock issuable upon the conversion of Series A Preferred Stock would be issued below par value of the Common Stock, the Corporation shall take any corporate action that may, in the opinion of its counsel, be reasonably necessary in order that the Corporation may validly and legally issue fully-paid and nonassessable shares of Common Stock at such adjusted Conversion Price.

(ii) The Corporation shall, at its sole cost and expense, in good faith and as expeditiously as possible and prior to such delivery, cause the shares of Common Stock required to be delivered upon conversion of the Series A Preferred Stock to be listed upon each national securities exchange, if any, upon which the outstanding Common Stock is listed at the time of such delivery.

(N) Beneficial Ownership Limitation. Notwithstanding anything to the contrary contained herein, no holder shall be entitled to receive shares of Common Stock or other securities of the Corporation (together with Common Stock, "**Equity Interests**") upon conversion of Series A Preferred Stock to the extent (but only to the extent) that such exercise or receipt would cause such holder's Holder Group to become, directly or indirectly, a "beneficial owner" (within the meaning of Section 13(d) of the Securities Exchange Act of 1934, as amended from time to time, and the rules and regulations promulgated thereunder from time to time in effect (the "**Exchange Act**")) of a number of Equity Interests of a class that is registered under the Exchange Act which exceeds the Maximum Percentage (as defined below) of the Equity Interests of such class that are outstanding at such time. This limitation on beneficial ownership (a) may be increased, decreased or terminated with respect to any Holder, in such holder's sole discretion, upon 61 days' written notice to the Corporation by such holder and (b) shall terminate automatically on the date that a Redemption Notice is delivered to such holder. Any purported delivery of Equity Interests in connection with the conversion of Series A Preferred Stock prior to the termination of this restriction in accordance herewith shall be void and have no effect to the extent (but only to the extent) that such delivery would result in a Holder Group becoming the beneficial owner of more than the Maximum Percentage of the Equity Interests of a class that is registered under the Exchange Act that is outstanding at such time. If any delivery of Equity Interests owed to a holder following a conversion of Series A Preferred Stock is not made, in whole or in part, as a result of this limitation, the Corporation's obligation to make such delivery shall not be extinguished and the Corporation shall deliver such Equity Interests as promptly as practicable after such holder gives notice to the Corporation that such delivery would not result in such limitation being triggered or upon termination of the restriction in accordance with the terms hereof. For purposes of this Section 5(O), (i) unless modified by a holder pursuant to the second sentence of this Section 5(O), the term "**Maximum Percentage**" shall mean 4.99%; provided, that if at any time after the date hereof such holder's Holder Group beneficially owns in excess of 4.99% of any class of Equity Interests in the

Corporation that is registered under the Exchange Act (excluding any Equity Interests deemed beneficially owned by virtue of any Series of Preferred Stock and any warrant exercisable for Common Stock), then the Maximum Percentage shall automatically increase to 9.99% so long as such Holder Group owns in excess of 4.99% of such class of Equity Interests (and shall, for the avoidance of doubt, automatically decrease to 4.99% upon such Holder Group ceasing to own in excess of 4.99% of such class of Equity Interests); and (ii) the term "**Holder Group**" shall mean, with respect to each holder, such holder plus any other Person with which such holder is considered to be part of a group under Section 13 of the Exchange Act or with which such holder otherwise files reports under Sections 13 and/or 16 of the Exchange Act. In determining the number of Equity Interests of a particular class outstanding at any point in time, a holder may rely on the number of outstanding Equity Interests of such class as reflected in (x) the Corporation's most recent Annual Report on Form 10-K or Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission, as the case may be, (y) a more recent public announcement by the Corporation or (z) a more recent notice by the Corporation or its transfer agent to such holder setting forth the number of Equity Interests of such class then outstanding. For any reason at any time, upon written or oral request of a holder, the Corporation shall, within two days of such request, confirm orally and in writing to such holder the number of Equity Interests of any class then outstanding. The provisions of this Section 5(O) shall be construed, corrected and implemented in a manner so as to effectuate the intended beneficial ownership limitation herein contained.

(O) Antitrust Notification. If any Holder determines, in its sole judgment upon the advice of counsel, that a conversion of any Series A Preferred Stock pursuant to the terms hereof would be subject to the provisions of the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended (the "**HSR Act**"), the Corporation shall file, within seven days after receiving notice from such Holder of the applicability of the HSR Act and a request to so file, with the United States Federal Trade Commission (the "**FTC**") and the United States Department of Justice (the "**DOJ**") the notification and report form and any supplemental information required to be filed by it pursuant to the HSR Act in connection with the conversion of Series A Preferred Stock. Any such notification and report form and supplemental information will be in full compliance with the requirements of the HSR Act. The Corporation will furnish to such Holder promptly (but in no event more than five days) such information and assistance as such Holder may reasonably request in connection with the preparation of any filing or submission required to be filed by such Holder under the HSR Act. The Corporation shall respond promptly after receiving any inquiries or requests for additional information from the FTC or the DOJ (and in no event more than three days after receipt of such inquiry or request). The Corporation shall keep such Holder apprised periodically and at such Holder's request of the status of any communications with, and any inquiries or requests for additional information from, the FTC or the DOJ. The Corporation shall bear all filing or other fees required to be paid by the Corporation and such Holder (or the "ultimate parent entity" of such Holder, if any) under the HSR Act or any other applicable law in connection with such filings and all costs and expenses (including, without limitation, reasonable attorneys' fees and expenses) incurred by the Corporation and such Holder in connection with the preparation of such filings and responses to inquiries or requests. In the event that this Section 5(O) is applicable to any conversion of any Series A Preferred Stock, the receipt by the Holder of the Common Stock subject to such exercise shall be subject to the expiration or earlier termination of the waiting period under the HSR Act (with the conversion date being deemed to be the date immediately following the date of such expiration or early termination).

Section 6. Amendment. Without the affirmative consent or vote of the holders of a majority of the Series A Preferred Stock outstanding at the time, the Corporation shall not (a) amend, alter, repeal, restate or supplement (in each case, whether by reclassification, merger, consolidation, reorganization or otherwise) this Certificate of Designation in any manner that would adversely affect the holders of the Series A Preferred Stock, (b) authorize or agree to authorize any increase in the number of shares of Series A Preferred Stock or issue any additional shares of Series A Preferred Stock, (c) amend, alter or repeal any provision of the Certificate of Incorporation or Bylaws of the Corporation which would adversely affect any right, preference, privilege or voting power of the Series A Preferred Stock or the holders thereof or (d) agree to take any of the foregoing actions.

Section 7. Impairment. The Corporation shall not amend the Certificate of Incorporation or participate in any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action for the purpose of avoiding or seeking to avoid the observance or performance of any of the terms to be observed or performed hereunder by the Corporation, but shall at all times act in good faith in carrying out all such action as may he reasonably necessary or appropriate in order to protect the conversion rights of the holders of Series A Preferred Stock against dilution or other impairment, as set forth herein.

Section 8. Redemption. To the extent the Corporation shall have funds legally available therefor, at any time after the fifth anniversary of the Original Issue Date, the Corporation shall have the right to redeem all or any portion of the outstanding shares of Series A Preferred Stock at the Series A Original Issue Price by providing at least seventy five (75) days written notice of such redemption to all holders of the then outstanding shares of Series A Preferred Stock (a "**Redemption Notice**"); provided that if less than all outstanding shares of Series A Preferred Stock are redeemed pursuant to this section, then such portion redeemed must result in proceeds to the holders of Series A Preferred Stock of at least $1,000,000. For the purposes of clarity, the Corporation may exercise its right to redemption under this Section 8 one or more times. The Redemption Notice shall specify the number of shares of Series A Preferred Stock to be redeemed from the Series A Holders, the date fixed for redemption (the "**Redemption Date**"), and the time and place of redemption. If the Redemption Notice shall have been given as hereinbefore provided, each holder of Series A Preferred Stock called for redemption shall surrender the certificates evidencing such shares to the Corporation against payment therefor. Any shares of Series A Preferred Stock that are redeemed or otherwise acquired by the Corporation shall be automatically and immediately cancelled and retired and shall not be reissued, sold or transferred.

THIRD: The effective date of these Articles of Amendment shall be November 8, 2017.

IN WITNESS WHEREOF, the undersigned has executed and subscribed these Articles of Amendment this 6th day of November, 2017.

ORAGENICS, INC.

/s/ Alan Joslyn

Alan Joslyn
President and Chief Executive Officer

[Signature Page to Articles of Amendment to Articles of Incorporation]

EXHIBIT 4.1

Form of Warrant

THIS WARRANT AND ANY SHARES ACQUIRED UPON THE EXERCISE OF THIS WARRANT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND MAY NOT BE SOLD OR TRANSFERRED IN THE ABSENCE OF SUCH REGISTRATION OR AN EXEMPTION THEREFROM UNDER SUCH ACT AND ANY APPLICABLE STATE SECURITIES LAWS.

This Warrant is issued pursuant to that certain Securities Purchase Agreement dated November 8, 2017 by and among the Company and the other parties signatory thereto (the "Purchase Agreement").

No. 2017-__ CUSIP: 684023 20 3

ORAGENICS, INC.

COMMON STOCK PURCHASE WARRANT

Oragenics, Inc., a Florida corporation (together with any corporation which shall succeed to or assume the obligations of Oragenics, Inc. hereunder, the "Company"), hereby certifies that, for value received, [ ] (the "Holder"), or its assigns, is entitled, subject to the terms set forth below, to purchase from the Company at any time during the Exercise Period (as defined in Section 12 hereof) up to [ ] fully paid and non-assessable shares of Common Stock (as defined in Section 12 hereof), at a purchase price per share equal to the Exercise Price (as defined in Section 12 hereof). The number of shares of Common Stock for which this Common Stock Purchase Warrant (the "Warrant") is exercisable and the Exercise Price are subject to adjustment as provided herein.

1. DEFINITIONS. Terms defined in the Purchase Agreement and not otherwise defined herein are used herein with the meanings so defined. Certain terms are used in this Warrant as specifically defined in Section 12 hereof.

2. EXERCISE OF WARRANT.

2.1. Exercise. This Warrant may be exercised prior to its expiration pursuant to Section 2.5 hereof by the Holder at any time or from time to time during the Exercise Period, by submitting the form of subscription attached hereto (the "Exercise Notice") duly executed by the Holder, to the Company at its principal office, indicating whether the Holder is electing to purchase a specified number of shares by paying the Aggregate Exercise Price as provided in Section 2.2 or is electing to exercise this Warrant as to a specified number of shares pursuant to the net exercise provisions of Section 2.3. On or before the first Trading Day following the date on which the Company has received the Exercise Notice, the Company shall transmit by facsimile an acknowledgement of confirmation of receipt of the Exercise Notice. This Warrant shall be deemed exercised for all purposes as of the close of business on the day on which the Holder has delivered the Exercise Notice to the Company. The Aggregate Purchase Price, if any, shall be paid by wire transfer to the Company within two (2) Business Days of the date of exercise and prior to the time the Company issues the certificates evidencing the shares issuable upon such exercise. In the event the Warrant is not exercised in full, the Company may, at its expense, require the Holder, after such partial exercise, to promptly return this Warrant to the Company and the Company will

forthwith issue and deliver to or upon the order of the Holder a new Warrant or Warrants of like tenor, in the name of the Holder or as the Holder (upon payment by the Holder of any applicable transfer taxes) may request, calling in the aggregate on the face or faces thereof for the number of shares of Common Stock equal (without giving effect to any adjustment therein) to the number of such shares called for on the face of this Warrant minus the number of such shares (without giving effect to any adjustment therein) for which this Warrant shall have been exercised. Notwithstanding the foregoing, if the Common Stock is listed on the NYSE MKT and shareholder approval of the issuance of the Common Stock issuable upon exercise of this Warrant is required under NYSE listing rules, then, until such shareholder approval is obtained, the Holder shall not be entitled to receive shares of Common Stock upon exercise of the Warrant to the extent (but only to the extent) that such exercise or receipt would cause a violation of such listing rules.

2.2. Payment of Exercise Price by Wire Transfer. If the Holder elects to purchase a specified number of shares by paying the Aggregate Exercise Price, the Holder shall pay such amount by wire transfer of immediately available funds to an account designated in advance by the Company.

2.3. Net Exercise. The Holder may also elect to exercise this Warrant at any time or from time to time, by receiving shares of Common Stock equal to the number of shares determined pursuant to the following formula:

$$X = \frac{Y (A - B)}{A}$$

where,

X = the number of shares of Common Stock to be issued to Holder;

Y = the number of shares of Common Stock as to which this Warrant is to be exercised (as indicated on the Exercise Notice);

A = the volume weighted average price of the Common Stock quoted on the Nasdaq Capital Market or any other U.S. exchange on which the Common Stock is listed, whichever is applicable, as posted by Bloomberg L.P. (or such other reference reasonably relied upon by the Company if not so published) for the five (5) Trading Days ending on the Trading Day immediately preceding the date of exercise; and

B = the Exercise Price.

2.4. Antitrust Notification. If the Holder determines, in its sole judgment upon the advice of counsel, that an exercise of this Warrant pursuant to the terms hereof would be subject to the provisions of the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended (the "HSR Act"), the Company shall file, within seven (7) Business Days after receiving notice from the Holder of the applicability of the HSR Act and a request to so file, with the United States Federal Trade Commission (the "FTC") and the United States Department of Justice (the "DOJ") the notification and report form and any supplemental information required to be filed by it pursuant to the HSR Act in connection with the exercise of this Warrant. Any such notification and report form and supplemental information will be in full compliance with the requirements of the HSR Act. The Company will furnish to the Holder promptly (but in no event more than five (5) Business Days) such information and assistance as the Holder may reasonably request in connection with the preparation of any filing or submission required to be filed by the Holder under the HSR Act. The Company shall respond promptly after receiving any inquiries or requests for additional information from the FTC or the DOJ (and in no event more than three (3) Business Days after receipt of such inquiry or request). The Company shall keep the Holder apprised periodically and at the Holder's request of the status of any communications with, and any inquiries or requests for additional information from, the FTC or the DOJ. The Company shall bear all filing or other

fees required to be paid by the Company and the Holder (or the "ultimate parent entity" of the Holder, if any) under the HSR Act or any other applicable law in connection with such filings and all costs and expenses (including, without limitation, reasonable attorneys' fees and expenses) incurred by the Company and the Holder in connection with the preparation of such filings and responses to inquiries or requests. In the event that this Section 2.4 is applicable to any exercise of this Warrant, the purchase by the Holder of the Exercise Shares subject to such exercise, and the payment by the Holder of the Exercise Price therefor, shall be subject to the expiration or earlier termination of the waiting period under the HSR Act (with the exercise date of this Warrant being deemed to be the date immediately following the date of such expiration or early termination).

2.5. Termination. This Warrant shall terminate upon the earlier to occur of (i) exercise in full or (ii) the expiration of the Exercise Period.

3. REGISTRATION RIGHTS. The Holder of this Warrant has certain rights to require the Company to register its resale of the Warrant Shares under the Securities Act and any blue sky or securities laws of any jurisdictions within the United States at the time and in the manner specified in the Registration Rights Agreement, dated as of November 8, 2017, as amended and in effect from time to time.

4. DELIVERY OF STOCK CERTIFICATES ON EXERCISE.

4.1. Delivery of Exercise Shares. As soon as practicable after any exercise of this Warrant and in any event within three (3) Trading Days thereafter (such date, the "Exercise Share Delivery Date"), the Company shall, at its expense (including the payment by it of any applicable issue or stamp taxes), cause to be issued in the name of and delivered to the Holder, or as the Holder may direct, a certificate or certificates evidencing the number of fully paid and nonassessable shares of Common Stock (or Other Securities, as applicable) (which number shall be rounded up to the nearest whole share in the event any fractional share may otherwise be issuable upon such exercise) to which the Holder shall be entitled on such exercise, in such denominations as may be requested by the Holder, which certificate or certificates shall be free of restrictive and trading legends provided that the shares subject to the Exercise Notice are included in an effective Registration Statement or all applicable requirements of Rule 144, including the holding period thereof, are met. In lieu of delivering physical certificates for the shares of Common Stock (or Other Securities) issuable upon any exercise of this Warrant, provided the Company's transfer agent is participating in the Depository Trust Company ("DTC") Fast Automated Securities Transfer ("FAST") program or a similar program and either (A) there is an effective registration statement permitting the issuance of the shares to or resale of the shares by the Holder or (B) the shares are eligible for resale without volume or manner-of-sale limitations pursuant to Rule 144 (it being understood that if both (A) and (B) are not satisfied, then such shares of Common Stock (or Other Securities) shall be kept in book entry form by the Company's transfer agent), upon request of the Holder, the Company shall cause its transfer agent to electronically transmit such shares of Common Stock (or Other Securities) issuable upon exercise of this Warrant to the Holder (or its designee), by crediting the account of the Holder's (or such designee's) broker with DTC through its Deposit Withdrawal Agent Commission system (provided that the same time periods herein as for stock certificates shall apply) as instructed by the Holder (or its designee). The Company understands that a delay in the delivery of the Exercise Shares after the Exercise Share Delivery Date could result in economic loss to the Holder. As compensation to the Holder for such loss, the Company agrees to pay (as liquidated damages and not as a penalty) to the Holder for late issuance of Exercise Shares upon exercise of this Warrant the proportionate amount of $10 per Trading Day (increasing to $20 per Trading Day after the fifth (5th) Trading Day) after the Exercise Share Delivery Date for each $1,000 of Aggregate Exercise Price for which this Warrant is exercised which are not timely delivered. The Company shall pay any payments incurred under this Section 4 in

immediately available funds upon demand. Furthermore, in addition to any other remedies which may be available to the Holder, in the event that the Company fails for any reason to effect delivery of the Exercise Shares by the Exercise Share Delivery Date, the Holder may revoke all or part of the relevant Warrant exercise by delivery of a notice to such effect to the Company, whereupon the Company and the Holder shall each be restored to their respective positions immediately prior to the exercise of the relevant portion of this Warrant, except that the liquidated damages described above shall be payable through the date notice of revocation or rescission is given to the Company.

4.2. Compensation for Buy-In on Failure to Timely Deliver Exercise Shares. In addition to any other rights available to the Holder, if the Company fails to cause its transfer agent to transmit to the Holder Exercise Shares pursuant to an exercise on or before the Exercise Share Delivery Date, and if after such date the Holder is required by its broker to purchase (in an open market transaction or otherwise) or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Exercise Shares which the Holder anticipated receiving upon such exercise (a "Buy-In"), then the Company shall (A) pay in cash to the Holder the amount, if any, by which (x) the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased exceeds (y) the amount obtained by multiplying (1) the number of Exercise Shares that the Company was required to deliver to the Holder in connection with the exercise at issue times (2) the price at which the sell order giving rise to such purchase obligation was executed, and (B) at the option of the Holder, either reinstate the portion of the Warrant and equivalent number of Exercise Shares for which such exercise was not honored (in which case such exercise shall be deemed rescinded) or deliver to the Holder the number of shares of Common Stock that would have been issued had the Company timely complied with its exercise and delivery obligations hereunder. For example, if the Holder purchases Common Stock having a total purchase price of $11,000 to cover a Buy-In with respect to an attempted exercise of shares of Common Stock with an aggregate sale price giving rise to such purchase obligation of $10,000, under clause (A) of the immediately preceding sentence the Company shall be required to pay the Holder $1,000. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Buy-In and, upon request of the Company, evidence of the amount of such loss. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof.

4.3. Charges, Taxes and Expenses. Issuance of Exercise Shares shall be made without charge to the Holder for any issue or transfer tax or other incidental expense in respect of the issuance of such Exercise Shares, all of which taxes and expenses shall be paid by the Company, and such Exercise Shares shall be issued in the name of the Holder or in such name or names as may be directed by the Holder; provided, however, that in the event Exercise Shares are to be issued in a name other than the name of the Holder, this Warrant when surrendered for exercise shall be accompanied by the Assignment Form attached hereto duly executed by the Holder and the Company may require, as a condition thereto, the payment of a sum sufficient to reimburse it for any transfer tax incidental thereto. The Company shall pay all transfer agent fees required for same-day processing of any Exercise Notice.

5. ADJUSTMENT FOR DIVIDENDS, DISTRIBUTIONS AND RECLASSIFICATIONS.

5.1. Distribution of Assets; Spin-Off. If the Company shall declare or make any dividend or other distribution of its assets (or rights to acquire its assets) to holders of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property or options by way of a Spin-Off, dividend, reclassification, corporate rearrangement or other similar transaction, but excluding cash dividends which are prohibited by Section 5.2 hereof and

excluding stock dividends or stock split adjustments in respect of which are provided for in Section 7 hereof) (a "Distribution"), at any time on or after the Closing Date (as defined in the Purchase Agreement), then, in each such case:

(a) (i) the Exercise Price in effect immediately prior to the close of business on the record date fixed for the determination of holders of Common Stock entitled to receive the Distribution shall be reduced, effective as of the close of business on such record date, to a price determined by multiplying such Exercise Price by a fraction of which:

(A) the numerator shall be the Market Price of the Common Stock on the Trading Day immediately preceding such record date minus the Fair Market Value of the Distribution applicable to one share of Common Stock, and

(B) the denominator shall be the Market Price of the Common Stock on the Trading Day immediately preceding such record date;

and (ii) the number of Warrant Shares obtainable upon exercise of this Warrant shall be increased to a number of shares equal to the number of shares of Common Stock obtainable immediately prior to the close of business on the record date fixed for the determination of holders of Common Stock entitled to receive the Distribution multiplied by the reciprocal of the fraction set forth in the immediately preceding clause (i) of this Section 5.1(a); and

(b) Notwithstanding the provisions of the foregoing clause (a), in the event of a Spin-Off in which the Distribution is of common stock of a subsidiary of the Company, then (i) the Exercise Price in effect immediately prior to the close of business on the record date fixed for the determination of holders of Common Stock entitled to receive such Distribution shall be reduced, effective as of the close of business on such record date, to a price determined by multiplying such Exercise Price by a fraction of which:

(A) the numerator shall be the Market Price of the Common Stock on the Trading Day immediately preceding such record date minus the Fair Market Value of the Distribution applicable to one share of Common Stock, and

(B) the denominator shall be the Market Price of the Common Stock on the Trading Day immediately preceding such record date;

and (ii) the Holder shall receive an additional warrant to purchase common stock of such company, the terms of which shall be identical to those of this Warrant, except that such warrant shall be exercisable into the number of shares of common stock of such company that would have been issuable or distributed to the Holder of this Warrant pursuant to the Distribution had the Holder exercised this Warrant for cash for the full number of shares of Common Stock on the face of this Warrant (notwithstanding the requirement that this Warrant be exercised pursuant to the net exercise provisions of Section 2.3) immediately prior to such record date and with an exercise price equal to the amount by which the Exercise Price of this Warrant was decreased with respect to the Distribution pursuant to the terms of the preceding clause (i) of this Section 5.1(b).

5.2. Cash Dividends. For so long as any Warrants are outstanding, no cash dividend shall be declared or paid or set aside for payment on any shares of the Company's Common Stock or any parity or junior stock thereto.

5.3. Other Events. If any event occurs of the type contemplated by the provisions of this Section 5 but not expressly provided for by such provisions, then the Company's board of directors (the "Board of Directors"), acting in good faith and consistent with their fiduciary duties, shall make an appropriate adjustment in the Exercise Price and the number of shares of Common Stock obtainable upon exercise of this Warrant so as to protect the rights of the Holder.

6. ADJUSTMENT FOR REORGANIZATION, CONSOLIDATION, MERGER, ETC.

6.1. Certain Adjustments. In case at any time or from time to time on or after the Closing Date (as defined in the Purchase Agreement), the Company shall (i) effect a capital reorganization, reclassification or recapitalization, (ii) consolidate with or merge into any other Person, or (iii) transfer all or substantially all of its properties or assets to any other Person under any plan or arrangement contemplating the dissolution of the Company, then in each such case, this Warrant shall thereafter be exercisable for the same kind and amounts of securities (including shares of stock) or other assets, or both, which were issuable or distributable to the holders of outstanding Common Stock upon such reorganization, reclassification, recapitalization, consolidation, merger or transfer, in respect of that number of shares of Common Stock for which this Warrant could have been exercised immediately prior to such reorganization, reclassification, recapitalization, consolidation, merger or transfer; and, in any such case, appropriate adjustments (as determined in good faith by the Board of Directors of the Company) shall be made to assure that the provisions set forth herein shall thereafter be applicable, as nearly as reasonably may be practicable, in relation to any securities or other assets thereafter deliverable upon the exercise of this Warrant.

6.2. Continuation of Terms. Upon any reorganization, consolidation, merger or transfer (and any dissolution following any transfer) referred to in this Section 6, this Warrant shall continue in full force and effect and the terms hereof shall be applicable to the shares of stock and other securities and property receivable on the exercise of this Warrant after the consummation of such reorganization, consolidation or merger or the effective date of dissolution following any such transfer, as the case may be, and shall be binding upon the issuer of any such stock or other securities, including, in the case of any such transfer, the Person acquiring all or substantially all of the properties or assets of the Company, whether or not such Person shall have expressly assumed the terms of this Warrant as provided in Section 8 hereof.

7. ADJUSTMENTS FOR STOCK EVENTS AND ISSUANCE OF OTHER SECURITIES.

7.1. General. If at any time on or after the Closing Date (as defined in the Purchase Agreement) there shall occur any stock split, stock dividend, reverse stock split or other subdivision of the Company's Common Stock ("Stock Event"), then the number of shares of Common Stock to be received by the Holder shall be appropriately adjusted such that the proportion of the number of shares issuable hereunder to the total number of shares of the Company (on a fully diluted basis) prior to such Stock Event is equal to the proportion of the number of shares issuable hereunder after such Stock Event to the total number of shares of the Company (on a fully-diluted basis) after such Stock Event. The Exercise Price shall be proportionately decreased or increased upon the occurrence of any Stock Event; provided that in no event will the Exercise Price be less than the par value of the Common Stock.

7.2. Other Securities. In case any Other Securities shall have been issued, or shall then be subject to issue upon the conversion or exchange of any stock (or Other Securities) of the Company (or any other issuer of Other Securities or any other entity referred to in Section 6 hereof) or to subscription, purchase or other acquisition pursuant to any rights or options granted by the Company (or such other issuer or entity), the Holder shall be entitled to receive upon exercise hereof such amount of Other Securities (in lieu of or in addition to Common Stock) as is determined in accordance with the terms

hereof, treating all references to Common Stock herein as references to Other Securities to the extent applicable, and the computations, adjustments and readjustments provided for in this Section 7 with respect to the number of shares of Common Stock issuable upon exercise of this Warrant shall be made as nearly as possible in the manner so provided and applied to determine the amount of Other Securities from time to time receivable on the exercise of the Warrant, so as to provide the Holder with the benefits intended by this Section 7 and the other provisions of this Warrant.

8. NO DILUTION OR IMPAIRMENT. The Company will not, by amendment of its Certificate of Incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of the Warrant, but will at all times in good faith assist in the carrying out of all such terms and in taking all such action as may be necessary or appropriate in order to protect the rights of the Holder against dilution. Without limiting the generality of the foregoing, the Company (i) will not increase the par value of any shares of stock receivable on the exercise of the Warrant above the amount payable therefor on such exercise, (ii) will take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and non-assessable shares of stock on the exercise of the Warrant from time to time outstanding, and (iii) subject to Section 14, will not transfer all or substantially all of its properties and assets to any other entity (corporate or otherwise), or consolidate with or merge into any other entity or permit any such entity to consolidate with or merge with the Company (if the Company is not the surviving entity), unless such other entity shall expressly assume in writing and will be bound by all the terms of this Warrant.

9. CERTIFICATE AS TO ADJUSTMENTS. In each case of any event that may require any adjustment or readjustment in the shares of Common Stock issuable on the exercise of this Warrant, the Company at its expense will promptly prepare a certificate setting forth such adjustment or readjustment, or stating the reasons why no adjustment or readjustment is being made, and showing, in detail, the facts upon which any such adjustment or readjustment is based, including a statement of (i) the number of shares of Common Stock then issued and outstanding, and (ii) the number of shares of Common Stock to be received upon exercise of this Warrant, in effect immediately prior to such adjustment or readjustment and as adjusted and readjusted (if required by Section 7) on account thereof. The Company will forthwith mail a copy of each such certificate to the Holder, and will, on the written request at any time of the Holder, furnish to the Holder a like certificate setting forth the calculations used to determine such adjustment or readjustment.

10. NOTICES OF RECORD DATE. In the event of:

(a) any taking by the Company of a record of the holders of any class of securities for the purpose of determining the holders thereof who are entitled to receive any dividend or other distribution, or any right to subscribe for, purchase or otherwise acquire any shares of stock of any class or any other securities or property, or to receive any other right; or

(b) any capital reorganization of the Company, any reclassification or recapitalization of the capital stock of the Company or any transfer of all or substantially all the assets of the Company to or any consolidation or merger of the Company with or into any other Person or any other Change of Control; or

(c) any voluntary or involuntary dissolution, liquidation or winding-up of the Company.

then, and in each such event, the Company will mail or cause to be mailed to the Holder a notice specifying (i) the date on which any such record is to be taken for the purpose of such dividend, distribution or right, and stating the amount and character of such dividend, distribution or right, or (ii) the date on which any such reorganization, reclassification, recapitalization, transfer, consolidation, merger, dissolution, liquidation or winding-up is anticipated to take place, and the time, if any is to be fixed, as of which the holders of record of Common Stock (or Other Securities) shall be entitled to exchange their shares of Common Stock (or Other Securities) for securities or other property deliverable on such reorganization, reclassification, recapitalization, transfer, consolidation, merger, dissolution, liquidation or winding-up. Such notice shall be mailed at least thirty (30) days prior to the date specified in such notice on which any such action is to be taken.

