Table of Contents

As confidentially submitted to the Securities and Exchange Commission on June 14, 2013 as Amendment No. 2 to the confidential submission.
This draft registration statement has not been publicly filed with the Securities and Exchange Commission and all information herein remains strictly confidential

Registration No. 333-

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

FORM S-1
REGISTRATION STATEMENT
UNDER THE SECURITIES ACT OF 1933

Intrexon Corporation
(Exact name of registrant as specified in its charter)

Virginia	**8731**	**26-0084895**
(State or other jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification Number)

20374 Seneca Meadows Parkway
Germantown, Maryland 20876
Telephone: (301) 556-9900
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Randal J. Kirk
Chairman of the Board, President and Chief Executive Officer
Intrexon Corporation
2875 South Ocean Boulevard
Suite 215
Palm Beach, Florida 33480
Telephone: (561) 855-7831
(Name, address, including zip code, and telephone number, including area code, of agent for service)

John Owen Gwathmey **David I. Meyers** **Troutman Sanders LLP** **1001 Haxall Point** **Richmond, Virginia 23219** **Telephone: (804) 697-1200**	***Copies to:*** **Donald P. Lehr** **Chief Legal Officer** **Intrexon Corporation** **20374 Seneca Meadows Parkway** **Germantown, Maryland 20876** **Telephone: (301) 556-9809**	**Mitchell S. Bloom** **Michael H. Bison** **Michael D. Maline** **Goodwin Procter LLP** **Exchange Place** **Boston, Massachusetts 02109** **Telephone: (617) 570-1000**

Approximate date of commencement of proposed sale to the public: As soon as practicable after this Registration Statement becomes effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, as amended (the "Securities Act"), check the following box. ☐

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

Indicate by check mark whether the Registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒ (Do not check if a smaller reporting company)	Smaller reporting company	☐

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Proposed Maximum Aggregate Offering Price(1)(2)	Amount of Registration Fee
Common Stock, no par value per share	$	$

(1) Includes shares that may be purchased by the underwriters upon exercise of their option to purchase additional shares of common stock.
(2) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(o) under the Securities Act of 1933.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment that specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until this Registration Statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

Table of Contents

The information in this preliminary prospectus is not complete and may be changed. These securities may not be sold until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell nor does it seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

Subject To Completion. Dated , 2013.

Shares

Common Stock

This is an initial public offering of shares of common stock of Intrexon Corporation.

We are offering shares to be sold in this offering.

Prior to this offering, there has been no public market for our common stock. It is currently estimated that the initial public offering price per share will be between $ and $. We intend to list our common stock on the New York Stock Exchange under the symbol "XON." We have not yet filed an application to have our common stock approved for listing. We intend to file such application following the filing of this registration statement.

We are an "emerging growth company" as defined under the federal securities laws, and as such, may elect to comply with certain reduced public company reporting requirements. See "Risk factors" beginning on page 11 to read about factors you should consider before buying shares of our common stock.

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

	Per share	Total
Initial public offering price	$	$
Underwriting discounts and commissions(1)	$	$
Proceeds to us, before expenses	$	$

(1) We refer you to "Underwriting" beginning on page 161 for additional information regarding total underwriting compensation.

We have granted the underwriters an option for a period of 30 days to purchase up to additional shares of common stock from us at the initial public offering price less the underwriting discount.

The underwriters expect to deliver the shares on or about , 2013.

J.P. Morgan **Barclays**

Prospectus dated , 2013.

Table of contents

Through and including , 2013 (the 25th day after the date of this prospectus), all dealers effecting transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to a dealer's obligation to deliver a prospectus when acting as an underwriter and with respect to an unsold allotment or subscription.

We are responsible for the information contained in this prospectus. We have not authorized anyone to provide you with different information, and we take no responsibility for any other information others may give you. If anyone provides you with different or inconsistent information, you should not rely on it. We are not, and the underwriters are not, making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should not assume that the information contained in this prospectus is accurate as of any date other than the date on the front of this prospectus.

For investors outside the United States: Neither we nor any of the underwriters have taken any action to permit a public offering of the shares of our common stock or the possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than the United States. You are required to inform yourselves about and to observe any restrictions relating to this offering and the distribution of this prospectus.

This prospectus includes statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties. Industry publications and third-party research, surveys and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information.

Prospectus summary

This summary highlights information included elsewhere in this prospectus and does not contain all of the information you should consider before buying shares of our common stock. You should read the entire prospectus carefully, especially the "Risk factors" section and our consolidated financial statements and the related notes appearing at the end of this prospectus, before deciding to invest in shares of our common stock. Unless the context requires otherwise, references in this prospectus to "Intrexon," "the Company," "we," "us" and "our" refer to Intrexon Corporation.

Company overview

At present rates of global industrialization and population growth, food and energy supplies and environmental and healthcare resources are becoming more scarce and/or costly. We believe it is not a viable option for mankind to continue on this path — new solutions will be necessary to preserve and globally expand a high quality of life. We believe that synthetic biology is a solution.

We believe Intrexon is a leader in the field of synthetic biology, an emerging and rapidly evolving discipline that applies engineering principles to biological systems. Using our suite of proprietary and complementary technologies, we design, build and regulate gene programs, or sequences of DNA that control cellular function, and cellular systems, or activities that take place within a cell and the interaction of those systems in the greater cellular environment, to enable the development of new and improved products and manufacturing processes across a variety of end markets, including healthcare, food, energy and environmental sciences. Our synthetic biology capabilities include the ability to precisely control the amount, location and modification of biological molecules to control the function and output of living cells and optimize for desired results at an industrial scale.

Working with our collaborators, we seek to create more effective, less costly and more sustainable solutions than can be provided through current industry practices. We believe our approach to synthetic biology can enable new and improved biotherapeutics, increase the productivity and quality of food crops and livestock, create sustainable alternative energy sources and chemical feedstocks and provide for enhanced environmental remediation. Our business model is to commercialize our technologies through exclusive channel collaborations, or ECCs, with collaborators that have industry expertise, development resources and sales and marketing capabilities to bring new and improved products and processes to market.

Our technologies combine the principles of precision engineering, statistical modeling, automation and production at an industrial scale. We efficiently engineer precise and complex gene programs across many cell types. We apply the engineering principle of a ***design-build-test-learn*** continuum, through which we accumulate knowledge about the characteristics and performance of gene programs and cell lines. This process of continuous learning allows us to enhance our ability to design and build improved and more complex gene programs and cellular systems.

We believe our technologies are broadly applicable across many diverse end markets, including some end markets that have failed to recognize the applicability of synthetic biology or failed to utilize biologically based processes to produce products. Our suite of proprietary and complementary technologies includes UltraVector, Cell Systems Informatics, *LEAP* and *mAbLogix*, all of which are described in detail in "Business—Our suite of proprietary and complementary

technologies." We have devised our business model to bring many different commercial products to market through the formation of ECCs with collaborators that have expertise within specific industry segments, but, to date, no commercial products have been enabled by our technologies. In our ECCs, we provide expertise in the engineering, fabrication and modification of gene programs and cellular systems, and our collaborators are responsible for providing market and product development expertise, as well as regulatory, sales and marketing capabilities. Generally, our collaborators compensate us through technology access fees, royalties, milestones and reimbursements of certain costs. This business model allows us to leverage our capabilities and capital across a broader landscape of product opportunities and end markets than we would be capable of addressing on our own.

We began entering into ECCs in 2011 and are currently party to nine such agreements. Under these ECCs, we are developing products in the fields of healthcare and food. In healthcare, our ECCs include programs in oncology, anti-infectives, antibiotics and tissue repair. In food, we are working to increase the productivity and nutritional value of salmon and other fish. We are also working to establish ECCs in the areas of energy and environmental sciences.

While the field of synthetic biology is still emerging, the addressable markets that may benefit from this approach are large and well-established. In healthcare, synthetic biology may provide new approaches to treating diseases, as well as improvements to the manufacture of existing products. It is estimated that the global human pharmaceuticals market is over $900 billion and that biological therapeutics represent approximately $150 billion of this market. While genetically modified salmon or trout may be considered new products, the global market for aquaculture was valued at approximately $110 billion in 2011. Genetically modified agricultural plants are already grown on more than 170 million hectares around the world and are worth an estimated $65 billion dollars. In energy, we are working to create novel, highly engineered organisms that use specific feed stocks to create commercially valuable end products, such as isobutanol, which already has a variety of technical and industrial applications and is also being investigated as a gasoline alternative.

Our competitive strengths

We believe that our technologies and our approach to synthetic biology — ***design-build-test-learn*** — give us a competitive advantage over traditional industrial processes as well as current approaches to synthetic biology.

We believe that we have the following competitive strengths:

- **We have a suite of proprietary and complementary technologies.** We have built a suite of proprietary and complementary technologies that provides us with a comprehensive ability to design, create, modify and regulate gene programs and cellular systems.
- **Our *design-build-test-learn* continuum allows us to design and build improved and more complex gene programs.** We have developed a core expertise and technologies to ***design***, ***build***, and ***test*** complex gene programs, as well as technologies to isolate cells that best express the desired biological output. We have also developed an extensive bioinformatic software platform that combines information technology with advanced statistical analysis for DNA design and genetic engineering, enabling us to continually ***learn*** and create optimal conditions for our gene programs.

- **We believe we are a leader in synthetic biology.** We believe we are the first company focused exclusively on applying synthetic biology across a broad spectrum of end markets and have been working in the field since 1998. Over the last 15 years, we have accumulated extensive knowledge and experience in design, modification and regulation of gene programs. We believe all of these factors, coupled with our suite of proprietary and complementary technologies, provide us with a first-mover advantage in synthetic biology.
- **We serve large and diverse end markets with high built-in demand.** A vast number of the products consumed globally are or can be produced using biologically based processes. Natural resources are becoming more scarce as demand exceeds supply creating unmet needs for improvements in development and manufacturing. Because synthetic biology has the potential to deliver against these unmet needs, we believe that significant demand already exists for improved products enabled by synthetic biology. Additionally, there are markets utilizing traditional industrial processes that have failed to recognize the significant improvement in performance that could be achieved using synthetic biology.
- **We have a scalable ECC business model to leverage the broad potential of synthetic biology.** Under our ECC business model, our collaborators are primarily responsible for providing market and product development expertise, as well as sales, marketing and regulatory capabilities. Our ECC business model allows us to participate in the potential upside from products that are enabled by our technologies across an extensive range of industries, without the need for us to invest considerable resources in bringing individual programs to market. Moreover, we believe that we will increasingly engage in ECCs in new fields at an accelerating pace with well-recognized collaborators.
- **We have experienced management and employees.** Our management team, including our Chief Executive Officer, Randal J. Kirk, and our Chief Operating Officer, Krish Krishnan, consists of executives with a track record of success in building and managing research and development-driven companies, including New River Pharmaceuticals Inc., which was sold in 2007 to Shire plc for $2.6 billion. Our Chief Science Officer, Thomas D. Reed, was responsible for the initial conception and creation of our UltraVector technology platform. We have 148 employees primarily engaged in research and development, 67 of whom hold advanced degrees in engineering and biology or other sciences, including either a Ph.D., M.D. or D.V.M.

Our markets

Synthetic biology has applicability across many diverse end markets. Our goal is to be a leader in the application of synthetic biology for products currently utilizing biologically based processes, and a leader in the replacement of conventional processes and products with biologically based ones. Through the application of our suite of proprietary and complementary technologies, we believe we can create optimized biological processes and create substitutes for traditional industrial techniques, leading to improved products that are developed and manufactured faster and more cost-effectively. Our markets include healthcare (therapeutics, bioproduction and diagnostics), food (food animals and agriculture), energy and chemicals and environmental sciences (biosensors, bioremediation and specialty processes).

Our business model

We believe that because synthetic biology has applicability across many diverse end markets, we cannot take full advantage of synthetic biology with internal development programs alone. To address this, we have devised our business model to allow us to focus on our core expertise in synthetic biology while bringing many different commercial products to market via collaborations in a broad range of industries or end markets, thus minimizing and leveraging the use of our own capital.

Our business model is built around the formation of ECCs. An ECC is an agreement with a collaborator to develop products based on our technologies in a specifically defined field. We seek collaborators that have expertise within a specific industry segment and the commitment to provide resources for the development and commercialization of products within that industry segment. In our ECCs, we provide expertise in the engineering of gene programs and cellular systems, and our collaborators are responsible for providing market and product development expertise, as well as regulatory, sales and marketing capabilities.

Risks associated with our business

Our business is subject to numerous risks, as more fully described in the section entitled “Risk factors” immediately following this prospectus summary. You should read these risks before you invest in our common stock. We may be unable, for many reasons, including those that are beyond our control, to implement our business strategy. In particular, risks associated with our business include:

- We have incurred net losses since our inception. We anticipate that we will continue to incur losses and negative cash flow from operating activities for the foreseeable future, and we may never achieve or maintain profitability. We expect a significant period of time will pass before the achievement of contractual milestones and the realization of royalties on products commercialized under our ECCs.
- We expect that we may need substantial additional funding in the future in order to fund our business. This may cause dilution to our existing shareholders, restrict our operations or require us to relinquish rights to our technologies or product candidates. If we are unable to raise capital when needed, we could be forced to delay, reduce or eliminate our product development programs or commercialization efforts.
- Ethical, legal and social concerns about synthetic biologically engineered products and processes could limit or prevent the use of products or processes using our technologies and limit our revenues.
- If we fail to maintain and successfully manage our existing, or enter into new, ECCs, we may not be able to develop and commercialize our technologies and achieve or sustain profitability.
- We rely on our collaborators to develop, commercialize and market products, and they may not be successful.
- To date, no commercial products have been enabled by our technologies, and, even if our technologies prove to be effective, they still may not lead to commercially viable products.

- Our ability to compete may decline if we do not adequately protect our propriety technologies or if we lose some of our intellectual property rights through costly litigation or administrative proceedings.
- If we lose key management personnel, including our Chief Executive Officer, Randal J. Kirk, our Chief Operating Officer, Krish S. Krishnan, or our Chief Science Officer, Thomas D. Reed, or are unable to attract and retain additional personnel, it could delay our product development programs, harm our research and development efforts, and we may be unable to pursue collaborations or develop our own products.

Corporate information

We were founded by Thomas D. Reed, Ph.D., in 1998. We are a Virginia corporation. Since 2005, we have been controlled, managed and primarily funded by Randal J. Kirk, our Chairman and Chief Executive Officer, and his affiliates for the purposes of developing our synthetic biology technologies. Our principal executive offices are located at 20374 Seneca Meadows Parkway, Germantown, Maryland 20876, and our telephone number is (301) 556-9900. Our website address is *www.dna.com*. The information contained on, or that can be accessed through, our website is not a part of this prospectus. We have included our website address in this prospectus solely as an inactive textual reference.

UltraVector®, RheoSwitch Therapeutic System® and RTS® are our registered trademarks in the United States and *LEAP™ and mAbLogix™* are our common law trademarks in the United States. Other trademarks, trade names and service marks appearing in this prospectus are the property of their respective owners.

The offering

Common stock offered by us	shares
Common stock to be outstanding after this offering	shares
Option to purchase additional shares from us	We have granted the underwriters an option for a period of up to 30 days to purchase up to additional shares from us.
Use of proceeds	We estimate that the net proceeds from the sale of shares of our common stock that we are selling in this offering will be approximately $ million (or approximately $ million if the underwriters' option to purchase additional shares in this offering is exercised in full), based upon an assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. We intend to use the net proceeds from this offering, together with our existing cash resources, to fund continued investment in our research and development platforms, to further our business development efforts to consummate new collaboration agreements with new companies across our various commercial divisions and for working capital and other general corporate purposes. See "Use of proceeds" on page 42.
Proposed New York Stock Exchange symbol	"XON"

The number of shares of common stock to be outstanding after this offering is based on (i) 9,909,669 shares of common stock outstanding on March 31, 2013, (ii) 121,085,428 shares of common stock into which all of our redeemable convertible preferred stock outstanding as of March 31, 2013 will be converted upon the completion of this offering, (iii) 10,868,655 shares of common stock into which the shares of Series F preferred stock issued on April 30, 2013 will be converted upon the completion of this offering, and (iv) the conversion of aggregate dividends on our series preferred stock of into approximately shares of our common stock, based on an initial public offering price of $ per share, which is the midpoint of the estimated offering range set forth on the cover page of this prospectus, upon completion of this offering and excludes:

- 3,953,172 shares of common stock issuable upon the exercise of outstanding options at a weighted average exercise price of $3.37 per share, of which 1,589,109 shares are vested as of March 31, 2013;

- 5,204,566 shares of our common stock reserved for future issuance under our 2008 Equity Incentive Plan as of March 31, 2013; and
- 894,423 shares of common stock issuable upon the exercise of warrants outstanding as of March 31, 2013 at a weighted average exercise price of $0.45 per share.

Except as otherwise noted, all information in this prospectus assumes:

- the filing and effectiveness of our amended and restated articles of incorporation in Virginia and the adoption of our amended and restated bylaws, each of which will occur immediately prior to the closing of this offering; and
- no exercise by the underwriters of their option to purchase up to additional shares of common stock from us to cover over-allotments.

Summary consolidated financial data

The following table summarizes our consolidated financial data. We derived the summary consolidated statement of operations data for the years ended December 31, 2012 and 2011 from our audited consolidated financial statements and related notes appearing elsewhere in this prospectus. The consolidated statement of operations data for the three months ended March 31, 2013 and 2012 and the consolidated balance sheet data as of March 31, 2013 have been derived from our unaudited consolidated financial statements included elsewhere in this prospectus and have been prepared on the same basis as the audited consolidated financial statements. In the opinion of management, the unaudited financial information includes all adjustments, consisting of normal recurring adjustments, necessary for the fair statement of our financial position and results of operations for these periods. Our historical results for any prior period are not necessarily indicative of the results to be expected in any future period, and our results for any interim period are not necessarily indicative of results to be expected for a full fiscal year. The summary consolidated financial data should be read together with our consolidated financial statements and related notes, as well as "Selected consolidated financial data" beginning on page 50 and "Management's discussion and analysis of financial condition and results of operations," beginning on page 53. Our audited and unaudited consolidated financial statements have been prepared in U.S. dollars in accordance with U.S. GAAP.

	Three months ended March 31,		Years ended December 31,	
	2013	2012	2012	2011
	(In thousands, except share and per share amounts) (Unaudited)			
Statement of Operations Data:				
Revenues:				
Collaboration revenues	$ 3,864	$ 1,554	$ 13,706	$ 5,118
Other revenues	112	64	219	3,053
Total revenues	3,976	1,618	13,925	8,171
Operating expenses:				
Research and development	11,502	18,979	64,185	70,386
General and administrative	6,480	7,760	24,897	18,300
Other operating expenses	—	—	—	1,912
Total operating expenses	17,982	26,739	89,082	90,598
Loss from operations	(14,006)	(25,121)	(75,157)	(82,427)
Total other income (expense), net	(21,966)	11,209	(6,443)	(2,853)
Equity in net loss of affiliate	(390)	—	(274)	—
Net loss	$ (36,362)	$ (13,912)	$ (81,874)	$ (85,280)
Net loss attributable to noncontrolling interest	51	—	—	—
Net loss attributable to Intrexon	$ (36,311)	$ (13,912)	$ (81,874)	$ (85,280)
Accretion of dividends on redeemable convertible preferred stock, not declared	(6,405)	(5,460)	(21,994)	(13,868)
Net loss attributable to Intrexon common shareholders	$ (42,716)	$ (19,372)	$ (103,868)	$ (99,148)
Net loss attributable to Intrexon common shareholders per share, basic and diluted	$ (4.31)	$ (2.03)	$ (10.73)	$ (10.81)
Weighted average shares outstanding, basic and diluted	9,908,047	9,548,468	9,683,984	9,171,140
Unaudited Pro forma information(1)(2)				
Pro forma net loss attributable to common shareholders				
Pro forma net loss per share, basic and diluted				
Pro forma shares used in computation of pro forma net loss per share, basic and diluted				

(1) Pro forma net loss and pro forma net loss per share, basic and diluted have been calculated after giving effect to (i) the issuance of 19,047,619 shares of Series F preferred stock issued between December 31, 2012 and April 30, 2013 and the conversion of those shares into 19,047,619 shares of common stock upon the completion of this offering; (ii) the conversion of 112,906,464 shares of our preferred stock outstanding as of December 31, 2012 into 112,906,464 shares of common stock upon the completion of this offering; and (iii) the conversion of aggregate cumulative dividends on our series preferred stock of $ into approximately shares of our common stock, based on an initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, upon completion of this offering.

(2) Pro forma net loss and pro forma net loss per share, basic and diluted have been calculated after giving effect to (i) the issuance of 10,868,655 shares of Series F preferred stock on April 30, 2013 and the conversion of those shares into 10,868,655 shares of common stock upon the completion of this offering; (ii) the conversion of 121,085,428 shares of our preferred stock outstanding as of March 31, 2013 into 121,085,428 shares of common stock upon completion of this offering; and (iii) the conversion of aggregate cumulative dividends on our series preferred stock of $ into approximately shares of our common stock, based on an initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover page of this prospectus, upon completion of this offering.

The following summary consolidated balance sheet data as of March 31, 2013 is presented:

- on an actual basis;
- on a pro forma basis after giving effect to (i) the issuance of 10,868,655 shares of Series F preferred stock issued on April 30, 2013 and the conversion of those shares into 10,868,655 shares of common stock upon completion of this offering; (ii) the conversion of $0.2 million of subscriptions for Series F preferred stock as of March 31, 2013 into shares of Series F preferred stock on April 30, 2013; (iii) the receipt of gross proceeds of $85.4 million, net of issuance costs of $1.6 million, from the issuance of Series F preferred stock on April 30, 2013; (iv) the conversion of 121,085,428 shares of our preferred stock outstanding as of March 31, 2013 into 121,085,428 shares of common stock upon completion of this offering; and (v) the conversion of aggregate cumulative dividends on our series preferred stock of $56.9 million into approximately shares of our common stock, based on an initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, upon completion of this offering; and
- on a pro forma as adjusted basis after giving effect to the pro forma adjustments and giving further effect to the sale of shares of common stock in this offering at an assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The summary unaudited pro forma as adjusted consolidated balance sheet is for information purposes only and does not purport to indicate consolidated balance sheet information as of any future date.

	As of March 31, 2013		
	Actual	Pro forma	Pro forma as adjusted(1)
		(Unaudited) (In thousands)	
Balance Sheet Data:			
Cash and cash equivalents	$ 59,724	$ 143,515	
Other current assets	6,290	6,290	
Equity securities	56,147	56,147	
Other long-term assets	77,524	77,524	
Total assets	199,685	283,476	
Accounts payable, accrued expenses and other current liabilities, excluding current portion of deferred revenue	7,817	7,617	
Deferred revenue, current and non-current	61,092	61,092	
Other long-term liabilities	3,232	3,232	
Redeemable convertible preferred stock	475,946	—	
Additional paid in capital	—	559,937	
Accumulated deficit	(363,471)	(363,471)	
Accumulated other comprehensive loss	(9)	(9)	
Total Intrexon shareholders' equity (deficit)	(363,480)	196,457	
Noncontrolling interest	15,078	15,078	
Total equity (deficit)	(348,402)	211,535	

(1) Each $1.00 increase (decrease) in the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, would increase (decrease) each of pro forma as adjusted cash and cash equivalents, total assets and total equity (deficit) by approximately $ million, assuming that the number of shares we are offering, as set forth on the cover page of this prospectus, remains the same and the underwriters do not exercise their over-allotment option. Depending on market conditions and other considerations at the time we price this offering, we may sell a greater or lesser number of shares than the number set forth on the cover page of this prospectus. An increase (decrease) of 1.0 million shares in the number of shares we are offering would increase (decrease) each of pro forma as adjusted cash and cash equivalents, total assets and total equity (deficit) by approximately $ million, assuming an initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions payable by us. An increase of 1.0 million shares in the number of shares we are offering, together with a $1.00 increase in the public offering price per share, would increase each of pro forma as adjusted cash and cash equivalents, total assets and total equity (deficit) by approximately $. A decrease of 1.0 million shares in the number of shares we are offering, together with a $1.00 decrease in the public offering price per share, would decrease each of pro forma as adjusted cash and cash equivalents, total assets and total equity (deficit) by approximately $ million.

Risk factors

Investing in our common stock involves a high degree of risk. You should carefully consider the risks described below, together with the other information contained in this prospectus, including our consolidated financial statements and the related notes appearing at the end of this prospectus, before making your decision to invest in shares of our common stock. We cannot assure you that any of the events discussed in the risk factors below will not occur. These risks could have a material and adverse impact on our business, results of operations, financial condition or prospects. If that were to happen, the trading price of our common stock could decline, and you could lose all or part of your investment.

This prospectus also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks faced by us described below and elsewhere in this prospectus. See "Special note regarding forward-looking statements" for information relating to these forward-looking statements.

Risks related to our financial position, operating results and need for additional capital

We have a history of net losses, and we may not achieve or maintain profitability.

We have incurred net losses since our inception, including losses of $81.9 million and $85.3 million in 2012 and 2011, respectively, and we incurred a net loss of $36.3 million for the three months ended March 31, 2013. As of March 31, 2013, we had an accumulated deficit of $363.5 million. We may incur losses and negative cash flow from operating activities for the foreseeable future. To date, we have derived a substantial portion of our revenues from exclusive channel collaborations, or ECCs, with our collaborators and expect to derive a substantial portion of our revenues from these and additional ECCs for the foreseeable future. If our existing collaborators terminate their ECCs with us or we are unable to enter into new ECCs, our revenues could be adversely affected. In addition, certain of our ECCs provide for milestone payments, future royalties and other forms of contingent consideration, the payment of which are uncertain as they are dependent on our collaborators' abilities and willingness to successfully develop and commercialize products. We expect a significant period of time will pass before the achievement of contractual milestones and the realization of royalties on products commercialized under our ECCs. As a result, we expect that our expenses will exceed revenues for the foreseeable future, and we may not achieve profitability. If we fail to achieve profitability, or if the time required to achieve profitability is longer than we anticipate, we may not be able to continue our business. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis.

We may need substantial additional capital in the future in order to fund our business.