11. RESERVATION OF STOCK ISSUABLE ON EXERCISE OF WARRANT; REGULATORY COMPLIANCE

11.1. Reservation of Stock Issuable on Exercise of Warrant. The Company shall at all times while this Warrant shall be outstanding, reserve and keep available out of its authorized but unissued Common Stock, such number of shares of Common Stock as shall from time to time be sufficient to effect the exercise of all or any portion of the Warrant Shares (disregarding for this purpose any and all limitations of any kind on such exercise). The Company shall, from time to time in accordance with the Florida Business Corporation Act, increase the authorized number of shares of Common Stock or take other effective action if at any time the unissued number of authorized shares shall not be sufficient to satisfy the Company's obligations under this Section 11.

11.2 Regulatory Compliance. If any shares of Common Stock to be reserved for the purpose of exercise of the Warrant Shares require registration or listing with or approval of any Governmental Authority, stock exchange or other regulatory body under any federal or state law or regulation or otherwise before such shares may be validly issued or delivered upon exercise, the Company shall, at its sole cost and expense, in good faith and as expeditiously as possible, secure such registration, listing or approval, as the case may be.

12. DEFINITIONS. As used herein the following terms, unless the context otherwise requires, have the following respective meanings:

Aggregate Exercise Price means, in connection with the exercise of this Warrant at any time, an amount equal to the product obtained by multiplying (i) the Exercise Price times (ii) the number of shares of Common Stock for which this Warrant is being exercised at such time.

Change of Control means an event or series of events by which any of the following occurs: (a) Board approval of any consolidation or merger of the Company or similar transaction or any sale, lease or other transfer in one transaction or a series of transactions of all or substantially all of the consolidated assets of the Company and its Subsidiaries, taken as a whole, to any Person, in each case pursuant to which the Common Stock will be converted into cash, securities or other property, other than pursuant to a transaction in which the Persons that beneficially owned, directly or indirectly, voting shares of the Company immediately prior to such transaction beneficially own, directly or indirectly, voting shares representing more than a majority of the total voting power of all outstanding classes of voting shares of the continuing or surviving Person immediately after the transaction; or (b) the Company's Board of Directors approve and adopt a plan of liquidation or dissolution of the Company or a sale of all or substantially all of the Company's assets and submit such plan to stockholders for approval.

Common Stock means (i) the Company's Common Stock, $0.001 par value per share, (ii) any other capital stock of any class or classes (however designated) of the Company, the holders of which shall have the right, without limitation as to amount, either to all or to a share of the balance of current dividends and liquidating dividends after the payment of dividends and distributions on any shares entitled to preference, and (iii) any other securities into which or for which any of the securities described in clauses (i), or (ii) above have been converted or exchanged pursuant to a plan of recapitalization, reorganization, merger, sale of assets or otherwise.

Common Stock Deemed Outstanding means, at any given time, the number of shares of Common Stock actually outstanding at such time, plus the number of shares of Common Stock issuable at such time upon conversion of any Convertible Securities and Options (other than this Warrant and any other warrants issued under the Purchase Agreement) then outstanding to the extent such Convertible Security or Option is (i) convertible, exercisable or exchangeable at such time and (ii) convertible, exercisable or exchangeable at a price that is less than the Fair Market Value of a share of Common Stock issuable upon such conversion, exercise or exchange at such time.

Convertible Securities means any evidences of indebtedness, shares (other than Common Stock) or other securities directly or indirectly convertible into or exchangeable for Common Stock.

Exchange Act shall mean the Securities Exchange Act of 1934, as amended from time to time, and the rules and regulations promulgated thereunder from time to time in effect.

Exercise Period means the period commencing on the six month anniversary of the Issue Date and ending on the seventh anniversary of the Issue Date.

Exercise Price means $0.31 per share of Common Stock.

Exercise Shares means the shares of Common Stock for which this Warrant is then being exercised.

Fair Market Value means, with respect to any security or other property, the fair market value of such security or other property as determined unanimously by the Board of Directors, acting in good faith. If the Board of Directors is unable to unanimously agree to the fair market value, it will have an independent third-party appraisal conducted by a nationally-recognized valuation company and the determination of such company shall be final.

Governmental Authority means the government of the United States or any other nation, or of any political subdivision thereof, whether state or local, and any agency, authority, instrumentality, regulatory body, court, central bank or other entity exercising executive, legislative, judicial, taxing, regulatory or administrative powers or functions of or pertaining to government (including any supra-national bodies such as the European Union or the European Central Bank).

Issue Date means November 8, 2017.

Market Price means, with respect to the Common Stock, on any given day, the closing sale price or, if no closing sale price is reported, the last reported sale price of the shares of the Common Stock on the New York Stock Exchange on such date. If the Common Stock is not traded on the New York Stock Exchange on any date of determination, the Market Price of the Common Stock on such date of determination means the closing sale price as reported in the composite transactions for the principal U.S. national or regional securities exchange on which the Common Stock is so listed or quoted, or, if no

closing sale price is reported, the last reported sale price on the principal U.S. national or regional securities exchange on which the Common Stock is so listed or quoted, or if the Common Stock is not so listed or quoted on a U.S. national or regional securities exchange, the last quoted bid price for the Common Stock in the over-the-counter market as reported by the OTC Markets Group or similar organization, or, if that bid price is not available, the market price of the Common Stock on that date as determined by a nationally recognized independent investment banking firm retained by the Company for this purpose.

Option means any rights, options or warrants to subscribe for, purchase or otherwise acquire Common Stock or Convertible Securities.

Other Securities refers to any stock (other than Common Stock) and other securities of the Company or any other entity (corporate or otherwise) (i) which the Holder at any time shall be entitled to receive, or shall have received, on the exercise of this Warrant, in lieu of or in addition to Common Stock, or (ii) which at any time shall be issuable or shall have been issued in exchange for or in replacement of Common Stock or Other Securities, in each case pursuant to Section 5 or 6 hereof.

Person shall mean and include an individual, a partnership, a joint venture, a corporation, a limited liability company, a trust, an unincorporated organization and a government or any department or agency thereof.

Preliminary Change of Control means, with respect to the Company, the earlier of (i) the public disclosure of a Change of Control or (ii) (A) the execution of a definitive agreement for a transaction or (B) the recommendation that stockholders tender in response to a tender or exchange offer, in the case of both (A) and (B), that would reasonably be expected to result in a Change of Control.

Principal Market means, at any time, the securities exchange, quotation system or over-the-counter trading facility on which the Common Stock is then principally traded or quoted at such time.

Reference Price means, on any date of determination, the greater of (i) the Market Price per share as of such date and (ii) the Exercise Price.

Securities Act means the Securities Act of 1933, as amended from time to time, and the rules and regulations promulgated thereunder from time to time in effect.

Spin-Off means a transaction in which the Company spins off or otherwise divests itself of a part of its business or operations or disposes all or a part of its assets in a transaction in which the Company does not receive compensation for such business, operations or assets, but causes securities of a subsidiary of the Company or another entity to be distributed or otherwise issued to security holders of the Company.

Trading Day means, at any time, a day on which the Principal Market is open for the general trading or quotation of securities and the Common Stock is traded or quoted thereon without suspension or interruption.

13. LIMITATION ON BENEFICIAL OWNERSHIP. Notwithstanding anything to the contrary contained herein, the Holder shall not be entitled to receive shares of Common Stock or Other Securities (together with Common Stock, "Equity Interests") upon exercise of the Warrant to the extent (but only to the extent) that such exercise or receipt would cause the Holder Group to become, directly or indirectly, a "beneficial owner" (within the meaning of Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder) of a number of Equity Interests of a class that is registered under the

Exchange Act which exceeds the Maximum Percentage (as defined below) of the Equity Interests of such class that are outstanding at such time. This limitation on beneficial ownership (a) may be increased, decreased or terminated, in the Holder's sole discretion, upon 61 days' written notice to the Company by the Holder and (b) shall terminate automatically on the date that is 15 days prior to expiration of the Exercise Period. Any purported delivery of Equity Interests in connection with the exercise of the Warrant prior to the termination of this restriction in accordance herewith shall be void and have no effect to the extent (but only to the extent) that such delivery would result in the Holder Group becoming the beneficial owner of more than the Maximum Percentage of the Equity Interests of a class that is registered under the Exchange Act that is outstanding at such time. If any delivery of Equity Interests owed to the Holder following exercise of the Warrant is not made, in whole or in part, as a result of this limitation, the Company's obligation to make such delivery shall not be extinguished and the Company shall deliver such Equity Interests as promptly as practicable after the Holder gives notice to the Company that such delivery would not result in such limitation being triggered or upon termination of the restriction in accordance with the terms hereof. For purposes of this Section 13, (i) unless modified by the Holder pursuant to the second sentence of this Section 13, the term "Maximum Percentage" shall mean 4.99%; provided, that if at any time after the date hereof the Holder Group beneficially owns in excess of 4.99% of any class of Equity Interests in the Company that is registered under the Exchange Act (excluding any Equity Interests deemed beneficially owned by virtue of this Warrant and or shares of any class of preferred stock issued by the Company), then the Maximum Percentage shall automatically increase to 9.99% so long as the Holder Group owns in excess of 4.99% of such class of Equity Interests (and shall, for the avoidance of doubt, automatically decrease to 4.99% upon the Holder Group ceasing to own in excess of 4.99% of such class of Equity Interests); and (ii) the term "Holder Group" shall mean the Holder plus any other Person with which the Holder is considered to be part of a group under Section 13 of the Exchange Act or with which the Holder otherwise files reports under Sections 13 and/or 16 of the Exchange Act. In determining the number of Equity Interests of a particular class outstanding at any point in time, the Holder may rely on the number of outstanding Equity Interests of such class as reflected in (x) the Company's most recent Annual Report on Form 10-K or Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission, as the case may be, (y) a more recent public announcement by the Company or (z) a more recent notice by the Company or its transfer agent to the Holder setting forth the number of Equity Interests of such class then outstanding. For any reason at any time, upon written or oral request of the Holder, the Company shall, within two Trading Days of such request, confirm orally and in writing to the Holder the number of Equity Interests of any class then outstanding. The provisions of this Section 13 shall be construed, corrected and implemented in a manner so as to effectuate the intended beneficial ownership limitation herein contained. The limitations in this Section 13 shall not have an effect on any calculation or payment due to the Holder of this Warrant pursuant to Section 14 hereof.

14. CHANGE OF CONTROL. Upon the occurrence of a Change of Control, the Company shall promptly, notify the Holders in writing of the Change of Control including the material elements thereof. After receipt of the Change of Control notice from the Company the Holder may, within five business days, provide a written notice to the Company that it objects to a Change of Control. Absent a timely objection notice from a Holder, the Company shall have no obligation under this Section. If a Holder provides a timely notice of objection the Company shall thereafter make an offer to repurchase the unexercised portion of this Warrant at the option value of the Warrant using Black-Scholes calculation methods and making the assumptions described in the Black-Scholes methodology described in Exhibit A. Such offer shall be made within ten (10) Trading Days following the date on which the transaction contemplated by the Change of Control is consummated, and shall remain open for a period of thirty (30) Trading Days. Payment of such purchase price by the Company to the Holder of this Warrant, if tendered pursuant to such offer to purchase, shall be due in cash promptly upon termination of such offer period. The Company will comply with all the applicable provisions of Rule 13e-4 and any other tender offer

rules under the Exchange Act, if required, in connection with any offer by the Company to repurchase this Warrant and to the extent necessary to comply therewith, the time periods specified herein shall be extended accordingly. The fact that this Warrant may be exercised on a cashless net exercise basis as provided in Section 2.3 shall not have any effect on any calculation or payment due to the Holder of this Warrant pursuant to this Section 14. The limitations in Section 13 hereof shall not have an effect on any calculation or payment due to the Holder of this Warrant pursuant this Section 14. The Company agrees that it will not take any action resulting in a Preliminary Change of Control or a Change of Control in the absence of definitive documentation providing for such repurchase of the Warrant pursuant to this Section 14.

15. TRANSFER OF WARRANT.

15.1. Transferability. This Warrant and all rights hereunder (including, without limitation, any registration rights) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form of assignment (the "Assignment Notice") attached hereto duly executed by the Holder or its agent or attorney. Upon such surrender, the Company shall execute and deliver a new Warrant or Warrants in the name of the assignee or assignees, as applicable, and in the denomination or denominations specified in such Assignment Notice, and shall issue to the assignor a new Warrant evidencing the portion of this Warrant not so assigned, and this Warrant shall promptly be cancelled. The Warrant, if properly assigned in accordance herewith, may be exercised by a new holder for the purchase of Exercise Shares without having a new Warrant issued.

15.2. New Warrants. This Warrant may be divided or combined with other Warrants upon presentation hereof at the aforesaid office of the Company, together with a written notice specifying the names and denominations in which new Warrants are to be issued, signed by the Holder or its agent or attorney. Subject to compliance with Section 15.1, as to any transfer which may be involved in such division or combination, the Company shall execute and deliver a new Warrant or Warrants in exchange for the Warrant or Warrants to be divided or combined in accordance with such notice. All Warrants issued on transfers or exchanges shall be dated the original Issue Date and shall be identical with this Warrant except as to the number of Exercise Shares issuable pursuant thereto.

16. LOSS, THEFT, DESTRUCTION OR MUTILATION OF WARRANT. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Exercise Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of this Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

17. REMEDIES. The Company stipulates that the remedies at law of the Holder in the event of any default or threatened default by the Company in the performance of or compliance with any of the terms of this Warrant are not and will not be adequate, and that such terms may be specifically enforced by a decree for the specific performance of any agreement contained herein or by an injunction against a violation of any of the terms hereof or otherwise.

18. NOTICES. All notices and other communications from the Company to the Holder shall be sent by overnight courier (or sent in the form of a facsimile) at such address as may have been furnished to the Company in writing by the Holder or, until the Holder furnishes to the Company an address, then to, and at the address of, the last Holder of this Warrant who has so furnished an address to the Company.

19. CONSENT TO AMENDMENTS. Any term of this Warrant may be amended, and the Company may take any action herein prohibited, or compliance therewith may be waived, only if the Company shall have obtained the written consent (and not without such written consent) to such amendment, action or waiver from the Holder; provided, that if any other holder of Warrants receives any remuneration or compensation as consideration for any consent, amendment or waiver to its Warrant, then such remuneration or compensation shall be concurrently delivered, on the same equivalent terms, ratably to the Holder. No course of dealing between the Company and the Holder nor any delay in exercising any rights hereunder shall operate as a waiver of any rights of the Holder.

20. MISCELLANEOUS. In case any provision of this Warrant shall be invalid, illegal or unenforceable, or partially invalid, illegal or unenforceable, the provision shall be enforced to the extent, if any, that it may legally be enforced and the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby. If any provision of this Warrant is found to conflict with the Purchase Agreement, the provisions of this Warrant shall prevail. THIS WARRANT SHALL BE CONSTRUED AND ENFORCED IN ACCORDANCE WITH, AND THE RIGHTS OF THE PARTIES SHALL BE GOVERNED BY, THE INTERNAL LAW OF THE STATE OF NEW YORK, EXCLUDING CHOICE-OF-LAW PRINCIPLES OF THE LAW OF SUCH STATE THAT WOULD PERMIT THE APPLICATION OF THE LAWS OF A JURISDICTION OTHER THAN SUCH STATE. The headings in this Warrant are for purposes of reference only, and shall not limit or otherwise affect any of the terms hereof.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the Company has caused this Warrant to be executed by its duly authorized officer.

Dated as of November 8, 2017

ORAGENICS, INC.

By: _____

Title: _____

[Signature Page to Warrant]

FORM OF SUBSCRIPTION

(To be signed only on exercise
of Common Stock Purchase Warrant)

TO: Oragenics, Inc.

1. The undersigned Holder of the attached Warrant hereby elects to exercise its purchase right under such Warrant to purchase shares of Common Stock of Oragenics, Inc., a Florida corporation (the "Company"), as follows (check one or more, as applicable):

☐ to exercise the Warrant to purchase shares of Common Stock and to pay the Aggregate Exercise Price therefor by wire transfer of United States funds to the account of the Company, which transfer has been made prior to or as of the date of delivery of this Form of Subscription pursuant to the instructions of the Company;

and/or

☐ to exercise the Warrant with respect to shares of Common Stock pursuant to the net exercise provisions specified in Section 2.3 of the Warrant.

2. Please issue a stock certificate or certificates representing the appropriate number of shares of Common Stock in the name of the undersigned or in such other name(s) as is specified below:

Name: _____

Address: _____

_____

_____

TIN: _____

_____ Dated: _____

(Signature must conform exactly to name of Holder
as specified on the face of the Warrant)

FORM OF ASSIGNMENT
(To be signed only on transfer of Warrant)

For value received, the undersigned hereby sells, assigns, and transfers unto the right represented by the within Warrant to purchase shares of Common Stock of Oragenics, Inc., a Florida corporation, to which the within Warrant relates, and appoints attorney to transfer such right on the books of Oragenics, Inc., with full power of substitution in the premises.

[insert name of Holder]

Dated: _____

By: _____

Title: _____

[insert address of Holder]

Signed in the presence of:

_____

EXHIBIT A

Black-Scholes Assumptions

For the purpose of this Exhibit A:

"Acquiror" means (A) the third party that has entered into definitive documentation for a transaction, or (B) the offeror in the event of a tender or exchange offer, which could reasonably result in a Change of Control upon consummation.

Underlying Security Price:	• In the event of a merger or acquisition, (A) in the event of an "all cash" deal, the cash per share offered to the Company's stockholders by the Acquiror; (B) in the event of an "all stock" deal, (1) in the event of a fixed exchange ratio transaction, the product of (i) the average of the Market Price of the Acquiror's common stock for the ten trading day period ending on the day preceding the date of the Preliminary Change of Control and (ii) the number of Acquiror's shares being offered for one share of Common Stock and (2) in the event of a fixed value transaction, the value offered by the Acquiror for one share of Common Stock; (C) in the event of a transaction contemplating various forms of consideration for each share of Common Stock, the cash portion, if any, shall be valued as clause (A) above and the stock portion shall be valued as clause (B) above and any other forms of consideration shall be valued by the Board of Directors of the Company in good faith, without applying any discounts to such consideration. • In the event of all other Change of Control events, the volume weighted average price of the Common Stock quoted on the New York Stock Exchange or any other U.S. exchange on which the Common Stock is listed, whichever is applicable, as posted by Bloomberg L.P. (or such other reference reasonably relied upon by the Company if not so published) for the ten (10) Trading Days beginning on the Trading Day immediately following the Reference Date. The Reference Date shall mean the date of the Preliminary Change of Control.
Exercise Price:	The Exercise Price as adjusted and then in effect for the Warrant.
Dividend Rate:	The Company's annualized dividend yield as of the Reference Date.
Interest Rate:	The applicable U.S. 5 year treasury note risk free rate as of the Reference Date.
Model Type:	Black-Scholes
Exercise Type:	American
Put or Call:	Call
Trade Date:	The Reference Date
Expiration Date:	The expiration of the Exercise Period
Settle Date:	The Reference Date plus one Trading Day
Exercise Delay:	0
Volatility:	The 30-day average of the daily volatility (annualized) over the period beginning on and including the Reference Date and ending on the date that is the thirtieth (30) Trading Day prior to the Reference Date, for the Common Stock as obtained from the HVT function on Bloomberg.

Such valuation of the Warrant based on the Black-Scholes methodology shall not be discounted in any way. If the Holder disputes such Black-Scholes valuation pursuant to this *Exhibit A* as calculated by the Company, the Company and the Holder will choose a mutually-agreeable firm to compute the valuation of the Warrant using the guidelines above, and such valuation shall be final. The fees and expenses of such firm shall be borne equally by the Company and the Holder. In the event that a new warrant is issued by a company in a Spin-Off from the Company pursuant to Section 5.1(b) of the Warrant, references in this *Exhibit A* to such spun-off company's "Dividend Rate" and "Volatility" shall refer those of the Company unless at the time of such measurement, such spun-off company has been trading in the public markets for at least 6 months.

Exhibit 9.1

VOTING AGREEMENT

To: The Purchasers of Series B Convertible Preferred Stock of Oragenics, Inc.

To Whom It May Concern:

This letter will confirm the agreement of the undersigned shareholders of Oragenics, Inc., a Florida corporation ("Oragenics"), to vote all shares of voting stock over which the undersigned has voting control in favor of any written consent of shareholders presented to the undersigned or resolution presented to the shareholders of Oragenics to approve the convertibility of shares of Series B Convertible Preferred Stock into Common Stock and the exercisability of the Warrants for Common Stock as required by the New York Stock Exchange Market (together with any successor entity, the "NYSE") rules as a result of the Series B Convertible Preferred Stock being issued for less than "Market Value" and the exercise price of the Warrants being less than "Market Value" pursuant to that certain Securities Purchase Agreement, dated as of November 8, 2017, among Oragenics and the purchasers signatory thereto (the "Purchase Agreement") and the other agreements entered into in connection therewith or as otherwise may be required by the applicable rules and regulations of the NYSE. This agreement is given in consideration of, and as a condition to enter into such Purchase Agreement and is not revocable by the undersigned.

This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. This Agreement may be executed and delivered by facsimile or by pdf electronic mail, and upon such delivery the facsimile or pdf signature will be deemed to have the same effect as if the original signature had been delivered to the other party. Capitalized terms used and not otherwise defined herein shall have the meaning given to them in the Purchase Agreement.

[Signatures on following page.]

MSD Credit Opportunity Master Fund, L.P.

/s/ Marcello Liguori

Marcello Liguori, Managing Director

[Signature Page to Voting Agreement]

INTREXON CORPORATION

/s/ Donald P. Lehr

Donald P. Lehr, Chief Legal Officer

[Signature Page to Voting Agreement]

KOSKI FAMILY LIMITED PARTNERSHIP

/s/ Christine L. Koski

Christine L. Koski, Managing General Partner

[Signature Page to Voting Agreement]

HARVEST INTREXON ENTERPRISE FUND I, L.P.
By: HARVEST ENTERPRISE GP I, LLC
its general partner
By: HARVEST CAPITAL STRATEGIES, LLC
its managing member

By: /s/ Joseph Jolson
Name: Joseph Jolson
Title: Chief Executive Officer

HARVEST INTREXON ENTERPRISE FUND I (AI), L.P.
By: HARVEST ENTERPRISE GP I, LLC
its general partner
By: HARVEST CAPITAL STRATEGIES, LLC,
its managing member

By: /s/ Joseph Jolson
Name: Joseph Jolson
Title: Chief Executive Officer

Address: 600 Montgomery Street, Suite 1700
San Francisco, California 94111

Exhibit 10.1

ORAGENICS, INC.

SECURITIES PURCHASE AGREEMENT

This Securities Purchase Agreement (this "Agreement") is dated as of November 8, 2017, among Oragenics, Inc., a Florida corporation (the "Company"), and each purchaser identified on the signature pages hereto (each, including its successors and assigns, a "Purchaser" and collectively the "Purchasers").

RECITALS

A. The Company and each Purchaser is executing and delivering this Agreement in reliance upon the exemption from securities registration afforded by Section 4(2) of the Securities Act, and Rule 506 of Regulation D ("Regulation D") as promulgated by the United States Securities and Exchange Commission (the "Commission") under the Securities Act.

B. Each Purchaser, severally and not jointly, wishes to purchase, and the Company wishes to sell, upon the terms and conditions stated in this Agreement, that aggregate number of shares of Series B Convertible Preferred Stock set forth below such Purchaser's name on the signature page of this Agreement and Warrants as provided herein.

C. Contemporaneously with the execution and delivery of this Agreement, the parties hereto are executing and delivering the Registration Rights Agreement, pursuant to which, among other things, the Company will agree to provide certain registration rights with respect to the Securities under the Securities Act and the rules and regulations promulgated thereunder and applicable state securities laws.

D. Contemporaneously with the Closing under this Agreement, the Company intends to (i) close on the conversion of a Promissory Note dated May 10, 2017 issued by the Company to Intrexon Corporation ("Intrexon") in the principal amount of $2,400,000, together with accounts payable owed to Intrexon and accrued and unpaid interest thereon into shares of Series C Non-Convertible Preferred Stock of the Company (the "Debt Conversion") and (ii) the Amendment to June 2012 Stock Issuance Agreement, the Second Amendment to June 2012 Exclusive Channel Agreement, the Second Amendment to June 2015 Stock Issuance Agreement and the Second Amendment to June 2015 Exclusive Channel Agreement, each by and among the Company, Intrexon Corporation and Intrexon Actobiotics NV and dated as of the Closing Date (collectively, the "ECC Amendments");

AGREEMENT

NOW, THEREFORE, IN CONSIDERATION of the mutual covenants contained in this Agreement, and for other good and valuable consideration the receipt and adequacy of which are hereby acknowledged, the Company and each Purchaser agree as follows:

ARTICLE I
DEFINITIONS

1.1 Recitals. The foregoing recitals are true and correct and are hereby incorporated into this Agreement as if fully set forth herein.

1.2 Definitions. In addition to the terms defined elsewhere in this Agreement, for all purposes of this Agreement, the following terms have the meanings set forth in this Section 1.2:

"Affiliate" means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person as such terms are used in and construed under Rule 144 under the Securities Act. With respect to a Purchaser, any investment fund or managed account that is managed on a discretionary basis by the same investment manager as such Purchaser will be deemed to be an Affiliate of such Purchaser.

"Business Day" means any day except Saturday, Sunday, any day which shall be a federal legal holiday in the United States or any day on which banking institutions in the State of New York are authorized or required by law or other governmental action to close.

"Certificate of Designation" means the Certificate of Designation to be filed prior to the Closing by the Company with the Secretary of State of Florida in the form of **Exhibit A** attached hereto.

"Closing" means the closing of the purchase and sale of the Securities pursuant to Section 2.1.

"Closing Date" means the Trading Day on which all of the Transaction Documents have been executed and delivered by the applicable parties thereto, and all conditions precedent to (i) the Purchasers' obligations to pay the Subscription Amount and (ii) the Company's obligations to deliver the Securities issuable at the Closing, in each case, have been satisfied or waived.

"Commission" means the Securities and Exchange Commission.

"Common Stock" means the Common Stock of the Company, par value $0.001 per share, and any other class of securities into which such securities may hereafter be reclassified or changed into.

"Common Stock Equivalents" means any securities of the Company or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, rights, options, warrants or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

"Company Counsel" means Shumaker, Loop & Kendrick, LLP, with offices located at 101 E. Kennedy Blvd. Suite 2800, Tampa, Florida 33602.

"Effective Date" means the date that the initial Registration Statement filed by the Company pursuant to the Registration Rights Agreement is first declared effective by the Commission.

"Exchange Act" means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

"GAAP" shall have the meaning ascribed to such term in Section 3.1(e).

"Intellectual Property" shall have the meaning ascribed to such term in Section 3.1(o).

"Legend Removal Date" shall have the meaning ascribed to such term in Section 4.1(c).

"Liens" means a lien, charge, security interest, encumbrance, right of first refusal, preemptive right or other restriction.

"Material Adverse Effect" shall have the meaning assigned to such term in Section 3.1(a).

"Per Share Purchase Price" equals $0.50.

"Person" means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

"Proceeding" means an action, claim, suit, investigation or proceeding (including, without limitation, an investigation or partial proceeding, such as a deposition), whether commenced or threatened.

"Purchaser Party" shall have the meaning ascribed to such term in Section 4.5.

"Registration Rights Agreement" means the Amended and Restated Registration Rights Agreement, dated the date hereof, among the Company and the Purchasers, in the form of **Exhibit B** attached hereto.

"Registration Statement" means a registration statement meeting the requirements set forth in the Registration Rights Agreement and covering the resale by the Purchasers of the Underlying Shares.

"Rule 144" means Rule 144 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same effect as such Rule.

"SEC Documents" shall have the meaning ascribed to such term in Section 3.1(e).

"Securities" means the Series B Convertible Preferred Stock, the Warrants and the Underlying Shares.

"Series A A&R Certificate of Designation" means the Amended and Restated Certificate of Designation and Rights of Series A Convertible Preferred Stock to be filed prior to the Closing by the Company with the Secretary of State of Florida in the form of **Exhibit F** attached hereto.

"Securities Act" means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

"Series B Convertible Preferred Stock" means the shares of Company Series B convertible preferred stock to be issued to the Purchasers of which each share of Series B Convertible Preferred Stock is initially convertible into two shares of Common Stock.

"Shareholder Approval" means such approval as may be required by the applicable rules and regulations of the Trading Market from the shareholders of the Company with respect to the transactions contemplated by the Transaction Documents, including approval of the convertibility of Shares into Common Stock and the exercisability of the Warrants for Common Stock as required by NYSE rules.

"Shares" means the shares of Series B Convertible Preferred Stock issued or issuable to each Purchaser pursuant to this Agreement.

"Short Sales" include, without limitation, all "short sales" as defined in Rule 200 promulgated under Regulation SHO under the Exchange Act, whether or not against the box, and all types of direct and indirect stock pledges, forward sale contracts, options, puts, calls, short sales, swaps, "put equivalent positions" (as defined in Rule 16a-1(h) under the Exchange Act) and similar arrangements (including on a total return basis), and sales and other transactions through non-U.S. broker dealers or foreign regulated brokers.

"Subscription Amount" means, as to each Purchaser, the aggregate amount to be paid for the Securities purchased hereunder as specified below such Purchaser's name on the signature page of this Agreement and next to the heading "Subscription Amount," in United States dollars and in immediately available funds.

"Subsidiary" means any subsidiary of the Company as set forth in the SEC Documents.

"Trading Day" means a day on which the Common Stock is traded on a Trading Market.

"Trading Market" means the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the American Stock Exchange, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market, the New York Stock Exchange or the OTC Bulletin Board.

"Transaction Documents" means this Agreement, Registration Rights Agreement, Warrants, Voting Agreement and Certificate of Designation.

"Transfer Agent" means Continental Stock Transfer and Trust Company, and any successor transfer agent of the Company.

"Underlying Shares" means the shares of Common Stock issued and issuable upon conversion of the Series B Convertible Preferred Stock and upon exercise of the Warrants.

"Voting Agreement" means the written agreement, in the form of **Exhibit D** attached hereto, of Intrexon Corporation, Harvest Intrexon Enterprise Fund I (AI), L.P., Harvest Intrexon Enterprise Fund I, L.P., the Koski Family Limited Partnership, MSD Credit Opportunity Master Fund, L.P., and their respective affiliates, such persons who have voting control as of the date hereof, amounting to, in the aggregate, a majority of the issued and outstanding Common Stock.

"Warrants" means, collectively, the Common Stock purchase warrants delivered to the Purchasers at the Closing in accordance with Section 2.2(a) hereof, which Warrants shall be in the form of **Exhibit C** attached hereto.

ARTICLE II

PURCHASE AND SALE

2.1 Closing. On the Closing Date, upon the terms and subject to the conditions set forth herein, the Company agrees to sell, and the Purchasers, severally and not jointly, agree to purchase, a number of shares of Series B Convertible Preferred Stock equal to such Purchaser's Shares of Series B Convertible Preferred Stock as set forth on the signature page hereto executed by such Purchaser, and Warrants as determined pursuant to Section 2.2(a). Each Purchaser shall deliver to the Company, via wire transfer immediately available funds equal to such Purchaser's Subscription Amount as set forth on the signature page hereto executed by such Purchaser and the Company shall deliver to each Purchaser its respective Shares of Series B Convertible Preferred Stock and Warrants as determined pursuant to Section 2.2(a), and the Company and each Purchaser shall deliver the other items set forth in Section 2.2 deliverable at the Closing. Upon satisfaction of the covenants and conditions set forth in Sections 2.2 and 2.3, the Closing shall occur at the offices of Company Counsel or such other location as the parties shall mutually agree.

2.2 Deliveries.

(a) On or prior to the Closing Date (unless otherwise indicated below), the Company shall deliver or cause to be delivered to each Purchaser the following:

(i) this Agreement duly executed by the Company;

(ii) a legal opinion of Company Counsel, substantially in the form of **Exhibit E** attached hereto;

(iii) an irrevocable letter of instruction to the transfer agent to issue book entry evidencing a number of shares of Series B Convertible Preferred Stock equal to such Purchaser's Shares of Series B Convertible Preferred Stock as set forth on the signature page hereto executed by such Purchaser registered in the name of such Purchaser;

(iv) a Warrant registered in the name of such Purchaser to purchase up to a number of shares of Common Stock equal to 100% of such Purchaser's Subscription Amount divided by the warrant exercise price of $0.31 per share;

(v) a Voting Agreement duly executed by each of Intrexon Corporation, Harvest Intrexon Enterprise Fund I (AI), L.P., Harvest Intrexon Enterprise Fund I, L.P., the Koski Family Limited Partnership and MSD Credit Opportunity Master Fund, L.P.;

(vi) the Registration Rights Agreement duly executed by the Company;

(vii) the fully executed ECC Amendments;

(viii) the fully executed Debt Conversion Agreement between the Company and Intrexon Corporation dated as of the date hereof (the "Debt Conversion Agreement")

(ix) evidence of the filing and acceptance of the Certificate of Designation from the Secretary of State of Florida; and

(x) evidence of the filing and acceptance of the Series A A&R Certificate of Designation from the Secretary of State of Florida.

(b) On or prior to the Closing Date, each Purchaser shall deliver or cause to be delivered to the Company the following:

(i) this Agreement duly executed by such Purchaser;

(ii) such Purchaser's Closing Subscription Amount by wire transfer to the account specified by the Company;

(iii) the Voting Agreement duly executed by such Purchaser; and

(iv) the Registration Rights Agreement duly executed by such Purchaser.

2.3 Closing Conditions.

(a) The obligations of the Company hereunder in connection with the Closing are subject to the following conditions being met or waived by the Company:

(i) the accuracy in all material respects when made and on the Closing Date of the representations and warranties of the Purchasers contained herein (except with respect to representations and warranties which relate to a specific date, in which case such representations and warranties shall continue to be materially accurate as of such date);

(ii) all obligations, covenants and agreements of the Purchasers required to be performed at or prior to the Closing Date shall have been performed;

(iii) the delivery by the Purchasers of the items set forth in Section 2.2(b) of this Agreement;

(iv) 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 that prohibits the consummation of any of the transactions contemplated by the Transaction Documents;

(v) the Company shall have obtained in a timely fashion any and all consents, permits, approvals, registrations and waivers necessary for consummation of the purchase and sale of the Shares and the Warrants, all of which shall be and remain so long as necessary in full force and effect.

(b) The respective obligations of the Purchasers hereunder in connection with the Closing are subject to the following conditions being met or waived by each Purchaser as to itself:

(i) the accuracy in all material respects on the Closing Date of the representations and warranties of the Company contained herein (except with respect to representations and warranties which relate to a specific date, in which case such representations and warranties shall continue to be materially accurate as of such date);

(ii) all obligations, covenants and agreements of the Company required to be performed at or prior to the Closing Date shall have been performed;

(iii) the delivery by the Company of the items set forth in Section 2.2(a) of this Agreement and a certificate, dated as of the Closing Date and signed by its Chief Executive Officer or its Chief Financial Officer, certifying to the fulfillment of the conditions specified in Sections 2.3(b)(i) and (ii);

(iv) on the Closing Date, trading in the Common Stock shall not have been suspended by the Commission or the Company's principal Trading Market (except for any suspension of trading of limited duration agreed to by the Company, which suspension shall be terminated prior to the Closing Date), and, at any time prior to the Closing Date, trading in securities generally as reported by Bloomberg L.P. shall not have been suspended or limited, or minimum prices shall not have been established on securities whose trades are reported by such service, or on any Trading Market, nor shall a banking moratorium have been declared either by the United States or New York State authorities;

(v) 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 that prohibits the consummation of any of the transactions contemplated by the Transaction Documents;

(vi) the Debt Conversion shall have been consummated; and

(vii) the Company shall have obtained in a timely fashion any and all consents, permits, approvals, registrations and waivers necessary for consummation of the purchase and sale of the Shares and the Warrants, all of which shall be and remain so long as necessary in full force and effect.

ARTICLE III

REPRESENTATIONS AND WARRANTIES

3.1 Representations and Warranties of the Company. Except as set forth in the SEC Documents, the Company hereby makes the following representations and warranties to each Purchaser as of the Closing Date:

(a) Organization, Good Standing and Power. The Company is a corporation duly incorporated, validly existing and in good standing under the laws of the State of Florida 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 Commission pursuant to the reporting requirements of 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 material subsidiaries. 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.

(b) Authorization; Enforcement. The Company has the requisite corporate power and authority to enter into and perform the Transaction Documents and to issue the Shares and the Warrants in accordance with the terms hereof. The execution, delivery and performance of the Transaction Documents 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. When executed and delivered by the Company, the Transaction Documents 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.

(c) Issuance of Shares. The Shares to be issued and sold hereunder have been duly authorized by all necessary corporate action and, when issued in accordance with the terms hereof, will be validly issued, fully paid and nonassessable. In addition, the Shares and the Warrants 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. The Company has not issued any shares of Common Stock, shares of Series A preferred stock, options or warrants since its most recent report on Form 10-Q.

(d) No Conflicts; Governmental Approvals. The execution, delivery and performance of the Transaction Documents 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 and the Warrants 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).

(e) SEC Documents, Financial Statements. The Common Stock of the Company is registered pursuant to Section 12(g) of the Exchange Act. During the year preceding this Agreement, 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 foregoing materials, including the exhibits thereto and documents incorporated by reference therein being collectively referred to as the "SEC Documents"). At the times of their respective filing, 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, 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 United States generally accepted accounting principles applied on a consistent basis ("GAAP") 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).

(f) Accountants. Mayer Hoffman McCann P.C. whose report on the financial statements of the Company is filed with the Commission in the Company's Annual Report on Form 10-K for the year ended December 31, 2016, were, at the time such report was issued, independent registered public accountants as required by the Securities Act.

(g) 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.

(h) 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.

(i) No Material Adverse Change. Except as disclosed in the SEC Documents, since June 30, 2017, 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.

(j) No Undisclosed Events or Circumstances. Except as disclosed in the SEC Documents, and except for the consummation of the transactions contemplated herein, since June 30, 2017, 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.

(k) 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.

(l) 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.

(m) 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 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 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.

(n) 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 January 1, 2017: (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 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.

(b) Since January 1, 2017, 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.

(o) 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.

(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.

(p) Application of Takeover Protections. The issuance of the Shares and the Warrants hereunder and the Purchasers' ownership thereof is not prohibited by the business combination statutes of the state of Florida. 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 Warrants and the Purchasers' ownership of such Shares and Warrants and there are no similar anti-takeover provisions under the Company's charter documents.

(q) Listing and Maintenance Requirements. The Company is in compliance with the requirements of the Trading Market for continued trading of the Common Stock pursuant thereto. The issuance and sale of the Shares and the Warrants hereunder does not contravene the rules and regulations of the Trading Market.

(r) 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 or the Warrants 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 Shares or the Warrants 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 Shares or the Warrants to Purchasers 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 Shares or the Warrants under the Securities Act or cause the offering of the shares to be integrated with other offerings. Assuming the accuracy of the representations and warranties of Purchasers, the offer and issuance of the Shares and the Warrants by the Company to Purchasers pursuant to this Agreement will be exempt from the registration requirements of the Securities Act.

(s) No Manipulation of Stock. The Company has not taken, and has no plans to take, in violation of applicable law, 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.

(t) Brokers. Other than Dawson James, 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 Purchasers from and against any broker's, finder's or agent's fees for which the Company is responsible.

(u) Solvency. Based on the financial condition of the Company as of the Closing Date, after giving effect to the receipt by the Company of the proceeds from the sale of the Shares and the Warrants hereunder, (i) the fair saleable value of the Company's assets exceeds the amount that will be required to be paid on or in respect of the Company's existing debts and other liabilities (including known contingent liabilities) as they mature; (ii) the Company's assets do not constitute unreasonably small capital to carry on its business as now conducted and as proposed to be conducted including its capital needs taking into account the particular capital requirements of the business conducted by the Company, and projected capital requirements and capital availability thereof; and (iii) the current cash flow of the Company, together with the proceeds the Company would receive, were it to liquidate all of its assets, after taking into account all anticipated uses of the cash, would be sufficient to pay all amounts on or in respect of its liabilities when such amounts are required to be paid. The Company does not intend to incur debts beyond its ability to pay such debts as they mature (taking into account the timing and amounts of cash to be payable on or in respect of its debt). Assuming the Closing occurs, the Company has no knowledge of any facts or circumstances which lead it to believe that it will file for reorganization or liquidation under the bankruptcy or reorganization laws of any jurisdiction within one year from the Closing Date.

(v) Foreign Corrupt Practices. Neither the Company, nor to the knowledge of the Company, any agent or other person acting on behalf of the Company, has (i) directly or indirectly, used any funds for unlawful contributions, gifts, entertainment or other unlawful expenses related to foreign or domestic political activity, (ii) made any unlawful payment to foreign or domestic government officials or employees or to any foreign or domestic political parties or campaigns from corporate funds, (iii) failed to disclose fully any contribution made by the Company (or made by any person acting on its behalf of which the Company is aware) which is in violation of law, or (iv) violated in any material respect any provision of the Foreign Corrupt Practices Act of 1977, as amended.

(w) Voting Agreements. The signatories to the Voting Agreements have voting control with respect to the Company as of the date hereof, amounting to, in the aggregate, a majority of the issued and outstanding Common Stock.

3.2 Representations and Warranties of the Purchasers. Each Purchaser, for itself and for no other Purchaser, hereby represents and warrants to the Company as follows (as of the Closing Date, unless otherwise noted below):

(a) Authority. The execution, delivery and performance by such Purchaser of the transactions contemplated by this Agreement have been duly authorized by all necessary corporate or similar action on the part of such Purchaser. Each Transaction Document to which it is a party has been duly executed by such Purchaser, and when delivered by such Purchaser in accordance with the terms hereof, will constitute the valid and legally binding obligation of such Purchaser, enforceable against it in accordance with its terms, except (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law.

(b) Own Account. Such Purchaser understands that the Shares are "restricted securities" and have not been registered under the Securities Act or any applicable state securities law and is acquiring the Shares as principal for its own account and not with a view to or for distributing or reselling such Shares or any part thereof in violation of the Securities Act or any applicable state securities law, has no present intention of distributing any of such Shares in violation of the Securities Act or any applicable state securities law and has no direct or indirect arrangement or understandings with any other persons to distribute or regarding the distribution of such Shares (this representation and warranty not limiting such Purchaser's right to sell the Shares pursuant to the Registration Statement or otherwise in compliance with applicable federal and state securities laws) in violation of the Securities Act or any applicable state securities law. Such Purchaser is acquiring the Shares hereunder in the ordinary course of its business. Such Purchaser understands that it may not be able to sell any of the Shares without prior registration under the Securities Act or the existence of an exemption from such registration requirement.

(c) No Conflicts. The execution, delivery and performance by such Purchaser of this Agreement and the Registration Rights Agreement and the consummation by such Purchaser of the transactions contemplated hereby and thereby will not (i) result in a violation of the organizational documents of such Purchaser, (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, indenture or instrument to which such Purchaser is a party, or (iii) result in a violation of any law, rule, regulation, order, judgment or decree (including federal and state securities laws) applicable to such Purchaser, except in the case of clauses (ii) and (iii) above, for such conflicts, defaults, rights or violations which would not, individually or in the aggregate, reasonably be expected to have a material adverse effect on the ability of such Purchaser to perform its obligations hereunder.

(d) Purchaser Status. At the time such Purchaser was offered the Shares, it was, and at the date hereof is, an "accredited investor" as defined in Rule 501 under the Securities Act. Investor is not a registered broker dealer registered under Section 15(a) of the Exchange Act, or a member of the Financial Industry Regulatory Authority Inc. ("FINRA"), or an entity engaged in the business of being a broker-dealer.

(e) Experience of Such Purchaser. Such Purchaser, either alone or together with its representatives, has such knowledge, sophistication and experience in business and financial matters so as to be capable of evaluating the merits and risks of the prospective investment in the Shares, and has so evaluated the merits and risks of such investment. Such Purchaser is able to bear the economic risk of an investment in the Shares and, at the present time, is able to afford a complete loss of such investment. Such Purchaser acknowledges that it has not received any legal or tax advice from the Company or any of its representatives with respect the transactions contemplated hereby.

(f) General Solicitation. Such Purchaser is not purchasing the Shares as a result of any advertisement, article, notice or other communication regarding the Shares published in any newspaper, magazine or similar media or broadcast over television or radio or presented at any seminar or any other general solicitation or general advertisement.

(g) Access to Information. Such Purchaser acknowledges that it has had the opportunity to review any Company information and business updates requested by Purchaser and has been afforded (i) the opportunity to ask such questions as it has deemed necessary of, and to receive answers from, representatives of the Company concerning the terms and conditions of the offering of the Shares and the merits and risks of investing in the Shares and; (ii) access to information about the Company and its financial condition, results of operations, business, properties, management and prospects sufficient to enable it to evaluate its investment; and (iii) the opportunity to obtain such additional information that the Company possesses or can acquire without unreasonable effort or expense that is necessary to make an informed investment decision with respect to the investment. Such Purchaser has sought such accounting, legal and tax advice as it has considered necessary to make an informed decision with respect to its acquisition of the Shares. Such Purchaser also acknowledges that it has had the opportunity to review the terms of the ECC Amendments and the Debt Conversion Agreement.

(h) Certain Trading Activities. As of the date hereof, other than with respect to the transactions contemplated herein, since the time that such Purchaser was first contacted by the Company or any other Person regarding the transactions contemplated hereby, neither the Purchaser nor any Affiliate of such Purchaser which (x) had knowledge of the transactions contemplated hereby, (y) has or shares discretion relating to such Purchaser's investments or trading or information concerning such Purchaser's investments, including in respect of the Shares, and (z) is subject to such Purchaser's review or input concerning such Affiliate's investments or trading (collectively, "Trading Affiliates") has directly or indirectly, nor has any Person acting on behalf of or pursuant to any understanding with such Purchaser or Trading Affiliate, effected or agreed to effect any purchases or sales of the securities of the Company (including, without limitation, any Short Sales involving the Company's securities). Notwithstanding the foregoing, in the case of a Purchaser and/or Trading Affiliate that is, individually or collectively, a multi-managed investment bank or vehicle whereby separate portfolio managers manage separate portions of such Purchaser's or Trading Affiliate's assets and the portfolio managers have no direct knowledge of the investment decisions made by the portfolio managers managing other portions of such Purchaser's or Trading Affiliate's assets, the representation set forth above shall apply only with respect to the portion of assets managed by the portfolio manager that have knowledge about the financing transaction contemplated by this Agreement. Other than to other Persons party to this Agreement, their affiliates and each of their respective professional advisors, such Purchaser maintained the confidentiality of all non-public information disclosed to it in connection with the transactions contemplated hereby (including the existence and terms of such transactions) at all times prior to the issuance of the Press Release (as defined below).

(i) Brokers and Finders. No Person will have, as a result of the transactions contemplated by this Agreement, any valid right, interest or claim against or upon the Company or any Purchaser for any commission, fee or other compensation pursuant to any agreement, arrangement or understanding entered into by or on behalf of the Purchaser.

(j) Independent Investment Decision. Such Purchaser has independently evaluated the merits of its decision to purchase Shares pursuant to the Transaction Documents, and such Purchaser confirms that it has not relied on the advice of any other Purchaser's business and/or legal counsel in making such decision. Such Purchaser understands that nothing in this Agreement or any other materials presented by or on behalf of the Company to the Purchaser in connection with the purchase of the Shares constitutes legal, tax or investment advice. Such Purchaser has consulted such legal, tax and investment advisors as it, in its sole discretion, has deemed necessary or appropriate in connection with its purchase of the Shares.

(k) No Governmental Review. Such Purchaser understands that no United States federal or state agency or any other government or governmental agency has passed on or made any recommendation or endorsement of the Shares or the fairness or suitability of the investment in the Shares nor have such authorities passed upon or endorsed the merits of the offering of the Shares.

(l) Residency. Such Purchaser's residence (if an individual) or office in which its investment decision with respect to the Shares was made (if an entity) are located at the address immediately below such Purchaser's name on its signature page hereto.

(m) Acknowledgment. Each Purchaser acknowledges and agrees that such Purchaser has reviewed and considered prior to entering this Agreement the more detailed information about the Company and the risk factors that may affect the realization of forward-looking statements set forth in the Company's filings with the SEC, including its Annual Report on Form 10-K and its Quarterly Reports on Form 10-Q filed with the SEC.

The Company and each of the Purchasers acknowledge and agree that no party to this Agreement has made or makes any representations or warranties with respect to the transactions contemplated hereby other than those specifically set forth in this Article III and the Transaction Documents.

ARTICLE IV

OTHER AGREEMENTS OF THE PARTIES

4.1 Transfer Restrictions.

(a) The Securities may only be disposed of in compliance with state and federal securities laws, including the requirement not to trade in the Securities while in possession of material non-public information. In connection with any transfer of Shares other than pursuant to an effective registration statement, to the Company or to an Affiliate of a Purchaser or in connection with a pledge as contemplated in Section 4.1(c), the Company may require the transferor thereof to provide to the Company an opinion of counsel selected by the transferor and reasonably acceptable to the Company, the form and substance of which opinion shall be reasonably satisfactory to the Company, to the effect that such transfer does not require registration of such transferred Shares under the Securities Act. As a condition of transfer, any such transferee shall agree in writing to be bound by the terms of this Agreement and shall have the rights of a Purchaser under this Agreement and the Registration Rights Agreement.

(b) The Purchasers agree to the imprinting, so long as is required by this Section 4.1, of a legend on any of the Securities in the following form:

> THIS SECURITY HAS 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 AS EVIDENCED BY A LEGAL OPINION OF COUNSEL TO THE TRANSFEROR TO SUCH EFFECT, THE SUBSTANCE OF WHICH SHALL BE REASONABLY ACCEPTABLE TO THE COMPANY. THIS SECURITY MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT WITH A REGISTERED BROKER-DEALER OR OTHER LOAN WITH A FINANCIAL INSTITUTION THAT IS AN "ACCREDITED INVESTOR" AS DEFINED IN RULE 501(a) UNDER THE SECURITIES ACT OR OTHER LOAN SECURED BY SUCH SECURITIES.

(c) The Company acknowledges and agrees that a Purchaser may from time to time pledge pursuant to a bona fide margin agreement with a registered broker-dealer or grant a security interest in some or all of the Securities to a financial institution that is an "accredited investor" as defined in Rule 501(a) under the Securities Act and who agrees to be bound by the provisions of this Agreement and the Registration Rights Agreement and, if required under the terms of such arrangement, such Purchaser may transfer pledged or secured Securities to the pledgees or secured parties. Such a pledge or transfer would not be subject to approval of the Company and no legal opinion of legal counsel of the pledgee, secured party or pledgor shall be required in connection therewith. Further, no notice shall be required of such pledge. At the appropriate Purchaser's expense, the Company will execute and deliver such reasonable documentation as a pledgee or secured party of Securities may reasonably request in connection with a pledge or transfer of the Securities, including, if the Underlying Shares are subject to registration pursuant to the Registration Rights Agreement, the preparation and filing of any required prospectus supplement under Rule 424(b)(3) under the Securities Act or other applicable provision of the Securities Act to appropriately amend the list of Selling Stockholders thereunder.

(d) Certificates evidencing the Underlying Shares shall not contain any legend (including the legend set forth in Section 4.1(b)), (i) while a registration statement (including the Registration Statement) covering the resale of such Underlying Shares is effective under the Securities Act, or (ii) following any sale of such Underlying Shares pursuant to Rule 144, or (iii) if such Underlying Shares are eligible for sale under Rule 144, or (iv) if such legend is not required under applicable requirements of the Securities Act (including judicial interpretations and pronouncements issued by the staff of the Commission). The Company shall cause its counsel to issue a legal opinion to the Transfer Agent promptly after the Effective Date if required by the Transfer Agent to effect the removal of the legend hereunder. The Company agrees that following the Effective Date or at such time as such legend is no longer required under this Section 4.1(d), it will, no later than three Trading Days following the delivery by a Purchaser to the Company or the Transfer Agent of a certificate representing Underlying Shares issued with a restrictive legend (such third Trading Day, the "Legend Removal Date"), deliver or cause to be delivered to such Purchaser a certificate representing such shares that is free from all restrictive and other legends. The Company may not make any notation on its records or give instructions to the Transfer Agent that enlarge the restrictions on transfer set forth in this Section 4.1. Certificates for Underlying Shares subject to legend removal hereunder shall be transmitted by the Transfer Agent to the Purchasers by crediting the account of the Purchaser's prime broker with the Depository Trust Company System, if the Transfer Agent is a participant in the DWAC system, and otherwise by physical delivery of certificates as directed by the Purchaser.

(e) Each Purchaser, severally and not jointly with the other Purchasers, agrees that the removal of the restrictive legend from certificates representing Securities as set forth in this Section 4.1 is predicated upon the Company's reliance that the Purchaser will sell any Securities pursuant to either the registration requirements of the Securities Act, including any applicable prospectus delivery requirements, or an exemption therefrom, and that if Securities are sold pursuant to a Registration Statement, they will be sold in compliance with the plan of distribution set forth therein.

4.2 Furnishing of Information. For a period of one year after the date of this Agreement, the Company covenants to timely file (or obtain extensions in respect thereof and file within the applicable grace period) all reports required to be filed by the Company after the date hereof pursuant to the Exchange Act. During this one-year period, if the Company is not required to file reports pursuant to the Exchange Act, it will prepare and furnish to the Purchasers and make publicly available in accordance with Rule 144 such information as is required for the Purchasers to sell the Shares and the Warrants under Rule 144. The Company further covenants that it will take such further action as any holder of Shares or the Warrants may reasonably request, to the extent required from time to time to enable such Person to sell such Shares or Warrants without registration under the Securities Act within the requirements of the exemption provided by Rule 144.

4.3 Integration. The Company shall not sell, offer for sale or solicit offers to buy or otherwise negotiate in respect of any security (as defined in Section 2 of the Securities Act) that could reasonably be expected to be integrated with the offer or sale of the Shares or the Warrants in a manner that would require the registration under the Securities Act of the sale of the Shares or the Warrants to the Purchasers or that would be integrated with the offer or sale of the Shares or the Warrants for purposes of the rules and regulations of any Trading Market such that it would require shareholder approval prior to the closing of such other transaction unless shareholder approval is obtained before the closing of such subsequent transaction.

4.4 Securities Laws Disclosure; Publicity. On or before 9:00 a.m., New York City time, on the Business Day immediately following the date hereof, the Company shall issue a press release (the "Press Release") reasonably acceptable to the Purchasers disclosing all material terms of the transactions contemplated hereby. On or before 5:30 p.m., New York City time, on the fourth Trading Day immediately following the execution of this Agreement, the Company will file a Current Report on Form 8-K with the Commission describing the terms of the Transaction Documents (and including as exhibits to such Current Report on Form 8-K the material Transaction Documents (including, without limitation, this Agreement, the form of Warrant and the Registration Rights Agreement)). Notwithstanding the foregoing, the Company shall not publicly disclose the name of any Purchaser or an Affiliate of any Purchaser, or include the name of any Purchaser or an Affiliate of any Purchaser in any press release or filing with the Commission (other than the Registration Statement) or any regulatory agency or Trading Market, without the prior written consent of such Purchaser, except (i) as required by federal securities law in connection with (A) any registration statement contemplated by the Registration Rights Agreement and (B) the filing of final Transaction Documents (including signature pages thereto) with the Commission and (ii) to the extent such disclosure is required by law, request of the Staff of the Commission or Trading Market regulations, in which case the Company shall provide the Purchasers with prior written notice of such disclosure permitted under this subclause (ii).

4.5 Indemnification of Purchasers.

(a) In addition to the indemnity provided in the Registration Rights Agreement, the Company will indemnify and hold each Purchaser and its directors, officers, stockholders, members, partners, employees and agents (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title), each Person who controls such Purchaser (within the meaning of Section 15 of the Securities Act and Section 20 of the Exchange Act), and the directors, officers, stockholders, agents, members, partners or employees (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title) of such controlling person (each, a "Purchaser Party") harmless from any and all losses, liabilities, obligations, claims, contingencies, damages, costs and expenses, including all judgments, amounts paid in settlements, court costs and reasonable attorneys' fees and costs of investigation that any such Purchaser Party may suffer or incur (i) as a result of any breach of any of the representations, warranties, covenants or agreements made by the Company in this Agreement or in the other Transaction Documents or (ii) arising out of, in connection with, or as a result of the execution or delivery of this Agreement, any other Transaction Document or any agreement or instrument contemplated hereby or thereby, the performance by the parties hereto of their respective obligations hereunder or thereunder or the consummation of the transactions contemplated hereby or thereby. The Company will not be liable to any Purchaser Party under this Agreement to the extent, but only to the extent that a loss, claim, damage or liability is attributable to any Purchaser Party's breach of any of the representations, warranties, covenants or agreements made by such Purchaser Party in this Agreement or in the other Transaction Documents; provided that such a claim for indemnification relating to any breach of any of the representations or warranties made by the Company in this Agreement is made within one year from the Closing.

(b) Promptly after receipt by any Person (the "Indemnified Person") of notice of any demand, claim or circumstances which would or might give rise to a claim or the commencement of any action, proceeding or investigation in respect of which indemnity may be

sought pursuant to Section 4.5(a), such Indemnified Person shall promptly notify the Company in writing and the Company shall assume the defense thereof, including the employment of counsel reasonably satisfactory to such Indemnified Person, and shall assume the payment of all fees and expenses; provided, however, that the failure of any Indemnified Person so to notify the Company shall not relieve the Company of its obligations hereunder except to the extent that the Company is actually and materially and adversely prejudiced by such failure to notify. In any such proceeding, any Indemnified Person shall have the right to retain its own counsel, but the fees and expenses of such counsel shall be at the expense of such Indemnified Person unless: (i) the Company and the Indemnified Person shall have mutually agreed to the retention of such counsel; (ii) the Company shall have failed promptly to assume the defense of such proceeding and to employ counsel reasonably satisfactory to such Indemnified Person in such proceeding; or (iii) in the reasonable judgment of counsel to such Indemnified Person, representation of both parties by the same counsel would be inappropriate due to actual or potential differing interests between them. The Company shall not be liable for any settlement of any proceeding effected without its written consent, which consent shall not be unreasonably withheld, delayed or conditioned. Without the prior written consent of the Indemnified Person, which consent shall not be unreasonably withheld, delayed or conditioned, the Company shall not effect any settlement of any pending or threatened proceeding in respect of which any Indemnified Person is or could have been a party and indemnity could have been sought hereunder by such Indemnified Party, unless such settlement includes an unconditional release of such Indemnified Person from all liability arising out of such proceeding, does not admit liability on the part of or attribute fault to any Indemnified Person and contains a provision requiring confidentiality with respect to the facts and circumstances of the dispute and of the existence and amount of the settlement.

4.6 Reservation of Preferred Stock. As of the date hereof, the Company has reserved and the Company shall continue to reserve and keep available at all times, a sufficient number of shares of Series B Convertible Preferred Stock for the purpose of enabling the Company to issue Shares pursuant to this Agreement.