We expect our future capital requirements will be substantial, particularly as we continue to develop our business and expand our synthetic biology technology platform. Although we believe that, based on our current level of operations and anticipated growth, our existing cash and cash equivalents and cash expected to be received from our current collaborators will provide adequate funds for ongoing operations, planned capital expenditures and working capital requirements through at least the next 12 months, we may need additional capital if our

current plans and assumptions change. Our need for additional capital will depend on many factors, including:

- the commercial success of our ECCs;
- whether we are successful in obtaining payments from our collaborators;
- whether we can enter into additional ECCs;
- the progress and scope of the collaborative and independent research and development projects performed by us and our collaborators;
- whether an existing obligation under our ECC with ZIOPHARM Oncology, Inc. is triggered that could require us to provide up to $29 million to them, the timing of which is not within our control;
- the effect of any acquisitions of other businesses or technologies that we may make in the future;
- whether we decide to develop internal development or manufacturing capabilities;
- the costs associated with being a public company; and
- the filing, prosecution and enforcement of our intellectual property.

If our capital resources are insufficient to meet our capital requirements, and we are unable to enter into or maintain ECCs with collaborators that are able or willing to fund development efforts or commercialize products enabled by our technologies, we will have to raise additional funds to continue the development of our technologies and complete the commercialization of products, if any, resulting from our technologies. If future financings involve the issuance of equity securities, our existing shareholders would suffer dilution. If we raise debt financing, we may be subject to restrictive covenants that limit our ability to conduct our business. We may not be able to raise sufficient additional funds on terms that are favorable to us, if at all. If we fail to raise sufficient funds and continue to incur losses, our ability to fund our operations, take advantage of strategic opportunities, develop products or technologies, or otherwise respond to competitive pressures could be significantly limited. If this happens, we may be forced to delay or terminate research or development programs or the commercialization of products resulting from our technologies, curtail or cease operations or obtain funds through ECCs or other collaborative and licensing arrangements that may require us to relinquish commercial rights, or grant licenses on terms that are not favorable to us. If adequate funds are not available, we will not be able to successfully execute our business plan or continue our business.

Our quarterly and annual operating results may fluctuate in the future. As a result, we may fail to meet or exceed the expectations of research analysts or investors, which could cause our stock price to decline.

Our financial condition and operating results have varied significantly in the past and may continue to fluctuate from quarter to quarter and year to year in the future due to a variety of factors, many of which are beyond our control. Factors relating to our business that may contribute to these fluctuations include the following factors, as well as other factors described elsewhere in this prospectus:

- our ability to achieve or maintain profitability;
- our relationships, and the associated exclusivity terms, with collaborators in our target end markets;

- our ability to develop and maintain technologies that our collaborators continue to use and that new collaborators are seeking;
- our ability to enter into ECCs;
- the feasibility of producing and commercializing products enabled by our technologies;
- obligations to provide resources to our collaborators or to the collaborations themselves pursuant to the terms of the relevant ECC;
- our ability to manage our growth;
- the outcomes of research programs, clinical trials, or other product development and approval processes conducted by our collaborators;
- the ability of our collaborators to develop and successfully commercialize products enabled by our technologies;
- risks associated with the international aspects of our business;
- our ability to integrate any businesses or technologies we may acquire with our business;
- potential issues related to our ability to accurately report our financial results in a timely manner;
- our dependence on, and the need to attract and retain, key management and other personnel;
- our ability to obtain, protect and enforce our intellectual property rights;
- our ability to prevent the theft or misappropriation of our intellectual property, know-how or technologies;
- potential advantages that our competitors and potential competitors may have in securing funding or developing competing technologies or products;
- our ability to obtain additional capital that may be necessary to expand our business;
- our exposure to the volatility associated with recording the fair value of securities of our collaborators held by us;
- our collaborators' ability to obtain additional capital that may be necessary to develop and commercialize products under our ECCs;
- business interruptions such as power outages and other natural disasters;
- public concerns about the ethical, legal and social ramifications of genetically engineered products and processes;
- our ability to use our net operating loss carryforwards to offset future taxable income; and
- the results of our consolidated subsidiaries.

Due to the various factors mentioned above, and others, the results of any prior quarterly or annual periods should not be relied upon as indications of our future operating performance.

We have a limited operating history, which may make it difficult to evaluate our current business and predict our future performance.

We have been in existence since 1998. From 1998 until 2010, our operations focused primarily on organizing and staffing our Company and developing our technologies. Our current business model has not been tested. In January 2011, we recognized our first revenues from our first ECC. Because our revenue growth has occurred in recent periods, our limited operating history may make it difficult to evaluate our current business and predict our future performance. Any assessments of our current business and predictions made about our future success or viability may not be as accurate as they could be if we had a longer operating history. We have encountered and will continue to encounter risks and difficulties frequently experienced by growing companies in rapidly changing industries. If we do not address these risks successfully, our business will be harmed. If we engage in any acquisitions, we will incur a variety of costs and may potentially face numerous risks that could adversely affect our business and operations.

We may pursue strategic acquisitions and investments which could have an adverse impact on our business if they are unsuccessful.

We have made acquisitions in the past, and if appropriate opportunities become available, we may acquire additional businesses, assets, technologies or products to enhance our business in the future. In connection with any future acquisitions, we could:

- issue additional equity securities, which would dilute our current shareholders;
- incur substantial debt to fund the acquisitions; or
- assume significant liabilities.

Although we conduct due diligence reviews of our acquisition targets, such processes may fail to reveal significant liabilities. Acquisitions involve numerous risks, including:

- problems integrating the purchased operations, technologies or products;
- unanticipated costs and other liabilities, diversion of management’s attention from our core businesses;
- adverse effects on existing business relationships with current and/or prospective collaborators, customers and/or suppliers;
- risks associated with entering markets in which we have no or limited prior experience; and
- potential loss of key employees.

We do not have extensive experience in managing the integration process, and we may not be able to successfully integrate any businesses, assets, products, technologies or personnel that we might acquire in the future without a significant expenditure of operating, financial and management resources. The integration process could divert management time from focusing on operating our business, result in a decline in employee morale and cause retention issues to arise from changes in compensation, reporting relationships, future prospects or the direction of the business. Acquisitions also may require us to record goodwill and non-amortizable intangible assets that will be subject to impairment testing on a regular basis and potential periodic impairment charges, incur amortization expenses related to certain intangible assets, and incur large and immediate write-offs and restructuring and other related expenses, all of which could

harm our operating results and financial condition. In addition, we may acquire companies that have insufficient internal financial controls, which could impair our ability to integrate the acquired company and adversely impact our financial reporting. If we fail in our integration efforts with respect to any of our acquisitions and are unable to efficiently operate as a combined organization, our business and financial condition may be adversely affected.

We own equity interests in several of our collaborators and have exposure to the volatility and liquidity risks inherent in holding their common stock.

In connection with our ECCs, we generally receive technology access fees. Because several of our collaborators are private companies or public corporations with limited capital, we allow them to pay our access fee in stock. As a result, we own equity interests in several of our collaborators. We may continue to provide this alternative to our collaborators. Owning equity in our collaborators further increases our exposure to the risks of our collaborators' businesses beyond our dependence on these collaborators to provide market and product development expertise, as well as sales, marketing and regulatory capabilities. Our equity ownership in our collaborators exposes us to volatility and the potential for negative returns. In many cases, our equity position is a minority position which exposes us to further risk as we are not able to exert control over the companies in which we hold securities.

We select collaborators based on a variety of factors such as their capabilities, capacity and expertise in a defined field. As described above, we may allow the collaborator to pay our access fee in cash or equity securities. As a result, the process by which we obtain equity interests in our collaborators and the factors we consider in deciding whether to acquire, hold or dispose of these equity positions may differ significantly from those that an independent investor would consider when purchasing equity interests in the collaborator. One significant factor would include our own expectation as to the success of our efforts to assist the collaborator in developing products enabled by our technologies.

We own common stock of several publicly traded companies and the values of those equity interests are subject to market price volatility. For each collaborator where we own equity securities, we make an accounting policy election to present them at either the fair value at the end of each reporting period or using the cost or equity method depending on our level of influence. We have adopted the fair value method of accounting for certain of these securities, and therefore, have recorded them at fair value at the end of each reporting period with the unrealized gain or loss recorded as a separate component of other expense, net for the period. As of March 31, 2013 and December 31, 2012, the aggregate original cost basis of these securities was $94.5 million and $92.1 million, respectively, and the market value was $56.1 million and $83.1 million, respectively. The fair value of these securities is subject to fluctuation in the future due to the volatility of the stock market, changes in general economic conditions and changes in the financial conditions of one or more collaborators.

The common stock of our collaborators may not be publicly traded, and if it is traded publicly, the trading market could be limited or have low trading volume. In some cases, we could hold unregistered shares and we may not have demand registration rights with respect to those shares. We evaluate whether any discounts for trading restrictions or other basis for lack of marketability should be applied to the fair value of the securities at inception of the ECC. In the event we conclude that a discount should be applied, the fair value of the securities is adjusted at inception of the ECC and re-evaluated at each reporting period thereafter. In all of these instances, we have substantial liquidity risk related to these holdings, and we may not be able to sell, or sell quickly, all or part of these equity interests.

In connection with future ECCs, we may, from time to time, receive from collaborators, both public and private, warrants, rights and/or options, all of which involve special risks. To the extent we receive warrants or options in connection with future ECCs, we would be exposed to risks involving pricing differences between the market value of underlying securities and our exercise price for the warrants or options, a possible lack of liquidity and the related inability to close a warrant or options position, all of which could ultimately have an adverse effect.

We rely on our collaborators and other third parties to deliver timely and accurate information in order to accurately report our financial results in the time frame and manner required by law.

We need to receive timely, accurate and complete information from a number of third parties in order to accurately report our financial results on a timely basis. We rely on our collaborators to provide us with complete and accurate information regarding revenues, expenses and payments owed to or by us on a timely basis. In addition, we intend to rely on current and future collaborators under our ECCs to provide us with product sales and cost saving information in connection with royalties, if any, owed to us. If the information that we receive is not accurate, our consolidated financial statements may be materially incorrect and may require restatement, and we may not receive the full amount of consideration to which we are entitled under our ECCs. Although we have audit rights with these parties, performing such an audit could be expensive and time consuming and may not be adequate to reveal any discrepancies in a timeframe consistent with our reporting requirements. We own a significant equity position in several of our ECC collaborators, including a majority position in one of our ECC collaborators, AquaBounty Technologies, Inc., or AquaBounty. In March 2013, we began to consolidate the financial statements of AquaBounty into our consolidated financial statements. In the future, we may need to consolidate the financial statements of one or more other collaborators into our consolidated financial statements. Although we have contractual rights to receive information and certifications allowing us to do this, such provisions may not ensure that we receive information that is accurate or timely. As a result, we may have difficulty completing accurate and timely financial disclosures, which could have an adverse effect on our business.

Our ability to use our net operating loss carryforwards and certain other tax attributes may be limited.

As of December 31, 2012, we had net operating loss carryforwards of approximately $207.0 million for U.S. federal income tax purposes available to offset future taxable income and U.S. federal and state research and development tax credits of $5.8 million, prior to consideration of annual limitations that may be imposed under Section 382 of the Internal Revenue Code of 1986, as amended, or Section 382. These carryforwards begin to expire in 2022. Our past issuances of stock and mergers and acquisitions have resulted in ownership changes within the meaning of Section 382. As a result, the utilization of portions of our net operating losses may be subject to annual limitations. As of December 31, 2012, approximately $16.4 million of our net operating losses generated prior to 2008 are limited by Section 382 to annual usage limits of approximately $1.5 million. As of December 31, 2012, approximately $14.8 million of net operating losses were inherited via acquisition and are limited based on the value of the target at the time of the transaction. Future changes in stock ownership may also trigger an ownership change and, consequently, a Section 382 limitation.

Risks related to our technologies and business operations

Ethical, legal and social concerns about synthetic biologically engineered products and processes could limit or prevent the use of products or processes using our technologies and limit our revenues.

Our technologies involve the use of synthetic biologically engineered products or synthetic biological technologies. Public perception about the safety and environmental hazards of, and ethical concerns over, genetically engineered products and processes could influence public acceptance of our technologies, products and processes. If we and our collaborators are not able to overcome the ethical, legal and social concerns relating to synthetic biological engineering, products and processes using our technologies may not be accepted. These concerns could result in increased expenses, regulatory scrutiny, delays or other impediments to our programs or the public acceptance and commercialization of products and processes dependent on our technologies or inventions. The ability of our collaborators to develop and commercialize products, or processes using our technologies could be limited by public attitudes and governmental regulation.

The subject of genetically modified organisms has received negative publicity, which has aroused public debate. This adverse publicity could lead to greater regulation and trade restrictions on imports of genetically altered products. Further, there is a risk that products produced using our technologies could cause adverse health effects or other adverse events, which could also lead to negative publicity.

The synthetic biological technologies that we develop may have significantly enhanced characteristics compared to those found in naturally occurring organisms, enzymes or microbes. While we produce our synthetic biological technologies only for use in a controlled laboratory and industrial environment, the release of such synthetic biological technologies into uncontrolled environments could have unintended consequences. Any adverse effect resulting from such a release could have a material adverse effect on our business and financial condition, and we may have exposure to liability for any resulting harm.

We may become subject to increasing regulation in the future.

Our ongoing research and development relies on evaluations in animals, which may become subject to bans or additional regulations, and, as described above, our research operations are subject to various environmental regulations. However, most of the laws and regulations concerning synthetic biology relate to the end products produced using synthetic biology, but that may change. For example, the Presidential Commission for the Study of Bioethical Issues in December 2010 recommended that the federal government oversee, but not regulate, synthetic biology research. The Presidential Commission also recommended that the government lead an ongoing review of developments in the synthetic biology field and that the government conduct a reasonable risk assessment before the field release of synthetic organisms. Synthetic biology may become subject to additional government regulations as a result of the recommendations, which could require us to incur significant additional capital and operating expenditures and other costs in complying with these laws and regulations.

To date, no commercial products have been enabled by our technologies and even if our technologies prove to be effective, they still may not lead to commercially viable products.

To date, none of our collaborators has received marketing approval or has commercialized any products enabled by our technologies. There is no guarantee that we or our collaborators will be successful in creating products enabled by our technologies. Even if our collaborators are successful in using our technologies, they may not be able to commercialize the resulting products or may decide to use other methods competitive with our technologies that do not utilize synthetic biology.

The FDA has not yet approved any gene therapies for use in humans or animals.

The U.S. Food and Drug Administration, or FDA, has not yet approved any gene therapies for use in humans or animals. The field of gene therapies is experimental and has not yet proven successful in many clinical trials. Clinical trials with gene therapies have encountered a multitude of significant technical problems in the past, including unintended integration with host DNA leading to serious adverse events, poor levels of protein expression, transient protein expression, viral overload, immune reactions to either viral capsids utilized to deliver DNA, DNA itself, proteins expressed or cells transfected with DNA. There can be no assurance that our development efforts or those of our collaborators will be successful, that we or they will receive the regulatory approvals necessary to initiate clinical trials, where applicable, or that we will ever be able to successfully commercialize a product enabled by our technologies. To the extent that we or our collaborators utilize viral constructs or other systems to deliver gene therapies and the same or similar delivery systems demonstrate unanticipated and/or unacceptable side effects in preclinical or clinical trials conducted by ourselves or others we may be forced to, or elect to, discontinue development of such products.

If we lose key personnel, including key management personnel, or are unable to attract and retain additional personnel, it could delay our product development programs, harm our research and development efforts, and we may be unable to pursue collaborations or develop our own products.

Our business involves complex operations across a variety of markets and requires a management team and employee workforce that is knowledgeable in the many areas in which we operate. The loss of any key members of our management, including our Chief Executive Officer, Randal J. Kirk, our Chief Operating Officer, Krish S. Krishnan, or our Chief Science Officer, Thomas D. Reed, or the failure to attract or retain other key employees who possess the requisite expertise for the conduct of our business, could prevent us from developing and commercializing our products for our target markets and entering into collaborations or licensing arrangements to execute on our business strategy. We currently maintain key man insurance on Dr. Reed in the amount of $25.0 million; however, that coverage would likely be inadequate to compensate for the loss of his services. In addition, the loss of any key scientific staff, or the failure to attract or retain other key scientific employees, could prevent us from developing our technologies for our target markets and entering into collaborations or licensing arrangements to execute on our business strategy. We may not be able to attract or retain qualified employees in the future due to the intense competition for qualified personnel among biotechnology, synthetic biology and other technology-based businesses, or due to the unavailability of personnel with the qualifications or experience necessary for our business. If we are not able to attract and retain the necessary personnel to accomplish our business objectives, we may experience staffing constraints that will adversely affect our ability to meet the demands of our collaborators and customers in a timely

fashion or to support our internal research and development programs. In particular, our product and process development programs are dependent on our ability to attract and retain highly skilled scientists. Competition for experienced scientists and other technical personnel from numerous companies and academic and other research institutions may limit our ability to attract and retain such personnel on acceptable terms. All of our employees are at-will employees, which means that either the employee or we may terminate their employment at any time.

Our planned activities will require additional expertise in specific industries and areas applicable to the products and processes developed through our technologies or acquired through strategic or other transactions, especially in the end markets that we seek to penetrate. These activities will require the addition of new personnel, and the development of additional expertise by existing personnel. The inability to attract personnel with appropriate skills or to develop the necessary expertise could impair our ability to grow our business.

We may encounter difficulties managing our growth, which could adversely affect our business.

Currently, we are working simultaneously on multiple projects targeting several market sectors, including activities in human therapeutics, protein production, animal sciences, agricultural biotechnology and industrial products. These diversified operations place increased demands on our limited resources and require us to substantially expand the capabilities of our administrative and operational resources and to attract, train, manage and retain qualified management, technicians, scientists and other personnel. As our operations expand domestically and internationally, we will need to continue to manage multiple locations and additional relationships with various customers, collaborators, suppliers and other third parties. Our ability to manage our operations, growth and various projects effectively will require us to make additional investments in our infrastructure to continue to improve our operational, financial and management controls and our reporting systems and procedures and to attract and retain sufficient numbers of talented employees, which we may be unable to do effectively. As a result, we may be unable to manage our expenses in the future, which may negatively impact our gross margins or operating margins in any particular quarter. In addition, we may not be able to successfully improve our management information and control systems, including our internal control over financial reporting, to a level necessary to manage our growth.

Competitors and potential competitors may develop products and technologies that make ours obsolete or garner greater market share than ours.

We do not believe that we have any direct competitors who provide comparable technologies of similar depth and breadth which to the same extent enable the commercialization of products developed using synthetic biology across a broad spectrum of biologically based industries. However, there are companies that have competing technologies for individual pieces of our proprietary suite of complementary technologies. One portion of our proprietary technology related to DNA synthesis and assembly includes the ability to synthesize new DNA. We believe the following companies engage in the manufacture of DNA components: DNA 2.0, Inc., Blue Heron Biotech, LLC and Life Technologies Corporation. Another portion of our proprietary technology includes development of fully human monoclonal antibodies. Our technology utilizes advanced methods of stimulating antibody production in naïve human B-cells *in vitro*, or in a test tube, and specifically selecting those cells which produce antibodies that can bind a desired target, such as human toxins, tumor cells and microbial pathogens. We believe the following companies engage in the manufacture of human or human-like monoclonal antibodies: AbD SeroTec (a Bio-Rad Laboratories, Inc. company), Alexion Pharmaceuticals, Inc., XOMA

Corporation, Genmab US, Inc., MorphoSys AG, NovImmune SA, Société Des Systèmes Biologiques, or BIOTEM, Adimab, LLC, ProMab Biotechnologies, Inc., Abpro, Inc., AIIM Therapeutics, Inc. and Open Monoclonal Technology, Inc.

The synthetic biologics industry and each of the commercial sectors we have targeted are characterized by rapid technological change and extensive competition. Our future success will depend on our ability to maintain a competitive position with respect to technological advances. Academic institutions also are working in this field. Technological development by others may result in our technologies, as well as products developed by our collaborators using our technologies, becoming obsolete.

Our ability to compete successfully will depend on our ability to develop proprietary technologies that can be used by our collaborators to produce products that reach the market in a timely manner and are technologically superior to and/or are less expensive than other products on the market. Certain of our competitors may benefit from local government subsidies and other incentives that are not available to us or our collaborators. As a result, our competitors may be able to develop competing and/or superior technologies and processes, and compete more aggressively and sustain that competition over a longer period of time than we or our collaborators can. As more companies develop new intellectual property in our markets, a competitor could acquire patent or other rights that may limit products using our technologies, which could lead to litigation.

We may be sued for product liability.

Each of our ECCs requires the collaborator to indemnify us for all liability related to products produced pursuant to the ECC and to obtain insurance coverage related to product liability in amounts considered standard for the industry. Even so, we may be named in product liability suits relating to products that are produced by our collaborators using our technologies. These claims could be brought by various parties, including other companies who purchase products from our collaborators or by the end users of the products. We cannot guarantee that our collaborators will not breach the indemnity and insurance coverage provisions of the ECCs. Further, insurance coverage is expensive and may be difficult to obtain, and may not be available to us or to our collaborators in the future on acceptable terms, or at all. We cannot assure you that our collaborators will have adequate insurance coverage against potential claims. In addition, although we currently maintain product liability insurance for our technologies in amounts we believe to be commercially reasonable, if the coverage limits of these insurance policies are not adequate, a claim brought against us, whether covered by insurance or not, could have a material adverse effect on our business, results of operations, financial condition and cash flows. This insurance may not provide adequate coverage against potential losses, and if claims or losses exceed our liability insurance coverage, we may go out of business. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our product candidates. Regardless of the merits or eventual outcome, liability claims may result in:

- reduced resources of our management to pursue our business strategy;
- decreased demand for products enabled by our technologies;
- injury to our or our collaborators' reputation and significant negative media attention;
- withdrawal of clinical trial participants;

- initiation of investigations by regulators;
- product recalls, withdrawals or labeling, marketing or promotional restrictions;
- significant costs to defend resulting litigation;
- substantial monetary awards to trial participants or patients;
- loss of revenue; and
- the inability to commercialize any products using our technologies.

We depend on sophisticated information technology and infrastructure.

We rely on various information systems to manage our operations. These systems are complex and include software that is internally developed, software licensed from third parties and hardware purchased from third parties. These products may contain internal errors or defects, particularly when first introduced or when new versions or enhancements are released. Failure of these systems could have an adverse effect on our business, which in turn may materially adversely affect our operating results and financial condition.

We may incur significant costs complying with environmental, health and safety laws and regulations, and failure to comply with these laws and regulations could expose us to significant liabilities.

We use hazardous chemicals and radioactive and biological materials in our business and are subject to a variety of federal, state, local and international laws and regulations governing, among other matters, the use, generation, manufacture, transportation, storage, handling, disposal of, and human exposure to these materials both in the United States and overseas, including regulation by governmental regulatory agencies, such as the Occupational Safety and Health Administration and the U.S. Environmental Protection Agency. We have incurred, and will continue to incur, capital and operating expenditures and other costs in the ordinary course of our business in complying with these laws and regulations.

Risks associated with our ECC business model

If we fail to maintain and successfully manage our existing, or enter into new, ECCs, we may not be able to develop and commercialize our technologies and achieve or sustain profitability.

Our ability to enter into, maintain and manage collaborations in our target markets is fundamental to the success of our business. We currently rely, and intend to rely for the foreseeable future, on our collaborators to develop products enabled by our technologies and then to manufacture, market, distribute and sell these products. We intend to enter into other strategic ECCs to produce, market and sell products enabled by the technologies that we have developed and will continue to develop. However, we may not be successful in entering into ECCs with future strategic collaborators. Any failure to enter into ECCs in our target market sectors on favorable terms could delay or hinder our ability to develop and commercialize our technologies and could increase our costs of development and commercialization.

We have entered into ECCs with strategic collaborators to develop products enabled by our technologies. There can be no guarantee that we can successfully manage these ECCs. Under the ECCs, we must use diligent efforts to carry out development activities under the ECC. The exclusivity provisions of the ECCs restrict our ability to commercialize our technologies in the

designated field covered by the ECC. In most cases, the collaborator may terminate the ECC with us for any reason upon 90 days' notice. In all cases, the ECC may be terminated if we fail to exercise diligent efforts or breach, and fail to cure, other provisions of the ECC. In addition, since our efforts to date have focused on a small number of collaborators in certain targeted sectors, our business would be adversely affected if one or more of these collaborators terminate their ECCs, fail to use our technologies or fail to develop commercially viable products enabled by our technologies.

Dependence on ECCs also will subject us to other risks, including:

- we have relinquished important rights regarding the commercialization, marketing and distribution of products and we may disagree with our collaborators' plans in these areas;
- although we retain broad rights with respect to intellectual property developed under the ECCs, our collaborators have the right, under certain circumstances, to take control of the enforcement of such intellectual property;
- we may have lower revenues than if we were to develop, manufacture, market and distribute products enabled by our technologies ourselves;
- a collaborator could, without the use of our synthetic biology technologies, develop and market a competing product either independently or in collaboration with others, including our competitors;
- our collaborators could be undercapitalized or fail to secure sufficient resources to fund the development and/or commercialization of the products enabled by our technologies in accordance with the ECC;
- our collaborators could become unable or less willing to expend their resources on research and development or commercialization efforts with respect to our technologies due to general market conditions, their financial condition or other circumstances beyond our control;
- we may be unable to manage multiple simultaneous ECCs or fulfill our obligations with respect thereto;
- disagreements with a collaborator could develop and any conflict with a collaborator could reduce our ability to enter into future ECCs and negatively impact our relationships with one or more existing collaborators;
- our collaborators could terminate our ECC with them, in which case, our collaborators may retain rights related to certain products, we may not be able to find another collaborator to develop different products in the field and we may not be able to develop different products in the field ourselves;
- our business could be negatively impacted if any of our collaborators undergo a change of control to a third party who is not willing to work with us on the same terms or commit the same resources as our current collaborator; and
- our collaborators may operate in countries where their operations could be adversely affected by changes in the local regulatory environment or by political unrest.

If any of these events occur, or if we fail to maintain our ECCs with our collaborators, we may not be able to commercialize our existing and potential technologies, grow our business or generate sufficient revenues to support our operations.

We rely on our collaborators to develop, commercialize and market products, and they may not be successful.

We depend on our collaborators to commercialize the products enabled by our technologies. If our collaborators are not able to successfully develop the products enabled by our technologies, none of our enabled products will become commercially available and we will receive no back-end payments under our ECCs. Because we do not currently and may never possess the resources necessary to independently develop and commercialize all of the potential products that may result from our technologies, our ability to succeed in markets we have currently targeted depends on our ability to enter into ECCs to develop and commercialize potential products. Some of our existing collaborators do not themselves have the resources necessary to commercialize products and they in turn will need to rely on additional sources of financing or third party collaborations. In addition, pursuant to our current ECCs and similar ECCs that we may enter into in the future, we have limited or no control over the amount or timing of resources that any collaborator is able or willing to devote to developing products or collaborative efforts. Any of our collaborators may fail to perform its obligations under the ECC. Our collaborators may breach or terminate their ECCs with us or otherwise fail to conduct their collaborative activities successfully and in a timely manner. If any of these events were to occur, our revenues, financial condition and results of operations could be adversely affected.

The sales process for our ECCs may be lengthy and unpredictable, and we may expend substantial funds and management effort with no assurance of successfully entering into new collaborations to commercialize our technologies.

The sales process for our ECCs may be lengthy and unpredictable. Our sales and licensing efforts may require the effective demonstration of the benefits, value, differentiation, validation of our technologies and services and significant education and training of multiple personnel and departments within the potential collaborator's organization. Though we have made efforts to standardize our ECCs, we may be required to negotiate ECCs containing terms unique to each collaborator, which would lengthen the sales cycle. We may expend substantial funds and management effort with no assurance that we will execute an ECC or otherwise sell our technologies or services. In addition, this lengthy sales cycle makes it more difficult for us to accurately forecast revenue in future periods and may cause revenues and operating results to vary significantly in such periods.

We have entered into a limited number of ECCs to date, and we require collaborators to successfully commercialize the products enabled by our technologies.

Our success depends upon entering into ECCs with a number of collaborators across a broad spectrum of industries. There is a risk that we may not be able to demonstrate the value proposition of our technologies with enough collaborators across enough industries for us to be successful. We intend to pursue additional ECCs, but may be unable to do so on terms satisfactory to us, or at all. Our current ECCs and any new ECCs we are able to enter into in one or more of the markets we have targeted may not be successful. Moreover, because we have limited financial and managerial resources, we will be required to prioritize our application of resources to particular development efforts. Any resources we expend on one or more of these efforts could be at the expense of other potentially profitable opportunities. If we focus our efforts and resources on one or more of these markets and they do not lead to commercially viable products, our revenues, financial condition and results of operations could be adversely affected.

Many of our current collaborators have no experience producing products at the commercial scale needed for the development of their business, and they will not succeed if they cannot effectively commercialize their products.

In addition to developing products using our technologies, our collaborators must demonstrate the ability to utilize our technologies to produce desired products at the commercial scale and on an economically viable basis or they must collaborate with others to do so. The products and processes developed using our technologies may not perform as expected when applied at commercial scale, or our collaborators may encounter operational challenges for which we and they are unable to devise a workable solution. For example, contamination in the production process could decrease process efficiency, create delays and increase our collaborators' costs. Moreover, under the terms of our ECCs, we limit the ability of our collaborators to partner their programs with third parties. We and our collaborators may not be able to scale up our production in a timely manner, if at all, even if our collaborators successfully complete product development in their laboratories and pilot and demonstration facilities. If this occurs, the ability of our collaborators to commercialize products and processes using our technologies will be adversely affected, and, with respect to any products that are brought to market, our collaborators may not be able to lower the cost of production, which would adversely affect our ability to increase the future profitability of our business.

The markets in which our collaborators are developing products using our technologies are subject to extensive regulation, and we rely on our collaborators to comply with all applicable laws and regulations.

Our technologies are used in products that are subject to extensive regulation by governmental authorities. We depend on our collaborators to comply with these laws and regulations with respect to products they produce using our technologies and we do not independently monitor whether our collaborators comply with applicable laws and regulations. If our collaborators fail to comply with applicable laws and regulations, we are subject to substantial financial and operating risks because we depend on our collaborators to produce the end products enabled by our technologies for sale, and because in many cases we have a substantial equity interest in our collaborators. These regulatory risks are extensive and include the following:

- complying with these regulations, including seeking approvals, the uncertainty of the scope of future regulations, and the costs of continuing compliance with regulations could affect the sales and profitability of our collaborators and materially impact our operating results;
- our business could be adversely affected if the processes used by our collaborators to manufacture their final products fail to be approved by the applicable regulatory authorities;
- where products are subject to regulatory approval, the regulatory approval process can be lengthy, costly, time consuming and inherently unpredictable, and if our collaborators are ultimately unable to obtain regulatory approval for products using our technologies, our business will be substantially harmed;
- even if our collaborators are able to commercialize products using our technologies, the product may become subject to post-approval regulatory requirements, unfavorable pricing regulations, third-party payor reimbursement practices or regulatory reform initiatives that could harm our business;

- we and our collaborators conduct on-going research and development that relies on evaluations in animals, which may become subject to bans or additional regulations;
- compliance with existing or future environmental laws and regulations could have a material adverse impact on the development and commercialization of products using our technologies; and
- to the extent products produced using our technologies are commercialized outside the United States, they will be subject to additional laws and regulations under the jurisdictions in which such products are commercialized.

The markets in which our collaborators are developing products using our technologies are highly competitive.

The markets in which our collaborators are developing products are, and will continue to be, highly competitive, and there can be no assurance that we or our collaborators will be able to compete effectively. There are numerous companies presently in these markets that are developing products that may compete with, and could adversely affect the prices for, any products developed by our collaborators using our technologies. Many of these competitors and potential competitors are well-established companies with significant resources and experience, along with well-developed distribution systems and networks for their products, valuable historical relationships with potential customers and extensive sales and marketing programs for their products. Some of these competitors may use these resources and their market influence to impede the development and/or acceptance of the products developed by our collaborators using our technologies.

We do not believe that we have any direct competitors who provide similar technologies which fully enable the commercialization of products developed using synthetic biology across a broad spectrum of biologically based industries. However, there are companies that have competing technologies for individual pieces of our proprietary suite of complementary technologies. One portion of our proprietary technology related to DNA synthesis and assembly includes the ability to de novo synthesize DNA. The following companies are examples of companies which we believe engage in the manufacture of DNA componentry: DNA 2.0, Inc., Blue Heron Biotech, LLC and Life Technologies Corporation. Another portion of our proprietary technology includes development of fully human monoclonal antibodies. Our technology utilizes advanced methods of stimulating antibody production in naïve human B-cells *in vitro* (*i.e.,* “in a test tube”) and specifically selecting those cells which produce antibodies that can bind a desired target (*e.g.,* human toxins, tumor cells, microbial pathogens). The following companies are examples of companies which we believe engage in the manufacture of human or human-like monoclonal antibodies: AbD SeroTec (a Bio-Rad Laboratories, Inc. company), Alexion Pharmaceuticals, Inc., XOMA Corporation, Genmab US, Inc., MorphoSys AG, NovImmune SA, Société Des Systèmes Biologiques, or BIOTEM, Adimab, LLC, ProMab Biotechnologies, Inc., Abpro Labs, AIIM Therapeutics and OmniAb.

To the extent that any of our collaborators’ competitors are more successful with respect to any key competitive factor or our collaborators are forced to reduce, or are unable to raise, the price of any products enabled by our technologies in order to remain competitive, our operating results and financial condition could be materially adversely affected. Competitive pressure could arise from, among other things, safety and efficacy concerns, limited demand or a significant number of additional competitive products being introduced into a particular market, price

reductions by competitors, the ability of competitors to capitalize on their economies of scale, the ability of competitors to produce or otherwise procure products similar or equivalent to those of our collaborators at lower costs and the ability of competitors to access more or newer technology than our collaborators can access (including our own).

Our right to terminate our ECCs is limited.

Generally, we do not have the right to terminate an ECC except in limited circumstances such as the collaborator's failure to exercise diligent efforts in performing its obligations under the ECC, including its development of products enabled by our technologies, or its breach of a term of the ECC that remains uncured for a specified period of time. Moreover, each of our collaborators receives an exclusive license to use all of our technologies in a designated field, potentially in perpetuity. The collaborators we choose in particular fields may not be in the best position to maximize the value of our technologies in that field, if they are capable of commercializing any products at all. In addition, the scope of the field for a particular ECC may prove to be too broad and result in the failure to maximize the value of our technologies in that field.

Risks related to our intellectual property

Our ability to compete may decline if we do not adequately protect our proprietary technologies or if we lose some of our intellectual property rights through costly litigation or administrative proceedings.

Our success depends in part on our ability to obtain patents and maintain adequate protection of our intellectual property in the United States and abroad for our suite of technologies and resultant products and potential products. We have adopted a strategy of seeking patent protection in the United States and abroad with respect to certain of the technologies used in or relating to our products and processes. We have also in-licensed rights to additional patents and pending patent applications in the United States and abroad. However, some of these in-licensed patents will expire as early as 2014, and some of our own patents will expire as early as 2017. We intend to continue to apply for patents relating to our technologies, methods and products as we deem appropriate.

The enforceability of patents involves complex legal and factual questions and, therefore, the extent of enforceability cannot be guaranteed. Issued patents and patents issuing from pending applications may be challenged, invalidated or circumvented. Moreover, the United States Leahy-Smith America Invents Act, enacted in September 2011, brought significant changes to the U.S. patent system, which include a change to a "first to file" system from a "first to invent" system and changes to the procedures for challenging issued patents and disputing patent applications during the examination process, among other things. The effects of these changes on our patent portfolio and business have yet to be determined, as the final substantive provisions of the America Invents Act took effect on March 16, 2013. The United States Patent and Trademark Office, or the USPTO, only recently finalized the rules relating to these changes and the courts have yet to address the new provisions. These changes could increase the costs and uncertainties surrounding the prosecution of our patent applications and the enforcement or defense of our patent rights. Additional uncertainty may result from legal precedent handed down by the United States Court of Appeals for the Federal Circuit and United States Supreme Court as they determine legal issues concerning the scope and construction of patent claims and inconsistent interpretation of patent laws by the lower courts. Accordingly, we cannot ensure that any of our pending patent applications will result in issued patents, or even if issued, predict the breadth of

the claims upheld in our and other companies' patents. Given that the degree of future protection for our proprietary rights is uncertain, we cannot ensure that we were the first to invent the inventions covered by our pending patent applications, we were the first to file patent applications for these inventions, the patents we have obtained, particularly certain patents claiming nucleic acids, proteins, or methods, are valid and enforceable, and the proprietary technologies we develop will be patentable.

In addition, unauthorized parties may attempt to copy or otherwise obtain and use our products or technology. Monitoring unauthorized use of our intellectual property is difficult, and we cannot be certain that the steps we have taken will prevent unauthorized use of our technologies, particularly in certain foreign countries where the local laws may not protect our proprietary rights as fully as in the United States. Moreover, third parties could practice our inventions in territories where we do not have patent protection. Such third parties may then try to import into the United States or other territories products, or information leading to potentially competing products, made using our inventions in countries where we do not have patent protection for those inventions. If competitors are able to use our technologies, our ability to compete effectively could be harmed. Moreover, others may independently develop and obtain patents for technologies that are similar to or superior to our technologies. If that happens, we may need to license these technologies, and we may not be able to obtain licenses on reasonable terms, if at all, which could harm our business.

We also rely on trade secrets to protect our technologies, especially in cases when we believe patent protection is not appropriate or obtainable. However, trade secrets are difficult to protect. While we require our employees, academic collaborators, collaborators, consultants and other contractors to enter into confidentiality agreements, we may not be able to adequately protect our trade secrets or other proprietary or licensed information. If we cannot maintain the confidentiality of our proprietary and licensed technologies and other confidential information, our ability and that of our licensor to receive patent protection and our ability to protect valuable information owned or licensed by us may be imperiled. Enforcing a claim that a third-party entity illegally obtained and is using any of our trade secrets is expensive and time consuming, and the outcome is unpredictable. Moreover, our competitors may independently develop equivalent knowledge, methods and know-how.

Litigation or other proceedings or third-party claims of intellectual property infringement could require us to spend significant time and money and could prevent us from commercializing our technologies or impact our stock price.

Our commercial success also depends in part on not infringing patents and proprietary rights of third parties, and not breaching any licenses or other agreements that we have entered into with regard to our technologies, products and business. We cannot ensure that patents have not been issued to third parties that could block our or our collaborators' ability to obtain patents or to operate as we would like. There may be patents in some countries that, if valid, may block our ability to make, use or sell our products in those countries, or import our products into those countries, if we are unsuccessful in circumventing or acquiring the rights to these patents. There also may be claims in patent applications filed in some countries that, if granted and valid, also may block our ability to commercialize products or processes in these countries if we are unable to circumvent or license them.

The biotechnology industry is characterized by frequent and extensive litigation regarding patents and other intellectual property rights. Many companies have employed intellectual

property litigation as a way to gain a competitive advantage. Our involvement in litigation, interferences, opposition proceedings or other intellectual property proceedings inside and outside of the United States, to defend our intellectual property rights or as a result of alleged infringement of the rights of others, may divert management time from focusing on business operations and could cause us to spend significant amounts of money. Some of our competitors may have significantly greater resources and, therefore, they are likely to be better able to sustain the cost of complex patent or intellectual property litigation than we could. The uncertainties associated with litigation could have a material adverse effect on our ability to raise the funds necessary to continue our business or to enter into additional collaborations with others. Furthermore, any potential intellectual property litigation also could force us or our collaborators to do one or more of the following:

- stop selling, incorporating or using products that use the intellectual property at issue;
- obtain from the third party asserting its intellectual property rights a license to sell or use the relevant technology, which license may not be available on reasonable terms, if at all; or
- redesign those products or processes that use any allegedly infringing technology, or relocate the operations relating to the allegedly infringing technology to another jurisdiction, which may result in significant cost or delay to us, or which could be technically infeasible.

The patent landscape in the field of synthetic biology is particularly complex. We are aware of U.S. and foreign patents and pending patent applications of third parties that cover various aspects of synthetic biology including patents that some may view as covering aspects of our technologies. In addition, there may be patents and patent applications in the field of which we are not aware. In many cases, the technologies we develop are early-stage technologies and we are and our collaborators are just beginning the process of designing and developing products using these technologies. Although we will seek to avoid pursuing the development of products that may infringe any patent claims that we believe to be valid and enforceable, we and our collaborators may fail to do so. Moreover, given the breadth and number of claims in patents and pending patent applications in the field of synthetic biology and the complexities and uncertainties associated with them, third parties may allege that we or our collaborators are infringing upon patent claims even if we do not believe such claims to be valid and enforceable.

Although no third party has asserted a claim of infringement against us, others may hold proprietary rights that could prevent products using our technologies from being marketed. Any patent-related legal action against persons who license our technologies, our collaborators or us claiming damages and seeking to enjoin commercial activities relating to products using our technologies or our processes could subject us to potential liability for damages and require our licensor or us to obtain a license to continue to manufacture or market such products or any future product candidates that use our technologies. We cannot predict whether we or our licensor would prevail in any such actions or that any license required under any of these patents would be made available on commercially acceptable terms, if at all. In addition, we cannot be sure that any such products or any future product candidates or processes could be redesigned to avoid infringement, if necessary. Accordingly, an adverse determination in a judicial or administrative proceeding, or the failure to obtain necessary licenses, could prevent our collaborators from developing and commercializing products using our technologies, which could harm our business, financial condition and operating results.

If any of our competitors have filed patent applications or obtained patents that claim inventions also claimed by us, we may have to participate in interference proceedings declared by the

USPTO to determine priority of invention and, thus, the right to the patents for these inventions in the United States. These proceedings could result in substantial cost to us even if the outcome is favorable. Even if successful, an interference may result in loss of certain of our important claims.

Any litigation or proceedings could divert our management's time and efforts. Even unsuccessful claims could result in significant legal fees and other expenses, diversion of management time, and disruption in our business. Uncertainties resulting from initiation and continuation of any patent or related litigation could harm our ability to compete.

Obtaining and maintaining our patent protection depends on compliance with various procedural, document submission, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other provisions during the patent process. Given the size of our intellectual property portfolio, compliance with these provisions involves significant time and expense. There are situations in which noncompliance can result in abandonment or lapse of a patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, competitors might be able to enter the market earlier than would otherwise have been the case.

If we do not obtain additional protection under the Hatch-Waxman Amendments and similar foreign legislation by extending the patent terms and obtaining data exclusivity for our technologies, our business may be materially harmed.

Depending upon the timing, duration and specifics of FDA marketing approval of products using our technologies, one or more of the U.S. patents we own or license may be eligible for limited patent term restoration under the Drug Price Competition and Patent Term Restoration Act of 1984, referred to as the Hatch-Waxman Amendments. The Hatch-Waxman Amendments permit a patent restoration term of up to five years as compensation for patent term lost during product development and the FDA regulatory review process. However, we may not be granted an extension because of, for example, failing to apply within applicable deadlines, failing to apply prior to expiration of relevant patents or otherwise failing to satisfy applicable requirements. Moreover, the applicable time period or the scope of patent protection afforded could be less than we request. If we are unable to obtain patent term extension or restoration or the term of any such extension is less than we request, our competitors may obtain approval of competing products following our patent expiration, and our ability to generate revenues could be materially adversely affected.

Enforcing our intellectual property rights may be difficult and unpredictable.

If we were to initiate legal proceedings against a third party to enforce a patent claiming one of our technologies, the defendant could counterclaim that our patent is invalid and/or unenforceable or assert that the patent does not cover its manufacturing processes, manufacturing components or products. Proving patent infringement may be difficult, especially where it is possible to manufacture a product by multiple processes. Furthermore, in patent litigation in the United States, defendant counterclaims alleging both invalidity and unenforceability are commonplace. Although we believe that we have conducted our patent

prosecution in accordance with the duty of candor and in good faith, the outcome following legal assertions of invalidity and unenforceability during patent litigation is unpredictable. With respect to the validity of our patent rights, we cannot be certain, for example, that there is no invalidating prior art, of which we and the patent examiner were unaware during prosecution. If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we would not be able to exclude others from practicing the inventions claimed therein. Such a loss of patent protection could have a material adverse impact on our business. Even if our patent rights are found to be valid and enforceable, patent claims that survive litigation may not cover commercially valuable products or prevent competitors from importing or marketing products similar to our own, or using manufacturing processes or manufacturing components similar to those used to produce the products using our technologies.

Although we believe we have obtained assignments of patent rights from all inventors, if an inventor did not adequately assign their patent rights to us, a third party could obtain a license to the patent from such inventor. This could preclude us from enforcing the patent against such third party.

We may not be able to enforce our intellectual property rights throughout the world.

The laws of some foreign countries do not protect intellectual property rights to the same extent as the laws of the United States. Many companies have encountered significant problems in protecting and defending intellectual property rights in certain foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property protection, particularly those relating to synthetic biology. This could make it difficult for us to stop the infringement of our patents or misappropriation of our other intellectual property rights. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business. Accordingly, our efforts to protect our intellectual property rights in such countries may be inadequate.

If our technologies or products using our technologies are stolen, misappropriated or reverse engineered, others could use the technologies to produce competing technologies or products.

Third parties, including our collaborators, contract manufacturers, contractors and others involved in our business often have access to our technologies. If our technologies, or products using our technologies, were stolen, misappropriated or reverse engineered, they could be used by other parties that may be able to reproduce our technologies or products using our technologies for their own commercial gain. If this were to occur, it would be difficult for us to challenge this type of use, especially in countries with limited intellectual property protection.

Confidentiality agreements with employees and others may not adequately prevent disclosures of trade secrets and other proprietary information.

We have taken measures to protect our trade secrets and proprietary information, but these measures may not be effective. We require our new employees and consultants to execute confidentiality agreements upon the commencement of an employment or consulting arrangement with us. These agreements generally require that all confidential information developed by the individual or made known to the individual by us during the course of the individual’s relationship with us be kept confidential and not disclosed to third parties. These agreements also generally provide that inventions conceived by the individual in the course of rendering services to us shall be our exclusive property. Nevertheless, our proprietary information

may be disclosed, third parties could reverse engineer our technologies or products using our technologies and others may independently develop substantially equivalent proprietary information and techniques or otherwise gain access to our trade secrets. Costly and time-consuming litigation could be necessary to enforce and determine the scope of our proprietary rights, and failure to obtain or maintain trade secret protection could adversely affect our competitive business position.

Risks related to AquaBounty

Because we own a majority of the issued and outstanding shares of AquaBounty, the following risk factors that are applicable to AquaBounty's business also apply to us.

AquaBounty will need additional capital.

In order for AquaBounty to execute on its business plan as announced by its management, AquaBounty will have future capital requirements, and we may be asked to invest additional funds in AquaBounty. If we fail to invest these additional funds, we may not retain control over AquaBounty. We have been advised by the management of AquaBounty that as of March 31, 2013, AquaBounty held $5.1 million of cash and cash equivalents and had a working capital balance of $4.8 million and that these amounts will provide adequate funds for AquaBounty's ongoing operations into the second quarter of 2014. We have no contractual obligation to provide funds to AquaBounty and therefore we do not know whether, or to what extent, we will be required to invest additional funds in AquaBounty.

There is significant uncertainty regarding regulatory approval for AquaBounty's AquAdvantage® Salmon.

As a genetically modified animal for human consumption, AquAdvantage Salmon, or AAS, will require approval from the FDA and regulatory bodies in other countries before it can be sold. To date, there have been significant delays in the regulatory process. There is no guarantee that any approvals granted, if granted, will not be subject to onerous obligations. Any change to AAS or the development of a new product, including pursuant to our ECC, will require AquaBounty to again obtain approval from the FDA and regulatory bodies in other countries.

The regulatory approval process for commercial introduction of AAS will be based on evidence that the AAS are safe to eat and can be grown under conditions that are environmentally sound. AquaBounty is seeking regulatory approval for AAS under a New Animal Drug Application, or NADA. NADA includes all the study components required for Import Tolerance, or tolerances for unapproved new animal drugs where edible portions of animals imported into the United States may contain residues of such drugs, plus an efficacy study, a target animal safety study and a non-target environmental safety study.

Regulatory approval, under the U.S. Food, Drug and Cosmetic Act, requires the submission of studies demonstrating human food safety and consistency in the manufacturing process. From 1995 to 2010 AquaBounty submitted the results of a number of studies on the safety and manufacturing of AAS. AquaBounty completed all major submissions for its NADA for AAS with the FDA in 2010.

In September 2010, the FDA held a public meeting of its Veterinary Medicine Advisory Committee to review its findings regarding AAS. The conclusion of the committee was that AAS is indistinguishable from other farmed Atlantic salmon, is safe to eat and does not pose a threat to the environment under its conditions of use. Subsequently, the FDA initiated an environmental

assessment in compliance with its obligations under the U.S. National Environmental Policy Act, which requires that all federal agencies consider the possible environmental impacts of any action which they authorize.

On December 26, 2012, the FDA published its environmental assessment for AAS, along with a Finding of No Significant Impact, in the Federal Register, confirming that an approval of the pending NADA would not have an adverse effect on the environment and opened up a 60 day period for public comment. On February 13, 2013, the FDA extended the period for public comment by an additional 60 days and the period expired on April 26, 2013.

As of the date of this registration statement, AquaBounty is awaiting a report of final action by the FDA on the pending NADA. We do not know when the FDA will issue this report.

The loss of AquaBounty broodstock would result in the loss of AquaBounty's commercial technology.

AquaBounty's AAS intellectual property resides in the breeding population of live fish, or broodstock, themselves; destruction of AAS broodstocks by whatever means would result in the loss of the commercial technology. Live animals are subject to disease that may, in some cases, prevent or cause delay in the export of fish or eggs to customers. Disease organisms may be present undetected and transferred inadvertently. Such events may cause loss of revenue.

AquaBounty is exposed to exchange rate fluctuation.

As a consequence of the international nature of its business, AquaBounty is exposed to risks associated with changes in foreign currency exchange rates. AquaBounty is based in the United States and presents its financial statements in U.S. dollars and the majority of AquaBounty's cash resources are held in U.S. dollars or in Canadian dollars. Some of AquaBounty's future expenses and revenues are expected to be denominated in currencies other than in U.S. dollars. Therefore, movements in exchange rates to translate to foreign currencies may have an impact on AquaBounty's reported results of operations, financial position and cash flows.

Risks related to our common stock and this offering

Purchasers in this offering will experience immediate and substantial dilution in the book value of their investment.

The initial public offering price of our common stock is substantially higher than the net tangible book value per share of our common stock. Therefore, if you purchase shares of our common stock in this offering, you will pay a price per share that substantially exceeds our net tangible book value per share after this offering. Based on the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, you will experience immediate dilution of $ per share, representing the difference between our pro forma net tangible book value per share after giving effect to this offering and the assumed initial public offering price. Purchasers of common stock in this offering will have contributed approximately percent of the aggregate price paid by all purchasers of our stock but will own only approximately percent of our common stock outstanding after this offering, excluding any shares of our common stock that they may have acquired prior to this offering. Furthermore, if the underwriters exercise their over-allotment option or our previously issued options and warrants to acquire common stock at prices below the assumed initial public offering price are exercised, you will experience further dilution. For a

further description of the dilution that you will experience immediately after this offering, see “Dilution” elsewhere in this prospectus.

No public market for our common stock currently exists and an active trading market may not develop or be sustained following this offering.

Prior to this offering, there has been no public market for our common stock. The initial public offering price for our common stock will be determined through negotiations with the underwriters. This price will not necessarily reflect the price at which investors in the market will be willing to buy and sell our shares following this offering. Although we intend to apply to list our common stock on the New York Stock Exchange, an active trading market for our shares may never develop or, if developed, be maintained following this offering. If an active market for our common stock does not develop or is not maintained, it may be difficult for you to sell shares you purchase in this offering without depressing the market price for the shares or at all. An inactive trading market also may impair our ability to raise capital to continue to fund operations by selling shares and may impair our ability to acquire other companies or technologies by using our shares as consideration. The lack of an active market also may reduce the fair market value of your shares.

We have broad discretion in the use of net proceeds from this offering and may not use them effectively.

Although we currently intend to use the net proceeds from this offering in the manner described in “Use of proceeds” elsewhere in this prospectus, we will have broad discretion in the application of the net proceeds and could spend the proceeds in ways that do not improve our results of operations or enhance the value of our common stock. Our failure to apply these net proceeds effectively could result in financial losses that could have a material adverse effect on our business, cause the price of our common stock to decline and delay the development of our product candidates. Pending their use, we may invest the net proceeds from this offering in a manner that does not produce income or that loses value.

The price of our shares of common stock is likely to be volatile, and you could lose all or part of your investment.