4.7 Listing or Quotation of Common Stock. The Common Stock is currently quoted on the NYES-MKT and is not currently eligible for listing or quotation on any other Trading Market. The Company hereby agrees to use best efforts to maintain the listing or quotation of the Common Stock on a Trading Market, and as soon as reasonably practicable following the Closing and subject to obtaining the Shareholder Approval (but not later than the earlier of the Effective Date and the first anniversary of the Closing Date) to list all of the Underlying Shares on such Trading Market, as may be applicable. The Company further agrees, if the Company applies to have the Common Stock traded on any other Trading Market, it will include in such application all of the Underlying Shares, and will take such other action as is necessary to cause all of the Underlying Shares to be listed on such other Trading Market as promptly as possible. The Company will take all action reasonably necessary to continue the listing and trading of its Common Stock on a Trading Market and will comply in all respects with the Company's reporting, filing and other obligations under the bylaws or rules of the Trading Market.

4.8 Equal Treatment of Purchasers. No consideration shall be offered or paid to any Person to amend or consent to a waiver or modification of any provision of any of the Transaction Documents unless the same consideration is also offered to all of the parties to the Transaction Documents. For clarification purposes, this provision constitutes a separate right granted to each Purchaser by the Company and negotiated separately by each Purchaser, and is

intended for the Company to treat the Purchasers as a class and shall not in any way be construed as the Purchasers acting in concert or as a group with respect to the purchase, disposition or voting of Securities or otherwise.

4.9 Confidentiality After The Date Hereof. Each Purchaser, severally and not jointly with the other Purchasers, covenants that until such time as the transactions contemplated by this Agreement and such other material non-public information related to the Company in possession of the Purchaser are publicly disclosed by the Company as described in Section 4.4, such Purchaser will maintain the confidentiality of all non-public information disclosed to it in connection with the transactions contemplated hereby (including the existence and terms of such transactions).

4.10 Delivery of Shares After Closing. The Company shall deliver, or cause to be delivered, the respective Shares purchased by each Purchaser to such Purchaser within three Trading Days of the Closing Date (unless such Purchaser has specified to the Company at the time of execution of this Agreement that it shall settle "delivery versus payment" in which case such Shares shall be delivered on or prior to the Closing Date).

4.11 Form D; Blue Sky Filings. The Company agrees to timely file a Form D with respect to the Shares and the Warrants as required under Regulation D and to provide a copy thereof, promptly upon request of any Purchaser. The Company shall take such action as the Company shall reasonably determine is necessary in order to obtain an exemption for, or to qualify the Shares and the Warrants for, sale to the Purchasers at the Closing under applicable securities or "Blue Sky" laws of the states of the United States, and shall provide evidence of such actions promptly upon request of any Purchaser.

4.12 Use of Proceeds. The Company intends to use the net proceeds of this offering after payment of the expenses of the offering for the funding of its AG013 clinical trial and lantibiotics programs and for general corporate purposes, including working capital and shall not use such proceeds for the satisfaction of any portion of the Company's debt (other than trade payables in the ordinary course of the Company's business and prior practices), or to redeem any Common Stock or Common Stock Equivalents.

4.13 Termination. Notwithstanding anything herein to the contrary, this Agreement may be terminated at any time by any Purchaser (with respect to the obligations of such Purchaser) or the Company, upon written notice to the other party, if the Closing shall not have occurred on or before the date that is three months from the date hereof (the "Outside Date"); provided, however, that the right to terminate this Agreement under this Section 4.13 shall not be available to any party whose (i) breach of any provision of this Agreement, (ii) failure to comply with their obligations under this Agreement or (iii) actions not taken in good faith, shall have been the cause of, or shall have resulted in, the failure of a Closing to occur on or prior to the Outside Date or the failure of a condition in Section 2.3 to be satisfied at such time.

4.14 NYSE Required Shareholder Approval. The Company shall take all action necessary to obtain the Shareholder Approval that is required by the NYSE rules in order to permit the Purchasers to be able to fully convert their respective Shares into Common Stock and to fully exercise their respective Warrants for Common Stock as soon as practicable, which NYSE required Shareholder Approval shall be obtained no later than ninety (90) days after the Closing Date. Each Purchaser covenants that until such time as the NYSE required Shareholder

Approval is obtained, unless the Common Stock is no longer listed on the NYSE MKT, such Purchaser shall not convert its Shares into Common Stock nor exercise its Warrants for Common Stock to the extent (but only to the extent) that such conversion or exercise would cause a violation of NYSE listing rules.

4.15 Waiver and Consent. Each Purchaser acknowledges that it understands that the Certificate of Designation and Rights of Series C Non-Convertible Preferred Stock provides that the Series C Non-Convertible Preferred Stock shall be senior to the Series A Convertible Preferred Stock and Series B Convertible Preferred Stock as to rights upon liquidation, dissolution or winding up of the Company. Each Purchaser hereby (i) consents to the filing of Certificate of Designation and Rights of Series C Non-Convertible Preferred Stock contained in the Certificate of Designation and the designations therein (the "Series C Certificate of Designation") and (ii) solely with respect to the filing of the Series C Certificate of Designation, waives its rights under clause (c) of Section 6 of the Certificate of Designation and Rights of Series A Convertible Preferred Stock.

ARTICLE V
MISCELLANEOUS

5.1 [Reserved]

5.2 Fees and Expenses. Except as expressly set forth in the Transaction Documents to the contrary, each party shall pay the fees and expenses of its advisers, 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. The Company shall pay all Transfer Agent fees, stamp taxes and other taxes and duties levied in connection with the delivery of the Securities to the Purchasers.

5.3 Entire Agreement. The Transaction Documents, together with the exhibits and schedules thereto, contain the entire understanding of the parties with respect to the subject matter hereof and supersede all prior agreements and understandings, oral or written, with respect to such matters, which the parties acknowledge have been merged into such documents, exhibits and schedules. At or after the Closing, and without further consideration, the Company and the Purchasers will execute and deliver to the other such further documents as may be reasonably requested in order to give practical effect to the intention of the parties under the Transaction Documents.

5.4 Notices. Any and all notices or other communications or deliveries required or permitted to be provided hereunder shall be in writing and shall be deemed given and effective on the earliest of (a) the date of transmission, if such notice or communication is delivered via email to the e-mail address set forth on the signature pages attached hereto prior to 5:30 p.m. (New York City time) on a Trading Day, (b) the next Trading Day after the date of transmission, if such notice or communication is delivered via email to the e-mail address set forth on the signature pages attached hereto on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (c) the 2nd Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service, or (d) upon actual receipt by the party to whom such notice is required to be given. The address for such notices and communications shall be as set forth on the signature pages attached hereto.

5.5 Amendments; Waivers. No provision of this Agreement may be waived or amended except in a written instrument signed, in the case of an amendment, by the Company and each Purchaser. No waiver of any default with respect to any provision, condition or requirement of this Agreement shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of either party to exercise any right hereunder in any manner impair the exercise of any such right.

5.6 Headings and Construction. The headings herein are for convenience only, do not constitute a part of this Agreement and shall not be deemed to limit or affect any of the provisions hereof. The language used in this Agreement will be deemed to be the language chosen by the parties to express their mutual intent, and no rules of strict construction will be applied against any party. This Agreement shall be construed as if drafted jointly by the parties, and no presumption or burden of proof shall arise favoring or disfavoring any party by virtue of the authorship of any provisions of this Agreement or any of the Transaction Documents.

5.7 Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the parties and their successors and permitted assigns. The Company may not assign this Agreement or any rights or obligations hereunder without the prior written consent of each Purchaser (other than by merger). Any Purchaser may assign any or all of its rights under this Agreement to any Person to whom such Purchaser assigns or transfers any Shares or Warrants, provided such transferee agrees in writing to be bound, with respect to the transferred Shares or Warrants, by the provisions of the Transaction Documents that apply to the "Purchasers."

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

5.9 Governing Law. All questions concerning the construction, validity, enforcement and interpretation of the Transaction Documents shall be governed by and construed and enforced in accordance with the internal laws of the State of New York, without regard to the principles of conflicts of law thereof. Each party agrees that all legal proceedings concerning the interpretations, enforcement and defense of the transactions contemplated by this Agreement and any other Transaction Documents (whether brought against a party hereto or its respective affiliates, directors, officers, shareholders, employees or agents) shall be commenced exclusively in the state and federal courts sitting in the City of New York. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of New York, borough of Manhattan for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein (including with respect to the enforcement of any of the Transaction Documents), and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such suit, action or proceeding is improper or is an inconvenient venue for such proceeding. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by law.

5.10 Survival. The representations and warranties contained herein shall survive the Closing and the delivery of the Shares and the Warrants.

5.11 Execution. This Agreement may be executed in two or more counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to the other party, it being understood that both parties need not sign the same counterpart. In the event that any signature is delivered by facsimile transmission or by e-mail delivery of a ".pdf" format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile or ".pdf" signature page were an original thereof.

5.12 Severability. If any term, provision, covenant or restriction of this Agreement is held by a court of competent jurisdiction to be invalid, illegal, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions set forth herein shall remain in full force and effect and shall in no way be affected, impaired or invalidated, and the parties hereto shall use their commercially reasonable efforts to find and employ an alternative means to achieve the same or substantially the same result as that contemplated by such term, provision, covenant or restriction. It is hereby stipulated and declared to be the intention of the parties that they would have executed the remaining terms, provisions, covenants and restrictions without including any of such that may be hereafter declared invalid, illegal, void or unenforceable.

5.13 Rescission and Withdrawal Right. Notwithstanding anything to the contrary contained in (and without limiting any similar provisions of) any of the other Transaction Documents, whenever any Purchaser exercises a right, election, demand or option under a Transaction Document and the Company does not timely and materially perform its related obligations within the periods therein provided, then such Purchaser may rescind or withdraw, in its sole discretion from time to time upon written notice to the Company, any relevant notice, demand or election in whole or in part without prejudice to its future actions and rights.

5.14 Replacement of Shares. If any certificate or instrument evidencing any Shares is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation thereof, or in lieu of and substitution therefor, a new certificate or instrument, but only upon receipt of evidence reasonably satisfactory to the Company and the Transfer Agent of such loss, theft or destruction and the execution by the holder thereof of a customary lost certificate affidavit of that fact and an agreement to indemnify and hold harmless the Company and the Transfer Agent for any losses in connection therewith or, if required by the Transfer Agent, a bond in such form and amount as is required by the Transfer Agent. The applicants for a new certificate or instrument under such circumstances shall also pay any reasonable third-party costs associated with the issuance of such replacement Shares. If a replacement certificate or instrument evidencing any Shares is requested due to a mutilation thereof, the Company may require delivery of such mutilated certificate or instrument as a condition precedent to any issuance of a replacement.

5.15 Remedies. In addition to being entitled to exercise all rights provided herein or granted by law, including recovery of damages, each of the Purchasers and the Company will be entitled to specific performance under the Transaction Documents. The parties agree that monetary damages may not be adequate compensation for any loss incurred by reason of any breach of obligations contained in the Transaction Documents and hereby agrees to waive and not to assert in any action for specific performance of any such obligation the defense that a remedy at law would be adequate.

5.16 Payment Set Aside. To the extent that the Company makes a payment or payments to any Purchaser pursuant to any Transaction Document or a Purchaser enforces or exercises its rights thereunder, and such payment or payments or the proceeds of such enforcement or exercise or any part thereof are subsequently invalidated, declared to be fraudulent or preferential, set aside, recovered from, disgorged by or are required to be refunded, repaid or otherwise restored to the Company, a trustee, receiver or any other person under any law (including, without limitation, any bankruptcy law, state or federal law, common law or equitable cause of action), then to the extent of any such restoration the obligation or part thereof originally intended to be satisfied shall be revived and continued in full force and effect as if such payment had not been made or such enforcement or setoff had not occurred.

5.17 Independent Nature of Purchasers' Obligations and Rights. The obligations of each Purchaser under any Transaction Document are several and not joint with the obligations of any other Purchaser, and no Purchaser shall be responsible in any way for the performance or non-performance of the obligations of any other Purchaser under any Transaction Document. Nothing contained herein or in any other Transaction Document, and no action taken by any Purchaser pursuant thereto, shall be deemed to constitute the Purchasers as a partnership, an association, a joint venture or any other kind of entity, or create a presumption that the Purchasers are in any way acting in concert or as a group with respect to such obligations or the transactions contemplated by the Transaction Documents. Each Purchaser shall be entitled to independently protect and enforce its rights, including without limitation, the rights arising out of this Agreement or out of the other Transaction Documents, and it shall not be necessary for any other Purchaser to be joined as an additional party in any proceeding for such purpose. Each Purchaser has been represented by its own separate legal counsel in their review and negotiation of the Transaction Documents. The Company has elected to provide all Purchasers with the same terms and Transaction Documents for the convenience of the Company and not because it was required or requested to do so by the Purchasers.

5.18 No Promotion. The Company agrees that it will not, and shall cause each of its Subsidiaries to not, without the prior written consent of a Purchaser, use in advertising, publicity, or otherwise the name of such Purchaser, its affiliates or any of their respective partners or employees, nor any trade name, trademark, trade device, service mark, symbol or any abbreviation, contraction or simulation thereof owned by such persons. The Company further agrees that it shall obtain the written consent of such Purchaser prior to the Company's or any of its Subsidiaries' issuance of any public statement detailing the purchase of Securities by Purchasers pursuant to this Agreement.

5.19 Construction. The parties agree that each of them and/or their respective counsel has reviewed and had an opportunity to revise the Transaction Documents and, therefore, the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of the Transaction Documents or any amendments hereto.

5.20 Exculpation Among Purchasers. Each Purchaser acknowledges that it is not relying upon any person, firm or corporation (including without limitation any other Purchaser), other than the Company and its officers and directors (acting in their capacity as representatives

of the Company), in deciding to invest and in making its investment in the Company. Each Purchaser agrees that no other Purchaser nor the respective controlling persons, officers, directors, partners, agents or employees of any other Purchaser shall be liable to such Purchaser for any losses incurred by such Purchaser in connection with its investment in the Company.

5.21 Company Acknowledgement. The Company acknowledges and agrees that (i) each of the Purchasers is participating in the transactions contemplated by this Agreement and the other Transaction Documents at the Company's request and the Company has concluded that such participation is in the Company's best interest and is consistent with the Company's objectives and (ii) each of the Purchasers is acting solely in the capacity of an arm's length purchaser. The Company further acknowledges that no Purchaser is acting or has acted as an advisor, agent or fiduciary of the Company (or in any similar capacity) with respect to this Agreement or the other Transaction Documents and any advice given by any Purchaser or any of its respective representatives in connection with this Agreement or the other Transaction Documents is merely incidental to the Purchasers' purchase of Shares and Warrants. The Company further represents to each Purchaser that the Company's decision to enter into this Agreement has been based solely on the independent evaluation of the transactions contemplated hereby by the Company and its representatives.

(*Signature Pages Follow*)

IN WITNESS WHEREOF, the parties hereto have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

ORAGENICS, INC.

Address for Notice:

4902 Eisenhower Blvd.
Suite 125
Tampa, FL 33634

By /s/ Alan Joslyn
Name: Alan Joslyn
Title: Chief Executive Officer

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK;
SIGNATURE PAGE FOR PURCHASERS FOLLOW]

IN WITNESS WHEREOF, the undersigned have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

Name of Purchaser: MSD Credit Opportunity Master Fund, L.P.

Signature of Authorized Signatory of Purchaser: /s/ Marcello Liguori

Name of Authorized Signatory: Marcello Liguori

Title of Authorized Signatory: Managing Director

Email Address of Purchaser: mliguori@msdcapital.com

Address for Notice of Purchaser: 645 Fifth Avenue, 21st Floor
New York, NY 10022
Attn: Marcello Liguori

Address for Delivery of Shares for Purchaser (if not same as above):

Total Subscription Amount: $1,275,000.00

Shares of Series B Convertible Preferred Stock: 2,550,000 (convertible into 5,100,000 shares of Common Stock)

Warrants: 4,112,903 shares of Common Stock at $0.31 per share.

IN WITNESS WHEREOF, the undersigned have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

Name of Purchaser: HARVEST INTREXON ENTERPRISE FUND I, L.P.

Signature of Authorized Signatory of Purchaser: /s/ Joseph Jolson

Name of Authorized Signatory: Joseph Jolson

Title of Authorized Signatory: Chief Executive Officer

Email Address of Purchaser: _____

Address for Notice of Purchaser:

600 Montgomery Street, Suite 1700
San Francisco, California 94111

Address for Delivery of Shares for Purchaser (if not same as above):

Total Subscription Amount: $1,205,002.50

Shares of Series B Convertible Preferred Stock: 2,410,005 (convertible into 4,820,010 shares of Common Stock)

Warrants: 3,887,105 shares of Common Stock at $0.31 per share.

IN WITNESS WHEREOF, the undersigned have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

Name of Purchaser: HARVEST INTREXON ENTERPRISE FUND I (AI), L.P.

Signature of Authorized Signatory of Purchaser: /s/ Joseph Jolson

Name of Authorized Signatory: Joseph Jolson

Title of Authorized Signatory: Chief Executive Officer

Email Address of Purchaser: _____

Address for Notice of Purchaser:

600 Montgomery Street, Suite 1700
San Francisco, California 94111

Address for Delivery of Shares for Purchaser (if not same as above):

Total Subscription Amount: $69,997.50

Shares of Series B Convertible Preferred Stock: 139,995 (convertible into 279,990 shares of Common Stock)

Warrants: 225,798 shares of Common Stock at $0.31 per share.

IN WITNESS WHEREOF, the undersigned have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

Name of Purchaser: KOSKI FAMILY LIMITED PARTNERSHIP

Signature of Authorized Signatory of Purchaser: /s/ Christine L. Koski

Name of Authorized Signatory: Christine L. Koski

Title of Authorized Signatory: Managing General Partner

Email Address of Purchaser: clkoski@swbell.net

Address for Notice of Purchaser:

3525 Turtle Creek Blvd, 19B
Dallas, TX 75219

Address for Delivery of Shares for Purchaser (if not same as above):

3525 Turtle Creek Blvd, 19B
Dallas, TX 75219

Total Subscription Amount: $750,000

Shares of Series B Convertible Preferred Stock: 1,500,000 (convertible into 3,000,000 shares of Common Stock)

Warrants: 2,419,355 shares of Common Stock at $0.31 per share.

Exhibit A
Certificate of Designation

Exhibit B
Registration Rights Agreement

Exhibit C
Form of Warrant

Exhibit D
Voting Agreement

Exhibit E
Form of Legal opinion of Company Counsel

Based upon and subject to the foregoing, it is our opinion as of this date that:

1. Based solely upon the certificate of good standing, dated [, 2017], issued by the State of Florida, the Company is a corporation validly existing and in good standing under the laws of the State of Florida.

2. The Company has the corporate power and authority to execute, deliver and perform its obligations under the Transaction Documents, including, without limitation, to issue and deliver the Shares as contemplated by the Agreement. Each of the Transaction Documents has been duly authorized by all necessary corporate action and each has been duly executed and delivered on behalf of the Company, and each is a legal, valid and binding obligation of the Company enforceable against the Company in accordance with its terms.

3. The execution and delivery by the Company of the Transaction Documents, and the performance by the Company of its obligations thereunder as of the date hereof, do not violate the Company's Articles of Incorporation or Bylaws, do not constitute a default under or a material breach of any material agreement of the Company that has not otherwise been waived and, to our knowledge, do not (a) violate any U. S. Federal or state statute, rule or regulation applicable to the transactions contemplated by the Transaction 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.

4. The Company has the authorized capital stock as set forth in the SEC Documents. The Securities have been duly authorized, and when issued and sold in accordance with the Securities Purchase Agreement, will be validly issued and non-assessable.

5. No approval, authorization or other action by, or notice to or filing with, any governmental authority is required in connection with the execution, delivery and performance by the Company of the Transaction Documents, except (a) those that have been obtained or made and are in full force and effect, and (b) any filings required by Regulation D promulgated under the Securities Act of 1933, as amended, or by state securities laws.

6. To our knowledge, 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.

7. Assuming the truth and accuracy of the representations made by the Company and the Purchasers in the Securities Purchase Agreement, the sale and issuance of the Shares in conformity with the terms of the Transaction Documents 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.

8. The Company is not, after giving effect to the issuance of the Shares, an “investment company” as defined in the Investment Company Act of 1940, as amended.

9. To our knowledge and except as set forth in the SEC Documents with respect to Intrexon Corporation and the Koski Family Limited Partnership, 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.

Exhibit F
Series A A&R Certificate of Designation

Exhibit 10.2

AMENDED AND RESTATED REGISTRATION RIGHTS AGREEMENT

This Registration Rights Agreement (the "Agreement") is made and entered into as of this 8th day of November, 2017 by and among Oragenics, Inc., a Florida corporation (the "Company"), and each of the several holders of Registrable Securities (as defined below) signatory hereto (each such holder, a "Holder" and, collectively, the "Holders"). Capitalized terms used herein have the respective meanings ascribed thereto in that certain Securities Purchase Agreement dated November 8, 2017 by and among the Company and the other parties signatory thereto (the "Purchase Agreement") unless otherwise defined herein.

R E C I T A L S

WHEREAS, the Company issued shares of Series A convertible preferred stock (the "Series A Convertible Preferred Stock") and a Common Stock Purchase Warrant to each of MSD Credit Opportunity Master Fund, L.P., Harvest Intrexon Enterprise Fund I, L.P. and Harvest Intrexon Enterprise Fund I (AI), L.P. pursuant to that certain Securities Purchase Agreement entered into by such parties and the Company on May 10, 2017 (the "May 2017 Purchase Agreement") and granted certain registration rights pursuant to that certain Registration Rights Agreement dated May 10, 2017 (the "May 2017 Registration Rights Agreement").

WHEREAS, the Company has issued shares of Series B Convertible Preferred Stock and a Common Stock Purchase Warrant in favor of each Holder, each dated as of the date hereof and acknowledged by such Holder, as such may be amended and supplemented from time to time; and

WHEREAS, in connection with the consummation of the transactions contemplated by the Purchase Agreement, the parties desire to enter into this Agreement in order to grant certain registration rights to the Holders as set forth below and to also amend and restate the May 2017 Registration Rights Agreement.

NOW, THEREFORE, in consideration of the promises, covenants and conditions set forth herein, the parties hereto hereby agree as follows:

1. Certain Definitions. As used in this Agreement, the following terms shall have the following meanings:

"Commission" means the U.S. Securities and Exchange Commission.

"Common Stock" means the Company's common stock, par value $0.001 per share, and any securities into which such shares may hereinafter be reclassified.

"Conversion Shares" shall mean collectively the shares of Common Stock of the Company or other Securities issuable upon conversion of the Series A Convertible Preferred Stock and Series B Convertible Preferred Stock.

"Exchange Act" means the Securities Exchange Act of 1934, as amended from time to time, and the rules and regulations promulgated thereunder from time to time in effect .

"Initiating Holder" means any Holder who properly initiates a registration request under this Agreement.

"Prospectus" means (i) the prospectus included in any Registration Statement, as amended or supplemented by any prospectus supplement, with respect to the terms of the offering of any portion of the Registrable Shares covered by such Registration Statement and by all other amendments and supplements to the prospectus, including post-effective amendments and all material incorporated by reference in such prospectus, and (ii) any "free writing prospectus" as defined in Rule 405 under the Securities Act.

"Register," "registered" and "registration" refer to a registration made by preparing and filing a Registration Statement or similar document in compliance with the Securities Act, and the declaration or ordering of effectiveness of such Registration Statement or document.

"Registrable Shares" means (i) any shares of Common Stock owned by the Holders, (ii) the Conversion Shares, (iii) the Warrant Shares, and (iv) any other securities issued or issuable with respect to or in exchange for the Conversion Shares and Warrant Shares, whether by merger, charter amendment or otherwise; provided, that, a security shall not be a Registrable Share (A) upon sale pursuant to a Registration Statement or Rule 144, or (B) while such security is eligible for sale without restriction by the Holders pursuant to Rule 144, assuming, for purposes of such determination with respect to each Holder, the full conversion or exercise by such Holder of all convertible securities held by such Holder (disregarding for this purpose any and all limitations of any kind on conversion or exercise of any convertible securities owned by such Holder).

"Registration Statement" means any registration statement of the Company filed under the Securities Act that covers the resale of any of the Registrable Shares pursuant to the provisions of this Agreement, amendments and supplements to such Registration Statement, including post-effective amendments, all exhibits and all material incorporated by reference in such Registration Statement.

"Required Holders" means the Holders holding at least a majority of the Conversion Shares and Warrant Shares, considered collectively, then outstanding (disregarding for this purpose any and all limitations of any kind on conversion or exercise of any convertible securities owned by such Holder).

"Rule 144" means Rule 144 promulgated under the Securities Act or any successor rule thereto.

"Securities Act" means the Securities Act of 1933, as amended from time to time, and the rules and regulations promulgated thereunder from time to time in effect .

"Warrants" means collectively the Common Stock Purchase Warrants issued to the Holders pursuant to the Purchase Agreement and the May 2017 Purchase Agreement.

"Warrant Shares" shall mean collectively the shares of Common Stock of the Company issuable upon exercise of the Warrants in accordance with their terms, as such number may be adjusted pursuant to the provisions thereof, and any other Securities to which the holder may become entitled pursuant to the terms of the Warrants.

2. Registration.

(a) Filing of the Registration Statement. At any time after the date hereof, any Holder may request registration under the Securities Act of the Registrable Shares with respect to at least fifty percent (50%) of such Holder's Registrable Securities having an anticipated aggregate offering price, net of Selling Expenses, of at least $1.0 million. Upon receipt of such request, the Company shall (i) within ten (10) days after the date such request is given, give notice thereof (the "Demand Notice") to all Holders other than the Initiating Holder, (ii) cause to be prepared and filed with the Commission a Registration Statement on Form S-3 (or, if the Company is not eligible to use Form S-3, on Form S-1) as soon as practicable and in any event within thirty (30) days of such request (the "Filing Deadline") for purposes of registering for sale to the public the Registrable Shares that the Initiating Holders requested to be registered and any additional Registrable Securities requested to be included in such registration by any other Holders, as specified by notice given by each such Holder to the Company within twenty (20) days of the date the Demand Notice is given, and (iii) use its commercially reasonable efforts to cause such Registration Statement to be declared effective under the Securities Act by the Commission as soon as practicable thereafter and in any event no later than ninety (90) days after the date of such request. If the Company files the Registration Statement on Form S-1 and subsequently becomes eligible to use Form S-3, the Company shall file a post-effective amendment to such Form S-1 on Form S-3 and use its commercially reasonable efforts to cause the Registration Statement, as so amended, to become effective within thirty (30) days of the filing thereof. Subject to any Commission comments, the foregoing Registration Statement shall include the plan of distribution attached hereto as Exhibit A; provided, however, that no Holder shall be named as an "underwriter" in such Registration Statement without such Holder's prior written consent. If the Registration Statement covering the Registrable Shares is not filed with the Commission on or prior to its Filing Deadline, the Company will make pro rata payments to each Holder that requested that its Registrable Shares be included on such Registration Statement, as liquidated damages and not as a penalty, in an amount equal to 1.0% of the aggregate amount invested by such Holder pursuant to the Purchase Agreement for each 30-day period or pro rata for any portion thereof following the Filing Deadline for which no Registration Statement is filed with respect to the Registrable Shares. Such payments shall constitute each Holder's exclusive monetary remedy for such event, but shall not affect the right of the Holder to seek injunctive relief. Such payments shall be made to each such Holder in cash no later than three (3) Business Days after the end of each 30-day period.

(b) Effectiveness.

(i) Following the declaration of effectiveness by the Commission of the Registration Statement filed pursuant to Section 2(a), the Company shall (i) use commercially reasonable efforts to cause such Registration Statement to remain effective until such time as there cease to be Registrable Shares, (ii) use commercially reasonable efforts to prepare and file with the Commission such amendments and supplements to such Registration

Statement and the Prospectus used in connection therewith as may be necessary to keep such Registration Statement effective until such time as there cease to be Registrable Shares, (iii) furnish to each Holder offering Registrable Shares under such Registration Statement such number of copies of a summary Prospectus or other Prospectus, including a preliminary Prospectus complying with the requirements of the Securities Act, as such Holder may reasonably request, (iv) comply with the provisions of the Securities Act with respect to the disposition of all Registrable Shares covered by the Registration Statement during such period in accordance with the intended methods of distribution by the selling holders thereof set forth in the Registration Statement, and (v) prior to any public offering of Registrable Shares, cooperate with the selling holders and the underwriter(s), if any, in connection with the registration and qualification of the Registrable Shares under the state securities or "blue sky" laws of such jurisdictions within the United States of America as the selling holders or underwriter(s), if any, may reasonably request and to use commercially reasonable efforts to do any and all other acts or things necessary or advisable to permit the disposition in such jurisdictions of the Registrable Shares covered by the Registration Statement in a manner that is in compliance with the applicable laws of such jurisdiction or, in the event that the registration does not involve an underwritten public offering, as each such selling holder shall reasonably request. The Company will promptly, and in any event within one (1) Business Day of having received notice of the following, notify each Holder of (1) any stop order issued or, to the knowledge of the Company, threatened by the Commission and take all commercially reasonable actions to obtain the withdrawal or lifting of such order if it has been issued or prevent the entry of such stop order if it has not yet been issued; (2) when the Registration Statement or any post-effective amendment thereto has been filed with the Commission and when the Registration Statement or any post-effective amendment thereto has become effective; (3) any request by the Commission for amendments or supplements to the Registration Statement or the Prospectus included therein or for additional information; and (4) any notification with respect to the suspension of the qualification of the Registrable Shares included therein for sale in any jurisdiction or the initiation or threatening of any proceeding for such purpose.