The trading price of our shares of common stock is likely to be volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control, including limited trading volume. In addition to the factors discussed in this “Risk factors” section and elsewhere in this prospectus, these factors include:

- developments concerning our collaborators;
- competition from existing technologies and products or new technologies and products that may emerge;
- announcements of new ECCs, significant acquisitions, strategic partnerships, joint ventures, new products, capital commitments or other events by us or our competitors;
- the inability to establish ECCs or terminate ECCs;
- actual or anticipated variations in our quarterly operating results;
- failure to meet the estimates and projections of the investment community or that we may otherwise provide to the public;

- our cash position;
- announcement or expectation of additional financing efforts;
- issuances of debt or equity securities;
- our inability to successfully enter new markets or develop additional products, whether with our collaborators or independently;
- actual or anticipated fluctuations in our competitors' or our collaborators' operating results or changes in their respective growth rates;
- fluctuations in the market value of collaborators for which we own equity interests, particularly in light of our use of equity accounting for certain of these investments;
- sales of our shares of common stock by us, or our shareholders in the future;
- trading volume of our shares of common stock on the ;
- market conditions in our industry;
- overall performance of the equity markets and general political and economic conditions;
- introduction of new products or services by us or our competitors;
- additions or departures of key management, scientific or other personnel;
- publication of research reports about us or our industry or positive or negative recommendations or withdrawal of research coverage by securities or industry analysts;
- changes in the market valuation of similar companies;
- disputes or other developments related to intellectual property and other proprietary rights, including patents, litigation matters and our ability to obtain patent protection for our technologies;
- changes in accounting practices;
- significant lawsuits, including patent or shareholder litigation; and
- other events or factors, many of which are beyond our control.

Furthermore, the public equity markets have experienced extreme price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many companies. These fluctuations often have been unrelated or disproportionate to the operating performance of those companies. These broad market and industry fluctuations, as well as general economic, political and market conditions such as recessions, interest rate changes or international currency fluctuations, may negatively impact the market price of our shares of common stock. If the market price of our shares of common stock after this offering does not exceed the initial public offering price, you may not realize any return on your investment in us and may lose some or all of your investment.

We do not anticipate paying cash dividends, and accordingly, shareholders must rely on stock appreciation for any return on their investment.

We have never declared or paid cash dividends on our capital stock. We do not anticipate paying cash dividends in the future and intend to retain all of our future earnings, if any, to finance the

operations, development and growth of our business. As a result, only appreciation of the price of our common stock, which may never occur, will provide a return to shareholders. Investors seeking cash dividends should not invest in our common stock.

If securities or industry analysts do not publish research or reports, or publish inaccurate or unfavorable research or reports about our business, our share price and trading volume could decline.

The trading market for our shares of common stock will depend, in part, on the research and reports that securities or industry analysts publish about us or our business. We do not have any control over these analysts. If no securities or industry analysts commence coverage of us, the trading price for our shares of common stock may be negatively impacted. If we obtain securities or industry analyst coverage and if one or more of the analysts who covers us downgrades our shares of common stock, changes their opinion of our shares or publishes inaccurate or unfavorable research about our business, our share price would likely decline. If one or more of these analysts ceases coverage of us or fails to publish reports on us regularly, demand for our shares of common stock could decrease and we could lose visibility in the financial markets, which could cause our share price and trading volume to decline.

If our executive officers, directors and largest shareholders choose to act together, they may be able to control our management and operations, acting in their own best interests and not necessarily those of other shareholders.

As of May 31, 2013, our executive officers, directors and beneficial holders of five percent or more of our outstanding stock owned approximately 72 percent of our voting stock, including shares subject to outstanding options and warrants, and we expect that upon completion of this offering, the same group will continue to hold at least percent of our outstanding voting stock. As a result, these shareholders, acting together, would be able to significantly influence all matters requiring approval by our shareholders, including the election of directors and the approval of mergers or other business combination transactions, as well as our management and affairs. The interests of this group of shareholders may not always coincide with the interests of other shareholders, and they may act in a manner that advances their best interests and not necessarily those of other shareholders. This concentration of ownership control may:

- delay, defer or prevent a change in control;
- entrench our management and/or the board of directors; or
- impede a merger, consolidation, takeover or other business combination involving us that other shareholders may desire.

We have engaged in transactions with companies in which Randal J. Kirk, our Chief Executive Officer, and his affiliates have an interest.

We have engaged in a variety of transactions with companies in which Mr. Kirk and affiliates of Mr. Kirk have an interest. Among these transactions are our ECCs with Genopaver, LLC and Fibrocell Science, Inc., our research collaboration with Biolife Cell Bank, Inc., and our licensing arrangement with Halozyme Therapeutics, Inc. We believe that each of these transactions was on terms no less favorable to us than terms we could have obtained from unaffiliated third parties, and each of these transactions was approved by at least a majority of the disinterested members of our board of directors. In addition, subsequent to our consummation of the ECCs with

Oragenics, Inc. and Synthetic Biologics, Inc., Mr. Kirk and his affiliates invested in these companies. Furthermore, as we execute on these ECCs going forward, a conflict may arise between our interests and those of Mr. Kirk and his affiliates. It is our intention to ensure that all future transactions, if any, between us and our officers, directors, principal shareholders and their affiliates, are approved by the audit committee or a majority of the independent and disinterested members of the board of directors in accordance with our written related person transaction policy, and are on terms no less favorable to us than those that we could obtain from unaffiliated third parties.

Randal J. Kirk will control approximately percent of our common stock after completion of this offering and will be able to control or significantly influence corporate actions, which may result in Mr. Kirk taking actions contrary to the desires of our other shareholders.

We have historically been controlled, managed and principally funded by Randal J. Kirk, our Chief Executive Officer, and affiliates of Mr. Kirk. As of May 31, 2013, Mr. Kirk and shareholders affiliated with him beneficially owned approximately 71 percent of our voting stock. Following this offering, Mr. Kirk and his affiliates will control approximately percent of our common stock. Mr. Kirk will be able to control or significantly influence all matters requiring approval by our shareholders, including the election of directors and the approval of mergers or other business combination transactions. The interests of Mr. Kirk may not always coincide with the interests of other shareholders, and he may take actions that advance his personal interests and are contrary to the desires of our other shareholders.

A significant portion of our total outstanding shares of common stock is restricted from immediate resale but may be sold into the market in the near future. This could cause the market price of our common stock to drop significantly, even if our business is doing well.

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares of common stock intend to sell shares, could reduce the market price of our common stock. If Mr. Kirk or any of his affiliates were to sell a substantial portion of the shares they hold, it could cause our stock price to decline. Based on shares outstanding as of , upon completion of this offering, we will have outstanding shares of common stock, assuming no exercise of the underwriters' over-allotment option to purchase additional shares. This includes the shares that we are selling in this offering. As of the date of this prospectus, of the remaining shares, approximately million shares of common stock will be subject to a 180-day contractual lock-up with the underwriters, and an additional approximately shares of common stock will be subject to a 180-day contractual lock-up with us.

In addition, as of , there were shares subject to outstanding options that will become eligible for sale in the public market to the extent permitted by any applicable vesting requirements, the lock-up agreements and Rules 144 and 701 under the Securities Act of 1933, as amended. Moreover, after this offering, holders of an aggregate of approximately shares of our common stock will have rights, subject to some conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other shareholders.

We also intend to register shares of common stock that we may issue under our Intrexon Corporation 2013 Omnibus Incentive Plan, or the 2013 Plan, plus the shares of common stock reserved for future grant or issuance under our Intrexon Corporation 2008 Equity Incentive Plan

that remain unissued. Once we register these shares, they can be freely sold in the public market upon issuance and once vested, subject to the 180-day lock-up periods under the lock-up agreements described in the “Underwriting” section of this prospectus.

We are subject to anti-takeover provisions in our articles of incorporation and bylaws and under Virginia law that could delay or prevent an acquisition of our Company, even if the acquisition would be beneficial to our shareholders.

Certain provisions of Virginia law, the commonwealth in which we are incorporated, and our articles of incorporation and bylaws could hamper a third party’s acquisition of us, or discourage a third party from attempting to acquire control of us. These provisions include:

- a provision allowing our board of directors to issue preferred stock with rights senior to those of the common stock without any vote or action by the holders of our common stock. The issuance of preferred stock could adversely affect the rights and powers, including voting rights, of the holders of common stock;
- establish advance notice requirements for nominations for election to the board of directors or for proposing matters that can be acted on at shareholder meetings;
- the inability of shareholders to convene a shareholders’ meeting without the support of shareholders owning together 25 percent of our common stock;
- the application of Virginia law prohibiting us from entering into a business combination with the beneficial owner of 10 percent or more of our outstanding voting stock for a period of three years after the 10 percent or greater owner first reached that level of stock ownership, unless we meet certain criteria;
- allow the authorized number of our directors to be changed only by resolution of our board of directors;
- limit the manner in which shareholders can remove directors from the board;
- require that shareholder actions must be effected at a duly called shareholder meeting and prohibit actions by our shareholders by written consent; and
- limit who may call a special meeting of shareholder meetings.

These provisions also could limit the price that certain investors might be willing to pay in the future for shares of our common stock. In addition, these provisions make it more difficult for our shareholders, should they choose to do so, to remove our board of directors or management. See “Description of capital stock.”

We are an “emerging growth company,” and we cannot be certain if the reduced reporting requirements applicable to emerging growth companies will make our shares of common stock less attractive to investors.

We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. For as long as we continue to be an emerging growth company, we may take advantage of exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive

compensation in this prospectus, our periodic reports and proxy statements and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved. We could be an emerging growth company for up to five years, although circumstances could cause us to lose that status earlier, including if the market value of our shares of common stock held by non-affiliates exceeds $700.0 million as of any June 30 before that time or if we have total annual gross revenue of $1.0 billion or more during any fiscal year before that time, in which cases we would no longer be an emerging growth company as of the following December 31, or if we issue more than $1.0 billion in non-convertible debt during any three-year period before that time, in which case we would no longer be an emerging growth company immediately. We cannot predict if investors will find our shares of common stock less attractive because we may rely on these exemptions. If some investors find our shares of common stock less attractive as a result, there may be a less active trading market for our shares of common stock and our share price may be more volatile.

Under the JOBS Act, emerging growth companies also can delay adopting new or revised accounting standards until such time as those standards apply to private companies. We have irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards and, therefore, will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

If we fail to maintain an effective system of internal control over financial reporting, we may not be able to accurately report our financial results or prevent fraud. As a result, shareholders could lose confidence in our financial and other public reporting, which would harm our business and the trading price of our common stock.

Effective internal controls over financial reporting are necessary for us to provide reliable financial reports and, together with adequate disclosure controls and procedures, are designed to prevent fraud. Any failure to implement required new or improved controls, or difficulties encountered in their implementation could cause us to fail to meet our reporting obligations. In addition, any testing by us conducted in connection with Section 404 of the Sarbanes-Oxley Act, or any subsequent testing by our independent registered public accounting firm, may reveal deficiencies in our internal controls over financial reporting that are deemed to be material weaknesses or that may require prospective or retroactive changes to our financial statements or identify other areas for further attention or improvement. Inferior internal controls could also cause investors to lose confidence in our reported financial information, which could have a negative effect on the trading price of our common stock.

The financial reporting obligations of being a public company in the United States are expensive and time consuming, and may place significant additional demands on our management.

Prior to the consummation of this offering, we have not been subject to public company reporting obligations in the United States. The additional obligations of being a public company in the United States require significant additional expenditures and place additional demands on our management, including costs resulting from public company reporting obligations under the Securities Exchange Act of 1934, as amended, and the rules and regulations regarding corporate governance practices, including those under the Sarbanes-Oxley Act, the Dodd-Frank Wall Street Reform and Consumer Protection Act, and the listing requirements of the New York Stock Exchange, the exchange on which we intend to apply to list our securities. Our management and other personnel will need to devote a substantial amount of time to ensure that we comply with all

of these requirements. Moreover, despite recent reforms made possible by the JOBS Act, the reporting requirements, rules and regulations will increase our legal and financial compliance costs and will make some activities more time-consuming and costly, particularly after we are no longer an “emerging growth company.” Any changes that we make to comply with these obligations may not be sufficient to allow us to satisfy our obligations as a public company on a timely basis, or at all.

We also expect these rules and regulations to make it more difficult and more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. These factors also could make it more difficult for us to attract and retain qualified persons to serve on our board of directors, particularly to serve on our audit and compensation committees, or as executive officers.

Special note regarding forward-looking statements

This prospectus contains forward-looking statements within the meaning of the federal securities laws, which statements involve substantial risks and uncertainties. All statements, other than statements of historical facts, included in this prospectus regarding our strategy, future events, future operations, future financial position, future revenue, projected costs, prospects, plans, objectives of management and expected market growth are forward-looking statements. The words “anticipate,” “believe,” “estimate,” “expect,” “intend,” “may,” “plan,” “predict,” “project,” “would” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These forward-looking statements include, among other things, statements about:

- our current and future ECCs;
- developments concerning our collaborators;
- our ability to successfully enter new markets or develop additional products, whether with our collaborators or independently;
- competition from existing technologies and products or new technologies and products that may emerge;
- actual or anticipated variations in our operating results;
- actual or anticipated fluctuations in our competitors’ or our collaborators’ operating results or changes in their respective growth rates;
- our cash position;
- market conditions in our industry;
- our ability, and the ability of our collaborators, to protect our intellectual property and other proprietary rights and technologies;
- our ability, and the ability of our collaborators, to adapt to changes in laws or regulations and policies;
- the ability of our collaborators to secure any necessary regulatory approvals to commercialize any products developed under the ECCs;
- the rate and degree of market acceptance of any products developed by a collaborator under an ECC;
- our ability to retain and recruit key personnel;
- our expectations related to the use of proceeds from this offering; and
- our estimates regarding expenses, future revenue, capital requirements and needs for additional financing.

Forward-looking statements may also concern our expectations relating to AquaBounty Technologies, Inc. We caution you that the foregoing list may not contain all of the forward-looking statements made in this prospectus.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the cautionary statements included in this prospectus, particularly in the “Risk factors” section beginning on page 11, that could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments that we may make.

You should read this prospectus, the documents that we reference in this prospectus and the documents that we have filed as exhibits to the registration statement of which this prospectus is a part completely and with the understanding that our actual future results may be materially different from what we expect. We do not assume any obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

Use of proceeds

We estimate that the net proceeds from our issuance and sale of shares of our common stock in this offering will be approximately $ million, assuming an initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. If the underwriters exercise their over-allotment option in full, we estimate that the net proceeds from this offering will be approximately $ million, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

A $1.00 increase or decrease in the assumed initial public offering price of $ per share would increase or decrease the net proceeds from this offering by approximately $ million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions. Similarly, each increase or decrease of $1.0 million in the number of shares of common stock offered by us would increase or decrease the net proceeds that we receive from this offering by approximately $ million, assuming the assumed initial public offering price remains the same and after deducting the estimated underwriting discounts and commissions.

The principal purposes of this offering are to increase our financial flexibility, create a public market for our common stock and facilitate our access to the public equity markets. We currently intend to use the net proceeds from this offering, together with our existing cash resources to fund continued investment in our research and development platforms (including up to approximately $29.0 million to fund our stock purchase commitments in conjunction with our ECC with ZIOPHARM Oncology, Inc.), further our business development efforts to consummate new ECCs with companies across various end markets, and for working capital and other general corporate purposes.

This expected use of net proceeds from this offering represents our intentions based upon our current plans and business conditions. We have not determined the amounts we may spend on any of the items listed above or the timing of these expenditures. The amounts and timing of our actual use of net proceeds will vary depending on numerous factors, including: our ability to enter into new ECCs and the frequency with which we execute these new ECCs; the timing and amounts of cash received as upfront or milestone payments, reimbursement of our research and development services, and royalties received on sales of products enabled by using our technologies from existing and new ECCs; the status and results of ongoing research and development; and the timing and amount of capital investments we may be obligated to make in affiliated entities, including our $29.0 million stock purchase commitment in ZIOPHARM and any additional investments we elect to make in AquaBounty. As a result, our management will retain broad discretion over the allocation of the net proceeds from this offering. We may find it necessary or advisable to use the net proceeds from this offering for other purposes, and we will have broad discretion in the application of net proceeds. Although we may use a portion of the net proceeds of this offering for the acquisition or licensing, as the case may be, of additional technologies, other assets or businesses, we have no current understandings, agreements or commitments to do so.

Although it is difficult to predict future liquidity requirements, we believe that our existing cash and cash equivalents and cash expected to be received from our current collaborators will be sufficient to fund our operations for at least the next 12 months.

Pending our use of the net proceeds from this offering, we intend to invest the net proceeds in a variety of capital preservation investments, including short-term, investment-grade, interest-bearing instruments, certificates of deposit and direct or guaranteed obligations of the U.S. government.

Dividend policy

We have never declared or paid any cash dividends on our capital stock. We currently intend to retain earnings, if any, to finance the growth and development of our business. We do not expect to pay any cash dividends on our common stock in the foreseeable future. Payment of future dividends, if any, will be at the discretion of our board of directors and will depend on our financial condition, results of operations, capital requirements, restrictions contained in current or future financing instruments, provisions of applicable law and other factors the board deems relevant.

Capitalization

The following table sets forth our cash and cash equivalents and capitalization as of March 31, 2013 on:

- an actual basis;
- on a pro forma basis after giving effect to (i) the issuance of 10,868,655 shares of Series F preferred stock on April 30, 2013 and the conversion of those shares into 10,868,655 shares of common stock upon completion of this offering; (ii) the conversion of $0.2 million of subscriptions for Series F preferred stock as of March 31, 2013 into Series F preferred stock on April 30, 2013; (iii) the receipt of gross proceeds of $85.4 million, net of issuance costs of $1.6 million, from the issuance of Series F preferred stock on April 30, 2013; (iv) the conversion of 121,085,428 shares of our preferred stock outstanding as of March 31, 2013 into 121,085,428 shares of common stock upon completion of this offering; and (iv) the conversion of aggregate cumulative dividends on our series preferred stock of $56.9 million into approximately shares of our common stock, based on an assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, upon completion of this offering; and
- a pro forma as adjusted basis after giving effect to the pro forma adjustments and giving further effect to the sale of shares of common stock by us in this offering at the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

You should read the following table in conjunction with our consolidated financial statements and related notes, “Selected consolidated financial data” and “Management’s discussion and analysis of financial condition and results of operations” appearing elsewhere in this prospectus.

	As of March 31, 2013		
	Actual	Pro forma	Pro forma as adjusted
	(In thousands, except share amounts) (Unaudited)		
Cash and cash equivalents	$ 59,724	$ 143,515	
Short term debt, including capital leases	89	89	
Long term debt, including capital leases	2,199	2,199	
Total debt, including capital leases	2,288	2,288	
Redeemable convertible preferred stock, no par value; 131,954,083 shares authorized and 121,085,428 shares issued and outstanding, actual; 131,954,083 shares authorized and no shares issued and outstanding, pro forma; and shares authorized and no shares issued and outstanding, pro forma as adjusted	475,946	—	
Shareholders’ equity (deficit):			
Common stock, no par value, 185,000,000 shares authorized, 9,909,669 shares issued and outstanding, actual; shares authorized and shares issued and outstanding, pro forma; shares authorized and issued and outstanding, pro forma as adjusted	—	—	
Additional paid-in capital	—	559,937	
Accumulated deficit	(363,471)	(363,471)	
Accumulated other comprehensive loss	(9)	(9)	
Total Intrexon shareholders’ equity (deficit)	(363,480)	196,457	
Noncontrolling interest	15,078	15,078	
Total equity (deficit)	(348,402)	211,535	
Total capitalization	129,832	213,823	

The pro forma and pro forma as adjusted tables above do not include:

- 3,953,172 shares of common stock issuable upon the exercise of outstanding options at a weighted average exercise price of $3.37 per share, of which 1,589,109 shares are vested as of March 31, 2013;
- 5,204,566 shares of our common stock reserved for future issuance under our 2008 Equity Incentive Plan as of March 31, 2013;
- 894,423 shares of common stock issuable upon the exercise of warrants outstanding as of March 31, 2013 at a weighted average exercise price of $0.45 per share; and
- shares of our common stock that will be made available for future issuance under our 2013 Omnibus Incentive Plan upon completion of this offering.

A $1.00 increase or decrease in the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, increase or decrease, as applicable, each of the pro forma as adjusted cash and cash equivalents, additional paid-in capital, total shareholder’s equity and total capitalization by $ million, assuming the shares offered by us as set forth on the cover of this prospectus remain the same and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us.

Dilution

If you invest in our common stock, your ownership interest will be diluted to the extent of the difference between the initial public offering price per share of our common stock and the pro forma as adjusted net tangible book value per share of our common stock immediately after this offering. Dilution results from the fact that the initial public offering price per share is substantially in excess of the book value (deficit) per share attributable to the existing shareholders for the presently outstanding stock. As of March 31, 2013, our net tangible book value (deficit) was $(405.9) million, or $(40.96) per share of common stock. Net tangible book value (deficit) per share represents the amount of our total tangible assets, which excludes intangible assets, less total liabilities, and redeemable convertible preferred stock, including cumulative dividends thereon, divided by 9,909,669, the number of shares of common stock outstanding on March 31, 2013.

Our pro forma net tangible book value (deficit) as of March 31, 2013 was $ million, or $ per share of common stock. Pro forma net tangible book value (deficit) per share represents the amount of our total tangible assets less our total liabilities, divided by the number of shares of our common stock outstanding, as of March 31, 2013, after giving effect to (i) the issuance of 10,868,655 shares of Series F preferred stock on April 30, 2013, including the conversion of $0.2 million of subscriptions for Series F preferred stock as of March 31, 2013, and the receipt of gross proceeds of $85.4 million, net of issuance costs of $1.6 million, and the conversion of those shares into 10,868,655 shares of common stock upon completion of this offering; (ii) the conversion of 121,085,428 shares of our preferred stock outstanding as of March 31, 2013 into 121,085,428 shares of common stock upon completion of this offering; and (iii) the conversion of aggregate dividends on our series preferred stock of $56.9 million into approximately shares of our common stock, based on the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, upon completion of this offering.

After giving effect to the pro forma adjustments and giving further effect to the sale of shares of our common stock in this offering, assuming an initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us, our pro forma as adjusted net tangible book value as of March 31, 2013 would have been $ million, or $ per share. This amount represents an immediate increase in pro forma as adjusted net tangible book value of $ per share to our existing shareholders and an immediate dilution in pro forma as adjusted net tangible book value of approximately $ per share to investors purchasing shares of our common stock in this offering. We determine dilution by subtracting the pro forma as adjusted net tangible book value per share after the offering from the amount of cash that an investor paid for a share of common stock.

The following table illustrates this dilution on a per share basis:

Assumed initial public offering price per share		$
Historical net tangible book value (deficit) per share as of March 31, 2013	$ (40.96)	
Increase per share from the proceeds received from the issuance of Series F preferred stock issued on April 30, 2013	$	
Increase per share due to conversion of our preferred stock into common stock	$	
Pro forma net tangible book value per share as of March 31, 2013		$
Increase per share attributable to investors purchasing shares in this offering	$	
Pro forma net tangible book value per share after the offering		$
Dilution per share to investors purchasing shares in this offering		$

If the underwriters exercise their option to purchase additional shares in full, the pro forma as adjusted net tangible book value per share after giving effect to the offering would be $ per share. This represents an increase in pro forma as adjusted net tangible book value of $ per share to existing shareholders and dilution in pro forma as adjusted net tangible book value of $ per share to investors purchasing shares in this offering.

A $1.00 increase or decrease in the assumed initial public offering price of $, the mid-point of the price range set forth on the cover page of this prospectus, would increase or decrease, as applicable, our pro forma as adjusted net tangible book value after this offering by $ million and the pro forma as adjusted net tangible book value per share after this offering by $ per share and would increase (decrease) the dilution per share to investors purchasing shares in this offering by $ per share, assuming the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same. The information discussed above is illustrative only and may change based on the actual initial public offering price and other terms of the offering determined at pricing.

The following table summarizes, on a pro forma as adjusted basis as of March 31, 2013, the total number of shares purchased from us, the total consideration paid, or to be paid, and the average price per share paid, or to be paid, by existing shareholders and by investors purchasing shares in this offering at an assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus before deducting underwriting discounts and commissions and estimated offering expenses payable by us. As the table shows, investors purchasing shares in this offering will pay an average price per share substantially higher than our existing shareholders paid.

	Shares purchased		Total consideration		Average price Per share
	Number	%	Amount	%	
Existing investors before this offering	141,863,752	%	$510,055,671	%	$ 3.60
Investors purchasing shares in this offering					$
Total		100%		100%	$

The table above is based on (i) 9,909,669 shares of common stock outstanding on March 31, 2013, (ii) 121,085,428 shares of common stock into which all of our preferred stock outstanding as of March 31, 2013 will be converted upon the completion of this offering and (iii) 10,868,655 shares of common stock into which the shares of Series F preferred stock issued on April 30, 2013 will be converted upon the completion of this offering.

The table above does not include:

- 3,953,172 shares of common stock issuable upon the exercise of outstanding options at a weighted average exercise price of $3.37 per share, of which 1,589,109 shares are vested as of March 31, 2013;
- 5,204,566 shares of our common stock reserved for future issuance under our 2008 Equity Incentive Plan as of March 31, 2013;
- 894,423 shares of common stock issuable upon the exercise of warrants outstanding as of March 31, 2013 at a weighted average exercise price of $0.45 per share;
- the conversion of aggregate dividends on our series preferred stock of into approximately shares of our common stock, based on the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, upon completion of this offering; and
- shares of our common stock that will be made available for future issuance under our 2013 Omnibus Incentive Plan upon completion of this offering.

If the underwriters exercise their option to purchase additional shares in full, the following will occur:

- the percentage of shares of our common stock held by existing shareholders will decrease to approximately percent of the total number of shares of our common stock outstanding after this offering; and
- the number of shares of our common stock held by investors purchasing shares in this offering will increase to or approximately percent of the total number of shares of our common stock outstanding after this offering.

To the extent that outstanding options or warrants are exercised, you will experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities may result in further dilution to our shareholders.

Selected consolidated financial data

The following table sets forth our selected consolidated financial data for the periods and as of the dates indicated. You should read the following selected consolidated financial data in conjunction with our audited and unaudited consolidated financial statements and the related notes thereto included elsewhere in this prospectus and the “Management’s discussion and analysis of financial condition and results of operations” section of this prospectus beginning on page 53.

The consolidated statement of operations data for the years ended December 31, 2012 and 2011, and the consolidated balance sheet data as of December 31, 2012 and 2011, are derived from our audited consolidated financial statements included elsewhere in this prospectus. The consolidated statement of operations data for the three months ended March 31, 2013 and 2012, and the consolidated balance sheet data as of March 31, 2013 are derived from our unaudited consolidated financial statements and the related notes thereto included elsewhere in this prospectus and have been prepared on the same basis as the audited consolidated financial statements. In the opinion of management, the unaudited financial information includes all adjustments, consisting of normal recurring adjustments, necessary for the fair statement of our financial position and results of operations for these periods. Our audited and unaudited consolidated financial statements have been prepared in U.S. dollars in accordance with U.S. GAAP.

Our historical results for any prior period are not necessarily indicative of results to be expected in any future period, and our results for any interim period are not necessarily indicative of results to be expected for a full fiscal year.