(ii) If after a Registration Statement has been declared effective by the Commission sales cannot be made pursuant to such Registration Statement for any reason (including without limitation by reason of a stop order, or the Company's failure to update the Registration Statement), but excluding any Suspension Period or the inability of any Holder to sell the Registrable Shares covered thereby due to market conditions, then the Company will make pro rata payments to each Holder that requested that its Registrable Shares be included on such Registration Statement, as liquidated damages and not as a penalty, in an amount equal to 1.0% of the aggregate amount invested by such Holder pursuant to the Purchase Agreement, for each 30-day period or pro rata for any portion thereof following the date by which such Registration Statement should have been effective and such Holder then held Registrable Shares (the "Blackout Period"). The amounts payable as liquidated damages pursuant to this Section 2(b)(ii) shall be paid monthly within three (3) Business Days of the last day of each month following the commencement of the Blackout Period until the termination of the Blackout Period. Such payments shall constitute each Holder's exclusive monetary remedy for such event, but shall not affect the right of the Holder to seek injunctive relief. Such payments shall be made to each such Holder in cash.

(c) Right to Piggyback Registration.

(i) If at any time following the date of this Agreement that any Registrable Shares remain outstanding the Company proposes for any reason to register any shares of Common Stock under the Securities Act (other than pursuant to a registration statement on Form S-4 or Form S-8 (or a similar or successor form)) with respect to an offering of Common Stock by the Company for its own account or for the account of any of its stockholders (including, without limitation, Intrexon Corporation or its affiliates (collectively, "Intrexon")), it shall at each such time promptly give written notice to the Holders, in accordance with the provisions of Section 5(b) below, of its intention to do so (but in no event less than thirty (30) days before the anticipated filing date) and, to the extent permitted under the provisions of Rule 415 under the Securities Act, include in such registration all Registrable Shares with respect to which the Company has received written requests for inclusion therein within fifteen (15) days after receipt of the Company's notice (a "Piggyback Registration"). Such notice shall offer the Holders the opportunity to register such number of shares of Registrable Shares as each such Holder may request and shall indicate the intended method of distribution of such Registrable Shares. By written notice delivered to the Company, any Holder (an "Opting-Out Holder") may elect to waive its right to participate in Piggyback Registrations ("Registration Opt-Out"), until such time as such written notice is rescinded in writing. During such time as a Registration Opt-Out is in effect: (x) the Opting-Out Holder shall not receive notices of any proposed Piggyback Registration and (y) shall not be entitled to participate in any such Piggyback Registration pursuant to this Section 2(c).

(ii) Notwithstanding the foregoing, (A) if such registration involves an underwritten public offering, the Holders must sell their Registrable Shares to, if applicable, the underwriter(s) at the same price and subject to the same underwriting discounts and commissions that apply to the other securities sold in such offering (it being acknowledged that the Company shall be responsible for other expenses as set forth in Section 3(b)) and subject to the Holders entering into customary underwriting documentation for selling stockholders in an underwritten public offering, and (B) if, at any time after giving written notice of its intention to register any Registrable Shares pursuant to Section 2(c)(i) and prior to the effective date of the registration statement filed in connection with such registration, the Company shall determine for any reason not to cause such registration statement to become effective under the Securities Act, the Company shall deliver written notice to the Holders and, thereupon, shall be relieved of its obligation to register any Registrable Shares in connection with such registration; provided, however, that nothing contained in this Section 2(c)(ii) shall limit the Company's liabilities and/or obligations under this Agreement, including, without limitation, the obligation to pay liquidated damages under this Section 2.

(d) Underwriting Requirements.

(i) If, at any time after the filing of a registration statement pursuant to Section 2(a), any Holder intends to distribute at least $15 million of Registrable Shares (including Registrable Shares held by other Holders) by means of an underwriting, then such Holder (the "Requesting Holder") shall so advise the Company. The underwriter(s) will be selected by the Requesting Holder, subject only to the reasonable approval of the Company. In such event, the right of any Holder to include such Holder's Registrable Shares in such

registration shall be conditioned upon such Holder's participation in such underwriting and the inclusion of such Holder's Registrable Shares in the underwriting to the extent provided herein. All Holders proposing to distribute their securities through such underwriting shall (together with the Company as provided in Section 2(d)(iii)) enter into an underwriting agreement in customary form with the underwriter(s) selected for such underwriting; provided, however, that only the Holders distributing securities through such offering shall be required to sign a lock-up agreement and in no event shall any such lock-up agreement restrict such Holders for a period longer than (i) imposed upon the Company or its officers and directors, (ii) imposed on Intrexon or (iii) ninety (90) days following the effective date of the Registration Statement. Any discretionary waiver or termination of the lock-up restrictions described above by the Company or the underwriter(s) shall apply pro rata to all Holders subject to such lock-up restrictions and, if Intrexon is distributing securities through such offering, to Intrexon, based on the number of Registrable Shares (or Common Stock owned by Intrexon that would constitute Registrable Shares if it were owned by a Holder (such Common Stock, "Intrexon Registrable Shares")) included in such underwriting. Notwithstanding any other provision of this Section 2(d)(i), if the managing underwriter(s) advise(s) the Requesting Holder in writing that marketing factors require a limitation on the number of shares to be underwritten, then the Requesting Holder shall so advise all Holders that otherwise would be underwritten pursuant hereto, and the number of Registrable Shares and Intrexon Registrable Shares that may be included in the underwriting shall be allocated among such Holders, including the Requesting Holder, and Intrexon in proportion (as nearly as practicable) to the number of Registrable Shares and Intrexon Registrable Shares owned by each Holder and Intrexon or in such other proportion as shall mutually be agreed to by all such selling Holders and Intrexon Corporation; provided, however, that the number of Registrable Shares held by the Holders to be included in such underwriting shall not be reduced unless all other securities (other than Intrexon Registrable Shares) are first entirely excluded from the underwriting.

(ii) In connection with any offering involving an underwriting of shares of the Company's capital stock pursuant to Section 2(c), the Company shall not be required to include any of the Holders' Registrable Shares in such underwriting unless the Holders accept the terms of the underwriting as agreed upon between the Company and its underwriters, and then only in such quantity as the underwriters in their sole discretion determine will not jeopardize the success of the offering by the Company; provided, however, that only the Holders distributing securities through such offering shall be required to sign a lock-up agreement and in no event shall any such lock-up agreement restrict such Holders for a period longer than (i) imposed upon the Company or its officers and directors, (ii) imposed on Intrexon or (iii) ninety (90) days following the effective date of the Registration Statement. Any discretionary waiver or termination of the lock-up restrictions described above by the Company or the underwriters shall apply pro rata to all Holders subject to such lock-up restrictions and, if Intrexon is distributing securities through such offering, to Intrexon, based on the number of Registrable Shares and Intrexon Registrable Shares included in such underwriting. If the total number of securities, including Registrable Shares and Intrexon Registrable Shares, requested by stockholders to be included in such offering exceeds the number of securities to be sold (other than by the Company) that the underwriters in their reasonable discretion determine is compatible with the success of the offering, then the Company shall be required to include in the offering only that number of such securities, including Registrable Shares and Intrexon Registrable Shares, which the underwriters and the Company in their sole discretion determine

will not jeopardize the success of the offering. If the underwriters determine that less than all of the Registrable Shares and Intrexon Registrable Shares requested to be registered can be included in such offering, then the Registrable Shares and Intrexon Registrable Shares that are included in such offering shall be allocated among the selling Holders and Intrexon in proportion (as nearly as practicable) to the number of Registrable Shares and Intrexon Registrable Shares owned by each selling Holder and Intrexon or in such other proportions as shall mutually be agreed to by all such selling Holders and Intrexon Corporation. Notwithstanding the foregoing, in no event shall the number of Registrable Shares included in the offering be reduced unless all other securities (other than securities to be sold by the Company or Intrexon Registrable Shares) are first entirely excluded from the offering. For purposes of the provision in this Section 2(d)(ii) concerning apportionment, for any selling Holder that is a partnership, limited liability company, or corporation, the partners, members, retired partners, retired members, stockholders, and Affiliates of such Holder, or the estates and immediate family members of any such partners, retired partners, members, and retired members and any trusts for the benefit of any of the foregoing Persons, shall be deemed to be a single "selling Holder," and any pro rata reduction with respect to such "selling Holder" shall be based upon the aggregate number of Registrable Shares owned by all Persons included in such "selling Holder," as defined in this sentence.

(iii) In connection with any offering involving an underwriting of shares of the Company's capital stock pursuant to Section 2(c), the Company shall enter into and perform its obligations under an underwriting agreement, in customary form, with the underwriter(s) of such offering and the Company shall comply with all customary requests by such underwriter(s), including, but not limited to, the delivery of a legal opinion, negative assurance letter and comfort letter, providing due diligence materials as reasonably requested by the underwriter(s) and participating in a road show if requested by the underwriter(s).

3. Qualifications; Obligations; Restrictions. The obligations of the Company under Section 2 are subject to the following qualifications:

(a) The Company shall not include in any registration, qualification or compliance requested pursuant to Section 2(a) any other securities (including, without limitation, those to be issued and sold by the Company) without the prior written consent of the Required Holders; provided that Common Stock held by Intrexon as of the date hereof may be included in any such registration, qualification or compliance without the prior written consent of the Required Holders;

(b) the Company shall pay all expenses incurred in complying with Section 2, including, all registration and filing fees, printing expenses, fees and disbursements of counsel for the Company and reasonable and documented fees and disbursements, not to exceed $15,000, of one counsel for all of the Holders selected by the Holders of a majority of the Registrable Shares to be included in such registration, expenses of any special audits incident to or required by any such registration and expenses of complying with the securities or "blue sky" laws of any jurisdictions pursuant to Section 2(b)(i);

(c) the Company shall not grant any right relating to the registration of its securities if the exercise thereof conflicts with or restricts the exercise and enjoyment of any of the rights granted under this Agreement, without the written consent of the Required Holders, which consent may be given or withheld in the sole discretion of such Holders. The Company will not permit at any time after the date hereof any of its Subsidiaries to grant any right relating to the registration of its securities until the termination of this Agreement;

(d) the Company shall use its best efforts to cause all Registrable Shares covered by a Registration Statement to be listed on each securities exchange, interdealer quotation system or other market on which similar securities issued by the Company are then listed; and

(e) the Company shall, with a view to making available to the Holders the benefits of Rule 144 (or its successor rule) and any other rule or regulation of the Commission that may at any time permit the Holders to sell shares of Common Stock to the public without registration, the Company covenants and agrees to: (i) make and keep public information available, as those terms are understood and defined in Rule 144, until the earlier of (A) six months after such date as all of the Registrable Shares may be sold without restriction by the holders thereof pursuant to Rule 144 or any other rule of similar effect or (B) such date as all of the Registrable Shares shall have been resold; (ii) file with the Commission in a timely manner all reports and other documents required of the Company under the Exchange Act; and (iii) furnish to each Holder upon request, as long as such Holder owns any Registrable Shares, (A) a written statement by the Company that it has complied with the reporting requirements of the Exchange Act, (B) a copy of the Company's most recent Annual Report on Form 10-K or Quarterly Report on Form 10-Q, and (C) such other information as may be reasonably requested in order to avail such Holder of any rule or regulation of the Commission that permits the selling of any such Registrable Shares without registration.

4. Obligations of Holders of Registrable Shares.

(a) Subject to the provisions of this Section 4, following the effectiveness of a Registration Statement, the Company may direct the Holders, in accordance with Section 4(b), to suspend sales of Registrable Shares pursuant to such Registration Statement and the use of any Prospectus or preliminary Prospectus contained therein for the shortest amount of time as the Company reasonably determines is necessary and advisable (but in no event for more than an aggregate of 60 days in any consecutive 12-month period commencing on the date hereof or more than an aggregate of 30 days in any consecutive 180-day period (a "Suspension Period")), if any of the following events shall occur: (1) the majority of the Company's board of directors determines in good faith, upon the advice of counsel, that an event has occurred or is continuing as a result of which the Registration Statement or Prospectus contained therein contains an untrue statement of a material fact or omits any fact necessary to make the statements therein not misleading causing such Registration Statement or the Prospectus contained therein not to be usable for resale of the Registrable Shares during the period required by this Agreement; (2) the majority of the Company's board of directors determines in good faith, upon the advice of counsel, that the sale of Registrable Shares pursuant to such Registration Statement would require disclosure of material non-public information not otherwise required to be disclosed under applicable laws and the Company has a bona fide business purpose for preserving the confidentiality of such information or disclosure of such information would have a material adverse effect on the Company, in each case under circumstances that would make it impractical or inadvisable to cause the Registration Statement to become effective or to promptly amend or

supplement the Registration Statement on a post-effective basis, as applicable; or (3) the majority of the Company's board of directors determines in good faith, upon the advice of counsel, that it is required by law, rule or regulation or Commission-published release or interpretation to supplement the Registration Statement or file a post-effective amendment to the Registration Statement in order to incorporate information into the Registration Statement, including for the purpose of (a) including in the Registration Statement any Prospectus required under Section 10(a)(3) of the Securities Act, (b) reflecting in the Prospectus any facts or events arising after the effective date of the Registration Statement (or of the most recent post-effective amendment) that, individually or in the aggregate, represents a fundamental change in the information set forth therein, or (c) including in the Prospectus any material information with respect to the plan of distribution not disclosed in the Registration Statement or any material change to such information (each of the events in clause (1), (2) and (3), a "Suspension Event"). Upon the occurrence of any such Suspension Event, the Company shall use commercially reasonable efforts to cause the Registration Statement to become effective or to promptly amend or supplement the Registration Statement on a post-effective basis or to take such action as is necessary to permit the Holders to resume sales of such securities as soon as possible and to promptly make available to each selling Holder any such supplement or amendment.

(b) Upon the occurrence of a Suspension Event, the Company shall provide to each Holder a notice (a "Suspension Notice"), which notice shall not include any material non-public information, that a Suspension Event has occurred or is occurring, and each Holder agrees that upon receipt of a Suspension Notice, such Holder will forthwith discontinue disposition of Registrable Shares pursuant to the Registration Statement until (A) such Holder's receipt of the copies of the supplemented or amended Prospectus that addresses the reasons for providing the Suspension Notice, or (B) it is advised in writing by the Company that the use of the Prospectus may be resumed, and has received copies of any additional or supplemental filings that are incorporated by reference in the Prospectus. Each Holder receiving a Suspension Notice hereby agrees that it will, at such Holder's election, either (1) destroy any Prospectuses, other than permanent file copies, then in such Holder's possession that have been replaced by the Company with more recently dated Prospectuses, or (2) deliver to the Company (at the Company's expense) all copies, other than permanent file copies then in such Holder's possession, of the Prospectus covering such Registrable Shares that was current at the time of receipt of such notice. Notwithstanding anything herein to the contrary, (A) a Holder shall be entitled to inquire of the Company further details regarding the nature of a Suspension Event for which it has been served a Suspension Notice, and the Company shall use its commercially reasonable efforts to provide any information requested about the Suspension Event to such Holder and (B) the Company shall not serve a Suspension Notice to the Holders, unless, concurrently therewith, it has suspended sales under all other effective registration statements relating to the resale of the Company's securities.

(c) Each Holder, by its acceptance of the Registrable Shares, agrees to cooperate with the Company as reasonably requested by the Company in connection with the preparation and filing of a Registration Statement hereunder, unless such Holder has notified the Company in writing of its election to exclude all of its Registrable Shares from such Registration Statement.

5. Due Diligence Review; Information.

(a) The Company shall make available, during normal business hours, for inspection and review by the Holders, advisors to and representatives of the Holders (who may or may not be affiliated with the Holders and who are reasonably acceptable to the Company), and any underwriter(s), all financial and other records, all filings with the Commission, and all other corporate documents and properties of the Company as may be reasonably necessary for the purpose of such review, and cause the Company's officers, directors and employees, within a reasonable time period, to supply all such information reasonably requested by the Holders or any such representative, advisor or underwriter in connection with the Registration Statement (including, without limitation, in response to all questions and other inquiries reasonably made or submitted by any of them), prior to and from time to time after the filing and effectiveness of each Registration Statement for the sole purpose of enabling the Holders and such representatives, advisors and underwriters and their respective accountants and attorneys to conduct initial and ongoing due diligence with respect to the Company and the accuracy of the Registration Statement.

(b) Notwithstanding anything contained herein to the contrary, the Company shall not disclose material nonpublic information to the Holders, or to advisors to or representatives of the Holders, unless prior to disclosure of such information the Company identifies such information as being material nonpublic information and provides the Holders, such advisors and representatives with the opportunity to accept or refuse to accept such material nonpublic information for review and any Holder wishing to obtain such information enters into an appropriate confidentiality agreement with the Company with respect thereto.

6. Indemnification.

(a) To the extent permitted by law, the Company shall indemnify each Holder, and each person controlling such Holder within the meaning of Section 15 of the Securities Act, with respect to which any registration that has been effected pursuant to this Agreement, against all claims, losses, damages and liabilities (or action in respect thereof), including any of the foregoing incurred in settlement of any litigation, commenced or threatened (subject to Section 6(c) below), arising out of or based on any untrue statement (or alleged untrue statement) of a material fact contained in the Registration Statement, Prospectus, any amendment or supplement thereof or based on any omission (or alleged omission) to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, in light of the circumstances in which they were made, or any violation by the Company of any rule or regulation promulgated by the Securities Act applicable to the Company and relating to any action or inaction required of the Company in connection with any such registration and will reimburse each Holder and each person controlling such Holder for reasonable legal and other expenses reasonably incurred in connection with investigating or defending any such claim, loss, damage, liability or action as incurred; provided, however, that the Company will not be liable in any such case to the extent that any untrue statement or omission or allegation thereof is made in reliance upon and in conformity with written information furnished to the Company by or on behalf of such Holder expressly for use in preparation of such Registration Statement, Prospectus, or any amendment or supplement thereof; provided further, however, that the Company will not be liable in any such case where the claim, loss, damage or liability arises out of or is related to the failure of the Holder to comply with the covenants and agreements contained in this Agreement respecting sales of Registrable Shares, and except that the foregoing

indemnity agreement is subject to the condition that, insofar as it relates to any such untrue statement or alleged untrue statement or omission or alleged omission made in the preliminary Prospectus but eliminated or remedied in the amended Prospectus on file with the Commission at the time the Registration Statement becomes effective or in the amended Prospectus filed with the SEC pursuant to Rule 424(b) or in the Prospectus subject to completion under Rule 434 of the Securities Act, which together meet the requirements of Section 10(a) of the Securities Act (the "Final Prospectus"), such indemnity shall not inure to the benefit of any such Holder or any such controlling person, if a copy of the Final Prospectus furnished by the Company to the Holder for delivery was not furnished to the person or entity asserting the loss, liability, claim or damage at or prior to the time such furnishing is required by the Securities Act and the Final Prospectus would have cured the defect giving rise to such loss, liability, claim or damage.

(b) Each party entitled to indemnification under this Section 6 (the "Indemnified Party") shall give notice to the party required to provide indemnification (the "Indemnifying Party") promptly after such Indemnified Party has actual knowledge of any claim as to which indemnity may be sought, and shall permit the Indemnifying Party (at its expense) to assume the defense of any such claim or any litigation resulting therefrom, provided, however, that counsel for the Indemnifying Party, who shall conduct the defense of such claim or litigation, shall be approved by the Indemnified Party (whose approval shall not unreasonably be withheld), and the Indemnified Party may participate in such defense provided that all legal and other expenses incurred by the Indemnified Party in connection therewith shall be at such Indemnified Party's expense, and, provided further, that the failure of any Indemnified Party to give notice as provided herein shall not relieve the Indemnifying Party of its obligations under this Agreement, unless such failure is materially prejudicial to the Indemnifying Party in defending such claim or litigation. An Indemnifying Party shall not be liable for any settlement of an action or claim effected without its written consent (which consent will not be unreasonably withheld). No Indemnifying Party, in its defense of any such claim or litigation, shall, except with the consent of each Indemnified Party, consent to entry of any judgment or enter into any settlement which does not include as an unconditional term thereof the giving by the claimant or plaintiff to such Indemnified Party of a release from all liability in respect to such claim or litigation. Notwithstanding the foregoing, the Company shall not, in connection with any one such action or proceeding or separate but substantially similar or related actions or proceedings in the same jurisdiction arising out of the same general allegations or circumstances, be liable for the reasonable fees and expenses of more than one separate firm of attorneys (in addition to any local counsel) at any time for indemnified Holders as a group, which firm shall be designated by such Holders.

(c) If the indemnification provided for in this Section 6 is held by a court of competent jurisdiction to be unavailable to an Indemnified Party with respect to any loss, liability, claim, damage or expense referred to therein, then the Indemnifying Party, in lieu of indemnifying such Indemnified Party thereunder, shall contribute to the amount paid or payable by such Indemnified Party as a result of such loss, liability, claim, damage or expense in such proportion as is appropriate to reflect the relative fault of the Indemnifying Party on the one hand and of the Indemnified Party on the other in connection with the statements or omissions which resulted in such loss, liability, claim, damage or expense as well as any other relevant equitable considerations. The relative fault of the Indemnifying Party and of the Indemnified Party shall be determined by reference to, among other things, whether the untrue or alleged untrue

statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Indemnifying Party or by the Indemnified Party and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission.

7. Miscellaneous.

(a) Amendments and Waivers. This Agreement may be amended only by a writing signed by the Company and the Required Holders. The Company may take any action herein prohibited, or omit to perform any act herein required to be performed by it, only if the Company shall have obtained the written consent to such amendment, action or omission to act, of the Required Holders. Notwithstanding the foregoing, this Agreement may not be amended or terminated and the observance of any term hereof may not be waived with respect to any Holder without the written consent of such Holder, unless such amendment, termination, or waiver applies to all Holders in the same fashion.

(b) Notices. All notices and other communications provided for or permitted hereunder shall be made as set forth in Section 5.4 of the Purchase Agreement.

(c) Assignments and Transfers by Holders. The provisions of this Agreement shall be binding upon and inure to the benefit of the Holders and their respective successors and assigns. A Holder may transfer or assign, in whole or from time to time in part, to one or more persons its rights hereunder in connection with the transfer of any shares of Series A Convertible Preferred Stock, Series B Convertible Preferred Stock, Warrant or Registrable Shares by such Holder to such person, provided that such Holder complies with all laws applicable thereto and provides written notice of assignment to the Company promptly after such assignment is effected. Following any such transfer or assignment, such transferee or assignee shall be considered a "Holder" under this Agreement.

(d) Assignments and Transfers by the Company. This Agreement may not be assigned by the Company (whether by operation of law or otherwise) without the prior written consent of the Holders, provided, however, that in the event that the Company is a party to a merger, consolidation, share exchange or similar business combination transaction in which the Common Stock is converted into the equity securities of another Person, from and after the effective time of such transaction, such Person shall, by virtue of such transaction, be deemed to have assumed the obligations of the Company hereunder, the term "Company" shall be deemed to refer to such Person and the term "Registrable Shares" shall be deemed to include the securities received by the Holders in connection with such transaction unless such securities are otherwise freely tradable by the Holders after giving effect to such transaction.

(e) Benefits of the Agreement. The terms and conditions of this Agreement shall inure to the benefit of and be binding upon the respective permitted successors and assigns of the parties. Nothing in this Agreement, express or implied, is intended to confer upon any party other than the parties hereto or their respective successors and assigns any rights, remedies, obligations, or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement.

(f) Counterparts; Electronic Transmission. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. This Agreement may also be executed via facsimile or other electronic transmission, which shall be deemed an original.

(g) Titles and Subtitles. The titles and subtitles used in this Agreement are used for convenience only and are not to be considered in construing or interpreting this Agreement.

(h) Severability. Any provision of this Agreement that is prohibited or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such prohibition or unenforceability without invalidating the remaining provisions hereof but shall be interpreted as if it were written so as to be enforceable to the maximum extent permitted by applicable law, and any such prohibition or unenforceability in any jurisdiction shall not invalidate or render unenforceable such provision in any other jurisdiction. To the extent permitted by applicable law, the parties hereby waive any provision of law which renders any provisions hereof prohibited or unenforceable in any respect.

(i) Further Assurances. The parties shall execute and deliver all such further instruments and documents and take all such other actions as may reasonably be required to carry out the transactions contemplated hereby and to evidence the fulfillment of the agreements herein contained.

(j) Entire Agreement. This Agreement is intended by the parties as a final expression of their agreement and intended to be a complete and exclusive statement of the agreement and understanding of the parties hereto in respect of the subject matter contained herein. This Agreement supersedes the May 2017 Registration Rights Agreement and all prior agreements and understandings between the parties with respect to such subject matter. If any provision of this Agreement is found to conflict with the Purchase Agreement, the provisions of this Agreement shall prevail.

(k) Governing Law. THIS AGREEMENT SHALL BE CONSTRUED AND ENFORCED IN ACCORDANCE WITH, AND THE RIGHTS OF THE PARTIES SHALL BE GOVERNED BY, THE INTERNAL LAW OF THE STATE OF NEW YORK, EXCLUDING CHOICE-OF-LAW PRINCIPLES OF THE LAW OF SUCH STATE THAT WOULD PERMIT THE APPLICATION OF THE LAWS OF A JURISDICTION OTHER THAN SUCH STATE.

(l) Personal Jurisdiction.

(i) The Company irrevocably submits to the non-exclusive jurisdiction of any New York State or federal court sitting in the Borough of Manhattan. The City of New York, over any suit, action or proceeding arising out of or relating to this Agreement or any of the agreements, documents or instruments delivered in connection herewith or therewith. To the fullest extent permitted by applicable law, the Company irrevocably waives and agrees not to assert, by way of motion, as a defense or otherwise, any claim that it is not subject to the jurisdiction of any such court, any objection that it may now or hereafter have to the laying of the venue of any such suit, action or proceeding brought in any such court and any claim that any such suit, action or proceeding brought in any such court has been brought in an inconvenient forum.

(ii) Nothing in this Section 7(l) shall affect the right of the Holders to serve process in any manner permitted by law, or limit any right that the Holders may have to bring proceedings against the Company in the courts of any appropriate jurisdiction or to enforce in any lawful manner a judgment obtained in one jurisdiction in any other jurisdiction.

(m) WAIVER OF JURY TRIAL. THE COMPANY AND EACH OF THE PURCHASERS EACH IRREVOCABLY WAIVES ALL RIGHT TO TRIAL BY JURY IN ANY ACTION, PROCEEDING OR COUNTERCLAIM (WHETHER BASED ON CONTRACT, TORT OR OTHERWISE) ARISING OUT OF OR RELATING TO THIS AGREEMENT OR ANY OTHER AGREEMENT, DOCUMENT OR INSTRUMENT DELIVERED IN CONNECTION HEREWITH OR THEREWITH OR THE ACTIONS OF THE PURCHASERS IN THE NEGOTIATION, ADMINISTRATION, PERFORMANCE OR ENFORCEMENT HEREOF OR THEREOF.

(n) No Inconsistent Agreements. Neither the Company nor any of its subsidiaries has entered, as of the date hereof, nor shall the Company or any of its subsidiaries, on or after the date of this Agreement, enter into any agreement with respect to its securities, that would have the effect of impairing the rights granted to the Holders in this Agreement or otherwise conflicts with the provisions hereof. Except as set forth in the Company's filings with the Commission, neither the Company nor any of its subsidiaries has previously entered into any agreement granting any registration rights with respect to any of its securities to any Person that have not been satisfied in full.

(o) Independent Nature of Holders' Obligations and Rights. The obligations of each Holder hereunder are several and not joint with the obligations of any other Holder hereunder, and no Holder shall be responsible in any way for the performance of the obligations of any other Holder hereunder. Nothing contained herein or in any other agreement or document delivered at any closing, and no action taken by any Holder pursuant hereto or thereto, shall be deemed to constitute the Holders as a partnership, an association, a joint venture or any other kind of group or entity, or create a presumption that the Holders are in any way acting in concert or as a group or entity with respect to such obligations or the transactions contemplated by this Agreement or any other matters, and the Company acknowledges that the Holders are not acting in concert or as a group, and the Company shall not assert any such claim, with respect to such obligations or transactions. Each Holder shall be entitled to protect and enforce its rights, including without limitation the rights arising out of this Agreement, and it shall not be necessary for any other Holder to be joined as an additional party in any proceeding for such purpose. The use of a single agreement with respect to the obligations of the Company contained was solely in the control of the Company, not the action or decision of any Holder, and was done solely for the convenience of the Company and not because it was required or requested to do so by any Holder. It is expressly understood and agreed that each provision contained in this Agreement is between the Company and a Holder, solely, and not between the Company and the Holders collectively and not between and among Holders.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the parties have executed this Agreement or caused their duly authorized officers to execute this Agreement as of the date first above written.

The Company:

ORAGENICS, INC.

By: /s/ Alan Joslyn
Name: Alan Joslyn
Title: Chief Executive Officer

The Holders:

MSD Credit Opportunity Master Fund, L.P.

/s/ Marecello Liguori

Marcello Liguori, Managing Director

[Holder signature page to Registration Rights Agreement]

The Holders:

HARVEST INTREXON ENTERPRISE FUND I, L.P.
By: HARVEST ENTERPRISE GP I, LLC
its general partner
By: HARVEST CAPITAL STRATEGIES, LLC
its managing member

By: /s/ Joseph Jolson
Name: Joseph Jolson
Title: Chief Executive Officer

HARVEST INTREXON ENTERPRISE FUND I (AI), L.P.
By: HARVEST ENTERPRISE GP I, LLC
its general partner
By: HARVEST CAPITAL STRATEGIES, LLC,
its managing member

By: /s/ Joseph Jolson
Name: Joseph Jolson
Title: Chief Executive Officer

Address: 600 Montgomery Street, Suite 1700
San Francisco, California 94111

The Holders:

KOSKI FAMILY LIMITED PARTERSHIP

By: /s/ Christine L. Koski
Name: Christine L. Koski
Title: Managing General Partner

Exhibit A

Plan of Distribution

The selling stockholders, which as used herein includes donees, pledgees, transferees or other successors-in-interest selling shares of common stock or interests in shares of common stock received after the date of this prospectus from a selling stockholder as a gift, pledge, partnership distribution or other transfer, may, from time to time, sell, transfer or otherwise dispose of any or all of their shares of common stock or interests in shares of common stock on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These dispositions may be at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices.

The selling stockholders may use any one or more of the following methods when disposing of shares or interests therein:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- short sales effected after the date the registration statement of which this Prospectus is a part is declared effective by the Commission;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- broker-dealers may agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- a combination of any such methods of sale; and
- any other method permitted by applicable law.

The selling stockholders may, from time to time, pledge or grant a security interest in some or all of the shares of common stock owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the shares of common stock, from time to time, under this prospectus, or under an amendment to this

prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act amending the list of selling stockholders to include the pledgee, transferee or other successors in interest as selling stockholders under this prospectus. The selling stockholders also may transfer the shares of common stock in other circumstances, in which case the transferees, pledgees or other successors in interest will be the selling beneficial owners for purposes of this prospectus.

In connection with the sale of our common stock or interests therein, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the common stock in the course of hedging the positions they assume. The selling stockholders may also sell shares of our common stock short and deliver these securities to close out their short positions, or loan or pledge the common stock to broker-dealers that in turn may sell these securities. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The aggregate proceeds to the selling stockholders from the sale of the common stock offered by them will be the purchase price of the common stock less discounts or commissions, if any. Each of the selling stockholders reserves the right to accept and, together with their agents from time to time, to reject, in whole or in part, any proposed purchase of common stock to be made directly or through agents. We will not receive any of the proceeds from this offering. Upon any exercise of the warrants by payment of cash, however, we will receive the exercise price of the warrants.

The selling stockholders also may resell all or a portion of the shares in open market transactions in reliance upon Rule 144 under the Securities Act of 1933, provided that they meet the criteria and conform to the requirements of that rule.

The selling stockholders and any underwriters, broker-dealers or agents that participate in the sale of the common stock or interests therein may be “underwriters” within the meaning of Section 2(11) of the Securities Act. Any discounts, commissions, concessions or profit they earn on any resale of the shares may be underwriting discounts and commissions under the Securities Act. Selling stockholders who are “underwriters” within the meaning of Section 2(11) of the Securities Act will be subject to the prospectus delivery requirements of the Securities Act.

To the extent required, the shares of our common stock to be sold, the names of the selling stockholders, the respective purchase prices and public offering prices, the names of any agents, dealer or underwriter, any applicable commissions or discounts with respect to a particular offer will be set forth in an accompanying prospectus supplement or, if appropriate, a post-effective amendment to the registration statement that includes this prospectus.

In order to comply with the securities laws of some states, if applicable, the common stock may be sold in these jurisdictions only through registered or licensed brokers or dealers. In addition, in some states the common stock may not be sold unless it has been registered or qualified for sale or an exemption from registration or qualification requirements is available and is complied with.

We have advised the selling stockholders that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of shares in the market and to the activities of the selling stockholders and their affiliates. In addition, to the extent applicable we will make copies of this prospectus (as it may be supplemented or amended from time to time) available to the selling stockholders for the purpose of satisfying the prospectus delivery requirements of the Securities Act. The selling stockholders may indemnify any broker-dealer that participates in transactions involving the sale of the shares against certain liabilities, including liabilities arising under the Securities Act.

We have agreed to indemnify the selling stockholders against liabilities, including liabilities under the Securities Act and state securities laws, relating to the registration of the shares offered by this prospectus.

We have agreed with the selling stockholders to keep the registration statement of which this prospectus constitutes a part effective until the earlier of (1) such time as all of the shares covered by this prospectus have been disposed of pursuant to and in accordance with the registration statement or (2) the date on which all of the shares may be sold without restriction pursuant to Rule 144 of the Securities Act.

Exhibit 10.3

DEBT CONVERSION AGREEMENT

This Debt Conversion Agreement (this "Agreement") is dated as of November 8, 2017, among Oragenics, Inc., a Florida corporation (the "Company"), and Intrexon Corporation ("Intrexon").

RECITALS

WHEREAS, the Company entered into a Note Purchase Agreement and executed a Promissory Note (the "Note") to Intrexon $2,400,000 on May 10, 2017;

WHEREAS, the Note provided that the unpaid amounts accrued interest at a rate of 12% per annum and approximately $146,400 in unpaid interest has been accrued under the Note as of November 8, 2017 (the "Note Accrued Interest");

WHEREAS, Intrexon previously billed the Company $764,376.61 for accounts payable (the "Accounts Payable") and approximately $65,432.85 in unpaid interest has been accrued under the Accounts Payable as of November 8, 2017 ("Payables Accrued Interest", together with Note Accrued Interest, the "Accrued Interest");

WHEREAS, the aggregate amount owed under the Accounts Payable and the Note including the Accrued Interest is $3,376,209.46 (the "Debt");

WHEREAS, the Company desires to cause the Debt to be repaid and cancelled by exchanging Series C Non-Convertible Preferred Stock of the Company (the "Series C Preferred Stock" or "Securities") for the Debt;

WHEREAS, Intrexon desires to acquire the Securities in exchange for the satisfaction and cancellation of the Debt;

WHEREAS, the Company and Intrexon are executing and delivering this Agreement in reliance upon the exemption from securities registration afforded by Section 4(2) of the Securities Act, and Rule 506 of Regulation D ("Regulation D") as promulgated by the United States Securities and Exchange Commission (the "Commission") under the Securities Act;

WHEREAS, contemporaneously with the Closing under this Agreement, the Company intends to close on a Series B Preferred Financing with certain accredited investors (the "Series B Preferred Financing");

NOW, THEREFORE, IN CONSIDERATION of the mutual covenants contained in this Agreement, and for other good and valuable consideration the receipt and adequacy of which are hereby acknowledged, the parties agree as follows:

ARTICLE I
DEFINITIONS

1.1 Recitals. The foregoing recitals are true and correct and are hereby incorporated into this Agreement as if fully set forth herein.

1.2 Definitions. In addition to the terms defined elsewhere in this Agreement, for all purposes of this Agreement, the following terms have the meanings set forth in this Section 1.2:

"Affiliate" means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person as such terms are used in and construed under Rule 144 under the Securities Act. With respect to Intrexon, any investment fund or managed account that is managed on a discretionary basis by the same investment manager as Intrexon will be deemed to be an Affiliate of Intrexon.

"Business Day" means any day except Saturday, Sunday, any day which shall be a federal legal holiday in the United States or any day on which banking institutions in the State of New York are authorized or required by law or other governmental action to close.

"Certificate of Designation" means the Certificate of Designation of the Series C Preferred Stock to be filed prior to the Closing by the Company with the Secretary of State of Florida in the form of **Exhibit A** attached hereto.

"Closing" means the closing of the conversion of the Debt into shares of Series C Preferred Stock contemplated hereby.

"Closing Date" means the Trading Day on which all of the Transaction Documents have been executed and delivered by the applicable parties thereto, and all conditions precedent to (i) Intrexon's obligations to convert the Debt and (ii) the Company's obligations to deliver the Securities issuable at the Closing, in each case, have been satisfied or waived.

"Commission" means the Securities and Exchange Commission.

"Common Stock" means the Common Stock of the Company, par value $0.001 per share, and any other class of securities into which such securities may hereafter be reclassified or changed into.

"Common Stock Equivalents" means any securities of the Company or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, rights, options, warrants or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

"Company Counsel" means Shumaker, Loop & Kendrick, LLP, with offices located at 101 E. Kennedy Blvd. Suite 2800, Tampa, Florida 33602.

"Exchange Act" means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

"GAAP" shall have the meaning ascribed to such term in Section 3.1(e).

"Intellectual Property" shall have the meaning ascribed to such term in Section 3.1(o).

"Legend Removal Date" shall have the meaning ascribed to such term in Section 4.1(c).

"Liens" means a lien, charge, security interest, encumbrance, right of first refusal, preemptive right or other restriction.

"Material Adverse Effect" shall have the meaning assigned to such term in Section 3.1(a).

"Per Share Exchange Price" equals $33,847.9874.

"Person" means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

"Proceeding" means an action, claim, suit, investigation or proceeding (including, without limitation, an investigation or partial proceeding, such as a deposition), whether commenced or threatened.

"Rule 144" means Rule 144 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same effect as such Rule.

"SEC Documents" shall have the meaning ascribed to such term in Section 3.1(e).

"Securities" means the Series C Preferred Stock.

"Securities Act" means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

"Series C Preferred Stock" has the meaning set forth in the recitals.

"Shares" means the shares of Series C Preferred Stock issued or issuable to Intrexon pursuant to this Agreement.

"Short Sales" include, without limitation, all "short sales" as defined in Rule 200 promulgated under Regulation SHO under the Exchange Act, whether or not against the box, and all types of direct and indirect stock pledges, forward sale contracts, options, puts, calls, short sales, swaps, "put equivalent positions" (as defined in Rule 16a-1(h) under the Exchange Act) and similar arrangements (including on a total return basis), and sales and other transactions through non-U.S. broker dealers or foreign regulated brokers.

"Subsidiary" means any subsidiary of the Company as set forth in the SEC Documents.

"Trading Day" means a day on which the Common Stock is traded on a Trading Market.

"Trading Market" means the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the American Stock Exchange, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market, the New York Stock Exchange or the OTC Bulletin Board.

"Transaction Documents" means this Agreement, Voting Agreement, ECC Amendments, and Certificate of Designation.

"Transfer Agent" means Continental Stock Transfer and Trust Company, and any successor transfer agent of the Company.

"Voting Agreement" means the written agreement, in the form of **Exhibit C** attached hereto, of Intrexon Corporation, Harvest Intrexon Enterprise Fund I (AI), L.P., Harvest Intrexon Enterprise Fund I, L.P., the Koski Family Limited Partnership, MSD Credit Opportunity Master Fund, L.P., and their respective affiliates, such persons who have voting control as of the date hereof, amounting to, in the aggregate, a majority of the issued and outstanding Common Stock.

ARTICLE II

DEBT CONVERSION

2.1 Closing. On the Closing Date, upon the terms and subject to the conditions set forth herein, substantially concurrent with the execution and delivery of this Agreement by the parties hereto, Intrexon hereby agrees to exchange the Debt for the issuance of One Hundred (100) shares of Series C Preferred Stock at the Per Share Exchange Price by the Company to Intrexon having a stated value equal to the amount of the Debt (the "Conversion Securities"). Upon satisfaction of the covenants and conditions set forth in Sections 2.2 and 2.3 applicable to the Closing, the Closing shall occur at the offices of Company Counsel or such other location as the parties shall mutually agree. When issued to Intrexon at the Closing, the Conversion Securities will be deemed to have been issued in full satisfaction and payment of the Debt owed by the Company to Intrexon.

2.2 Deliveries.

(a) On or prior to the Closing Date (unless otherwise indicated below), the Company shall deliver or cause to be delivered to Intrexon the following:

(i), this Agreement duly executed by the Company;

(ii) a legal opinion of Company Counsel, substantially in the form of **Exhibit B** attached hereto;

(iii) an irrevocable letter of instruction to the transfer agent to issue book entry evidencing 100 shares of Series C Preferred Stock registered in the name of Intrexon and evidence of the filing and acceptance of the Certificate of Designation from the Secretary of State of Florida;

(iv) the Voting Agreement duly executed by the Series B Preferred Financing participants;

(v) the Amendment to the June 2012 Stock Issuance Agreement duly executed by the Company;

(vi) the Second Amendment to the June 2012 Exclusive Channel Agreement duly executed by the Company;

(vii) the Second Amendment to the June 2015 Stock Issuance Agreement duly executed by the Company; and

(viii) the Second Amendment to the June 2015 Exclusive Channel Agreement duly executed by the Company.

(b) On or prior to the Closing Date, Intrexon shall deliver or cause to be delivered to the Company the following:

(i) this Agreement duly executed by Intrexon;

(ii) the original Note marked "cancelled";

(iii) the Voting Agreement duly executed by Intrexon;

(iv) the Amendment to the June 2012 Stock Issuance Agreement duly executed by Intrexon;

(v) the Second Amendment to the June 2012 Exclusive Channel Agreement duly executed by Intrexon;

(vi) the Second Amendment to the June 2015 Stock Issuance Agreement duly executed by Intrexon; and

(vii) the Second Amendment to the June 2015 Exclusive Channel Agreement duly executed by Intrexon and Intrexon Actobiotics NV.

2.3 Closing Conditions.

(a) The obligations of the Company hereunder in connection with the Closing are subject to the following conditions being met or waived by the Company:

(i) the accuracy in all material respects when made and on the Closing Date of the representations and warranties of Intrexon contained herein (except with respect to representations and warranties which relate to a specific date, in which case such representations and warranties shall continue to be materially accurate as of such date);

(ii) all obligations, covenants and agreements of Intrexon required to be performed at or prior to the applicable Closing Date shall have been performed;

(iii) the delivery by Intrexon of the items set forth in Section 2.2(b) of this Agreement;

(iv) 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 that prohibits the consummation of any of the transactions contemplated by the Transaction Documents;

(v) the simultaneous closing of the Series B Preferred Financing; and

(vi) the Company shall have obtained in a timely fashion any and all consents, permits, approvals, registrations and waivers necessary for consummation of the issuance of the Shares, all of which shall be and remain so long as necessary in full force and effect.

(b) The obligations of Intrexon hereunder in connection with the Closing are subject to the following conditions being met or waived by Intrexon as to itself:

(i) the accuracy in all material respects on the Closing Date of the representations and warranties of the Company contained herein (except with respect to representations and warranties which relate to a specific date, in which case such representations and warranties shall continue to be materially accurate as of such date);

(ii) all obligations, covenants and agreements of the Company required to be performed at or prior to the Closing Date shall have been performed;

(iii) the delivery by the Company of the items set forth in Section 2.2(a) of this Agreement and a certificate, dated as of the Closing Date and signed by its Chief Executive Officer or its Chief Financial Officer, certifying to the fulfillment of the conditions specified in Sections 2.3(b)(i) and (ii);

(iv) on the Closing Date, trading in the Common Stock shall not have been suspended by the Commission or the Company's principal Trading Market (except for any suspension of trading of limited duration agreed to by the Company, which suspension shall be terminated prior to the applicable Closing Date), and, at any time prior to the Closing Date, trading in securities generally as reported by Bloomberg L.P. shall not have been suspended or limited, or minimum prices shall not have been established on securities whose trades are reported by such service, or on any Trading Market, nor shall a banking moratorium have been declared either by the United States or New York State authorities;

(v) 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 that prohibits the consummation of any of the transactions contemplated by the Transaction Documents;

(vi) the simultaneous closing of the Series B Preferred Financing; and

(vii) the Company shall have obtained in a timely fashion any and all consents, permits, approvals, registrations and waivers necessary for consummation of the purchase and sale of the Shares, all of which shall be and remain so long as necessary in full force and effect.

ARTICLE III

REPRESENTATIONS AND WARRANTIES

3.1 Representations and Warranties of the Company. Except as set forth in the SEC Documents, the Company hereby makes the following representations and warranties to Intrexon as of the Closing Date:

(a) Organization, Good Standing and Power. The Company is a corporation duly incorporated, validly existing and in good standing under the laws of the State of Florida 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 Commission pursuant to the reporting requirements of 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 material subsidiaries. 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.

(b) Authorization; Enforcement. The Company has the requisite corporate power and authority to enter into and perform the Transaction Documents and to issue the Shares in accordance with the terms hereof. The execution, delivery and performance of the Transaction Documents 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. When executed and delivered by the Company, the Transaction Documents 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.

(c) Issuance of Shares. The Shares to be issued and sold hereunder have been duly authorized by all necessary corporate action and, when issued in accordance with the terms hereof, will be validly issued, fully paid and nonassessable. In addition, the 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. The Company has not issued any shares of Common Stock, shares of Series A preferred stock, options or warrants since its most recent report on Form 10-Q.

(d) No Conflicts; Governmental Approvals. The execution, delivery and performance of the Transaction Documents 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 Closing).

(e) SEC Documents, Financial Statements. The Common Stock of the Company is registered pursuant to Section 12(g) of the Exchange Act. During the year preceding this Agreement, 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 foregoing materials, including the exhibits thereto and documents incorporated by reference therein being collectively referred to as the "SEC Documents"). At the times of their respective filing, 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, 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 United States generally accepted accounting principles applied on a consistent basis ("GAAP") 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).

(f) Accountants. Mayer Hoffman McCann P.C. whose report on the financial statements of the Company is filed with the Commission in the Company's Annual Report on Form 10-K for the year ended December 31, 2016, were, at the time such report was issued, independent registered public accountants as required by the Securities Act.

(g) 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.

(h) 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.

(i) No Material Adverse Change. Except as disclosed in the SEC Documents, since June 30, 2017, 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.

(j) No Undisclosed Events or Circumstances. Except as disclosed in the SEC Documents, and except for the consummation of the transactions contemplated herein, since June 30, 2017, 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.

(k) 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.

(l) 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.

(m) 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 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 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.

(n) 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 January 1, 2017: (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 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.

(b) Since January 1, 2017, 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.

(o) 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.

(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.

(p) 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 Florida. 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.

(q) Listing and Maintenance Requirements. The Company is in compliance with the requirements of the Trading Market for continued trading of the Common Stock pursuant thereto. The issuance and sale of the Shares hereunder does not contravene the rules and regulations of the Trading Market.

(r) 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 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 Shares 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 Shares under the Securities Act or cause the offering of the shares to be integrated with other offerings. Assuming the accuracy of the representations and warranties of Intrexon, the offer and issuance of the Shares by the Company to Intrexon pursuant to this Agreement will be exempt from the registration requirements of the Securities Act.

(s) No Manipulation of Stock. The Company has not taken, and has no plans to take, in violation of applicable law, 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.

(t) Brokers. Other than Dawson James, 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.

(u) Solvency. Based on the financial condition of the Company as of the Closing Dates, after giving effect to the receipt by the Company of the proceeds from the sale of the Shares hereunder, (i) the fair saleable value of the Company's assets exceeds the amount that will be required to be paid on or in respect of the Company's existing debts and other liabilities (including known contingent liabilities) as they mature; (ii) the Company's assets do not constitute unreasonably small capital to carry on its business as now conducted and as proposed to be conducted including its capital needs taking into account the particular capital requirements of the business conducted by the Company, and projected capital requirements and capital availability thereof; and (iii) the current cash flow of the Company, together with the proceeds the Company would receive, were it to liquidate all of its assets, after taking into account all anticipated uses of the cash, would be sufficient to pay all amounts on or in respect of its liabilities when such amounts are required to be paid. The Company does not intend to incur debts beyond its ability to pay such debts as they mature (taking into account the timing and amounts of cash to be payable on or in respect of its debt). Assuming the Closing occurs, the Company has no knowledge of any facts or circumstances which lead it to believe that it will file for reorganization or liquidation under the bankruptcy or reorganization laws of any jurisdiction within one year from the Closing Date.

(v) Foreign Corrupt Practices. Neither the Company, nor to the knowledge of the Company, any agent or other person acting on behalf of the Company, has (i) directly or indirectly, used any funds for unlawful contributions, gifts, entertainment or other unlawful expenses related to foreign or domestic political activity, (ii) made any unlawful payment to foreign or domestic government officials or employees or to any foreign or domestic political parties or campaigns from corporate funds, (iii) failed to disclose fully any contribution made by the Company (or made by any person acting on its behalf of which the Company is aware) which is in violation of law, or (iv) violated in any material respect any provision of the Foreign Corrupt Practices Act of 1977, as amended.

(w) Voting Agreement. The signatories to the Voting Agreement have voting control with respect to the Company as of the date hereof, amounting to, in the aggregate, a majority of the issued and outstanding Common Stock.

3.2 Representations and Warranties of Intrexon. Intrexon hereby represents and warrants to the Company as follows (as of the Closing Date, unless otherwise noted below):

(a) Authority. The execution, delivery and performance by Intrexon of the transactions contemplated by this Agreement have been duly authorized by all necessary corporate or similar action on the part of Intrexon. Each Transaction Document to which it is a party has been duly executed by Intrexon, and when delivered by Intrexon in accordance with the terms hereof, will constitute the valid and legally binding obligation of Intrexon, enforceable against it in accordance with its terms, except (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law.

(b) Own Account. Intrexon understands that the Shares are "restricted securities" and have not been registered under the Securities Act or any applicable state securities law and is acquiring the Shares as principal for its own account and not with a view to or for distributing or reselling such Shares or any part thereof in violation of the Securities Act or any applicable state securities law, has no present intention of distributing any of such Shares in violation of the Securities Act or any applicable state securities law and has no direct or indirect arrangement or understandings with any other persons to distribute or regarding the distribution of such Shares (this representation and warranty not limiting Intrexon's right to sell the Shares pursuant to the Registration Statement or otherwise in compliance with applicable federal and state securities laws) in violation of the Securities Act or any applicable state securities law. Intrexon is acquiring the Shares hereunder in the ordinary course of its business. Intrexon understands that it may not be able to sell any of the Shares without prior registration under the Securities Act or the existence of an exemption from such registration requirement.

(c) No Conflicts. The execution, delivery and performance by Intrexon of this Agreement and the consummation by Intrexon of the transactions contemplated hereby and thereby will not (i) result in a violation of the organizational documents of Intrexon, (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, indenture or instrument to which Intrexon is a party, or (iii) result in a violation of any law, rule, regulation, order, judgment or decree (including federal and state securities laws) applicable to Intrexon, except in the case of clauses (ii) and (iii) above, for such conflicts, defaults, rights or violations which would not, individually or in the aggregate, reasonably be expected to have a material adverse effect on the ability of Intrexon to perform its obligations hereunder.

(d) Purchaser Status. At the time Intrexon was offered the Shares, it was, and at the date hereof is, an "accredited investor" as defined in Rule 501 under the Securities Act. Investor is not a registered broker dealer registered under Section 15(a) of the Exchange Act, or a member of the Financial Industry Regulatory Authority Inc. ("FINRA"), or an entity engaged in the business of being a broker-dealer.

(e) Experience of Intrexon. Intrexon, either alone or together with its representatives, has such knowledge, sophistication and experience in business and financial matters so as to be capable of evaluating the merits and risks of the prospective investment in the Shares, and has so evaluated the merits and risks of such investment. Intrexon is able to bear the economic risk of an investment in the Shares and, at the present time, is able to afford a complete loss of such investment. Intrexon acknowledges that it has not received any legal or tax advice from the Company or any of its representatives with respect the transactions contemplated hereby.

(f) No Trading Market for Shares. Intrexon understands and acknowledges that there is no market for the Shares and that none is likely to develop and that the Shares will not be listed on any Trading Market.

(g) General Solicitation. Intrexon is not purchasing the Shares as a result of any advertisement, article, notice or other communication regarding the Shares published in any newspaper, magazine or similar media or broadcast over television or radio or presented at any seminar or any other general solicitation or general advertisement.

(h) Access to Information. Intrexon acknowledges that it has had the opportunity to review any Company information and business updates requested by Intrexon and has been afforded (i) the opportunity to ask such questions as it has deemed necessary of, and to receive answers from, representatives of the Company concerning the terms and conditions of the offering of the Shares and the merits and risks of investing in the Shares and; (ii) access to information about the Company and its financial condition, results of operations, business, properties, management and prospects sufficient to enable it to evaluate its investment; and (iii) the opportunity to obtain such additional information that the Company possesses or can acquire without unreasonable effort or expense that is necessary to make an informed investment decision with respect to the investment. Intrexon has sought such accounting, legal and tax advice as it has considered necessary to make an informed decision with respect to its acquisition of the Shares. Intrexon also acknowledges that it has had the opportunity to review the Series B Preferred Financing terms and transaction documents.

(i) Certain Trading Activities. As of the date hereof, other than with respect to the transactions contemplated herein, since the time that Intrexon was first contacted by the Company or any other Person regarding the transactions contemplated hereby, neither Intrexon nor any Affiliate of Intrexon which (x) had knowledge of the transactions contemplated hereby, (y) has or shares discretion relating to Intrexon's investments or trading or information concerning Intrexon's investments, including in respect of the Shares, and (z) is subject to Intrexon's review or input concerning such Affiliate's investments or trading (collectively, "Trading Affiliates") has directly or indirectly, nor has any Person acting on behalf of or pursuant to any understanding with Intrexon or Trading Affiliate, effected or agreed to effect any purchases or sales of the securities of the Company (including, without limitation, any Short Sales involving the Company's securities). Notwithstanding the foregoing, in the case of a Intrexon and/or Trading Affiliate that is, individually or collectively, a multi-managed investment bank or vehicle whereby separate portfolio managers manage separate portions of Intrexon or Trading Affiliate's assets and the portfolio managers have no direct knowledge of the investment decisions made by the portfolio managers managing other portions of Intrexon's or Trading Affiliate's assets, the representation set forth above shall apply only with respect to the portion of assets managed by the portfolio manager that have knowledge about the financing transaction contemplated by this Agreement. Other than to other Persons party to this Agreement, their affiliates and each of their respective professional advisors, Intrexon maintained the confidentiality of all non-public information disclosed to it in connection with the transactions contemplated hereby (including the existence and terms of such transactions) at all times prior to the issuance of the Press Release (as defined below).

(j) Brokers and Finders. No Person will have, as a result of the transactions contemplated by this Agreement, any valid right, interest or claim against or upon the Company or Intrexon for any commission, fee or other compensation pursuant to any agreement, arrangement or understanding entered into by or on behalf of Intrexon.

(k) Independent Investment Decision. Intrexon has independently evaluated the merits of its decision to purchase Shares pursuant to the Transaction Documents, and Intrexon confirms that it has not relied on the advice of any other business and/or legal counsel in making such decision. Intrexon understands that nothing in this Agreement or any other materials presented by or on behalf of the Company to Intrexon in connection with the purchase of the Shares constitutes legal, tax or investment advice. Intrexon has consulted such legal, tax and investment advisors as it, in its sole discretion, has deemed necessary or appropriate in connection with its purchase of the Shares.

(l) No Governmental Review. Intrexon understands that no United States federal or state agency or any other government or governmental agency has passed on or made any recommendation or endorsement of the Shares or the fairness or suitability of the investment in the Shares nor have such authorities passed upon or endorsed the merits of the offering of the Shares.

(m) Residency. Intrexon's residence (if an individual) or office in which its investment decision with respect to the Shares was made (if an entity) are located at the address immediately below Intrexon's name on its signature page hereto.

(n) Acknowledgment. Intrexon acknowledges and agrees that Intrexon has reviewed and considered prior to entering this Agreement the more detailed information about the Company and the risk factors that may affect the realization of forward-looking statements set forth in the Company's filings with the SEC, including its Annual Report on Form 10-K and its Quarterly Reports on Form 10-Q filed with the SEC.

The Company and Intrexon acknowledge and agree that no party to this Agreement has made or makes any representations or warranties with respect to the transactions contemplated hereby other than those specifically set forth in this Article III and the Transaction Documents.

ARTICLE IV

OTHER AGREEMENTS OF THE PARTIES

4.1 Transfer Restrictions.

(a) The Securities may only be disposed of in compliance with state and federal securities laws, including the requirement not to trade in the Securities while in possession of material non-public information. In connection with any transfer of Shares other than pursuant to an effective registration statement, to the Company or to an Affiliate of Intrexon or in connection with a pledge as contemplated in Section 4.1(c), the Company may require the transferor thereof to provide to the Company an opinion of counsel selected by the transferor and reasonably acceptable to the Company, the form and substance of which opinion shall be reasonably satisfactory to the Company, to the effect that such transfer does not require registration of such transferred Shares under the Securities Act. As a condition of transfer, any such transferee shall agree in writing to be bound by the terms of this Agreement and shall have the rights of Intrexon under this Agreement.

(b) Intrexon agrees to the imprinting, so long as is required by this Section 4.1, of a legend on any of the Securities in the following form:

> THIS SECURITY HAS 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 AS EVIDENCED BY A LEGAL OPINION OF COUNSEL TO THE TRANSFEROR TO SUCH EFFECT, THE SUBSTANCE OF WHICH SHALL BE REASONABLY ACCEPTABLE TO THE COMPANY. THIS SECURITY MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT WITH A REGISTERED BROKER-DEALER OR OTHER LOAN WITH A FINANCIAL INSTITUTION THAT IS AN "ACCREDITED INVESTOR" AS DEFINED IN RULE 501(a) UNDER THE SECURITIES ACT OR OTHER LOAN SECURED BY SUCH SECURITIES.

(c) The Company acknowledges and agrees that Intrexon may from time to time pledge pursuant to a bona fide margin agreement with a registered broker-dealer or grant a security interest in some or all of the Securities to a financial institution that is an "accredited investor" as defined in Rule 501(a) under the Securities Act and who agrees to be bound by the provisions of this Agreement and, if required under the terms of such arrangement, Intrexon may transfer pledged or secured Securities to the pledgees or secured parties. Such a pledge or transfer would not be subject to approval of the Company and no legal opinion of legal counsel of the pledgee, secured party or pledgor shall be required in connection therewith. Further, no notice shall be required of such pledge. At Intrexon's expense, the Company will execute and deliver such reasonable documentation as a pledgee or secured party of Securities may reasonably request in connection with a pledge or transfer of the Securities.