	Three months ended March 31,		Years ended December 31,	
	2013	2012	2012	2011
	(In thousands, except share and per share amounts) (Unaudited)			
Statement of Operations Data:				
Revenues:				
Collaboration revenues	$ 3,864	$ 1,554	$ 13,706	$ 5,118
Other revenues	112	64	219	3,053
Total revenues	3,976	1,618	13,925	8,171
Operating expenses:				
Research and development	11,502	18,979	64,185	70,386
General and administrative	6,480	7,760	24,897	18,300
Other operating expenses	—	—	—	1,912
Total operating expenses	17,982	26,739	89,082	90,598
Loss from operations	(14,006)	(25,121)	(75,157)	(82,427)
Total other income (expense), net	(21,966)	11,209	(6,443)	(2,853)
Equity in net loss of affiliate	(390)	—	(274)	—
Net loss	$ (36,362)	$ (13,912)	$ (81,874)	$ (85,280)
Net loss attributable to noncontrolling interest	51	—	—	—
Net loss attributable to Intrexon	$ (36,311)	$ (13,912)	$ (81,874)	$ (85,280)
Accretion of dividends on redeemable convertible preferred stock, not declared	(6,405)	(5,460)	(21,994)	(13,868)
Net loss attributable to Intrexon common shareholders	$ (42,716)	$ (19,372)	$ (103,868)	$ (99,148)
Net loss attributable to Intrexon common shareholders per share, basic and diluted	$ (4.31)	$ (2.03)	$ (10.73)	$ (10.81)
Weighted average shares outstanding, basic and diluted	9,908,047	9,548,468	9,683,984	9,171,140
Unaudited Pro forma information(1)(2)				
Pro forma net loss attributable to common shareholders				
Pro forma net loss per share, basic and diluted				
Pro forma shares used in computation of pro forma net loss per share, basic and diluted				

(1) Pro forma net loss and pro forma net loss per share, basic and diluted have been calculated after giving effect to (i) the issuance of 19,047,619 shares of Series F preferred stock issued between December 31, 2012 and April 30, 2013 and the conversion of those shares into 19,047,619 shares of common stock upon completion of this offering; (ii) the conversion of 112,906,464 shares of our preferred stock outstanding as of December 31, 2012 into 112,906,464 shares of common stock upon completion of this offering; and (iii) the conversion of aggregate cumulative dividends on our series preferred stock of $ into approximately shares of our common stock, based on an initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, upon completion of this offering.

(2) Pro forma net loss and pro forma net loss per share, basic and diluted have been calculated after giving effect to (i) the issuance of 10,868,655 shares of Series F preferred stock on April 30, 2013 and the conversion of those shares into 10,868,655 shares of common stock upon the completion of this offering; (ii) the conversion of 121,085,428 shares of our preferred stock outstanding as of March 31, 2013 into 121,085,428 shares of common stock upon completion of this offering; and (iii) the conversion of aggregate cumulative dividends on our series preferred stock of $ into approximately shares of our common stock, based on an initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover page of this prospectus, upon completion of this offering.

	March 31, 2013(4) (Unaudited)	December 31, 2012(3)	December 31, 2011
	(In thousands, except share and per share amounts)		
Balance Sheet Data:			
Cash and cash equivalents	$ 59,724	$ 10,403	$ 19,628
Other current assets	6,290	3,130	3,350
Equity securities	56,147	83,116	39,097
Other long-term assets	77,524	54,997	52,753
Total assets	199,685	151,646	114,828
Accounts payable, accrued expenses and other current liabilities, excluding current portion of deferred revenue(1)	7,817	6,754	16,197
Deferred revenue, current and non-current	61,092	58,636	16,921
Other long-term liabilities(2)	3,232	1,150	1,288
Redeemable convertible preferred stock	475,946	406,659	301,681
Total Intrexon shareholders' deficit	(363,480)	(321,553)	(221,259)
Noncontrolling interest	15,078	—	—
Total deficit	(348,402)	(321,553)	(221,259)

(1) Other current liabilities includes $200 related to subscriptions for Series F preferred stock as of March 31, 2013.

(2) Other long-term liabilities includes $34, $42 and $97 related to capital leases as of March 31, 2013 and December 31, 2012 and 2011, respectively, and $2,165 of long term debt as of March 31, 2013.

(3) We acquired four businesses in 2011: Agarigen, Inc. on January 26, 2011; Neugenesis Corporation on April 18, 2011; GT Life Sciences, Inc. on October 5, 2011; and Immunologix, Inc. on October 21, 2011.

(4) On March 15, 2013, we acquired 18,714,814 additional shares of AquaBounty Technologies, Inc. common stock increasing our ownership in AquaBounty Technologies, Inc. to 53.82 percent, resulting in us gaining control over AquaBounty. As such AquaBounty Technologies, Inc. was consolidated in our results of operations and financial position on March 15, 2013.

Management's discussion and analysis of financial condition and results of operations

You should read the following discussion and analysis of our financial condition and results of operations together with "Selected consolidated financial data" beginning on page 50 and our consolidated financial statements and the related notes. In addition to historical information, this discussion and analysis contains forward-looking statements that involve risks, uncertainties and assumptions. Our actual results may differ materially from those discussed below. Factors that could cause or contribute to such differences include, but are not limited to, those identified below, and those discussed in the section titled "Risk factors" beginning on page 11.

Overview

We believe Intrexon is a leader in the field of synthetic biology, an emerging and rapidly evolving discipline that applies engineering principles to biological systems. Using our suite of proprietary and complementary technologies, we design, build and regulate gene programs, which are DNA sequences that consist of key genetic components. A single gene program or a complex, multi-genic program are fabricated and stored within a DNA vector. Vectors are segments of DNA used as a vehicle to transmit genetic information. DNA vectors can, in turn, be introduced into cells in order to generate a simple or complex cellular system, which are the basic and complex cellular activities that take place within a cell and the interaction of those systems in the greater cellular environment. It is these genetically modified cell systems that can be used to produce proteins, produce small molecules, or serve as cell-based products, which enable the development of new and improved products and manufacturing processes across a variety of end markets, including healthcare, food, energy and environmental sciences. Intrexon's synthetic biology capabilities include the ability to precisely control the amount, location and modification of biological molecules to control the function and output of living cells and optimize for desired results at an industrial scale.

We have devised our business model to bring many different commercial products to market through the formation of exclusive channel collaborations, or ECCs, with collaborators that have expertise within specific industry segments. In our ECCs, we provide expertise in the engineering, creation and modification of gene programs and cellular systems, and our collaborators are responsible for providing market and product development expertise, as well as regulatory, sales and marketing capabilities. Generally, our collaborators compensate us through payment of technology access fees, royalties, milestones and reimbursement of certain costs. This business model allows us to leverage our capabilities and capital across a broader landscape of product opportunities and end markets than we would be capable of addressing on our own.

We began entering into ECCs in 2011 and are currently party to nine such agreements. Under these ECCs, we are developing products in the fields of healthcare and food. In healthcare, our ECCs include programs in oncology, anti-infectives, antibiotics and tissue repair. In food, we are working to increase the productivity and nutritional value of salmon and other fish. We are also working to establish ECCs in the areas of energy and environmental sciences. Please see "Business — Our ECCs" for a detailed description of our material ECCs.

Mergers and acquisitions

We completed several acquisitions in 2011 in order to enhance our capabilities and service offerings. On January 26, 2011, we acquired Agarigen, Inc., or Agarigen, a North Carolina-based

company that allowed us to expand our capabilities in the agricultural sector. On August 31, 2011, we acquired the LEAP platform technology from Cyntellect, Inc., or Cyntellect. On October 5, 2011, we acquired the cell systems informatics technology from GT Life Sciences, Inc., or GT Life. On October 21, 2011, we acquired the mAbLogix antibody platform from Immunologix, Inc., or Immunologix. See the footnotes to our audited consolidated financial statements found elsewhere in this prospectus for additional information with respect to these business combinations. See "Business — Our suite of proprietary and complementary technologies."

Cyntellect was a related party to us through affiliates of Third Security, LLC. We recorded this transaction as a transaction between entities under common control and therefore, the results of operations of Cyntellect are presented in our consolidated financial statements for all periods presented. The results of operations for each of the other entities that we acquired have been included in our consolidated results of operations after the respective dates of acquisition. Because they represented significant acquisitions, the stand-alone audited financial statements for the period January 1, 2011 through the respective acquisition dates for GT Life and Immunologix are found elsewhere in this prospectus.

On November 16, 2012, we acquired 48,631,444 shares of common stock of AquaBounty Technologies, Inc., or AquaBounty, representing 47.56 percent of the then outstanding shares of AquaBounty, through a definitive purchase agreement with an existing AquaBounty shareholder and its affiliate. We originally accounted for our investment in AquaBounty using the equity method. On March 15, 2013, we acquired 18,714,814 additional shares of AquaBounty common stock increasing our aggregate ownership in AquaBounty to 53.82 percent, resulting in us gaining control over AquaBounty. AquaBounty was consolidated on our results of operations and financial position beginning on March 15, 2013.

Financial overview

We have incurred significant losses since our inception. We anticipate that we may continue to incur significant losses for the foreseeable future, and we may never achieve or maintain profitability. We have never generated any royalty revenues from sales of products by our collaborators and may never be profitable.

We expect our future capital requirements will be substantial, particularly as we continue to develop our business and expand our synthetic biology technology platform. Although we believe that, based on our current level of operations and anticipated growth, our existing cash and cash equivalents and cash expected to be received from our current collaborators will provide adequate funds for ongoing operations, planned capital expenditures and working capital requirements through at least the next 12 months, we may need additional capital if our current plans and assumptions change.

Sources of revenue

We derive our revenues through the execution of ECCs for the development and commercialization of products enabled by our technologies. Generally, the terms of our ECCs provide that we receive some or all of the following: (i) technology access fees upon consummation of such ECC; (ii) reimbursements of costs incurred by us for our research and development and/or manufacturing efforts related to the specific application provided for in the ECC; (iii) milestone payments upon the achievement of specified development, regulatory and commercial activities; and (iv) royalties on sales of products arising from the collaboration.

Our technology access fees and milestone payments may be in the form of cash or securities of the collaborator. Because our ECCs contain multiple arrangements, we typically defer much of the technology access fees and milestone amounts received and recognize such revenues in the future over the anticipated performance period. We are also entitled to sublicensing revenues in those situations where our collaborators choose to license our technologies to other parties.

Research and development expenses

We have no individually significant research and development projects and our research and development expenses primarily relate to either the costs incurred to expand or otherwise improve our multiple platform technologies or the costs incurred to develop a specific application of our technologies in support of current or prospective collaborators. Research and development expenses typically do not include significant development, including pre-clinical or clinical development, activities since they are the responsibility of the collaborator. Research and development expenses incurred for programs we support pursuant to an ECC agreement are reimbursed by the collaborator at cost and all other research and development programs may be terminated or otherwise deferred at our discretion. The amount of our research and development expenses may be impacted by, among other things, the number of ECCs and the number and size of programs we may support on behalf of an ECC.

We recognize research and development expenses as they are incurred. Our research and development expenses consist primarily of:

- salaries and related overhead expenses for personnel in research and development functions;
- fees paid to consultants and contract research organizations who perform research on our behalf and under our direction;
- costs related to laboratory supplies used in our research and development efforts;
- depreciation of leasehold improvements, laboratory equipment and computers;
- amortization of patents and related technologies acquired in mergers and acquisitions;
- rent and utility costs for our research and development facilities; and
- costs related to stock options granted to personnel in research and development functions.

General and administrative expenses

General and administrative expenses consist primarily of salaries and related costs for employees in executive, operational, finance and legal functions. Other significant general and administrative expenses include rent and utilities, insurance, legal services and expenses associated with obtaining and maintaining our intellectual property.

Other income (expense), net

We hold equity securities received and/or purchased from certain collaborators. Other than securities accounted for using the equity method discussed below, we elected the fair value option to account for our equity securities held in these collaborators. These equity securities are recorded at fair value at each reporting date. Unrealized appreciation (depreciation) resulting

from fair value adjustments are reported as other income (expense) in the consolidated statement of operations. As such, we bear the risk that fluctuations in the securities' share prices may significantly impact our results of operations.

Interest income consists of interest earned on our cash and cash equivalents. We expect our interest income to increase following the completion of this offering as we invest the net proceeds from this offering pending their use in our operations.

Interest expense pertains to equipment currently under four capitalized leases. Two of these capitalized leases mature in 2013, one matures in 2014, and the last one matures in 2015 and, as such, we will no longer be subject to the interest expense under these capitalized leases as of those dates.

On March 15, 2013, we recorded a gain on our previously held equity investment in AquaBounty; such gain represented the adjustment to fair value of the pro rata share of our original investment.

Equity in net income (loss) of affiliate

For the three months ended March 31, 2013 and the year ended December 31, 2012, equity in net loss of affiliate is our pro-rata share of our equity method investment's operating results, adjusted for accretion of basis difference. As of December 31, 2012 and through March 15, 2013, we accounted for our investment in AquaBounty using the equity method of accounting as we had the ability to exercise significant influence over, but not control of, the operating activities of AquaBounty. On March 15, 2013, we acquired 18,714,814 additional shares of AquaBounty increasing our ownership in AquaBounty to 53.82 percent. We have consolidated AquaBounty on our results of operations and financial position beginning on March 15, 2013.

Results of operations

Comparison of the three months ended March 31, 2013 (unaudited) and the three months ended March 31, 2012 (unaudited)

The following table summarizes our results of operations for the three months ended March 31, 2013 and 2012, together with the changes in those items in dollars and as a percentage:

	Three months ended March 31,		Dollar change	% Change
	2013	2012		
	(In thousands) (Unaudited)			
Revenues:				
Collaboration revenues	$ 3,864	$ 1,554	$ 2,310	148.6%
Other revenues	112	64	48	75.0%
Total revenues	3,976	1,618	2,358	145.7%
Operating expenses:				
Research and development	11,502	18,979	(7,477)	(39.4)%
General and administrative	6,480	7,760	(1,280)	(16.5)%
Total operating expenses	17,982	26,739	(8,757)	(32.7)%
Operating loss	(14,006)	(25,121)	11,115	(44.2)%
Total other income (expense), net	(21,966)	11,209	(33,175)	(296.0)%
Equity in net loss of affiliate	(390)	—	(390)	100.0%
Net loss	(36,362)	(13,912)	(22,450)	161.4%
Net loss attributable to noncontrolling interest	51	—	51	100.0%
Net loss attributable to Intrexon	$(36,311)	$(13,912)	$(22,399)	161.0%

Revenues

Revenues were $4.0 million for the three months ended March 31, 2013 compared to $1.6 million for the three months ended March 31, 2012 resulting in an increase of $2.4 million, or 145.7 percent. The following table shows the collaboration revenue recognized for upfront and milestone payments received from each of our collaborators and reimbursements received for research and development services provided to each of our collaborators for the three months ended March 31, 2013 and 2012, together with the changes in those items:

	Upfront and milestone payments			Research and development services			Total		
	Three months ended March 31,		Dollar change	Three months ended March 31,		Dollar change	Three months ended March 31,		Dollar change
	2013	2012		2013	2012		2013	2012	
	(In thousands) (unaudited)								
ZIOPHARM Oncology, Inc.	$ 644	$ 314	$ 330	$1,430	$ 944	$ 486	$2,074	$1,258	$ 816
Synthetic Biologics, Inc.	195	32	163	375	61	314	570	93	477
Elanco, Inc.	3	3	—	88	200	(112)	91	203	(112)
Oragenics, Inc.	137	—	137	379	—	379	516	—	516
Fibrocell Science, Inc.	158	—	158	430	—	430	588	—	588
Other	—	—	—	25	—	25	25	—	25
Total	$ 1,137	$ 349	$ 788	$2,727	$1,205	$ 1,522	$3,864	$1,554	$ 2,310

The $2.3 million increase in collaboration revenue from the three months ended March 31, 2012 to the three months ended March 31, 2013 is the result of the following:

- Collaboration revenue recognized for upfront and milestone payments received from ZIOPHARM Oncology, Inc., or ZIOPHARM, increased for the three months ended March 31, 2013 compared to the three months ended March 31, 2012 primarily due to the achievement of a collaboration milestone in October 2012. We received $18.3 million of milestone consideration of which $14.5 million was recorded as deferred revenue as of December 31, 2012 since the milestone was not deemed substantive. This deferred revenue is being recognized over the expected life of our technology platform using a straight-line approach. Reimbursements from research and development services increased $0.5 million for the three months ended March 31, 2013 compared to the three months ended March 31, 2012 as a result of an increase in new programs initiated throughout 2012 and continued progression of the research for the collaboration programs that were ongoing during the three months ended March 31, 2012;
- Collaboration revenue for upfront payments received from Synthetic Biologics, Inc., or Synthetic Biologics, increased for the three months ended March 31, 2013 compared to the three months ended March 31, 2012 due to the amortization of the upfront payment received for our second ECC with Synthetic Biologics in August 2012. Reimbursements from research and development services increased $0.3 million for the three months ended March 31, 2013 compared to the three months ended March 31, 2012 due primarily to the work performed pursuant to the second ECC; and

- Our ECC with Oragenics, Inc., or Oragenics, and our ECC with Fibrocell Science, Inc., or Fibrocell, commenced in June 2012 and October 2012, respectively. The collaboration revenues recorded for each of these ECCs in 2013 reflect both the amortization of upfront payments for each as well as reimbursements for work performed in the respective fields for the period.

Research and development expenses

Research and development expenses were $11.5 million for the three months ended March 31, 2013 compared to $19.0 million for the three months ended March 31, 2012. The $7.5 million decrease in research and development expenses is the result of the following:

- Salaries, benefits and other personnel expenses decreased $2.6 million to $5.9 million for the three months ended March 31, 2013 from $8.5 million for the three months ended March 31, 2012. The decrease is primarily related to a decrease in the number of employees in the three months ended March 31, 2013 compared to three months ended March 31, 2012. Throughout 2012 and early 2013, we eliminated certain positions due to improvements in our production processes as well as the reliance on additional automation. We also transitioned from a primary emphasis on building our parts inventory and other platforms towards applying such platforms towards specific applications for the benefit of our current and prospective collaborators. We also consolidated and centralized certain research and development functions to eliminate redundancies which arose primarily as a result of acquisitions of various technologies in late 2011;
- Expenses related to consultants and third party contract research organizations decreased $1.3 million to $0.8 million for the three months ended March 31, 2013 from $2.1 million for the three months ended March 31, 2012. The decrease is the result of us continuing to reduce the level of research and development performed by third parties and, where practical, performing this research and development internally; and
- Laboratory supply expenses decreased $2.7 million to $1.2 million for the three months ended March 31, 2013 from $3.9 million for the three months ended March 31, 2012. Supplies used in DNA manufacturing decreased $1.9 million for the three months ended March 31, 2013 compared to the three months ended March 31, 2012. As discussed above, we transitioned from building our parts inventory towards applying our technologies for the benefit of current and prospective collaborators. The decrease in laboratory supplies is also the result of centralizing certain research and development functions as discussed above.

General and administrative expenses

General and administrative expenses decreased $1.3 million to $6.5 million for the three months ended March 31, 2013 compared to $7.8 million for the three months ended March 31, 2012. The $1.3 million net decrease is the result of the following:

- Salaries, benefits and other personnel expenses decreased $0.6 million to $3.4 million for the three months ended March 31, 2013 from $4.0 million for the three months ended March 31, 2012. This decrease is primarily the result of the requirement for fewer general and administrative employees due to the elimination of the research and development positions discussed above; and

- Legal and professional fees decreased $0.6 million to $1.7 million for the three months ended March 31, 2013 from $2.3 million for the three months ended March 31, 2012. This decrease was due primarily to the incurrence of software consulting fees associated with the development of our technology platforms during the three months ended March 31, 2012 partially offset by an increase in legal and accounting fees in the three months ended March 31, 2013 related to this offering.

Total other expense, net

Total other income (expense), net is primarily comprised of unrealized appreciation (depreciation) in fair value of equity securities which was $(29.4) million for the three months ended March 31, 2013 compared to $11.2 million for the three months ended March 31, 2012. The unrealized appreciation (depreciation) is the result of market change for the equity securities we hold in other entities. In the three months ended March 31, 2013, the market value of our ZIOPHARM equity securities decreased $31.5 million due primarily to the reported results of one of their programs which did not utilize any of our technologies. Total other income (expense), net for the three months ended March 31, 2013 includes a $7.4 million gain on our previously held equity interest in AquaBounty as a result of our requirement to consolidate AquaBounty as of March 15, 2013.

Equity in net income (loss) of affiliate

In November 2012, we purchased a 47.56 percent interest in AquaBounty and through March 15, 2013, we accounted for this investment using the equity method. Our equity in net loss of AquaBounty's operations of $0.4 million reflects our portion of the net losses of AquaBounty during the period from January 1, 2013 through March 15, 2013.

Comparison of the year ended December 31, 2012 and the year ended December 31, 2011

The following table summarizes our results of operations for the years ended December 31, 2012 and 2011, together with the changes in those items in dollars and as a percentage:

	Years ended December 31,		Dollar change	% Change
	2012	2011		
	(In thousands)			
Revenues:				
Collaboration revenues	$ 13,706	$ 5,118	$ 8,588	167.8%
Other revenues	219	3,053	(2,834)	(92.8)%
Total revenues	13,925	8,171	5,754	70.4%
Operating expenses:				
Research and development	64,185	70,386	(6,201)	(8.8)%
General and administrative	24,897	18,300	6,597	36.0%
Other operating expenses	—	1,912	(1,912)	(100.0)%
Total operating expenses	89,082	90,598	(1,516)	(1.7)%
Operating loss	(75,157)	(82,427)	7,270	(8.8)%
Total other expense, net	(6,443)	(2,853)	(3,590)	125.8%
Equity in net loss of affiliate	(274)	—	(274)	100.0%
Net loss	$(81,874)	$(85,280)	$ 3,406	(4.0)%

Revenues

Revenues were $13.9 million for the year ended December 31, 2012 compared to $8.2 million for the year ended December 31, 2011 resulting in an increase of $5.7 million, or 70.4 percent. The following table shows the collaboration revenue recognized for upfront and milestone payments received from each of our collaborators and reimbursements received for research and development services provided to each of our collaborators for the years ended December 31, 2012 and 2011, together with the changes in those items:

	Upfront and milestone payments			Research and development services			Total		
	Years ended December 31,		Dollar change	Years ended December 31,		Dollar change	Years ended December 31,		Dollar change
	2012	2011		2012	2011		2012	2011	
	(In thousands)								
ZIOPHARM Oncology, Inc.	$5,068	$2,372	$ 2,696	$6,333	$2,724	$ 3,609	$11,401	$5,096	$ 6,305
Synthetic Biologics, Inc.	293	22	271	327	—	327	620	22	598
Elanco, Inc.	12	—	12	587	—	587	599	—	599
Oragenics, Inc.	320	—	320	516	—	516	836	—	836
Fibrocell Science, Inc.	158	—	158	61	—	61	219	—	219
Other	—	—	—	31	—	31	31	—	31
Total	$5,851	$2,394	$ 3,457	$7,855	$2,724	$ 5,131	$13,706	$5,118	$ 8,588

The $8.6 million increase in collaboration revenue from 2011 to 2012 is the result of the following:

- Collaboration revenue recognized for upfront and milestone payments received from ZIOPHARM increased in 2012 primarily as a result of a collaboration milestone being achieved in October 2012. We received $18.3 million of milestone consideration and recognized $3.8 million as collaboration revenue in 2012. The milestone was not deemed substantive and the remaining $14.5 million of milestone consideration was recorded as deferred revenue and will be recognized over the expected life of our technology platform using a straight-line approach. Reimbursements from research and development services provided to ZIOPHARM increased $3.6 million in 2012 as a result of an increase of new programs initiated in 2012 with ZIOPHARM under our collaboration and continued progression of the research for the collaboration programs initiated in 2011;
- Collaboration revenue for upfront payments received from Synthetic Biologics increased in 2012 as a result of a full year of revenue from the amortization of the upfront payment received for our first ECC with Synthetic Biologics in November 2011 as well as a partial year of revenue from the upfront payment received for our second ECC with Synthetic Biologics in August 2012. Our research and development services provided in 2012 have primarily consisted of initial research of the fields specified in the ECCs;
- Our ECC with Elanco, the animal health division of Eli Lilly and Company, or Elanco, commenced in late November 2011 and we began providing research and development services in 2012; and

- Our ECC with Oragenics commenced in June 2012 and we have recognized $0.3 million of collaboration revenue from the amortization of the upfront payment received upon the execution of the ECC. Our research and development services provided in 2012 have primarily consisted of research on improving production in the field of use specified in the ECC and developing and validating these improved production methods.

Our 2011 amounts of other revenues include $2.7 million of revenue related to Cyntellect.

In future periods, our revenues will depend on the number of ECCs into which we enter, the advancement and creation of programs within our ECCs and the extent to which our collaborators bring products enabled by our technologies to market. Our revenues will also depend on the ability of AquaBounty to receive regulatory approval and establish successful commercialization of its AquAdvantage Salmon products. In light of our limited operating history and experience in consummating new ECCs, there can be no assurance as to the timing, magnitude and predictability of revenues to which we might be entitled.