(d) Intrexon agrees that the removal of the restrictive legend from certificates representing Securities as set forth in this Section 4.1 is predicated upon the Company's reliance that Intrexon will sell any Securities pursuant to either the registration requirements of the Securities Act, including any applicable prospectus delivery requirements, or an exemption therefrom, and that if Securities are sold pursuant to a Registration Statement, they will be sold in compliance with the plan of distribution set forth therein.

4.2 Furnishing of Information. For a period of one year after the date of this Agreement, the Company covenants to timely file (or obtain extensions in respect thereof and file within the applicable grace period) all reports required to be filed by the Company after the date hereof pursuant to the Exchange Act. During this one-year period, if the Company is not required to file reports pursuant to the Exchange Act, it will prepare and furnish to Intrexon and make publicly available in accordance with Rule 144 such information as is required for Intrexon to sell the Shares under Rule 144. The Company further covenants that it will take such further action as any holder of Shares may reasonably request, to the extent required from time to time to enable such Person to sell such Shares without registration under the Securities Act within the requirements of the exemption provided by Rule 144.

4.3 Integration. The Company shall not sell, offer for sale or solicit offers to buy or otherwise negotiate in respect of any security (as defined in Section 2 of the Securities Act) that could reasonably be expected to be integrated with the offer or sale of the Shares in a manner that would require the registration under the Securities Act of the sale of the Shares to Intrexon or that would be integrated with the offer or sale of the Shares for purposes of the rules and regulations of any Trading Market such that it would require shareholder approval prior to the closing of such other transaction unless shareholder approval is obtained before the closing of such subsequent transaction.

4.4 Securities Laws Disclosure; Publicity. On or before 9:00 a.m., New York City time, on the Business Day immediately following the date hereof, the Company shall issue a press release (the "Press Release") reasonably acceptable to Intrexon disclosing all material terms of the transactions contemplated hereby. On or before 5:30 p.m., New York City time, on the fourth Trading Day immediately following the execution of this Agreement, the Company will file a Current Report on Form 8-K with the Commission describing the terms of the Transaction Documents (and including as exhibits to such Current Report on Form 8-K the material Transaction Documents (including, without limitation, this Agreement)). Notwithstanding the foregoing, the Company shall not publicly disclose the name of Intrexon or an Affiliate of Intrexon, or include the name of Intrexon or an Affiliate of Intrexon in any press release or filing with the Commission (other than the Registration Statement) or any regulatory agency or Trading Market, without the prior written consent of Intrexon, except (i) as required by federal securities law in connection with the filing of final Transaction Documents (including signature pages thereto) with the Commission and (ii) to the extent such disclosure is required by law, request of the Staff of the Commission or Trading Market regulations, in which case the Company shall provide Intrexon with prior written notice of such disclosure permitted under this subclause (ii).

4.5 Indemnification of Intrexon.

(a) The Company will indemnify and hold Intrexon and its directors, officers, stockholders, members, partners, employees and agents (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title), each Person who controls Intrexon (within the meaning of Section 15 of the Securities Act and Section 20 of the Exchange Act), and the directors, officers, stockholders, agents, members, partners or employees (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title) of such controlling person (each, a "Purchaser Party") harmless from any and all losses, liabilities, obligations, claims, contingencies, damages, costs and expenses, including all judgments,

amounts paid in settlements, court costs and reasonable attorneys' fees and costs of investigation that any Purchaser Party may suffer or incur (i) as a result of any breach of any of the representations, warranties, covenants or agreements made by the Company in this Agreement or in the other Transaction Documents or (ii) arising out of, in connection with, or as a result of the execution or delivery of this Agreement, any other Transaction Document or any agreement or instrument contemplated hereby or thereby, the performance by the parties hereto of their respective obligations hereunder or thereunder or the consummation of the transactions contemplated hereby or thereby. The Company will not be liable to any Purchaser Party under this Agreement to the extent, but only to the extent that a loss, claim, damage or liability is attributable to any Purchaser Party's breach of any of the representations, warranties, covenants or agreements made by Purchaser Party in this Agreement or in the other Transaction Documents.

(b) Promptly after receipt by any Person (the "Indemnified Person") of notice of any demand, claim or circumstances which would or might give rise to a claim or the commencement of any action, proceeding or investigation in respect of which indemnity may be sought pursuant to Section 4.5(a), such Indemnified Person shall promptly notify the Company in writing and the Company shall assume the defense thereof, including the employment of counsel reasonably satisfactory to such Indemnified Person, and shall assume the payment of all fees and expenses; provided, however, that the failure of any Indemnified Person so to notify the Company shall not relieve the Company of its obligations hereunder except to the extent that the Company is actually and materially and adversely prejudiced by such failure to notify. In any such proceeding, any Indemnified Person shall have the right to retain its own counsel, but the fees and expenses of such counsel shall be at the expense of such Indemnified Person unless: (i) the Company and the Indemnified Person shall have mutually agreed to the retention of such counsel; (ii) the Company shall have failed promptly to assume the defense of such proceeding and to employ counsel reasonably satisfactory to such Indemnified Person in such proceeding; or (iii) in the reasonable judgment of counsel to such Indemnified Person, representation of both parties by the same counsel would be inappropriate due to actual or potential differing interests between them. The Company shall not be liable for any settlement of any proceeding effected without its written consent, which consent shall not be unreasonably withheld, delayed or conditioned. Without the prior written consent of the Indemnified Person, which consent shall not be unreasonably withheld, delayed or conditioned, the Company shall not effect any settlement of any pending or threatened proceeding in respect of which any Indemnified Person is or could have been a party and indemnity could have been sought hereunder by such Indemnified Party, unless such settlement includes an unconditional release of such Indemnified Person from all liability arising out of such proceeding, does not admit liability on the part of or attribute fault to any Indemnified Person and contains a provision requiring confidentiality with respect to the facts and circumstances of the dispute and of the existence and amount of the settlement.

4.6 Reservation of Preferred Stock. As of the date hereof, the Company has reserved and the Company shall continue to reserve and keep available at all times, a sufficient number of shares of Series C Preferred Stock for the purpose of enabling the Company to issue Shares pursuant to this Agreement.

4.7 Waiver and Consent. Intrexon elects not to participate in the Series B Preferred Financing and in connection therewith (a) waives any and all contractual rights to participate in the Series B Financing and (b) consents to the registration rights being granted to the investors in the Series B Financing.

4.8 Confidentiality After The Date Hereof. Intrexon covenants that until such time as the transactions contemplated by this Agreement and such other material non-public information related to the Company in possession of Intrexon are publicly disclosed by the Company as described in Section 4.4, Intrexon will maintain the confidentiality of all non-public information disclosed to it in connection with the transactions contemplated hereby (including the existence and terms of such transactions).

4.9 Delivery of Shares After Closing. The Company shall deliver, or cause to be delivered, the respective Shares purchased by Intrexon to Intrexon within three Trading Days of the Closing Date (unless Intrexon has specified to the Company at the time of execution of this Agreement that it shall settle "delivery versus payment" in which case such Shares shall be delivered on or prior to the Closing Date).

4.10 Form D; Blue Sky Filings. The Company agrees to timely file a Form D with respect to the Shares as required under Regulation D and to provide a copy thereof, promptly upon request of Intrexon. The Company shall take such action as the Company shall reasonably determine is necessary in order to obtain an exemption for, or to qualify the Shares for, sale to Intrexon at the Closing under applicable securities or "Blue Sky" laws of the states of the United States, and shall provide evidence of such actions promptly upon request of Intrexon.

4.12 Use of Proceeds. The Company intends to use the net proceeds of this offering after payment of the expenses of the offering for the funding of its AG013 research and clinical trials and for general corporate purposes, including working capital and shall not use such proceeds for the satisfaction of any portion of the Company's debt (other than trade payables in the ordinary course of the Company's business and prior practices), or to redeem any Common Stock or Common Stock Equivalents.

4.13 Prepaid Invoice Amount. The Per Share Exchange Price reflects an overpayment of the Debt equal to $8,589.28. The Company and Intrexon agree that such amount shall be treated as a prepaid amount by the Company and will be deducted from future invoices issued to the Company by Intrexon.

4.14 Termination. Notwithstanding anything herein to the contrary, this Agreement may be terminated at any time by Intrexon (with respect to the obligations of Intrexon) or the Company, upon written notice to the other party, if the Closing shall not have occurred on or before the date that is three months from the date hereof (the "Outside Date"); provided, however, that the right to terminate this Agreement under this Section 4.13 shall not be available to any party whose (i) breach of any provision of this Agreement, (ii) failure to comply with their obligations under this Agreement or (iii) actions not taken in good faith, shall have been the cause of, or shall have resulted in, the failure of the Closing to occur on or prior to the Outside Date or the failure of a condition in Section 2.3 to be satisfied at such time.

ARTICLE V
MISCELLANEOUS

5.1 [Reserved]

5.2 Fees and Expenses. Except as expressly set forth in the Transaction Documents to the contrary, each party shall pay the fees and expenses of its advisers, 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. The Company shall pay all Transfer Agent fees, stamp taxes and other taxes and duties levied in connection with the delivery of the Securities to Intrexon.

5.3 Entire Agreement. The Transaction Documents, together with the exhibits and schedules thereto, contain the entire understanding of the parties with respect to the subject matter hereof and supersede all prior agreements and understandings, oral or written, with respect to such matters, which the parties acknowledge have been merged into such documents, exhibits and schedules. At or after the Closing, and without further consideration, the Company and Intrexon will execute and deliver to the other such further documents as may be reasonably requested in order to give practical effect to the intention of the parties under the Transaction Documents.

5.4 Notices. Any and all notices or other communications or deliveries required or permitted to be provided hereunder shall be in writing and shall be deemed given and effective on the earliest of (a) the date of transmission, if such notice or communication is delivered via email to the e-mail address set forth on the signature pages attached hereto prior to 5:30 p.m. (New York City time) on a Trading Day, (b) the next Trading Day after the date of transmission, if such notice or communication is delivered via email to the e-mail address set forth on the signature pages attached hereto on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (c) the 2nd Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service, or (d) upon actual receipt by the party to whom such notice is required to be given. The address for such notices and communications shall be as set forth on the signature pages attached hereto.

5.5 Amendments; Waivers. No provision of this Agreement may be waived or amended except in a written instrument signed, in the case of an amendment, by the Company and Intrexon. No waiver of any default with respect to any provision, condition or requirement of this Agreement shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of either party to exercise any right hereunder in any manner impair the exercise of any such right.

5.6 Headings and Construction. The headings herein are for convenience only, do not constitute a part of this Agreement and shall not be deemed to limit or affect any of the provisions hereof. The language used in this Agreement will be deemed to be the language chosen by the parties to express their mutual intent, and no rules of strict construction will be applied against any party. This Agreement shall be construed as if drafted jointly by the parties, and no presumption or burden of proof shall arise favoring or disfavoring any party by virtue of the authorship of any provisions of this Agreement or any of the Transaction Documents.

5.7 Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the parties and their successors and permitted assigns. The Company may not assign this Agreement or any rights or obligations hereunder without the prior written consent of Intrexon (other than by merger). Intrexon may assign any or all of its rights under this Agreement to any Person to whom Intrexon assigns or transfers any Shares, provided such transferee agrees in writing to be bound, with respect to the transferred Shares, by the provisions of the Transaction Documents that apply to Intrexon.

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

5.9 Governing Law. All questions concerning the construction, validity, enforcement and interpretation of the Transaction Documents shall be governed by and construed and enforced in accordance with the internal laws of the State of Florida, without regard to the principles of conflicts of law thereof. Each party agrees that all legal proceedings concerning the interpretations, enforcement and defense of the transactions contemplated by this Agreement and any other Transaction Documents (whether brought against a party hereto or its respective affiliates, directors, officers, shareholders, employees or agents) shall be commenced exclusively in the state and federal courts sitting in Hillsborough County, Florida. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in Hillsborough County, Florida for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein (including with respect to the enforcement of any of the Transaction Documents), and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such suit, action or proceeding is improper or is an inconvenient venue for such proceeding. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by law.

5.10 Survival. The representations and warranties contained herein shall survive the Closing and the delivery of the Shares.

5.11 Execution. This Agreement may be executed in two or more counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to the other party, it being understood that both parties need not sign the same counterpart. In the event that any signature is delivered by facsimile transmission or by e-mail delivery of a ".pdf" format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile or ".pdf" signature page were an original thereof.

5.12 Severability. If any term, provision, covenant or restriction of this Agreement is held by a court of competent jurisdiction to be invalid, illegal, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions set forth herein shall remain in full force and effect and shall in no way be affected, impaired or invalidated, and the parties hereto shall use their commercially reasonable efforts to find and employ an alternative means to achieve the same or substantially the same result as that contemplated by such term, provision, covenant or restriction. It is hereby stipulated and declared to be the intention of the parties that they would have executed the remaining terms, provisions, covenants and restrictions without including any of such that may be hereafter declared invalid, illegal, void or unenforceable.

5.13 Rescission and Withdrawal Right. Notwithstanding anything to the contrary contained in (and without limiting any similar provisions of) any of the other Transaction Documents, whenever Intrexon exercises a right, election, demand or option under a Transaction Document and the Company does not timely and materially perform its related obligations within the periods therein provided, then Intrexon may rescind or withdraw, in its sole discretion from time to time upon written notice to the Company, any relevant notice, demand or election in whole or in part without prejudice to its future actions and rights.

5.14 Replacement of Shares. If any certificate or instrument evidencing any Shares is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation thereof, or in lieu of and substitution therefor, a new certificate or instrument, but only upon receipt of evidence reasonably satisfactory to the Company and the Transfer Agent of such loss, theft or destruction and the execution by the holder thereof of a customary lost certificate affidavit of that fact and an agreement to indemnify and hold harmless the Company and the Transfer Agent for any losses in connection therewith or, if required by the Transfer Agent, a bond in such form and amount as is required by the Transfer Agent. The applicants for a new certificate or instrument under such circumstances shall also pay any reasonable third-party costs associated with the issuance of such replacement Shares. If a replacement certificate or instrument evidencing any Shares is requested due to a mutilation thereof, the Company may require delivery of such mutilated certificate or instrument as a condition precedent to any issuance of a replacement.

5.15 Remedies. In addition to being entitled to exercise all rights provided herein or granted by law, including recovery of damages, Intrexon and the Company will be entitled to specific performance under the Transaction Documents. The parties agree that monetary damages may not be adequate compensation for any loss incurred by reason of any breach of obligations contained in the Transaction Documents and hereby agrees to waive and not to assert in any action for specific performance of any such obligation the defense that a remedy at law would be adequate.

5.16 Payment Set Aside. To the extent that the Company makes a payment or payments to Intrexon pursuant to any Transaction Document or Intrexon enforces or exercises its rights thereunder, and such payment or payments or the proceeds of such enforcement or exercise or any part thereof are subsequently invalidated, declared to be fraudulent or preferential, set aside, recovered from, disgorged by or are required to be refunded, repaid or otherwise restored to the Company, a trustee, receiver or any other person under any law (including, without limitation, any bankruptcy law, state or federal law, common law or equitable cause of action), then to the extent of any such restoration the obligation or part thereof originally intended to be satisfied shall be revived and continued in full force and effect as if such payment had not been made or such enforcement or setoff had not occurred.

5.17 [Reserved].

5.18 No Promotion. The Company agrees that it will not, and shall cause each of its Subsidiaries to not, without the prior written consent of Intrexon, use in advertising, publicity, or otherwise the name of Intrexon, its affiliates or any of their respective partners or employees, nor

any trade name, trademark, trade device, service mark, symbol or any abbreviation, contraction or simulation thereof owned by such persons. The Company further agrees that it shall obtain the written consent of Intrexon prior to the Company's or any of its Subsidiaries' issuance of any public statement detailing the acquisition of Securities by Intrexon pursuant to this Agreement.

5.19 Construction. The parties agree that each of them and/or their respective counsel has reviewed and had an opportunity to revise the Transaction Documents and, therefore, the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of the Transaction Documents or any amendments hereto.

5.20 Exculpation. Intrexon acknowledges that it is not relying upon any person, firm or corporation, other than the Company and its officers and directors (acting in their capacity as representatives of the Company), in deciding to invest and in making its investment in the Company.

5.21 Company Acknowledgement. The Company acknowledges and agrees that (i) Intrexon is participating in the transactions contemplated by this Agreement and the other Transaction Documents at the Company's request and the Company has concluded that such participation is in the Company's best interest and is consistent with the Company's objectives and (ii) Intrexon is acting solely in the capacity of an arm's length purchaser. The Company further acknowledges that Intrexon is acting or has acted as an advisor, agent or fiduciary of the Company (or in any similar capacity) with respect to this Agreement or the other Transaction Documents and any advice given by Intrexon or any of its respective representatives in connection with this Agreement or the other Transaction Documents is merely incidental to Intrexon's acquisition of Shares. The Company further represents to Intrexon that the Company's decision to enter into this Agreement has been based solely on the independent evaluation of the transactions contemplated hereby by the Company and its representatives.

(*Signature Pages Follow*)

IN WITNESS WHEREOF, the parties hereto have caused this Debt Conversion Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

ORAGENICS, INC.

By /s/ Alan Joslyn
Name: Alan Joslyn
Title: Chief Executive Officer

Address for Notice:

4902 Eisenhower Blvd.
Suite 125
Tampa, FL 33634

INTREXON CORPORATION

By /s/ Donald P. Lehr
Name: Donald P. Lehr
Title: Chief Legal Officer

Address for Notice:

20374 Seneca Meadows Parkway,
Germantown, MD 20876

[Signature page to Debt Conversion Agreement]

Exhibit A
Certificate of Designation

Exhibit B
Form of Legal opinion of Company Counsel

Based upon and subject to the foregoing, it is our opinion as of this date that:

1. Based solely upon the certificate of good standing, dated [, 2017], issued by the State of Florida, the Company is a corporation validly existing and in good standing under the laws of the State of Florida.

2. The Company has the corporate power and authority to execute, deliver and perform its obligations under the Transaction Documents, including, without limitation, to issue and deliver the Shares as contemplated by the Agreement. Each of the Transaction Documents has been duly authorized by all necessary corporate action and each has been duly executed and delivered on behalf of the Company, and each is a legal, valid and binding obligation of the Company enforceable against the Company in accordance with its terms.

3. The execution and delivery by the Company of the Transaction Documents, and the performance by the Company of its obligations thereunder as of the date hereof, do not violate the Company's Articles of Incorporation or Bylaws, do not constitute a default under or a material breach of any material agreement of the Company that has not otherwise been waived and, to our knowledge, do not (a) violate any U. S. Federal or state statute, rule or regulation applicable to the transactions contemplated by the Transaction 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.

4. The Company has the authorized capital stock as set forth in the SEC Documents. The Securities have been duly authorized, and when issued and sold in accordance with the Securities Purchase Agreement, will be validly issued and non-assessable.

5. No approval, authorization or other action by, or notice to or filing with, any governmental authority is required in connection with the execution, delivery and performance by the Company of the Transaction Documents, except (a) those that have been obtained or made and are in full force and effect, and (b) any filings required by Regulation D promulgated under the Securities Act of 1933, as amended, or by state securities laws.

6. To our knowledge, 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.

7. Assuming the truth and accuracy of the representations made by the Company and Intrexon in the Debt Conversion Agreement, the sale and issuance of the Shares in conformity with the terms of the Transaction Documents 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.

8. The Company is not, after giving effect to the issuance of the Shares, an “investment company” as defined in the Investment Company Act of 1940, as amended.

9. To our knowledge and except as set forth in the SEC Documents with respect to Intrexon Corporation and the Koski Family Limited Partnership, 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.

Exhibit C
Voting Agreement

Exhibit 10.6

SECOND AMENDMENT TO EXCLUSIVE CHANNEL COLLABORATION AGREEMENT

This **SECOND AMENDMENT TO EXCLUSIVE CHANNEL COLLABORATION AGREEMENT** (the "**Amendment**") is effective as of November 8, 2017 (the "**Second Amendment Effective Date**") by and between **INTREXON CORPORATION**, a Virginia corporation with offices at 20374 Seneca Meadows Parkway, Germantown, MD 20876 ("**Intrexon**") and **ORAGENICS, INC.,** a Florida corporation having its principal place of business at 4902 Eisenhower Boulevard, Suite 125, Tampa, FL 33634, U.S.A. ("**Oragenics**"). Intrexon on the one hand and Oragenics on the other hand may be referred to herein individually as a "**Party**", and collectively as the "**Parties**."

RECITALS

A. WHEREAS Intrexon and Oragenics are parties to that certain Exclusive Channel Collaboration Agreement, effective June 5, 2012, as amended by that certain First Amendment to Exclusive Channel Collaboration Agreement, effective July 21, 2016 (the "**Agreement**"), pursuant to which Intrexon appointed Oragenics as their exclusive channel collaborator for developing and commercializing certain products in an exclusive field as defined by the Agreement;

B. WHEREAS Intrexon and Oragenics now mutually desire to further amend the Agreement;

D. NOW, THEREFORE, Intrexon and Oragenics agree to amend the terms of the Agreement as provided below, effective as of the Second Amendment Effective Date.

1. GENERALLY

1.1 Capitalized terms present within this Amendment that are not proper names or titles, that are not conventionally capitalized, or that are not otherwise defined within this Amendment shall have the meaning set forth in the Agreement.

1.2 Intrexon and Oragenics, in conjunction with and contemporaneously with this Amendment, have entered into an Amendment to the Stock Issuance Agreement of even date herewith (the "**Stock Amendment**"), which Stock Amendment amends the Stock Issuance Agreement by and between Intrexon and Oragenics, effective June 5, 2012 (the "**Stock Agreement**").

2. AMENDMENTS TO THE AGREEMENT

2.1 Definitions.

(a) Section 1.12 of the Agreement "**Costs of Goods Sold**", Section 1.41 of the Agreement "**Manufacturing Costs**" and Section 1.50 of the Agreement "**Product Profit**" are hereby deleted in their entirety and each replaced with "Reserved".

(b) The following is added as a new third sentence to Section 1.14 of the Agreement "**Diligent Efforts**":

Oragenics' obligation to use Diligent Efforts under this Agreement shall be deemed satisfied if from the Second Amendment Effective Date until the end of 2018, Oragenics has budgeted one million two hundred thousand United States dollars ($1,200,000) for manufacturing and support activities related to, and including the conduct of the required toxicology studies for the OG716 IND filing.

2.2 Sublicensing. The following is added as a new third sentence to the introductory paragraph of Section 3.2 of the Agreement:

The parties shall agree, in connection with any such sublicense not covered under Sections 3.2(a) through 3.2(c) below, on the applicable Sublicensing Revenue Rate (as defined herein) with respect to such sublicense.

2.3 Milestones. Section 5.2 of the Agreement is hereby replaced in its entirety with the following Section 5.2:

5.2 Milestones.

(a) Oragenics Milestones. Upon the first instance of attainment of certain commercialization milestone events by an Oragenics Product (whether such attainment is achieved by Oragenics or by a permitted sublicensee), Oragenics has agreed to pay Intrexon milestone payments as set forth in the Equity Agreement. The milestone payments are each payable in cash (subject to Section 5.2(b)) by wire transfer to the account specified by Intrexon. The specific milestone payments due to Intrexon upon achievement of each milestone event are set forth in the Equity Agreement.

(b) Product Sublicense Milestones. If (A) a commercialization milestone event occurs that gives rise to a right for Intrexon to receive a payment from Oragenics under Section 5.2(a), (B) that milestone event is achieved by an Oragenics Product licensed to a Product Sublicensee under a respective Product Sublicense, and (C) Oragenics is due to receive a milestone payment from the Product Sublicensee for achievement of that same (or substantially similar) milestone event by the sublicensed Oragenics Product under the respective Product Sublicense, then Intrexon may elect at its own discretion to waive that particular milestone payment from Oragenics for that particular commercialization milestone

event and instead designate the amount of the payment due to Oragenics from the Product Sublicensee for achievement of that same (or substantially similar) milestone event as Sublicensing Revenue for which Intrexon will be entitled to receive revenue sharing under Section 5.4(b). If it so elects under this Section 5.2(b), Intrexon must notify Oragenics in writing of its waiver of that particular milestone payment and election to share the milestone payment due from the Product Sublicensee as Sublicensing Revenue at least five (5) business days prior to the deadline for Oragenics to make a payment for the waived milestone payment. The actual receipt by Intrexon of its full share of the Product Sublicensee milestone payment as Sublicensing Revenue will be a condition subsequent to making final any waiver of Intrexon's rights to receive the particular milestone payment otherwise due from Oragenics under Section 5.2(a). Oragenics will pay Intrexon any amount due under this Section 5.2(b) within the later of (i) six (6) months from underlying commercialization milestone event, or (ii) ten (10) days following the date stipulated in the underlying Product Sublicense for Oragenics to receive the milestone payment.

2.4 Equity Agreement Controls. Section 5.3 of the Agreement is hereby replaced in its entirety with the following new Section 5.3:

5.3 Equity Agreement Controls. All cash payments to Intrexon shall be in accordance with the terms and conditions of the Equity Agreement, which Equity Agreement shall control to the extent it may conflict with Sections 5.1 through 5.2 of this Agreement.

2.5 Revenue Sharing. Section 5.4 of the Agreement is hereby replaced in its entirety with the following new Section 5.4:

5.4 Revenue Sharing.

(a) No later than thirty (30) days after each calendar quarter in which there is positive Net Sales arising from the sale of any Oragenics Product in the Field in the Territory, Oragenics shall pay a royalty to Intrexon of ten percent (10%) of such Net Sales, on an Oragenics Product-by-Oragenics Product basis. Commencing with the Effective Date, in the event that no Net Sales occur for a particular Oragenics Product in any calendar quarter, neither Oragenics nor Intrexon shall owe any payments hereunder with respect to such Oragenics Product.

(b) No later than thirty (30) days after each calendar quarter in which Oragenics or any Oragenics Affiliate receives Sublicensing Revenue, Oragenics shall pay to Intrexon a percentage of such Sublicensing Revenue equal to the applicable Sublicensing Revenue Rate. "**Sublicensing Revenue Rate**" means a percentage of Sublicensing Revenue applicable to a proposed sublicense by Oragenics as follows: (a) with respect to any sublicense of a Lantibiotics Oragenics Product (including new indications thereof), any revenues Oragenics receives from a Product Sublicensee under a Product Sublicense that are not a percentage of Product Sublicensee's Net Sales of Oragenics Products, and any amounts recovered under Section 6.3(f), the Sublicensing Revenue Rate shall be twenty five percent (25%); and (b) with respect to any other sublicense, the Sublicensing Revenue Rate shall be determined in accordance with Section 3.2.

2.6 Payment Reports and Records Retention. Section 5.6 of the Agreement is hereby replaced in its entirety with the following new Section 5.6:

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 or during which Sublicensing Revenue has been received, Oragenics shall deliver to Intrexon a written report that shall contain at a minimum for the applicable calendar quarter:

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

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

(c) itemized calculation of Sublicensing Revenue, including any offsets claimed for Third Party license costs;

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

(e) the amount of the payment (if any) made or made due by the achievement of an applicable commercialization milestone event during the present calendar quarter;

(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 or other commercial use of Oragenics Product, after incurring any component item Oragenics incorporated into its calculation of Sublicensing Revenues, payments in accord with Section 5.2(b), or Net Sales as reported to Intrexon, Oragenics shall keep (and shall ensure that its Affiliates and, if applicable, (sub)licensees shall keep) complete and accurate records of such sales, commercial use, or component item in sufficient detail to confirm the accuracy of the payment calculations hereunder.

3. MISCELLANEOUS

3.1 Full Force and Effect. This Amendment amends the terms of the Agreement and is deemed incorporated into the Agreement. The provisions of the Agreement as amended remain in full force and effect.

3.2 Entire Agreement. This Amendment, together with the Agreement, the Stock Agreement, and the Stock Amendment, constitutes the entire agreement, both written and oral, between the Parties with respect to the subject matter hereof, and any and all prior agreements with respect to the subject matter hereof, either written or oral, expressed or implied, are superseded hereby, merged and canceled, and are null and void and of no effect.

3.3 Counterparts. This Amendment may be executed in one or more counterparts, each of which will be an original and all of which together will constitute one instrument.

[Remainder of Page Intentionally Left Blank; Signature Page Follows]

IN WITNESS WHEREOF, Intrexon and Oragenics have executed this Amendment by their respective duly authorized representatives as of the Second Amendment Effective Date.

INTREXON CORPORATION		**ORAGENICS, INC.**	
By:	/s/ Donald P. Lehr	By:	/s/ Alan Joslyn
Name:	Donald P. Lehr	Name:	Alan Joslyn
Title:	Chief Legal Officer	Title:	Chief Executive Officer

Exhibit 10.8

AMENDMENT TO STOCK ISSUANCE AGREEMENT

This **AMENDMENT TO STOCK ISSUANCE AGREEMENT** (the "**Amendment**") is effective as of November 8, 2017 (the "**Amendment Effective Date**") by and between **INTREXON CORPORATION**, a Virginia corporation with offices at 20374 Seneca Meadows Parkway, Germantown, MD 20876 ("**Intrexon**"), and **ORAGENICS, INC.,** a Florida corporation having its principal place of business at 4902 Eisenhower Boulevard, Suite 125, Tampa, FL 33634, U.S.A. (the "**Company**"). Intrexon on the one hand and the Company on the other hand may be referred to herein individually as a "**Party**", and collectively as the "**Parties**."