Research and development expenses

Research and development expenses were $64.2 million for the year ended December 31, 2012 compared to $70.4 million for the year ended December 31, 2011 resulting in a decrease of $6.2 million, or 8.8 percent. The $6.2 million net decrease in research and development expenses is the result of the following:

- Expenses related to licensing agreements for in-licensed technologies were $1.8 million for the year ended December 31, 2012 compared to $9.3 million for the year ended December 31, 2011 resulting in a decrease of $7.5 million. In 2011, we entered into an exclusive licensing agreement with Halozyme Therapeutics, Inc., or Halozyme, for the use of Halozyme's proprietary enzyme. Under the terms of the agreement, we paid a license fee of $9.0 million upon execution of this agreement, which was expensed when paid in 2011. In 2012, we paid and expensed an annual exclusivity fee of $1.0 million. This decrease was offset by an increase in contractual payments for other license agreements;
- Expenses related to consultants and third party contract research organizations were $5.5 million for the year ended December 31, 2012 compared to $10.8 million for the year ended December 31, 2011 resulting in a decrease of $5.3 million. The decrease in 2012 is the result of our reducing the level of research and development being performed by third parties and, where practical, performing this research and development internally;
- Laboratory supply expenses were $10.4 million for the year ended December 31, 2012, compared to $11.9 million for the year ended December 31, 2011, resulting in a decrease of $1.5 million. Supplies used in DNA manufacturing in 2012 decreased $2.6 million as we improved the efficiency of our production process and reduced the potential for manufacturing errors. We also transitioned away from focusing on building our parts inventory towards manufacturing specific DNA parts for current and prospective collaborators. This decrease was partially offset by an increase of $1.1 million in additional supplies required for those technologies which we acquired in 2011;
- Salaries, benefits and other personnel expenses were $29.4 million for the year ended December 31, 2012, compared to $24.8 million for the year ended December 31, 2011, resulting in an increase of $4.6 million. Of this increase, $3.4 million was the result of an increase in the average number of research and development employees of 26 employees from 2011 to 2012

as we expanded the capabilities acquired through merger and acquisition activity in 2011 and developed specific capabilities to support new and prospective collaborators. We also incurred $1.2 million of performance bonuses in 2012 and we paid no bonuses to employees in 2011;

- Depreciation and amortization expense was $7.2 million for the year ended December 31, 2012, compared to $3.2 million for the year ended December 31, 2011, resulting in an increase of $4.0 million. Amortization expense for the patents and related technologies acquired in 2011 increased $1.8 million in 2012 as a result of a full year of amortization. The remaining increase is related to increased depreciation expense on property and equipment purchased in 2012 as well as a full year of depreciation for equipment acquired in 2011. We purchased $7.5 million and $13.0 million of property and equipment in 2012 and 2011, respectively, to scale up our DNA manufacturing capacity and for use in new facilities for our agricultural and industrial operations;
- Rent and utilities expenses were $5.4 million for the year ended December 31, 2012, compared to $4.3 million for the year ended December 31, 2011, resulting in an increase of $1.1 million. The increase is due to a full year of rent incurred related to the addition of four new research and development facilities as a result of our acquisitions; and
- Our 2011 amounts include $1.2 million of research and development expenses related to Cyntellect.

We expect that our research and development expenses will increase as we continue to enter into ECCs and operate as a public company. We believe these increases will likely include increased costs related to the hiring of additional personnel in research and development functions, increased costs paid to consultants and contract research organizations and increased costs related to laboratory supplies.

General and administrative expenses

General and administrative expenses were $24.9 million for the year ended December 31, 2012 compared to $18.3 million for the year ended December 31, 2011 resulting in an increase of $6.6 million, or 36.0 percent. The $6.6 million net increase in general and administrative expenses is the result of the following:

- Salaries, benefits and other personnel expenses were $13.2 million for the year ended December 31, 2012, compared to $5.3 million for the year ended December 31, 2011, resulting in an increase of $7.9 million. Of this increase, $5.2 million was the result of an increase in the average number of general and administrative employees of 16 employees from 2011 to 2012, which was primarily the result of increasing our general and administrative personnel to support our acquired operations and additional collaborators. In addition to our increase in general and administrative employees, our non-employee, non-compensated Chief Executive Officer began serving the role on a full-time basis at the beginning of 2012, resulting in a non-cash increase to our general and administrative expenses of $1.4 million. Lastly, we paid bonuses of $1.3 million for 2012 whereas we did not pay bonuses for 2011;
- Legal and professional fees were $6.4 million for the year ended December 31, 2012, compared to $9.1 million for the year ended December 31, 2011, resulting in a decrease of $2.7 million. These expenses in 2012 and 2011 are primarily comprised of fees for external legal counsel, obtaining and maintaining patents and intellectual property, assistance with ECC transactions,

external consulting and recruiting services. The decrease in these expenses is primarily the result of the lack of merger and acquisition activity in 2012; and

- Our 2011 amounts include $0.1 million of general and administrative expenses related to Cyntellect.

We expect that our general and administrative expenses will increase as we operate as a public company. We believe that these increases will likely include increased costs for director and officer liability insurance, costs related to the hiring of additional personnel and increased fees for outside consultants, lawyers and accountants. We also expect to incur increased costs to comply with corporate governance, internal controls and similar requirements applicable to public companies.

Other operating expenses

Other operating expenses of $1.9 million for the year ended December 31, 2011 relate to Cyntellect.

Total other expense, net

Total other expense, net is primarily comprised of unrealized depreciation in fair value of equity securities which was $(6.3) million for the year ended December 31, 2012 compared to unrealized depreciation of $(2.7) million for the year ended December 31, 2011 resulting in a change of $3.6 million. This change is the result of market depreciation as of December 31, 2012 for the equity securities we hold in other entities.

Equity in net income (loss) of affiliate

In November 2012, we purchased a 47.56 percent interest in AquaBounty and through December 31, 2012, we accounted for this investment using the equity method. Our equity in net loss of AquaBounty's operations for the period subsequent to investment through December 31, 2012 of $0.3 million reflects our portion of the net losses of AquaBounty for the period from the date of our investment through December 31, 2012.

Liquidity and capital resources

Sources of liquidity

We have incurred losses from operations since our inception in 1998 and as of March 31, 2013, we had an accumulated deficit of $363.5 million. From our inception through March 31, 2013, we have funded our operations principally with the proceeds received from the sale of $423.9 million of our preferred stock and the receipt of $12.5 million in prepayments of services by our collaborators. As of March 31, 2013, we had cash and cash equivalents of $59.7 million. Cash in excess of immediate requirements is invested primarily in money market funds and certificates of deposits in order to maintain liquidity and capital preservation.

On April 30, 2013, we converted $0.2 million of subscriptions for our Series F Redeemable Convertible Preferred Stock, or Series F Preferred Stock, and received additional gross proceeds of $85.4 million, net of offering expenses of $1.6 million, from the issuance of 10,868,655 shares of Series F Preferred Stock.

Cash flows

The following table sets forth the significant sources and uses of cash for the periods set forth below:

	Three months ended, March 31,		Years ended, December 31,	
	2013	2012	2012	2011
	(Unaudited)		(In thousands)	
Net cash provided by (used in):				
Operating activities	$ (14,279)	$ (13,005)	$ (61,529)	$ (81,758)
Investing activities	531	(15,664)	(23,636)	(64,097)
Financing activities	63,069	42,201	75,940	148,111
Net increase (decrease) in cash and cash equivalents	$ 49,321	$ 13,532	$ (9,225)	$ 2,256

Cash flows from operating activities:

Net cash used in operating activities was $14.3 million for the three months ended March 31, 2013 compared to $13.0 million for the three months ended March 31, 2012. Net cash used in operating activities during the three months ended March 31, 2013 was primarily comprised of our $36.4 million net loss, offset by unrealized depreciation on equity securities of $29.4 million and our $7.4 million gain on previously held equity interest in AquaBounty. Net cash used in operating activities during the three months ended March 31, 2012 was primarily comprised of our $13.9 million net loss offset by unrealized appreciation on equity securities of $11.2 million and the receipt of $10.0 million from one of our collaborators for a prepayment of research and development services in conjunction with our ECC.

Net cash used in operating activities was $61.5 million for the year ended December 31, 2012 compared to $81.8 million for the year ended December 31, 2011. The change from 2011 to 2012 is primarily the result of the receipt of $12.5 million from two of our collaborators for prepayments of research and development services in conjunction with our ECCs of which $7.2 million remains in deferred revenue. Deferred revenue also increased as a result of upfront and milestone payments received in the form of the collaborators' securities in 2012 in conjunction with new and existing ECCs. Non-cash charges such as depreciation and amortization, unrealized depreciation on equity securities and non-cash compensation expense for our non-compensated Chief Executive Officer increased in 2012 compared to 2011.

Cash flows from investing activities:

Net cash provided by investing activities was $0.5 million for the three months ended March 31, 2013 compared to net cash used in investing activities of $15.7 million for the three months ended March 31, 2012. During the three months ended March 31, 2013, our consolidation of AquaBounty on March 15, 2013 resulted in net cash acquired of $0.5 million. During the three months ended March 31, 2012, we paid $10.0 million to purchase shares of common stock of ZIOPHARM and we used $5.7 million for property and equipment purchases primarily to expand our laboratory facilities.

Net cash used in investing activities was $23.6 million for the year ended December 31, 2012 compared to $64.1 million for the year ended December 31, 2011. In 2011, we used $28.7 million,

net of cash received, to pay for the acquisitions of four businesses; we paid $22.6 million to purchase shares of common stock of ZIOPHARM; and we used $13.0 million for property and equipment purchases primarily to scale up our DNA manufacturing capacity. In 2012, we used $6.0 million to purchase a 47.56 percent interest in AquaBounty; we paid $10.0 million to purchase additional shares of common stock of ZIOPHARM; and we paid $7.5 million for property and equipment used in our DNA manufacturing operations and lab equipment for use in our agricultural and industrial operations.

Cash flows from financing activities:

Net cash provided by financing activities was $63.1 million for the three months ended March 31, 2013 compared to $42.2 million for the three months ended March 31, 2012. During the three months ended March 31, 2013, we received $62.9 million of proceeds from the sale of our Series F Preferred Stock, net of issuance costs, in addition to $0.2 million of proceeds for subscriptions for our Series F Preferred Stock issued in April 2013. During the three months ended March 31, 2012, we received $25.6 million of proceeds from the sale of our Series E Redeemable Convertible Preferred Stock, or Series E Preferred Stock, in addition to $16.7 million of proceeds for subscriptions for our Series E Preferred Stock issued in April 2012.

Net cash provided by financing activities was $75.9 million for the year ended December 31, 2012 compared to $148.1 million for the year ended December 31, 2011. In 2011, we received $26.4 million of proceeds from the issuance of our Series D Redeemable Convertible Preferred Stock, $99.2 million of proceeds, net of issuance costs, from the issuance of our Series E Preferred Stock, proceeds from the issuance of short-term borrowings, which, along with accrued interest, converted into $15.2 million of Series E Preferred Stock and $7.4 million of subscriptions for our Series E Preferred Stock. In 2012, we received $75.5 million of proceeds, net of issuance costs, from the issuance of our Series E Preferred Stock.

Future capital requirements

We established our current strategy and business model of commercializing our technologies through collaborators with development expertise in 2010. From January 6, 2011 through March 31, 2013, we consummated nine new ECCs with eight new collaborators. As a result of these new ECCs, we received (i) upfront and milestone consideration totaling $65.0 million, of which $55.6 million has been deferred and will be recognized over future periods; and (ii) reimbursement of our costs incurred for work performed on behalf of our collaborators of $13.3 million. We believe that we will continue to consummate ECCs with new companies across our various market sectors, which will result in additional upfront, milestone and cost recovery payments in the future.

We believe that our existing cash and cash equivalents, and cash expected to be received through our current collaborators will enable us to fund our operating expenses and capital expenditure requirements for at least the next 12 months. We intend to devote the net proceeds from this offering to continued investment in our research and development platforms, further our business development efforts to consummate new ECCs, and to support our existing collaborations. We have not determined the amounts we may spend on any of the items listed above or the timing of these expenditures. We may also use these proceeds as consideration for acquisitions of technologies or companies that we believe may be complementary to our current technologies and for which we believe may provide near term value to us.

We have based our estimates on assumptions that may prove to be wrong, and we may use our available capital resources sooner than we currently expect. Our future capital requirements will depend on many factors, including:

- progress in our research and development programs, as well as the magnitude of these programs;
- the timing, receipt and amount of upfront, milestone and other payments, if any, from present and future collaborators, if any;
- the timing, receipt and amount of sales and royalties, if any, from our potential products;
- the timing, receipt and amount of funding under future government contracts, if any;
- our ability to maintain and establish additional collaborative arrangements and/or new business initiatives;
- the timing of regulatory approval of AquaBounty products;
- the resources, time and cost required for the preparation, filing, prosecution, maintenance and enforcement of patent claims;
- the costs associated with legal activities, including litigation, arising in the course of our business activities and our ability to prevail in any such legal disputes; and
- the timing and extent of our obligation to participate in up to $29.0 million in equity financings of ZIOPHARM.

Until such time, if ever, as we can generate positive operating cash flows, we may finance our cash needs through a combination of equity offerings, debt financings, government or other third-party funding, strategic alliances and licensing arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interests of our common shareholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our common shareholders. Debt financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. If we raise additional funds through government or other third-party funding, marketing and distribution arrangements or other collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates or to grant licenses on terms that may not be favorable to us.

Contractual obligations and commitments

The following table summarizes our significant contractual obligations and commercial commitments at December 31, 2012 and the effects such obligations are expected to have on our liquidity and cash flows in future periods:

	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
			(In thousands)		
Operating Leases(1)	$11,097	$ 2,825	$ 5,410	$ 2,790	$ 72
Capital Leases	99	54	45	—	—
License Payments	1,000	1,000	—	—	—
Total	$12,196	$ 3,879	$ 5,455	$ 2,790	$ 72

(1) We lease our facilities and certain equipment under noncancelable operating leases.

In addition to the obligations in the table above, as of December 31, 2012 we also have the following significant contractual obligations described below.

In conjunction with our ECC with ZIOPHARM in 2011, we agreed to purchase up to $50.0 million of ZIOPHARM common stock in conjunction with securities offerings that may be conducted by ZIOPHARM in the future, subject to certain conditions and limitations. We purchased $10.0 million and $11.0 million in 2012 and 2011, respectively, of ZIOPHARM common stock in such securities offerings. The remaining obligation on this purchase commitment is approximately $29.0 million at December 31, 2012. This amount is not included in the table above due to the fact that the timing of such securities purchases cannot be predicted.

In June 2011, we entered into an exclusive licensing agreement with Halozyme for the use of Halozyme's proprietary enzyme in one of our targeted therapeutics. We are related parties with Halozyme through common ownership by Third Security, LLC. Under the terms of this agreement, we are required to pay a non-refundable, annual exclusivity fee of $1.0 million on each anniversary of the agreement effective date until a certain development event occurs. The agreement requires us to pay up to $54.0 million of milestone payments upon the achievement of certain regulatory events. We are obligated to pay tiered royalties on net sales of an approved product developed with Halozyme's proprietary enzyme. We may terminate this agreement in whole or on a product-by-product basis at any time upon 90 days' prior written notice to Halozyme. Only the $1.0 million payment which was due and paid on June 6, 2013 is included in the table above. All other contingent payments related to this agreement are not included in the table above due to uncertainties surrounding the number of annual payments that will be required and the unpredictability of the timing and likelihood of achieving the milestones.

We acquired 100 percent of the outstanding capital stock of Immunologix in October 2011. The transaction included a contingent consideration arrangement which may require us to pay the selling shareholders 50 percent, subject to a maximum of $2.0 million, of revenue generated from Immunologix's technology applied towards a specific target as defined in the agreement up to a maximum of $2.0 million. This amount is not included in the table above due to the uncertainty of whether, if ever, we will pay this contingent consideration.

In conjunction with our ECC with Oragenics, we have the right, but not the obligation, to purchase up to 30 percent of securities offerings that may be conducted by Oragenics in the future, subject to certain conditions and limitations.

In March 2012, we received $10.0 million from ZIOPHARM as a prepayment of research and development services to be provided in conjunction with our ECC. Any remaining balance of this prepayment is refundable to ZIOPHARM in the event the ECC is terminated. ZIOPHARM may voluntarily terminate the ECC upon 90 days' written notice to us. The remaining balance of this prepayment is $4.9 million at December 31, 2012 and is not included in the table above due to the uncertainty of the timing of the provision of these services by us and the unlikely termination of this ECC by either party.

In December 2012, we received $2.5 million from Synthetic Biologics as prepayment of research and development services to be provided to Synthetic Biologics. Any remaining balance of this prepayment is refundable to Synthetic Biologics in the event our August 2012 ECC is terminated. Synthetic Biologics may voluntarily terminate the ECC upon 90 days' written notice to us provided that no voluntary termination by Synthetic Biologics can be made during the first 18 months of the ECC. The remaining balance of this prepayment is $2.4 million at December 31, 2012 and is not included in the table above due to the uncertainty of the timing of the provision of these services by us and the unlikely termination of the ECC by either party.

We are also party to in-licensed research and development agreements with various academic and commercial institutions where we could be required to make future payments for annual maintenance fees as well as for milestones and royalties we might receive upon commercial sales of products which incorporate their technologies. These agreements are generally subject to termination by us and therefore no amounts are included in the tables above. At December 31, 2012, we had research and development commitments with third parties totaling $3.2 million of which $1.4 had not yet been incurred.

In January 2009, AquaBounty was awarded a grant to provide funding of a research and development project from the Atlantic Canada Opportunities Agency, a Canadian government agency. The total amount available under the award is C$2.9 million, or USD$2.8 million as of March 31, 2013, which AquaBounty can claim over a five year period. All amounts claimed by AquaBounty must be repaid in the form of a 10% royalty on any products commercialized out of this research and development project until fully paid. As of March 31, 2013, the total amount claimed by AquaBounty was $2.0 million and is included in long term debt in the March 31, 2013 unaudited consolidated balance sheet. This amount is not included in the table above due to the uncertainty of the timing of repayment. AquaBounty has $0.2 million of additional debt instruments that mature between December 2013 and June 2014.

Net operating losses

As of December 31, 2012, we had net operating loss carryforwards of approximately $207.0 million for U.S. federal income tax purposes available to offset future taxable income and U.S. federal and state research and development tax credits of $5.8 million, prior to consideration of annual limitations that may be imposed under Section 382 of the Internal Revenue Code of 1986, as amended, or Section 382. These carryforwards begin to expire in 2022.

Our past issuances of stock and mergers and acquisitions have resulted in ownership changes within the meaning of Section 382. As a result, the utilization of portions of our net operating losses may be subject to annual limitations. As of December 31, 2012, approximately $16.4 million of our net operating losses generated prior to 2008 are limited by Section 382 to annual usage limits of approximately $1.5 million. As of December 31, 2012, approximately $14.8 million of net

operating losses were inherited via acquisition and are limited based on the value of the target at the time of the transaction. Future changes in stock ownership may also trigger an ownership change and, consequently, a Section 382 limitation.

Off-balance sheet arrangements

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements, other than operating leases as mentioned above, as defined under Securities and Exchange Commission, or SEC, rules.

Quantitative and qualitative disclosure about market risk

The following sections provide quantitative information on our exposure to interest rate risk, stock price risk, and foreign currency exchange risk. We make use of sensitivity analyses which are inherently limited in estimating actual losses in fair value that can occur from changes in market conditions.

Interest rate risk

We had cash, cash equivalents and short term investments of $60.0 million and $10.7 million at March 31, 2013 and December 31, 2012, respectively. These funds were primarily invested in money market funds and certificates of deposit. Due to the relatively short-term nature of our investment portfolio, we believe that we do not have any material exposure to changes in the fair value of these instruments as a result of changes in interest rates. We believe that a hypothetical 100 basis point increase in interest rates would not materially affect the fair value of our interest-sensitive financial instruments. Because we believe that we have the ability to liquidate these instruments, we do not expect our operating results or cash flows to be materially affected to any significant degree by a sudden change in market interest rates.

Investments in publicly traded companies

We have common stock investments in several publicly traded companies that are subject to market price volatility. We have adopted the fair value method of accounting for these investments, except for our investment in AquaBounty as further described below, and therefore, have recorded them at fair value at the end of each reporting period with the unrealized gain or loss recorded as a separate component other income (expense), net for the period. As of March 31, 2013 and December 31, 2012 the original aggregate cost basis of these investments was $94.5 million and $92.1 million, respectively, and the market value was $56.1 million and $83.1 million, respectively. The fair value of these investments is subject to fluctuation in the future due to the volatility of the stock market, changes in general economic conditions and changes in the financial conditions of these companies. The fair value of these investments as of March 31, 2013 would be approximately $61.8 million and $44.9 million, respectively, based on a hypothetical 10 percent increase or 20 percent decrease in the value of the investments. The fair value of these investments as of December 31, 2012 would be approximately $91.0 million and $66.0 million, respectively, based on a hypothetical 10 percent increase or 20 percent decrease in the value of the investments.

In November 2012, we acquired 47.56 percent of the outstanding common stock of AquaBounty and we accounted for this investment under the equity method of accounting for the period

from acquisition date through March 15, 2013. On March 15, 2013, we acquired 18,714,814 additional shares of AquaBounty common stock for $4.9 million, thereby increasing our aggregate ownership to 53.82 percent upon closing. Accordingly, effective upon closing of the acquisition of the additional shares, we consolidated the assets and operating results of AquaBounty in our consolidated financial statements. The common stock of AquaBounty is traded on the London Stock Exchange and the fair value of our investment in AquaBounty at March 31, 2013 and December 31, 2012 was $16.4 million and $14.3 million, respectively. The fair value of our investment in AquaBounty as of March 31, 2013 would be approximately $18.0 million and $13.1 million, respectively, based on a hypothetical 10 percent increase or 20 percent decrease in the share price of AquaBounty. The fair value of our investment in AquaBounty as of December 31, 2012 would be approximately $15.7 million and $11.4 million, respectively, based on a hypothetical 10 percent increase or 20 percent decrease in the share price of AquaBounty.

Foreign currency exchange risk

Because the common stock of AquaBounty is traded on the London Stock Exchange, the fair value of our holdings is subject to fluctuations in foreign currency rates. In addition, some of AquaBounty's current expenses are denominated in Canadian dollars. We do not hedge our foreign currency exchange rate risk. The effect of a hypothetical 10 percent change in foreign currency exchange rates applicable to our business would not have a material impact on our consolidated financial statements.

Critical accounting policies and estimates

Our management's discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which we have prepared in accordance with generally accepted accounting principles in the United States, or U.S. GAAP. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported revenues and expenses during the reporting periods. We evaluate these estimates and judgments on an ongoing basis. We base our estimates on historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Our actual results may differ from these estimates under different assumptions or conditions.

While our significant accounting policies are more fully described in Note 2 to our consolidated financial statements appearing elsewhere in this prospectus, we believe that the following accounting policies are the most critical for fully understanding and evaluating our financial condition and results of operations.

Revenue recognition

Our ECCs typically contain multiple elements, or deliverables, including technology licenses, research and development services, and in certain cases manufacturing services. Our ECCs may provide for various types of payments to us including upfront payments or technology access fees, funding of research and development and/or manufacturing services, milestone payments, profit sharing and royalties on product sales. Effective January 1, 2011, we adopted the provisions of Accounting Standards Update, or ASU, No. 2009-13, *Revenue Recognition (Topic*

605): Multiple Deliverable Revenue Arrangements, or ASU 2009-13. In accordance with the provisions of ASU 2009-13, we identify the deliverables within the ECCs and evaluate which deliverables represent separate units of accounting. Analyzing the ECCs to identify deliverables requires the use of judgment. A deliverable is considered a separate unit of accounting when the deliverable has value to the collaborator on a standalone basis based on the consideration of the relevant facts and circumstances for each ECC.

Consideration received is allocated at the inception of the ECC to all identified units of accounting based on their relative selling price. When available, the relative selling price for each deliverable is determined using vendor specific objective evidence, or VSOE, of selling price or third-party evidence of selling price, if VSOE does not exist. If neither VSOE nor third-party evidence of selling price exists, we use our best estimate of the selling price for the deliverable. The amount of allocable consideration is limited to amounts that are fixed or determinable. The consideration received is allocated among the separate units of accounting, and the applicable revenue recognition criteria are applied to each of the separate units. We recognize the revenue allocated to each unit of accounting as we deliver the related goods or services. If we determine that we should treat certain deliverables as a single unit of accounting, then we recognize the revenue using either a proportional performance or straight-line method, depending on whether we can reasonably estimate the level of effort required to complete our performance obligations under an arrangement and whether such performance obligations are provided on a best-efforts basis. As we cannot reasonably estimate our performance obligations related to our collaborations, we recognize revenue on a straight-line basis over the period we expect to complete our performance obligations.

Typically, we must estimate our period of performance when the ECCs we enter into do not clearly define such information. Our estimated period of performance for our ECCs has been the expected life of our technologies based on the lack of significant experience we have with these types of agreements and the possibility for multiple products and/or treatments for each ECC's defined field of use.

Our ECCs typically provide for milestone payments upon achievement of specified development, regulatory and commercial activities. Effective January 1, 2011, we adopted ASU No. 2010-17, *Revenue Recognition — Milestone Method*, or the Milestone Method. Under the Milestone Method, we recognize consideration that is contingent upon the achievement of a milestone in its entirety as revenue in the period in which the milestone is achieved only if the milestone is substantive in its entirety. A milestone is considered substantive when it meets all of the following criteria:

- The consideration is commensurate with either the entity's performance to achieve the milestone or the enhancement of the value of the delivered item or items as a result of a specific outcome resulting from the entity's performance to achieve the milestone;
- The consideration relates solely to past performance; and
- The consideration is reasonable relative to all of the deliverables and payment terms with the arrangement.

In the event that a milestone is not considered substantive, we recognize the milestone consideration as revenue using the same method applied to the upfront payments.

Research and development services are a deliverable satisfied by us in accordance with the terms of the ECCs and we consider these services to be inseparable from the license to the core technology; thus reimbursements of services provided are recognized as revenue. Further, because reimbursement (i) is contingent upon performance of the services by us, (ii) does not include a profit component and (iii) does not relate to any future deliverable, the revenue is recognized during the period in which the related services are performed and collection of such amounts is reasonably assured. Payments received for manufacturing services will be recognized when the process related to the manufactured materials has been completed. Royalties to be received under our ECCs will be recognized as earned.

We recognized $3.9 million and $1.6 million of collaboration revenues in the three months ended March 31, 2013 and 2012, respectively, and $13.7 million and $5.1 million in the years ended December 31, 2012 and 2011, respectively. As of March 31, 2013 and December 31, 2012, we have $55.6 million and $51.4 million, respectively, of deferred revenue related to our receipt of upfront and milestone payments.

We also generate revenue from other licenses of certain technologies and rental and other income from sublease agreements. License revenue is recognized on a straight-line basis over the term of the license agreement. Deferred revenue is recorded on the consolidated balance sheet when cash is received prior to the period in which the revenue is earned. Sublease and laboratory services revenues are recognized in the period in which they are earned.

Valuation of investments

We consider all highly liquid investments with remaining maturities of 90 days at date of purchase to be cash equivalents. Our short-term investments have maturities between 90 days and one year. The carrying amount of short-term investments approximate fair value due to the short maturities of these instruments, and there are no unrealized gains or losses associated with these instruments.

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset and liability. We use a three-tier fair value hierarchy to prioritize the inputs used in our fair value measurements. These tiers include: Level 1, defined as observable inputs such as quoted prices in active markets for identical assets, which includes our cash equivalents, short-term investments and certain investments in equity securities of our publicly held collaborators; Level 2, defined as inputs other than quoted prices included in Level 1 that are observable for the asset or liability either directly or indirectly, which includes certain investments in equity securities of our publicly held collaborators; and Level 3, defined as unobservable inputs for the asset or liability used to measure fair value to the extent that observable inputs are not available.