RECITALS

A. WHEREAS Intrexon and the Company are parties to that certain Exclusive Channel Collaboration Agreement, effective June 5, 2012, as amended by that certain First Amendment to Exclusive Channel Collaboration Agreement, effective July 21, 2016 (the "**ECC Agreement**"), pursuant to which Intrexon appointed the Company as its exclusive channel collaborator for developing and commercializing certain products in an exclusive field as defined by the ECC Agreement;

B. WHEREAS Intrexon and the Company are also parties to that certain Stock Issuance Agreement, effective June 5, 2012 (the "**Stock Agreement**"), pursuant to which Intrexon and the Company further defined certain rights and obligations of Intrexon and the Company in regards to equity of the Company potentially payable under the ECC Agreement;

C. WHEREAS Intrexon and the Company, in conjunction with concurrent amendment of the ECC Agreement effectuated under separate instrument of even date herewith (the "**ECC Amendment**"), now mutually desire to amend the Stock Agreement;

D. NOW, THEREFORE, Intrexon and the Company agree to amend the terms of the Stock Agreement as provided below, effective as of the Amendment Effective Date.

1. GENERALLY

1.1 Capitalized terms present within this Amendment that are not proper names or titles, that are not conventionally capitalized, or that are not otherwise defined within this Amendment shall have the meaning set forth in the Stock Agreement.

2. AMENDMENTS TO THE AGREEMENT

2.1 Milestones. Section 1.2 of the Stock Agreement is hereby replaced in its entirety with the following Section 1.2:

1.2 Milestones. Subject to the terms and conditions of this Agreement and the Channel Agreement, upon the first instance of attainment of the commercialization milestones as set forth below, and with respect to only the first Oragenics Product (as defined in the Channel Agreement) developed under the Channel Agreement that reaches any such milestone, the Company has agreed to make certain milestone payments (each a "**Milestone Payment**" and together "**Milestone Payments**") as set forth in this Section 1.2. The Milestone Payments are each payable in cash (subject to Section 5.2(b) of the Channel Agreement) by wire transfer to the account specified by Intrexon. The specific milestone payments due to Intrexon upon achievement of each of the Milestone Events are set forth in Sections 1.2(a) through 1.2(c) below.

(a) The Company shall pay Intrexon a one-time milestone payment in cash of twenty five million United States dollars ($25,000,000) (subject to Section 5.2(b) of the Channel Agreement) within six (6) months of the first instance of the achievement of the Regulatory Approval Milestone Event.

(b) The Company shall pay Intrexon a one-time milestone payment in cash of five million United States dollars ($5,000,000) (subject to Section 5.2(b) of the Channel Agreement) within six (6) months of the first instance of the achievement of the New Indication Milestone Event.

(c) The Company shall pay Intrexon a one-time milestone payment in cash of five million United States dollars ($5,000,000) (subject to Section 5.2(b) of the Channel Agreement) within six (6) months of the first instance of the achievement of the New Product Milestone Event.

(d) As used in this Section:

(i) "**FDA New Product Application**" means a "New Drug Application" or a "Biologics License Application" (as both of such are defined according to relevant FDA guidelines and regulations establishing the mechanisms for the submission of new drug products in the United States of America for regulatory approval prior to commercial sale and marketing), but excluding any Supplemental FDA Applications.

(ii) "**New Indication Milestone Event**" means for a given Oragenics Product, the approval of a Supplemental FDA Application with the FDA (or an equivalent filing with another equivalent regulatory agency) which Supplemental FDA Application sought approval of an indication for use of an Oragenics Product other than the current regulatory-approved

indication for the respective Oragenics Product. For the avoidance of doubt and clarification purposes, any occurrence of the New Indication Milestone Event shall not also be deemed the occurrence of the New Product Milestone Event or vice versa.

(iii) "**New Product Milestone Event**" means for a given Oragenics Product, the approval of a FDA New Product Application for such Oragenics Product that is deemed (according to relevant FDA guidelines) to be a different drug product than the first Oragenics Product that was clinically pursued under the Lantibiotics Program (as defined in the Channel Agreement). For purposes of the New Product Milestone Event, the subject Oragenics Product shall be deemed to be a "different" Oragenics Product from the first Oragenics Product (and thus constitute an occurrence of the New Product Milestone Event) if regulatory approval of the subject Oragenics Product had to be obtained from the FDA under a different FDA New Product Application than the first Oragenics Product. For the avoidance of doubt and clarification purposes, any occurrence of the New Product Milestone Event shall not also be deemed the occurrence of the New Indication Milestone Event or vice versa.

(iv) "**Regulatory Approval Milestone Event**" means for a given Oragenics Product, the approval of a FDA New Product Application for such Oragenics Product by the FDA or equivalent regulatory action in a foreign jurisdiction.

(v) "**Supplemental FDA Application**" means a "Supplemental New Drug Application" or a "Supplemental Biologics License Application" (as both of such are defined according to relevant FDA guidelines and regulations establishing the mechanisms for the submission of data in support of the FDA granting approval for new, amended, and/or expanded label indications for a prior-approved drug product in the United States of America).

The event giving rise to a milestone payment under subsections (a) through (c) of this Section 1.2 shall be a "**Milestone Event**" and together, the "**Milestone Events**."

2.2 Company Sale. Section 1.3 of the Stock Agreement is hereby deleted in its entirety.

2.3 Capital Adjustments. Section 1.4 of the Stock Agreement is hereby deleted in its entirety.

2.4 Closings. Section 2.2(b) of the Stock Agreement is hereby deleted in its entirety and all references to a Subsequent Closing or Subsequent Closings are deleted in their entirety.

3. MISCELLANEOUS

3.1 Full Force and Effect. This Amendment amends the terms of the Stock Agreement and is deemed incorporated into the Stock Agreement. The provisions of the Stock Agreement as amended remain in full force and effect.

3.2 Entire Agreement. This Amendment, together with the Stock Agreement, the ECC Amendment, and the ECC Agreement, constitutes the entire agreement, both written and oral, between the Parties with respect to the subject matter hereof, and any and all prior agreements with respect to the subject matter hereof, either written or oral, expressed or implied, are superseded hereby, merged and canceled, and are null and void and of no effect.

3.3 Counterparts. This Amendment may be executed in one or more counterparts, each of which will be an original and all of which together will constitute one instrument.

[Remainder of Page Intentionally Left Blank; Signature Page Follows]

IN WITNESS WHEREOF, Intrexon and the Company have executed this Amendment by their respective duly authorized representatives as of the Amendment Effective Date.

INTREXON CORPORATION

By: /s/ Donald P. Lehr
Name: Donald P. Lehr
Title: Chief Legal Officer

ORAGENICS, INC.

By: /s/ Alan Joslyn
Name: Alan Joslyn
Title: Chief Executive Officer

Signature Page to *Amendment* to Stock Issuance Agreement

Exhibit 10.11

SECOND AMENDMENT TO EXCLUSIVE CHANNEL COLLABORATION AGREEMENT

This **SECOND AMENDMENT TO EXCLUSIVE CHANNEL COLLABORATION AGREEMENT** (the "**Amendment**") is effective as of November 8, 2017 (the "**Amendment Effective Date**") by and between **INTREXON CORPORATION**, a Virginia corporation with offices at 20374 Seneca Meadows Parkway, Germantown, MD 20876 ("**Intrexon**"), **INTREXON ACTOBIOTICS NV**, a *naamloze vennootschap* under Belgian law with registered offices at Technologiepark 4, 9052 Zwijnaarde (CBE no. 0882.251.820 (Ghent), Belgium ("**Actobiotics**"), and **ORAGENICS, INC.,** a Florida corporation having its principal place of business at 4902 Eisenhower Boulevard, Suite 125, Tampa, FL 33634, U.S.A. ("**Oragenics**"). Intrexon and Actobiotics together on the one hand and Oragenics on the other hand may be referred to herein individually as a "**Party**", and collectively as the "**Parties**."

RECITALS

A. WHEREAS Intrexon, Actobiotics, and Oragenics are parties to that certain Exclusive Channel Collaboration Agreement, effective June 9, 2015, as amended by that certain Amendment to Exclusive Channel Collaboration Agreement, effective May 10, 2017 (the "**Agreement**"), pursuant to which Intrexon and Actobiotics collectively appointed Oragenics as their exclusive channel collaborator for developing and commercializing certain products in an exclusive field as defined by the Agreement;

B. WHEREAS Intrexon, Actobiotics, and Oragenics all now mutually desire to amend the Agreement;

D. NOW, THEREFORE, Intrexon, Actobiotics, and Oragenics agree to amend the terms of the Agreement as provided below, effective as of the Amendment Effective Date.

1. GENERALLY

1.1 Capitalized terms present within this Amendment that are not proper names or titles, that are not conventionally capitalized, or that are not otherwise defined within this Amendment shall have the meaning set forth in the Agreement.

1.2 Intrexon and Oragenics, in conjunction with and contemporaneously with this Amendment, have entered into an Amendment to Stock Issuance Agreement of even date herewith (the "**Stock Amendment**"), which Stock Amendment amends the stock Issuance Agreement by and between Intrexon and Oragenics, effective June 9, 2015, as amended by that certain Amendment to Stock Issuance Agreement, effective May 10, 2017 (the "**Stock Agreement**").

2. AMENDMENTS TO THE AGREEMENT

2.1 Definitions.

(a) Section 1.6 of the Agreement "**Approval Milestone Event**", Section 1.58 of the Agreement "**Phase II Milestone Event**", Section 1.59 of the Agreement "**Phase IIb/III Milestone Event**", and Section 1.60 of the Agreement "**Prior Field**" are hereby deleted in their entirety and each replaced with "Reserved".

(b) Section 1.14 of the Agreement is hereby replaced in its entirety with the following new Section 1.14:

> "**Commercialization Milestone Event**" means any one of the Regulatory Approval Milestone Event, the New Indication Milestone Event, and the New Product Milestone Event.

(c) Section 1.27 of the Agreement is hereby replaced in its entirety with the following new Section 1.27:

> "**Field**" means, irrespective of whether such requires regulatory approval, the treatment of oral mucositis in humans through the administration of an effector via genetically modified bacteria. Notwithstanding the foregoing, the Field shall exclude the delivery of anti-cancer effectors for the purpose of treatment or prophylaxis of cancer.

(d) Section 1.50 of the Agreement is hereby replaced in its entirety with the following new Section 1.50:

> "**New Indication Milestone Event**" means for a given Oragenics Product, the approval of a Supplemental FDA Application with the FDA (or an equivalent filing with another equivalent regulatory agency) which Supplemental FDA Application sought approval of an indication for use of an Oragenics Product other than the current regulatory-approved indication for the respective Oragenics Product. Notwithstanding the foregoing and in order to incentivize Oragenics to pursue new indications for the product AG013 in parallel with the existing indication (as such existing indication is described in Investigational Drug Application no. 13995) for product AG013, the New Indication Milestone Event will be deemed <u>not</u> to have occurred if the filed regulatory package under the prior sentence relies upon one or more human clinical trials for the specific new indication, which clinical trial(s) were conducted simultaneously and in parallel with human clinical trials underpinning the first-approved indication for AG013. For the avoidance of doubt and clarification purposes, any occurrence of the New Indication Milestone Event shall not also be deemed the occurrence of the New Product Milestone Event or vice versa.

(e) Section 1.51 of the Agreement is hereby replaced in its entirety with the following new Section 1.51:

> "**New Product Milestone Event**" means for a given Oragenics Product, the approval of a FDA New Product Application for such Oragenics Product that is deemed (according to relevant FDA guidelines) to be a different drug product than the first Oragenics Product that was clinically pursued under the Program. For purposes of the New Product Milestone Event, the subject Oragenics Product shall be deemed to be a "different" Oragenics Product from the first Oragenics Product (and thus constitute an occurrence of the New Product Milestone Event) if regulatory approval of the subject Oragenics Product had to be obtained from the FDA under a different FDA New Product Application than the first Oragenics Product. For the avoidance of doubt and clarification purposes, any occurrence of the New Product Milestone Event shall not also be deemed the occurrence of the New Indication Milestone Event or vice versa.

(f) Section 1.68 of the Agreement is hereby replaced in its entirety with the following new Section 1.68:

> "**Regulatory Approval Milestone Event**" means for a given Oragenics Product, the approval of a FDA New Product Application for such Oragenics Product by the FDA or equivalent regulatory action in a foreign jurisdiction.

(g) Section 1.74(a) of the Agreement "**Sublicensing Revenue Rate**" is hereby amended by deleting "Sublicensing Revenue Rate shall be fifty percent (50%)" and replacing it with "Sublicensing Revenue Rate shall be twenty five percent (25%)".

2.2 Milestones. Section 5.2(a) of the Agreement is hereby replaced in its entirety with the following new Section 5.2(a) and all references in the Agreement to Sections 5.2(a)(i) through 5.2(a)(vi) shall refer to Sections 5.2(a)(i) through 5.2(a)(iii):

> **(a) Oragenics Commercialization Milestones**. Upon the first instance of attainment of certain Commercialization Milestone Events by an Oragenics Product (whether such attainment is achieved by Oragenics or by a permitted sublicensee), Oragenics has agreed to pay Intrexon milestone payments as set forth in this Section 5.2. The milestone payments are each payable, at Oragenics' election but subject to Sections 5.2(b) through 5.2(d), either in cash or in shares of Oragenics' common stock (using Fair Market Value, as defined in the Equity Agreement, to calculate the number of shares to be issued to Intrexon in lieu of cash). The specific milestone payments due to Intrexon upon achievement of each of the Commercialization Milestone Events are set forth in Sections 5.2(a)(i) through 5.3(a)(iii) below.

(i) Oragenics shall pay Intrexon a milestone payment of twenty seven million five hundred thousand United States dollars ($27,500,000) within six (6) months of the first instance of the achievement of the Regulatory Approval Milestone Event, said payment being made, at Oragenics' option but subject to Sections 5.2(b) through 5.2(d), either in cash or in shares of Oragenics' common stock.

(ii) Oragenics shall pay Intrexon a one-time milestone payment of five million United States dollars ($5,000,000) within six (6) months of the first instance of the achievement of the New Indication Milestone Event, said payment being made, at Oragenics' option but subject to Sections 5.2(b) through 5.2(d), either in cash or in shares of Oragenics' common stock.

(iii) Oragenics shall pay Intrexon a one-time milestone payment of five million United States dollars ($5,000,000) within six (6) months of the first instance of the achievement of the New Product Milestone Event, said payment being made, at Oragenics' option but subject to Sections 5.2(b) through 5.2(d), either in cash or in shares of Oragenics' common stock.

Notwithstanding anything in this Agreement to the contrary, but subject to its obligation under Section 4.5(a), Oragenics shall have sole and exclusive control over clinical trials (including patient dosing) and regulatory filings (including the jurisdictions in which such filings are made) for the purpose of the Commercialization Milestones in Section 5.2(a)(i)-(iii) as applicable.

3. MISCELLANEOUS

3.1 Full Force and Effect. This Amendment amends the terms of the Agreement and is deemed incorporated into the Agreement. The provisions of the Agreement as amended remain in full force and effect.

3.2 Entire Agreement. This Amendment, together with the Agreement, the Stock Agreement, and the Stock Amendment, constitutes the entire agreement, both written and oral, between the Parties with respect to the subject matter hereof, and any and all prior agreements with respect to the subject matter hereof, either written or oral, expressed or implied, are superseded hereby, merged and canceled, and are null and void and of no effect.

3.3 Counterparts. This Amendment may be executed in one or more counterparts, each of which will be an original and all of which together will constitute one instrument.

IN WITNESS WHEREOF, Intrexon, Actobiotics, and Oragenics have executed this Amendment by their respective duly authorized representatives as of the Amendment Effective Date.

INTREXON CORPORATION

By: /s/ Donald P. Lehr
Name: Donald P. Lehr
Title: Chief Legal Officer

ORAGENICS, INC.

By: /s/ Alan Joslyn
Name: Alan Joslyn
Title: Chief Executive Officer

INTREXON ACTOBIOTICS NV

By: /s/ Ricky Sterling
Name: Ricky Sterling
Title: Director

Exhibit 10.14

SECOND AMENDMENT TO STOCK ISSUANCE AGREEMENT

This **SECOND AMENDMENT TO STOCK ISSUANCE AGREEMENT** (the "**Amendment**") is effective as of November 8, 2017 (the "**Amendment Effective Date**") by and between **INTREXON CORPORATION**, a Virginia corporation with offices at 20374 Seneca Meadows Parkway, Germantown, MD 20876 ("**Intrexon**"), and **ORAGENICS, INC.,** a Florida corporation having its principal place of business at 4902 Eisenhower Boulevard, Suite 125, Tampa, FL 33634, U.S.A. (the "**Company**"). Intrexon on the one hand and the Company on the other hand may be referred to herein individually as a "**Party**", and collectively as the "**Parties**."

RECITALS

A. WHEREAS Intrexon, Intrexon's wholly-owned subsidiary Intrexon Actobiotics NV, and the Company are parties to that certain Exclusive Channel Collaboration Agreement, effective June 9, 2015, as amended by that certain Amendment to Exclusive Channel Collaboration Agreement, effective May 10, 2017 (the "**ECC Agreement**"), pursuant to which Intrexon and Actobiotics collectively appointed the Company as their exclusive channel collaborator for developing and commercializing certain products in an exclusive field as defined by the ECC Agreement;

B. WHEREAS Intrexon and the Company are also parties to that certain Stock Issuance Agreement, effective June 9, 2015, as amended by that certain Amendment to Stock Issuance Agreement, effective May 10, 2017 (the "**Stock Agreement**"), pursuant to which Intrexon and the Company further defined certain rights and obligations of Intrexon and the Company in regards to equity of the Company potentially payable under the ECC Agreement;

C. WHEREAS Intrexon and the Company, in conjunction with concurrent amendment of the ECC Agreement effectuated under separate instrument of even date herewith (the "**ECC Amendment**"), now mutually desire to amend the Stock Agreement;

D. NOW, THEREFORE, Intrexon and the Company agree to amend the terms of the Stock Agreement as provided below, effective as of the Amendment Effective Date.

1. GENERALLY

1.1 Capitalized terms present within this Amendment that are not proper names or titles, that are not conventionally capitalized, or that are not otherwise defined within this Amendment shall have the meaning set forth in the Stock Agreement.

2. AMENDMENTS TO THE AGREEMENT

2.1 Purchase and Sale of Shares; Authorization of Issuance of Shares.

(a) Section 1.2 of the Stock Agreement is hereby replaced in its entirety with the following new Section 1.2:

1.2 Issuance of Shares upon Achievement of Commercialization Milestone Event. Subject to the terms and conditions of this Agreement and the Channel Agreement, upon the first attainment of Commercialization Milestone Event (as defined in the Channel Agreement), the Company has agreed to make certain milestone payments (each a "**Milestone Payment**" and together "**Milestone Payments**"), at the Company's option either in the form of shares of Company Common Stock (based upon the Fair Market Value of the shares). In the event that the Company so elects to pay any one or more of the Milestone Payments in shares of Company Common Stock instead of in cash the terms of this Section 1.2 shall govern.

(a) In the event that the Company so elects in accord with Section 5.2 of the Channel Agreement to pay the Milestone Payment due for the first attainment of the Regulatory Approval Milestone Event (as defined in the Channel Agreement) in shares of Company Common Stock, then Company shall in accord with Sections 2.3 and 2.4 hereof issue to Intrexon, and/or to Subsidiary in whole or in part upon request by Intrexon in accord with Section 5.2 of the Channel Agreement, that number of shares of Company Common Stock having a Fair Market Value of twenty seven million five hundred thousand United States dollars ($27,500,000).

(b) In the event that the Company so elects in accord with Section 5.2 of the Channel Agreement to pay a Milestone Payment due for the first attainment of a New Indication Milestone Event (as defined in the Channel Agreement) in shares of Company Common Stock, then Company shall in accord with Sections 2.3 and 2.4 hereof issue to Intrexon, and/or to Subsidiary in whole or in part upon request by Intrexon in accord with Section 5.2 of the Channel Agreement, that number of shares of Company Common Stock having a Fair Market Value of five million United States dollars ($5,000,000).

(c) In the event that the Company so elects in accord with Section 5.2 of the Channel Agreement to pay a Milestone Payment due for the first attainment of a New Product Milestone Event (as defined in the Channel Agreement) in shares of Company Common Stock, then Company shall in accord with Sections 2.3 and 2.4 hereof issue to Intrexon, and/or to Subsidiary in whole or in part upon request by Intrexon in accord with Section 5.2 of the Channel Agreement, that number of shares of Company Common Stock having a Fair Market Value of five million United States dollars ($5,000,000).

The number of shares of Common Stock to be issued under each of subsections (a) through (c) 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) through (c) of this Section 1.2 hereafter each generically shall be a "**Milestone Event**" and together generically, the "**Milestone Events**." For clarity, shares issued under subsections (a) through (c) of this Section 1.2 may be issued entirely to Intrexon, entirely to Subsidiary, or in combination to Intrexon and Subsidiary; however, when issued in combination to Intrexon and Subsidiary, the total and collective number of shares issued to Intrexon and Subsidiary for the respective Milestone Event shall not exceed the amount that would have been issued to Intrexon (or to Subsidiary) singly.

Defined terms not otherwise defined herein shall have the meaning set forth in the Channel Agreement.

(b) Section 1.3 of the Stock Agreement is hereby replaced in its entirety with the following new Section 1.3:

1.3 Determination of Fair Market Value for Milestones. "**Fair Market Value**" as used in this Agreement with respect to the payments to Intrexon made under Sections 1.2(a) through 1.2(c) means the value of the issued shares of Company's Common Stock using published market data of the share price for Company's Common Stock at the close of market on the business day immediately preceding the date of the Milestone Payment.

3. MISCELLANEOUS

3.1 Full Force and Effect. This Amendment amends the terms of the Stock Agreement and is deemed incorporated into the Stock Agreement. The provisions of the Stock Agreement as amended remain in full force and effect.

3.2 Entire Agreement. This Amendment, together with the Stock Agreement, the ECC Amendment, and the ECC Agreement, constitutes the entire agreement, both written and oral, between the Parties with respect to the subject matter hereof, and any and all prior agreements with respect to the subject matter hereof, either written or oral, expressed or implied, are superseded hereby, merged and canceled, and are null and void and of no effect.

3.3 Counterparts. This Amendment may be executed in one or more counterparts, each of which will be an original and all of which together will constitute one instrument.

[Remainder of Page Intentionally Left Blank; Signature Page Follows]

IN WITNESS WHEREOF, Intrexon and the Company have executed this Amendment by their respective duly authorized representatives as of the Amendment Effective Date.

INTREXON CORPORATION

By: /s/ Donald P. Lehr
Name: Donald P. Lehr
Title: Chief Legal Officer

ORAGENICS, INC.

By: /s/ Alan Joslyn
Name: Alan Joslyn
Title: Chief Executive Officer

Signature Page to Amendment to Stock Issuance Agreement

Exhibit 99.1

Oragenics Announces Closing of $3.3 Million Preferred Stock Private Placement and $3.4 Million Debt Conversion into Equity

Also amends Exclusive Channel Collaboration (ECC) Agreements with Intrexon

TAMPA, November 9, 2017— Oragenics, Inc. (NYSE MKT: OGEN), a clinical stage biotechnology company, today announced that it has completed a private placement of $3.3 million of Non-Voting Series B Convertible Preferred Stock (the "Series B Preferred Stock") with four existing shareholders who are accredited investors including an entity affiliated with a director of the Company (the "Preferred Stock Financing"). Concurrently with the Preferred Stock Financing, the Company also entered into a Debt Conversion Agreement (the "Debt Conversion Agreement") with Intrexon Corporation ("Intrexon"), pursuant to which Intrexon exchanged its $2.4 million unsecured non-convertible promissory note previously issued by the Company to Intrexon (the "Intrexon Note"), the accrued interest on the Intrexon Note and trade payables owed to Intrexon, including accrued interest in the aggregate amount of approximately $3.4 million (collectively the "Debt") for equity in the form of 100 shares of Series C Non-Voting, Non-Convertible, Preferred Stock (the "Series C Preferred Stock") issued by the Company to Intrexon.

Additionally, the Company amended its two Exclusive Channel Collaboration Agreements and related Stock Issuance Agreements, with Intrexon for its Oral Mucositis and Lantibiotic programs (collectively the "ECC Amendments") to consolidate the development milestone payments into one payment within six months after the Food and Drug Administration (the "FDA") approval for each separate program.

Dr. Alan Joslyn, the Company's President and Chief Executive Officer stated, "We are extremely pleased with the financial commitment that our investors and Intrexon have shown to the Company's programs through this financing, Debt Conversion and ECC Amendments. The proceeds from the stock offering will enable us to continue advancing our promising biotherapeutic candidates."

The Preferred Stock Private Placement

The Company issued an aggregate of 6,600,000 shares of Series B Preferred Stock at a purchase price of $0.50 per share which are convertible into 13,200,000 shares of the Company's Common Stock, based on a conversion ratio of one share of Series B Preferred Stock into two shares of common stock. The purchase price per share represented by the shares of common stock the Series B Preferred Stock is convertible into equates to $0.25 per share. In addition, the Company issued to the investors in the private placement accompanying warrants to purchase an aggregate of 10,645,161 shares of Common Stock. The Warrants have a term of seven years from the date of issuance, are non-exercisable until 6 months after issuance, and have an exercise price of $0.31 per share. The convertibility of Series B Convertible Preferred Stock into shares of common stock and the exercisability of the Warrants into shares of common stock are subject to shareholder approval as required under NYSE MKT rules which shareholder approval is expected to be obtained by written consent and effectiveness thereof subject to the completion of the 20 day period after the filing of a definitive Information Statement on Schedule 14C.

Proceeds from the Preferred Stock Financing (including the exercise of any warrants for cash) will be used for the advancement of the AG013 Oral Mucositis clinical trial and the lantibiotic program and general corporate purposes, including working capital. The Company believes that the proceeds from the Preferred Stock Financing as well as the exchange of the Debt for Series C Preferred Stock will also allow the Company to timely comply with its plan to regain compliance with the NYSE MKT's shareholders' equity requirements.

The ECC Amendments

The ECC Amendment for the Company's oral mucositis product candidate ActoBiotics® AG013, an oral biotherapeutic, provides for a single milestone payment within six months after FDA approval of $27,500,000 and revised the field in which the Company has exclusive rights to its oral mucositis product candidate for the treatment of oral mucositis to clarify the Company has an exclusive for the treatment of Oral Mucositis in humans regardless of etiology. The ECC Amendment for the Company's lantibiotic product candidate provided for a single milestone payment within six months after FDA approval of $25,000,000. Each ECC was modified to reduce the sublicense revenue percentage it would have to pay from 50% to 25%. The Lantibiotic ECC royalty rate was also revised from 25% of Positive Product Profit to 10% of Net Sales.

The Intrexon Debt Conversion

Intrexon exchanged the Debt for equity in the form of 100 shares of Series C Preferred Stock issued by the Company to Intrexon. The Series C Preferred Stock is non-voting and non-convertible and is redeemable in whole or part at any time by the Company for cash. The Series C Preferred bears an accruing annual PIK dividend payable in Series C Preferred Stock of 12% through May 10, 2019 and after such date, the dividend will accrue at 20%, annually, unless earlier redeemed by the Company.

The Series B Preferred Stock, Warrants and Series C Preferred Stock were offered and sold in a private placement pursuant to Section 4(a)(2) of the Securities Act of 1933, as amended, and Regulation D promulgated thereunder. The Series B Preferred Stock, the Warrants, the Common Stock issuable upon the conversion thereof, the exercise of the Warrants and the Series C Preferred Stock have not been registered under the Securities Act and may not be offered or sold in the United States absent registration with the United States Securities and Exchange Commission or an applicable exemption from such registration requirements.

This press release shall not constitute an offer to sell or the solicitation of an offer to buy any of the securities described herein, nor shall there be any sale of these securities in any state or jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such state or jurisdiction.

About Oragenics, Inc.

We are focused on becoming a leader in novel antibiotics against infectious disease and on developing effective treatments for oral mucositis. Oragenics, Inc. has established two exclusive worldwide channel collaborations with Intrexon Corporation, a synthetic biology company. The collaborations allow Oragenics access to Intrexon's proprietary technologies toward the goal of accelerating the development of much needed new antibiotics that can work against resistant strains of bacteria and the development of biotherapeutics for oral mucositis and other diseases and conditions of the oral cavity, throat, and esophagus.

For more information about Oragenics, please visit www.oragenics.com.

About ActoBiotics®

The ActoBiotics® platform utilizes *Lactococcus lactis*, a food grade microbe able to deliver active biological molecules, including nucleic acids and peptides, with precision. This innovative class of oral biotherapeutics has the potential to treat a variety of diseases via expression of biopharmaceuticals selectively to the oral and gastrointestinal tract. ActoBiotics® technology also enables production of targeted biologicals for crop protection designed to avoid off-target health and environmental impact of conventional pest and disease control methods. ActoBiotics® is a registered trademark of Intrexon Corporation.

Safe Harbor Statement: Under the Private Securities Litigation Reform Act of 1995: This release includes forward-looking statements that reflect management's current views with respect to future events and performance. These forward-looking statements are based on management's beliefs and assumptions and information currently available. The words "believe," "expect," "anticipate," "intend," "estimate," "project" and similar expressions that do not relate solely to historical matters identify forward-looking statements. Investors should be cautious in relying

on forward-looking statements because they are subject to a variety of risks, uncertainties, and other factors that could cause actual results to differ materially from those expressed in any such forward-looking statements. These factors include, but are not limited to, our ability to raise capital in the future, our current need for financing to meet our operational needs and to be able to move our product candidates forward through pre-clinical and clinical development, our inability to obtain sufficient financing to conduct our business; any inability to obtain or delays in the Food and Drug Administration approval for future clinical studies and testing, the future success of our studies and testing and any inability to also achieve favorable results in human studies, our ability to successfully develop and commercialize products, the financial resources available to us to continue research and development, any inability to regain compliance with the NYSE MKT continued listing requirements and those other factors described in our filings with the U.S. Securities and Exchange Commission. Any responsibility to update forward-looking statements is expressly disclaimed.

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