We have equity securities in publicly held companies that we have received and/or purchased from certain collaborators. For each collaborator where we own equity securities, we make an accounting policy election to present them either (i) at the fair value at the end of each reporting period or (ii) using the cost or equity method depending on our level of influence. We have elected to account for certain of these equity securities in publicly held collaborators using the fair value option. These equity securities in publicly held collaborators are recorded at fair value at each reporting date. Unrealized gains and losses resulting from fair value adjustments are

reported as other income (expense) in the consolidated statement of operations. As of March 31, 2013 and December 31, 2012, our equity securities received from collaborators are valued at $56.1 million and $83.1 million, respectively.

We record the fair value of securities received on the date the collaboration is consummated or the milestone is achieved upon the closing, quoted price of the collaborator's security on that date, assuming the transfer of the consideration is considered perfunctory. If the transfer of the consideration is not considered perfunctory, we consider the specific facts and circumstances to determine the appropriate date on which to evaluate fair value. We also evaluate whether any discounts for trading restrictions or other basis for lack of marketability should be applied to the fair value of the securities at inception of the collaboration. In the event we conclude that a discount should be applied, the fair value of the securities is adjusted at inception of the collaboration and re-evaluated at each reporting period thereafter.

We account for investments in which we have the ability to exercise significant influence over, but not control, the operating activities of the investee using the equity method. Under the equity method, we include our pro-rata share of the investee's operating results, adjusted for accretion of basis difference, in our consolidated statement of operations with the corresponding increase or decrease applied to the carrying value of the investment. The excess cost over our pro-rata share of the investee's net assets is equity-method goodwill. This equity-method goodwill is not amortized; however, the investment is analyzed for impairment on a periodic basis or if an event occurs or circumstances change that indicates the carrying amount may be impaired. The carrying value of our equity method investment in AquaBounty is $5.7 million at December 31, 2012. On March 15, 2013, we acquired 18,714,814 additional shares of AquaBounty increasing our ownership in AquaBounty to 53.82 percent, resulting in us gaining control over AquaBounty. As such AquaBounty was consolidated on our results of operations and financial position beginning on March 15, 2013.

Valuation allowance for net deferred tax assets

We record a valuation allowance to offset any net deferred tax assets if, based upon the available evidence, it is more likely than not that we will not recognize some or all of the deferred tax assets. We have had a history of net losses since inception, and as a result, we have established a 100 percent valuation allowance for our net deferred tax assets. If circumstances change and we determine that we will able to realize some or all of these net deferred tax assets in the future, we will record an adjustment to the valuation allowance.

Consolidation of variable interest entities

We identify entities as variable interest entities, or VIEs, either: (i) that do not have sufficient equity investment at risk to permit the entity to finance its activities without additional subordinated financial support, or (ii) in which the equity investors lack an essential characteristic of a controlling financial interest. We perform an initial and on-going evaluation of the entities with which we have variable interests to determine if any of these entities are VIEs. If an entity is identified as a VIE, we perform an assessment to determine whether we have both: (i) the power to direct activities of the VIE that most significantly impact the VIE's economic performance, and (ii) have the obligation to absorb losses from or the right to receive benefits of the VIE that could potentially be significant to the VIE. If we have both these criterion, we are identified as the primary beneficiary of the VIE. As of March 31, 2013, two of our collaborators, AmpliPhi BioSciences Corp. and Genopaver, LLC, were identified as VIEs. We are not the primary

beneficiary for either of these entities as we do not have the power to direct the activities that most significantly impact the economic performance of the VIEs. As of December 31, 2012, we identified AquaBounty, our investment in an affiliate, as a VIE. We were not the primary beneficiary for this entity as we did not have the power to direct the activities that most significantly impact the economic performance of the VIE. On March 15, 2013, we began consolidating AquaBounty on our results of operations and financial position as a result of our ownership in AquaBounty increasing to 53.82 percent.

Valuation of long-lived assets

We evaluate long-lived assets, which include property and equipment and intangible assets, for impairment whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. Conditions that would necessitate an impairment assessment include a significant decline in the observable market value of an asset, a significant change in the extent or manner an asset is used, or a significant adverse change that would indicate that the carrying amount of an asset or group of assets is not recoverable.

Indefinite-lived intangible assets, which include in-process research and development, are tested for impairment annually, or more frequently if events or circumstances between annual tests indicate that the assets may be impaired. Impairment losses on indefinite-lived intangible assets are recognized based solely on a comparison of their fair value to carrying value, without consideration of any recoverability test. We monitor the progression of our in-process research and development, as the likelihood of success is contingent upon regulatory approval.

Stock-based compensation

We record the fair value of stock options issued to employees and non-employees as of the grant date as stock-based compensation expense. Stock-based compensation expense for employees and non-employees is recognized over the requisite service period, which is typically the vesting period. Stock-based compensation expense recorded as research and development expenses and general and administrative expenses each amounted to $0.2 million for the three months ended March 31, 2013, $(0.1) million and $0.3 million, respectively, for the three months ended March 31, 2012, $0.4 million and $1.1 million, respectively, for the year ended December 31, 2012, and $0.8 million and $0.2 million, respectively, for the year ended December 31, 2011. We utilize the Black-Scholes option-pricing model to estimate the grant-date fair value of all stock options. The Black-Scholes option-pricing model requires the use of weighted average assumptions for estimated expected volatility, estimated expected term of stock options, risk-free rate, estimated expected dividend yield, and the fair value of the underlying common stock at the date of grant. Because we do not have sufficient history to estimate the expected volatility of our common stock price, expected volatility is based on the average volatility of peer public entities that are similar in size and industry. We estimate the expected term of all stock options based on previous history of exercises. The risk-free rate is based on the U.S. Treasury yield curve in effect at the time of grant for the expected term of the stock option. The expected dividend yield is 0 percent as we have not declared any common stock dividends to date and do not expect to declare common stock dividends in the near future. The fair value of the underlying common stock at the date of grant is discussed below. We estimate forfeitures based on our historical analysis of actual stock option forfeitures. Actual forfeitures are recorded when incurred and

estimated forfeitures are reviewed and adjusted at least annually. The assumptions used in the Black-Scholes option-pricing model for the years ended December 31, 2012 and 2011 are set forth below:

	Years ended December 31,	
	2012	2011
Valuation Assumptions		
Expected dividend yield	0%	0%
Expected volatility	71% - 76%	68% - 72%
Expected term (years)	6.00	5.37 - 6.23
Risk-free interest rate	0.80% - 1.10%	1.34% - 2.51%

We had 3,953,172 options outstanding as of March 31, 2013 of which 1,589,109 were exercisable. We had 4,048,672 options outstanding as of December 31, 2012 of which 1,415,109 were exercisable. Total unrecognized stock-based compensation expense related to non-vested awards at March 31, 2013 and December 31, 2012 was $3.8 million and $4.9 million, respectively, and is expected to be recognized over a weighted-average period of approximately three years. The weighted average grant date fair value for options granted in 2012 was $2.63.

Common stock valuations

Due to the absence of an active market for our common stock, the fair value of our common stock was determined in good faith by our board of directors, with the assistance and upon the recommendation of management, based on a number of objective and subjective factors consistent with the methodologies outlined in the American Institute of Certified Public Accountants Practice Aid, Valuation of Privately-Held-Company Equity Securities Issued as Compensation, referred to as the AICPA Practice Aid, including:

- the shares of common stock involved illiquid securities in a private company;
- the prices of each of our series of preferred stock sold by us to outside investors at arm’s length transactions and the rights, preferences and privileges of each of these series of preferred stock relative to our common stock;
- our consolidated results of operations, financial position and the status of our research and development efforts;
- the composition of our management team and board of directors;
- the material risks related to our business;
- our business strategy;
- our entry into ECCs as contemplated by our business strategy;
- the market performance of publicly traded companies in the life sciences and biotechnology sectors;
- the likelihood of achieving a liquidity event for the holders of our shares of common stock, such as a sale of the company or an initial public offering given prevailing market conditions;
- external market conditions affecting the life sciences and biotechnology industry sectors; and

- contemporaneous valuations of our shares of common stock.

We have engaged independent third-party valuation consultants to perform contemporaneous valuations of our common stock since 2007. We typically evaluate the valuation of our common stock upon the closing of a series of preferred financing round and also upon the occurrence of significant events affecting us or our achievement of significant milestones, to the extent that they are not contemplated in the enterprise valuation prepared in conjunction with a series of preferred stock financing.

The following table presents the issuance of each series of preferred stock financing and stock options granted from May 27, 2011 through May 31, 2013, as well as the estimated fair value of the options and the underlying common stock on the grant date.

Preferred shares			Stock options		
Date of issuance	Shares issued	Price per share	Date of grant	Options issued	Estimated fair value per common share at grant date
May 26, 2011	19,047,619 shares of Series E Preferred Stock	$ 5.25	May 27, 2011-January 10,2012	3,471,750	$ 4.07
January 10, 2012	9,523,810 shares of Series E Preferred Stock	$ 5.25	January 11, 2012-April 12, 2012	346,500	$ 4.07
April 12, 2012	4,761,905 shares of Series E Preferred Stock	$ 5.25	April 13, 2012-November 13, 2012	445,500	$ 4.07
November 13, 2012	4,761,905 shares of Series E Preferred Stock	$ 5.25	November 14, 2012-March 1, 2013	3,000	$ 4.07
March 1, 2013 and April 30, 2013	19,047,619 shares of Series F Preferred Stock	$ 7.88	May 28, 2013	1,227,500	$ 5.53

Stock options granted from May 27, 2011 through January 10, 2012

On May 26, 2011, we sold $100.0 million of Series E Preferred Stock. A majority of the shares of Series E Preferred Stock were sold to new unrelated third party investors, at a price per share of $5.25. During the period from May 27, 2011 through January 10, 2012, we issued to new employees 3,471,750 options to purchase shares of our common stock at a price of $4.07 per share. In establishing the price per share of common stock of $4.07, we considered the factors above as well as the May 26, 2011 contemporaneous valuation of our common stock.

In the May 26, 2011 contemporaneous valuation, the fair value of our common stock of $4.07 was established using the Probability-Weighted Expected Return Method, or PWERM, pursuant to which the value of an enterprise's common stock is estimated based upon an analysis of current and future values for the enterprise assuming possible liquidity events. The PWERM approach employs various market approach and income approach calculations depending upon

the likelihood of a given liquidation scenario and considers the terms of each series of preferred stock, including the rights for each share class, at the date in the future upon which those rights will either be executed or abandoned. Application of the PWERM includes:

- for each liquidity event, enterprise value or range of values is established based on available company-specific and market data;
- for each liquidity event, the rights and preferences of each shareholder class are considered in order to determine the appropriate allocation of value between the classes;
- for calculating the potential value for each liquidity event, the return is discounted to present value using an appropriate discount rate;
- a probability is estimated for each liquidity event based on the facts and circumstances as of the valuation date; and
- the returns for each liquidity event are weighted by the probability assigned and summed to conclude the expected return for the common stock.

For the May 26, 2011 valuation, we calculated values under each scenario based on the assumptions and methodology as follows:

Near-Term Initial Public Offering:

- Assumed a 40 percent probability of closing of an initial public offering by mid-2012 at an enterprise value substantially greater than the post-closing enterprise value of our most recent Series E Preferred Stock sale. Our estimate of enterprise value was based on our anticipated capital structure and consideration of recent IPO pricing data at that time. We believe this was appropriate because we had just executed our first ECC with ZIOPHARM in January 2011 under our new ECC business model and believed that we would sign additional ECCs across our target markets during 2011; and
- Applied a discount rate of 12 percent.

Long-Term Initial Public Offering:

- Assumed a 16 percent probability of closing an initial public offering by mid-2013 at an enterprise value substantially greater than the post-closing enterprise value of our most recent Series E Preferred Stock sale. Our estimate of enterprise value was based on our anticipated capital structure and consideration of recent IPO pricing data at that time. We assumed that we would sign additional ECCs across our target markets by the end of 2012 and would require us to raise additional financing to execute on our ECC business model; and
- Applied a discount rate of 12 percent.

Remain as a Private Company:

- Assumed a 38 percent probability of remaining as a private company. We assumed that we would need to raise additional capital in 2012 in order to continue to execute on our ECC business model, however, even with the additional financing we would be unsuccessful in sufficiently executing our ECC business model to achieve a valuation in excess of the aggregate liquidation preference of the preferred stock. This results in zero value afforded to the holders of common stock.

Liquidation:

- Assumed a 6 percent probability of a liquidation scenario occurring by mid 2012. We assumed under this scenario that we could not execute on our business model using the proceeds from the Series E Preferred Stock offering nor raise additional capital and would therefore liquidate in 2012. Because of the preferences afforded to the holders of preferred stock, liquidation would result in zero value afforded to the holders of common stock.

We then applied the probabilities of each liquidity scenario to their respective price per share of common stock to arrive at a value per share of $4.07.

We believed each of these weightings to be appropriate in light of the current status of and risks associated with the market and our Company, including the execution of our initial ECC with ZIOPHARM, our deal pipeline, the development of our technologies, our available cash and anticipated future cash requirements.

On January 10, 2012, we completed the sale of an additional $50.0 million of Series E Preferred Stock, at a price per share of $5.25. We determined that the events and circumstances that occurred between May 26, 2011 and January 10, 2012 did not indicate a significant change in the value of common stock during this period. We considered the following events that occurred during this period:

- the issuance of additional Series E Preferred Stock at the same price and with the same rights and preferences as the original issuance of Series E Preferred Stock on May 26, 2011. The original issuance of the Series E Preferred Stock implied a value per share of our common stock of $4.07;
- the acquisition of certain assets required to operate the cell processing business of Cyntellect on August 31, 2011;
- the acquisition of technology for the development of high value production cells lines from GT Life on October 5, 2011;
- the acquisition of a therapeutic antibody platform technology from Immunologix on October 21, 2011;
- the execution of an ECC with Synthetic Biologics; and
- the execution of an ECC with Elanco, the animal health division of Eli Lilly and Company.

Each of the three acquisitions was for technologies we believe are complementary to our technologies, however we did not acquire any existing or imminent revenue streams as part of those transactions. Execution of the ECCs represented the second and third such ECCs by us as contemplated in our operating plan for 2011.

Stock options granted from January 11, 2012 through April 12, 2012

On April 12, 2012, we completed the sale of an additional $25.0 million of Series E Preferred Stock, at a price per share of $5.25. During the period from January 11, 2012 through April 12, 2012, we issued to new employees 346,500 options to purchase shares of common stock at a price of $4.07 per share. Based on the lack of intervening events during this period and the fact that we issued additional shares of Series E Preferred Stock at the same price and on the same terms as prior issuances, we determined there was no basis for a significant change in the value of common stock during this period.

Stock options granted from April 13, 2012 through November 13, 2012

On November 13, 2012, we completed the sale of an additional $25.0 million of Series E Preferred Stock, at a price per share of $5.25. During the period from April 13, 2012 through November 13, 2012, we issued to new employees 445,500 options to purchase shares of common stock at a price of $4.07 per share. We determined that the events and circumstances which occurred during this period did not indicate a significant change in the value of common stock. We considered the following events that occurred during this period:

- the issuance of additional Series E Preferred Stock at the same price and with the same rights and preferences as the prior issuances of Series E Preferred Stock, which implied a value per share of our common stock of $4.07;
- execution of an ECC with Oragenics, Inc., in June 2012;
- execution of our second ECC with Synthetic Biologics, Inc., in August 2012;
- execution of an ECC with Fibrocell Science, Inc, in October 2012; and
- initiation of a Phase 2 clinical trial using our technologies by ZIOPHARM, Inc., thereby triggering our receipt of $18.3 million of additional consideration pursuant to our ECC with them, in October 2012.

The execution of the three ECCs during this time period was originally contemplated when setting the original price per share of our Series E Preferred Stock in May 2011. We believe that the initiation of the Phase 2 clinical trial with ZIOPHARM may have resulted in an increase in value of our common stock. We did not perform a valuation of common stock, however, because we believe the resulting value per share of common stock would have been insignificant based on the small number of stock options granted between the date of achievement of this milestone and the date of initial closing of our Series F Preferred Stock financing discussed below. Based on these factors and that we issued additional shares of Series E Preferred Stock at the same price and on the same terms as prior issuances, we determined there was no basis for a significant change in the value of common stock for this period.

Stock options granted from November 14, 2012 through March 1, 2013

From March 1, 2013 to April 30, 2013, we completed the sale of $150.0 million Series F Redeemable Convertible Preferred Stock, which we refer to as the Series F Preferred Stock. The increase in share price of the Series F Preferred Stock compared to the share price of the Series E Preferred Stock was due primarily to the preference in liquidation and dividends provided in the terms of the Series F Preferred Stock. Of the $150.0 million of Series F Preferred Stock sold, approximately $79.0 million (or 52 percent) was received from new unrelated third party investors. During the period from November 14, 2012 through March 1, 2013, we issued to new employees 3,000 options to purchase shares of common stock at a price of $4.07 per share. On November 16, 2012, we purchased 47.56 percent of the then outstanding shares of common stock of AquaBounty Technologies, Inc., which we refer to as AquaBounty. We determined that the only significant event that occurred during the period from November 14, 2012 through March 1, 2013 was the December 22, 2012 notification by the FDA of the publication for comment of the Environmental Assessment of AquaBounty's most advanced product, thereby we believe significantly increasing the likelihood that such product might be sold commercially for human consumption. While we believe this notification may have resulted in an increase in the value of our common stock, we did not perform a valuation of common stock based on our plans to close our Series F Preferred Stock financing round in the first quarter of 2013.

Transactions involving shares of our common stock from March 2, 2013 through May 31, 2013

In conjunction with the initial closing of the Series F Preferred Stock financing, we initiated a contemporaneous valuation of our common stock, effective March 1, 2013 and temporarily suspended the granting of options to purchase new shares of common stock to new employees as well as the issuance of stock options and shares of our common stock to members of our board of directors pursuant to our Director Compensation Plan until such valuation was completed and approved by our board of directors. We utilized the PWERM approach, which we believed to be appropriate based on initiating discussions for an initial public offering. We calculated values under each scenario based on the assumptions and methodology as follows:

Near Term Initial Public Offering:

- Assumed a 35 percent probability of closing of an initial public offering before September 2013 at an enterprise value of approximately 25 percent greater than the post-closing enterprise value of our most recent Series F Preferred Stock sale. Our estimate of enterprise value was based on our anticipated capital structure as of September 2013 and consideration of recent IPO pricing data; and
- Applied a discount rate of 30% to arrive at a per share price of $8.50.

Low Initial Public Offering:

- Assumed a 35 percent probability of closing an initial public offering before November 2013 at the same post-closing enterprise value of our most recent Series F Preferred Stock sale; and
- Applied a discount rate of 30 percent to arrive at a per share price of $6.44.

Deferred Initial Public Offering:

- Assumed a 12 percent probability of closing an initial public offering before July 2014 at an enterprise value substantially greater than our most recent Series F Preferred Stock sale; such value was estimated based on our anticipated capital structure as of July 2014 and consideration of recent IPO pricing data which was assumed to be significantly higher than the near-term scenario because we assumed we would continue to make progress in implementing our ECC business plan prior to the closing date; and
- Applied a discount rate of 30 percent to arrive at a per share price of $9.02.

Remain as Private Company:

- Assumed a 12 percent probability of remaining a private company at an enterprise value substantially less than our most recent Series F Preferred Stock sale. Our estimate of enterprise value was based on comparable public company multiples; and
- allocated the enterprise value to various classes of shares using the option pricing model using a volatility of 55 percent to arrive at an implied share price of $1.62.

IP Sale/Dissolution:

- Assumed a 6 percent probability of dissolution of our Company with no value to common shareholders; and
- Used the same approach as the scenario above that we would remain a private company with an enterprise value equal to our cumulative historical research and development investment.

We then applied the probabilities of each liquidity scenario to their respective price per share of common stock to arrive at a value per share of $6.50. Based upon our evaluation of the market and input received from our independent third-party valuation consultant, we determined that a 15% discount for lack of marketability was appropriate, resulting in a value per share of $5.53.

We believed each of these weightings to be appropriate in light of the current status of and risks associated with the market and us, including the execution of the additional ECCs, our deal pipeline, the development of our technologies, our available cash and anticipated future cash requirements.

On May 9, 2013, our Board of Directors approved the contemporaneous valuation of our common stock at a price per share of $5.53 and on May 28, 2013, our Board of Directors authorized management to grant 1,227,500 stock options to employees and consultants at a price of $5.53 per share.

Estimated offering price

On , 2013, we and the underwriters determined the estimated price range for this offering. The midpoint of the estimated range was $ per share. In comparison, our estimate of the fair value of our common stock was $5.53 per share as of March 1, 2013. We note that, as is typical in initial public offerings, the estimated price range for this offering was not derived using a formal determination of fair value, but was determined based upon discussions between us and the underwriters. Among the factors considered in setting the estimated range were prevailing market conditions and estimates of our business potential, as described above. In addition to this difference in purpose and methodology, we believe that the difference in value reflected between the midpoint of the estimated range and the board of directors' determination of the fair value of our common stock on March 1, 2013 was primarily the result of the following factors:

- The March 1, 2013 valuation used a probability weighting of % that the initial public offering would occur at a premium to our prior preferred stock financing round. However, the estimated initial public offering price range, which was determined based upon discussions between us and the underwriters, necessarily assumes that the initial public offering has occurred, that a public market for our common stock has been created and that all outstanding shares of our preferred stock have been converted into common stock in connection with the initial public offering, and therefore excludes any discount for lack of marketability of our common stock, which was factored in the March 1, 2013 valuation. As such, the previously used private company valuation methodology is no longer applicable.
- Our preferred stock currently has substantial economic rights and preferences superior to our common stock. The midpoint of the estimated price range assumes the conversion of our preferred stock upon the completion of this offering and the corresponding elimination of such economic rights and preferences, resulting in an increased common stock valuation, which more than offsets the dilutive impact of the conversion of our preferred stock to common stock.
- The proceeds of a successful initial public offering would substantially strengthen our consolidated balance sheet by increasing our cash and cash equivalents. Additionally, the completion of this offering would provide us with access to the public company debt and equity markets. These projected improvements in our consolidated financial position influenced the increased common stock valuation indicated by the midpoint of the estimated price range.

Jumpstart Our Business Startups Act of 2012

On April 5, 2012, the Jumpstart Our Business Startups Act of 2012, or the JOBS Act, was enacted. Section 107 of the JOBS Act provides that an "emerging growth company" can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act of 1933, as amended, or the Securities Act, for complying with new or revised accounting standards. In other words, an "emerging growth company" can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have irrevocably elected not to avail ourselves of this extended transition period and, as a result, we will adopt new or revised accounting standards on the relevant dates on which adoption of such standards is required for other public companies.

We are in the process of evaluating the benefits of relying on other exemptions and reduced reporting requirements provided by the JOBS Act. Subject to certain conditions set forth in the JOBS Act, if as an "emerging growth company" we choose to rely on such exemptions, we may not be required to, among other things, (i) provide an auditor's attestation report on our systems of internal controls over financial reporting pursuant to Section 404, (ii) provide all of the compensation disclosure that may be required of non-emerging growth public companies under the Dodd-Frank Wall Street Reform and Consumer Protection Act, (iii) comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements (auditor discussion and analysis), and (iv) disclose certain executive compensation-related items such as the correlation between executive compensation and performance and comparisons of the Chief Executive Officer's compensation to median employee compensation. These exemptions will apply until we no longer meet the requirements of being an "emerging growth company." We will remain an "emerging growth company" until the earliest of (i) the last day of the fiscal year in which we have total annual gross revenues of $1 billion or more; (ii) the last day of our fiscal year following the fifth anniversary of the date of the completion of this offering; (iii) the date on which we have issued more than $1 billion in nonconvertible debt during the previous three years; or (iv) the date on which we are deemed to be a large accelerated filer under the rules of the SEC.

Recent accounting pronouncements

In May 2011, the Financial Accounting Standards Board, or FASB, issued ASU No. 2011-04, Fair Value Measurement (Topic 820): Amendments to Achieve Common Fair Value Measurement and Disclosure Requirements in U.S. GAAP and IFRSs. The new standards do not extend the use of fair value but, rather, provide guidance about how fair value should be applied where it already is required or permitted under U.S. GAAP or International Financial Reporting Standards, or IFRS. For U.S. GAAP, most of the changes are clarifications of existing guidance or wording changes to align with IFRS. We adopted this amendment on January 1, 2012. The adoption of this amendment did not have a material impact on our consolidated financial statements.

In June 2011, the FASB issued ASU No. 2011-05, *Comprehensive Income (Topic 220): Presentation of Comprehensive Income*, or ASU 2011-05. Under this ASU, an entity will have the option to present the components of net income and comprehensive income in either one or two consecutive financial statements. The ASU eliminates the option in U.S. GAAP to present other comprehensive income in the statement of changes in equity. An entity should apply the ASU retrospectively. In December 2011, the FASB decided to defer the effective date of those changes

in ASU 2011-05 that relate only to the presentation of reclassification adjustments in the statement of income by issuing ASU 2011-12, *Comprehensive Income (Topic 220): Deferral of the Effective Date for the Amendments to the Presentation of Reclassifications of Items Out of Accumulated Other Comprehensive Income in ASU 2011-05*. We implemented the provisions of ASU 2011-05 as of January 1, 2012. The adoption of this amendment did not have a material impact on our consolidated financial statements.

In February 2013, the FASB issued ASU No. 2013-02, *Reporting of Amounts Reclassified Out of Accumulated Other Comprehensive Income*, or ASU 2013-02. ASU 2013-02 requires that companies present either in a single note or parenthetically on the face of the financial statements, the effect of significant amounts reclassified from each component of accumulated other comprehensive income based on its source and the income statement line items affected by the reclassification. If a component is not required to be reclassified to net income in its entirety, companies would instead cross reference to the related footnote for additional information. ASU 2013-02 is effective for interim and annual reporting periods beginning after December 15, 2012. We implemented the provisions of ASU 2013-02 as of January 1, 2013. The adoption of this pronouncement did not have a material impact on our consolidated financial statements.

In December 2011, the FASB issued ASU No. 2011-11, *Balance Sheet (Topic 210): Disclosures about Offsetting Assets and Liabilities*, or ASU 2011-11. ASU 2011-11 requires an entity to disclose information about offsetting and related arrangements to enable users of financial statements to understand the effect of those arrangements on its financial position, and to allow investors to better compare financial statements prepared under U.S. GAAP with financial statements prepared under IFRS. The new standards are effective for annual periods beginning January 1, 2013 and interim periods within those annual periods. Retrospective application is required. We implemented the provisions of ASU 2011-11 as of January 1, 2013. The adoption of this pronouncement did not have a material impact on our consolidated financial statements.

Business

Overview

At present rates of global industrialization and population growth, food and energy supplies and environmental and healthcare resources are becoming more scarce and/or costly. We believe it is not a viable option for mankind to continue on this path — new solutions will be necessary to preserve and globally expand a high quality of life. We believe that synthetic biology is a solution.

We believe Intrexon is a leader in the field of synthetic biology, an emerging and rapidly evolving discipline that applies engineering principles to biological systems. Using our suite of proprietary and complementary technologies, we design, build and regulate gene programs, which are DNA sequences that consist of key genetic components. A single gene program or a complex, multi-genic program are fabricated and stored within a DNA vector. Vectors are segments of DNA used as a vehicle to transmit genetic information. DNA vectors can, in turn, be introduced into cells in order to generate a simple or complex cellular system, which are the basic and complex cellular activities that take place within a cell and the interaction of those systems in the greater cellular environment. It is these genetically modified cell systems that can be used to produce proteins, produce small molecules, or serve as cell-based products, which enable the development of new and improved products and manufacturing processes across a variety of end markets, including healthcare, food, energy and environmental sciences. Our synthetic biology capabilities include the ability to precisely control the amount, location and modification of biological molecules to control the function and output of living cells and optimize for desired results at an industrial scale.

Working with our collaborators, we seek to create more effective, less costly and more sustainable solutions than can be provided through current industry practices. We believe our approach to synthetic biology can enable new and improved biotherapeutics, increase the productivity and quality of food crops and livestock, create sustainable alternative energy sources and chemical feedstocks and provide for enhanced environmental remediation. Our business model is to commercialize our technologies through exclusive channel collaborations, or ECCs, with collaborators that have industry expertise, development resources and sales and marketing capabilities to bring new and improved products and processes to market.

Our technologies combine the principles of precision engineering, statistical modeling, automation and production at an industrial scale. We efficiently engineer precise and complex gene programs across many cell types. We apply the engineering principle of a ***design-build-test-learn*** continuum, through which we accumulate knowledge about the characteristics and performance of gene programs and cell lines. This process of continuous learning allows us to enhance our ability to design and build improved and more complex gene programs and cellular systems.

We believe our technologies are broadly applicable across many diverse end markets, including some end markets that have failed to recognize the applicability of synthetic biology or failed to efficiently utilize biologically based processes to produce products. We have devised our business model to bring many different commercial products to market through the formation of ECCs with collaborators that have expertise within specific industry segments, but, to date, no commercial products have been enabled by our technologies. In our ECCs, we provide expertise in the engineering, fabrication and modification of gene programs and cellular systems, and our

collaborators are responsible for providing market and product development expertise, as well as regulatory, sales and marketing capabilities. Generally, our collaborators compensate us through technology access fees, royalties, milestones and reimbursements of certain costs. This business model allows us to leverage our capabilities and capital across a broader landscape of product opportunities and end markets than we would be capable of addressing on our own.

We began entering into ECCs in 2011 and are currently party to nine such agreements. Under these ECCs, we are developing products in the fields of healthcare and food. In healthcare, our ECCs include programs in oncology, anti-infectives, antibiotics and tissue repair. In food, we are working to increase the productivity and nutritional value of salmon and other fish. We are also working to establish ECCs in the areas of energy and environmental sciences.

While the field of synthetic biology is still emerging, the addressable markets that may benefit from this approach are large and well-established. In healthcare, synthetic biology may provide new approaches to treating diseases, as well as improvements to the manufacture of existing products. It is estimated that the global human pharmaceuticals market is over $900 billion and that biological therapeutics represent approximately $150 billion of this market. While genetically modified salmon or trout may be considered new products, the global market for aquaculture was valued at approximately $110 billion in 2011. Genetically modified agricultural plants are already grown on more than 170 million hectares around the world and are worth an estimated $65 billion dollars. In energy, we are working to create novel, highly engineered organisms that use specific feed stocks to create commercially valuable end products, such as isobutanol, which already has a variety of technical and industrial applications and is also being investigated as a gasoline alternative.

What is synthetic biology?

History

Synthetic biology entails the application of engineering principles to biological systems for the purpose of designing and constructing new biological systems or redesigning/modifying existing biological systems. Biological systems are governed by DNA, the building blocks of gene programs, which controls cellular processes by coding for the production of proteins and other molecules that have a functional purpose and by regulating the activities of these molecules. This regulation occurs via complex biochemical and cellular reactions working through intricate cell signaling pathways, and control over these molecules modifies the output of biological systems.

In the early 1970s, scientists utilized basic tools and procedures for transferring DNA from one organism to another. Foundational tools included: gene programs contained in vectors; enzymes that could cut DNA at specific sites; and enzymes that could “glue” two complementary segments of DNA together. Developments between 1980 and the end of the 20th century advanced the field of genetic engineering, including automated DNA sequencing, DNA amplification via PCR and the creation of genetically modified organisms. However, the simplistic “cut-and-paste” nature of the available tools, and the absence of genomic sequence information, significantly restricted the scope of early synthetic biology efforts.

More recently, synthetic biology has been enabled by the application of information technology and advanced statistical analysis, also known as bioinformatics, to genetic engineering, as well as by improvements in DNA synthesis. Synthetic biology aims to engineer gene-based programs or codes to modify cellular function to achieve a desired biological outcome. For example,

applications may consist of the replacement of a defective protein with a functional protein to treat a broad range of human and animal disease states, or the production of multiple proteins through the regulation of several genes in a cell to produce petrochemicals.

Our approach

The essence of our approach is to apply synthetic biology by using an iterative process that is rapid, automated and highly reproducible, in which we:

- ***Design*** genes of interest and gene programs utilizing knowledge of cellular pathways and protein function;
- ***Build*** biological molecules, gene programs and their variants to optimize performance of the biological system;
- ***Test*** gene programs by inserting them into cellular systems and comparing the result(s) to the intended effects; and
- ***Learn*** by utilizing information gained in our iterative processes to create better DNA vectors and gene programs using a more informed and efficient process to achieve improved outcomes.

As a result of our approach, we have developed extensive knowledge about many classes of DNA components and the rules governing their expression and activity. We have also assembled an inventory of these DNA components that we can use to rationally construct unique vectors rapidly and with predictable outcomes. The knowledge embedded in our DNA database allows us to create single gene and highly complex multigenic gene programs (an individual gene program containing multiple genes).

To support our approach, we have developed, on our own and through acquisitions, a unique suite of technologies, and we continue to expand upon their capabilities. These technologies include: our UltraVector gene design and fabrication platform, and its associated library of modular DNA components; Cell Systems Informatics; Laser-Enabled Analysis and Processing, or LEAP; and mAbLogix. These technologies are complementary in nature and share the following key characteristics:

- **Platform neutral — outcome oriented.** We can work across different cell types with the objective of achieving the intended biological outcome allowing for product development across a broad spectrum of end markets.
- **Knowledge driven.** We use statistical modeling tools and computational analysis to continually acquire more knowledge about biological systems and their design to continually improve our ability to develop new and improved products and processes for our collaborators.
- **Rationally designed.** Our knowledge of biological systems and components allows us to design, build and select gene programs and predict the probable outcome of these programs.
- **Capable of complexity.** Our technologies enable the design and precise control of complex biological molecules and multigenic gene programs.
- **Industrial scale.** We use engineering principles and automation to enable products based on synthetic biology that are commercially viable.

Our competitive strengths

We believe that our technologies and our approach to synthetic biology — ***design-build-test-learn*** — give us a competitive advantage over traditional industrial processes as well as current approaches to synthetic biology.

We believe that we have the following competitive strengths:

We have a suite of proprietary and complementary technologies

We have built a suite of proprietary and complementary technologies that provides us with a comprehensive ability to design, create, modify and regulate gene programs and cellular systems. By virtue of the complementary nature of our technologies, we are able to provide our collaborators with a diverse array of capabilities, representing a “one stop shop” to potentially develop and commercialize new and differentiated products enabled by synthetic biology.

Our design-build-test-learn continuum allows us to design and build improved and more complex gene programs

We have developed a core expertise and technologies to ***design***, ***build*** and ***test*** complex gene programs, as well as technologies to isolate cells that best express the desired biological output. We have also developed an extensive bioinformatic software platform that combines information technology with advanced statistical analysis for DNA design and genetic engineering, enabling us to continually ***learn*** and create optimal conditions for our gene programs. Our approach allows us to build improved and more complex gene programs.

We believe we are a leader in synthetic biology

We believe we are the first company focused exclusively on applying synthetic biology across a broad spectrum of end markets and have been working in the field since 1998. Over the last 15 years, we have accumulated extensive knowledge and experience in design, modification and regulation of gene programs. We believe all of these factors, coupled with our suite of proprietary and complementary technologies, provide us with a first-mover advantage in synthetic biology.

We serve large and diverse end markets with high built-in demand

A vast number of products consumed globally are or can be produced using biologically based processes. Natural resources are becoming more scarce as demand exceeds supply creating unmet needs for improvements in development and manufacturing. As a result, the need for complex biologically engineered molecules such as those enabled by our synthetic biology technologies is large and spans multiple industries, including healthcare, food, energy and environmental sciences. Each of these markets faces unique challenges, however all have unmet needs for improvements in product development and manufacturing that can result in savings of both cost and time as compared to traditional means of industrial design and production. Because synthetic biology has the potential to deliver against these unmet needs, we believe that significant demand already exists for improved products enabled by synthetic biology. Additionally, there are markets utilizing traditional industrial processes that have failed to recognize the significant improvement in performance that could be achieved using synthetic biology.

We have a scalable ECC business model that allows us to leverage the broad potential of synthetic biology

We believe our ECC business model is a capital efficient and rapid way for us to participate in a more diversified range of product opportunities and industrial end markets than would otherwise be possible, including healthcare food, energy and environmental sciences. Our collaborators are primarily responsible for providing market and product development expertise, as well as sales, marketing and regulatory capabilities. Generally, our collaborators compensate us through technology access fees, royalties, milestones and reimbursements of certain costs. Our ECC business model allows us to participate in the potential upside from products that are enabled by our technologies across an extensive range of industries, without the need for us to invest considerable resources in bringing individual programs to market. Moreover, we believe that we will increasingly engage in ECCs in new fields at an accelerating pace with well-recognized collaborators.

We have experienced management and employees

Our management team, including our Chief Executive Officer, Randal J. Kirk, and our Chief Operating Officer, Krish Krishnan, consists of executives with a track record of success in building and managing research and development-driven companies, including New River Pharmaceuticals Inc., which was sold in 2007 to Shire plc for $2.6 billion. Our Chief Science Officer, Thomas D. Reed, was responsible for the initial conception and creation of our UltraVector technology platform. As of May 31, 2013 we had 148 employees primarily engaged in research and development, 67 of whom hold advanced degrees in engineering and biology or other sciences, including either a Ph.D., M.D. or D.V.M.

Our suite of proprietary and complementary technologies

We apply the potential of synthetic biology through our suite of proprietary and complementary technologies that combine the principles of precision engineering, statistical modeling, automation and production at an industrial scale. This enables us to engineer precise and complex gene programs across many cell types rapidly and inexpensively. Our technologies include the following:

The UltraVector gene design and fabrication platform

Biological processes have the potential to be designed or redesigned for improved performance for a given application. One of the main challenges is to engineer and introduce the appropriate genetic parts that will yield a product with the desired outcome, such as enhanced biological function, decreased cost of goods or therapeutic effect. This has traditionally been done via a trial and error approach. However, in order to quickly optimize a product it is often necessary to explore multiple variables simultaneously to efficiently sample a broad experimental space. Doing so requires several components, including a robust DNA construction platform capable of constructing large targeted libraries of DNA designs with the appropriate complexity and scale, a powerful set of statistical tools to guide efficient sampling of a large biological sample space, high-throughput screening capacity matched to library requirements, and a suite of statistical tools to enable recognition and then recombination of improved performers.

Our gene program design platform, which we refer to as UltraVector, is an integrated suite of tools comprising advanced DNA construction technology or components, cellular and protein

engineering, computational models and statistical methods which facilitate the rapid ***design***, ***build*** and ***testing*** of complex systems. The UltraVector platform allows us to translate complex gene programs into standard components that can be designed, manufactured and tested in a robust, automated format. This technology enables us to engineer at the cellular level from biological sources.

UltraVector DNA ***design*** is computer-automated and utilizes a proprietary set of defined construction rules to rapidly assemble components that are stored in our DNA library. These rules are derived from UltraVector's object-oriented DNA programming language that enables the hierarchical assembly of DNA parts, which can be a single base pair or thousands of base pairs in length. This allows us to rapidly assemble gene programs from defined and controlled DNA components imparting a desired biological outcome.

Following the design of the DNA vector, the UltraVector-driven ***build*** phase is performed via a proprietary modular assembly platform. Importantly, the underlying algorithm is designed to determine the best approach to efficiently assemble DNA, regardless of complexity or scale. By accommodating multigenic complexity and industrial scale production, we provide our collaborators with multiple options for efficiently optimizing DNA-based functions.

In addition to the growing number of gene components in our UltraVector library, we are continually designing and creating enzymatic and regulatory components that provide more precise control over genome integration and gene regulation. For example, our RheoSwitch Therapeutic System is a three-component transcriptional regulator that provides inducible gene expression. The RheoSwitch Therapeutic System provides the ability to not only express proteins/enzymes of interest, but also the ability to control the level and timing of expression to achieve a biological outcome. Both *in vivo*, which means within a whole living organism, and *ex vivo*, which means in a test tube or petri dish, applications have demonstrated highly controllable expression when the RheoSwitch Therapeutic System is incorporated into UltraVector-designed vectors. Other ongoing programs include our Attsite recombinases, which mediate predictable gene exchange into host cells thereby eliminating many of the difficulties seen with traditional gene insertion. Many traditional gene insertion techniques are difficult to perform because of a low and/or random insertion of the desired genetic code due to the lack of specificity for the recognition site related to the gene insertion enzyme resulting in unpredictable outcomes, such as, but not limited to, poor expression, loss of viability of the host organism or no expression of the desired molecule. AttSite recombinases provide specific attachment sites for insertion of the desired genetic code through highly specific recognition regions and corresponding enzymes permitting many specific gene transfers in a reliable and repeatable fashion.

Cell Systems Informatics

Cell systems informatics permits faster ***design*** as well as efficient ***testing*** and ***learning*** about new gene targets or product pathways. Our proprietary bioinformatics software and database systems for mapping cellular pathways when combined with our genome-scale modeling and experimental data, including, for example, gene expression profiling and protein engineering, enable us to optimize selection and development of gene programs and cellular systems for our collaborators.

Our computational modeling and simulation platform enables the development of predictive computer models of organisms, from microbes to humans. This platform ***builds*** virtual cells from their basic molecular components, and can simulate the activity of the cell's complete reaction

network, serving as an advanced biological knowledge management system with proven predictive capabilities. Reconstructed models can be used as the basis for computer simulations of the biological systems providing a mechanism for high-throughput ***testing***. The capabilities of these systems can be used to predict the outcomes of adaptive evolution, identify undiscovered pathways or reactions in the network based on necessary biomass components, test the effect of adding and/or eliminating genes or reactions to the network, design metabolic networks to support and optimize the production of a specific metabolite or protein and examine conditions consistent with disease and healthy states. Our computational modeling infrastructure allows scientists to rapidly examine a large experimental space *in silico*, which means performed via computer simulation, and then focus on the most promising conditions to be validated experimentally. Furthermore, this platform allows us to bridge experimental and computational research efforts by enabling models to be refined and improved as more data for an organism becomes available, thereby creating a highly effective method of rapid ***learning*** from the results of our research and development efforts.

Our bioinformatics platform is also central to our protein engineering expertise, which focuses on designing proteins with enhanced stability, solubility and post-translational modifications. We are also working to develop novel enzyme inhibitors and fusion proteins for a variety of applications in human and animal therapeutics. Our protein engineering may utilize one or more of the following aspects of our technologies to obtain novel catalysis activities—our proprietary component library, the generation of component variants sequence, evolutionary analysis and structure-based sequence alignment, computer-aided drug discovery, *de novo*, or newly synthesized or generated, and comparative protein modeling, molecular dynamics simulation and free energy analysis, antibody design and humanization, antigenicity prediction, protein pharmacokinetics optimization, and/or *in silico* support of enzyme engineering—and quantitative structure-function relationships with machine learning algorithms to optimize, facilitate and prioritize protein variant libraries for the advancement of our collaborators.

LEAP — cell identification and selection

Our proprietary Laser-Enabled Analysis and Processing technology, or LEAP, is an instrument that merges semiconductor manufacturing technologies for cell processing applications to provide high levels of control and scale to cell purification and stem cell culture management. Capable of operating at the single cell level by utilizing a wide range of image-based assays to charactize cell population, the LEAP platform can identify and purify cells of interest from large libraries of cells created by our UltraVector and bioinformatics technologies using a laser-based purification process, thereby providing a mechanism of ***testing*** the degree of protein expression in genetically modified cells as well as rapid means to ***learn*** from the genetic building process. Combining the flexibility of image-based selection with the precision of laser purification, LEAP provides a platform to identify and purify high value cells.

Coupled with our UltraVector platform capability to rapidly generate large libraries of vector variants, the LEAP instrument provides a platform to identify and ***test*** the individual UltraVector-transfected cell expressing the protein of interest at optimal levels. The rapid cycle time of the linked processes enables the creation of complex, synthetic biology solutions in an iterative, variation/selection fashion, applying an evolutionary approach, but at a much accelerated time scale, thereby significantly enhancing our ability to ***learn*** about the genetic vectors we create. Applied to cell line generation, a core step in the generation of biomanufacturing cell lines for the production of therapeutic proteins such as antibodies, LEAP generates more highly purified

cell lines of higher expressing cells, with greater productivity and in less time than conventional approaches can provide. This leads to cost and time savings both at the research and development stage and for cost of goods of manufactured products.

A unique feature of the LEAP platform is its ability to purify cells while they remain attached to the plate surface where they are grown. Many cell types, including many stem cells, do not maintain cell health and viability when processed with conventional, flow-based purification instrumentation. LEAP allows these cells to be efficiently processed and purified, while maintaining high viability. Applied to stem cells, LEAP enables the scale up and automation of stem cell processing that has historically been largely manual, providing a solution for scale-up.

mAbLogix — antibody discovery

Our proprietary mAbLogix antibody discovery platform, or mAbLogix platform, enables production of B-cell libraries for discovery of antibodies. An antibody, also known as an immunoglobulin, is a protein produced in response to and counteracting a specific antigen, or marker, on cells and infectious agents, such as virus and bacteria, that identify them as foreign or non-self. Monoclonal antibodies, or mAbs, have become an important therapeutic that can be used in a number of ways including anti-infectives and oncology indications. The mAbLogix platform permits antigen targeting using “fully human” monoclonal and polyclonal antibodies.

Our mAbLogix antibody discovery process is comprised of two major activities: the ***build*** of human B-cell libraries expressing a large number of unique antibodies; and the ***testing*** of these libraries based on an analysis of B-cells that positively express antibodies in response to a specifically chosen antigen. Our proprietary discovery process is differentiated by the large size of human B-cell libraries generated and by the rapid, cell-based screening process. Together these capabilities allow us to quickly explore the entire human antibody repertoire and generate fully human mAbs against diverse antigens.

Utilization of complementary synthetic biology technologies to facilitate the creation of unique biological products

In order to create a highly functional biological system, we recognize the complexity of cellular processes and the necessity to create an optimized gene program in conditions reflective of the natural environment to allow for the creation of the optimal biological product. This requires a rigorous understanding of cell signaling pathways as well as the interactions that influence the expression of protein. This knowledge is captured in our advanced bioinformatics systems, which uses statistical modeling and other analytic frameworks to determine the most efficient pathways for an intended biochemical result. Our bioinformatics platform also plays a critical role in our research and development as this library of information allows us to explore new targets of potential interest to our current or future collaborators.

In addition to creating the optimized gene program via the most efficient cell signaling pathway and in the relevant cellular environments, we have a growing library of DNA components that facilitate quantitative dose-proportionate control over the amount and timing of the target protein generated, thereby providing another mechanism to closely control activity of the newly constructed gene program.

Our LEAP technology facilitates the automated identification of an individual cell with the highest levels of expression, quality and potency from a population of over 100,000 cells.

Traditional cloning techniques are manual and only allow the generation of a few hundred clones while still being subject to human error. Following LEAP's identification of the cell of interest, we clone the cell, thereby generating millions of cells that produce high concentrations of the biological molecule of interest.

Our mAbLogix platform complements UltraVector with a library of human antibodies that exceeds 500 million. By immortalizing human tonsils which are comprised of lymphatic tissue containing B-cells, our mAbLogix platform creates a B-cell library that can generate antibodies against an almost infinite number of new antigens.

Antigens of interest could include cancer cells, bacteria/infective organisms or proteins that require inhibition, such as oncogenes. Following exposure of the antigen to the immortalized B-cell library, we are able to identify the B-cell that contains the reactive antibody. This antibody can then be isolated via LEAP, sequenced, manipulated, regulated and reconstructed using the UltraVector system.

Our markets

Synthetic biology has applicability across many diverse end markets. Our goal is to be a leader in the application of synthetic biology for products currently utilizing biologically based processes, and a leader in the replacement of conventional processes and products with biologically based substitutes. Through the application of our suite of proprietary and complementary technologies, we believe we can create optimized biological processes and create substitutes for traditional industrial techniques, leading to improved products that are developed and manufactured faster and more cost-effectively.

Healthcare

It is estimated that the global human pharmaceuticals market is approximately $900 billion and that biological therapeutics represent approximately $150 billion of this market. Additionally, the market for animal health therapeutics is currently estimated to be valued at more than $20 billion globally. The aging population in developed markets, and the population growth and increasing middle class in emerging markets, suggest that there will be a steadily increasing utilization of therapeutics. However, the global biopharmaceutical industry continues to face challenges in cost-effectively developing and producing new therapeutics. These demographic trends, as well as food production resource constraints, suggest similar trends in the animal health medicines and vaccines market.

In this market, we are focused on:

- **Therapeutics**. Both in health and animal health, synthetic biology has the potential to enable the development of highly complex biological molecules as well as the ability to regulate complex biological processes, with advantages as compared to traditional therapeutics, both *in vivo* and *ex vivo*. It may be possible, for example, to create highly targeted precision therapeutics with few off-target or adverse effects.
- **Bioproduction**. Synthetic biology allows new biologically based manufacturing techniques that have the potential to significantly lower the cost of goods for highly complex biological molecules, including both existing and novel biopharmaceuticals as well as small molecules.

- **Diagnostics**. By utilizing the sensing and reporting capabilities of cells and specific cellular mechanisms, it may be possible to create highly sensitive diagnostics, to report on a patient's health and provide advance warning of changes in the state of the patient's health.

Food

The Food and Agriculture Organization of the United Nations, or the FAO, predicts that by 2050 the world's population will reach 9.1 billion, 2 billion more than today. To feed a larger, more urban and wealthier population, food production must increase by 70 percent. Annual cereal production will need to rise to about 3 billion tons from 2.1 billion today and annual meat production will need to rise to 470 million tons from today's 270 million tons.

In this market, we are focused on:

- **Food animals**. Within the United States, beef, pork and chicken sales are in excess of $125 billion per year. Dairy sales provide an additional $28 billion in annual sales of animal byproduct. The global market for meat is approximately 5 times larger than the US market, and the global dairy market is 10 times the size of the US market. Traditional methods of genetic selection in animals is an inefficient and slow process, requiring many generations in order to evolve and select for desired traits. However, selective breeding techniques have resulted in increased size of cattle and hogs, increased milk production in cows and other valuable attributes. By applying our suite of technologies, we believe we can more rapidly develop livestock with commercially valuable attributes such as enhanced nutritional content, resistance to disease and increased growth efficiency.
- **Agriculture**. The FAO estimates that 90 percent of the production increases necessary to feed the future population will come from increases in crop yield and cropping intensity through enhanced traits. Current methods of crop yield and productivity enhancement are no longer keeping pace with demand. Genetically modified agricultural plants are already grown on more than 170 million hectares around the world and are worth an estimated $65 billion dollars. We believe we have the potential to create improved crops by simultaneously incorporating multigenic traits into plants that are designed to enhance the efficiency of water, carbon and nitrogen utilization. We also believe that we can use our gene expression and gene regulation technologies to provide highly complex traits related to enhanced nutritional content, product quality and disease resistance.

Energy and chemicals

A significant challenge of industrial markets, such as the energy and the petrochemical industries, is their large scale, which can require hundreds of millions and even billions of pounds per year of production, and corresponding price sensitivity. For these industries, the production of any product must allow for scalability and end-to-end economic viability. It has long been recognized that biology offers promising alternatives to energy production as well as alternatives to resource intensive synthetic chemistry. For more than a decade, efforts have been made to produce fuels from bacteria, yeast and other organisms with little success. We believe that the many and complex changes to any organism's DNA that must be made to result in significant energy production cannot be effected without the use of an engineered approach to synthetic biology.

Our UltraVector platform, by enabling high through-put gene program design and construction, allows us to identify the relevant pathways within an organism for the production of complex

biological molecules, design a variety of alternative solutions to their expression, and rapidly build and evaluate solution sets to select the most promising alternatives. We believe our novel biological solutions can increase yield and productivity, which are critical in the development of alternative energy and the production of chemicals.

In this market, we are focused on:

- **Energy**. The development of engineered microbes for biological conversion of natural gas to alcohols as drop-in fuels can be accomplished with synthetic biology. We have already achieved as proof of concept the conversion by engineered bacteria of methane to isobutanol, which is an alternative alcohol-based fuel.
- **Chemicals**. The chemical industry is highly dependent on crude petroleum as a feedstock. Increased demand for petroleum and continued declines in new reserves, as well as declines in the productivity of existing and proven reserves, has led to increased costs for consumers and reduced margins for many manufacturers. Economically viable alternatives to carbon feed stocks are critical to the future and sustainability of the chemical industry.

Environmental sciences

This sector embodies a diverse set of applications that we believe can be enhanced and expanded with the use of our suite of proprietary and complementary technologies. With the goal of entering into ECCs, we plan to focus our development activities on platform tailoring and selective third party enabling technology collaboration in the following areas:

- **Biosensors**. The biosensor global market is forecasted to exceed $12 billion by 2016 and opportunities exist to capture a portion of this market through design and construction of unique biosensors that leverage our suite of proprietary and complementary technologies.
- **Bioremediation**. The global market for microbial and associated bioremediation products is forecasted to reach over $1 billion by 2016. Industrial sources of soil and groundwater contamination present major environmental, policy and health issues because of the adverse effects of contaminants on humans and ecosystems. Bioremediation, which we believe our technologies have the potential to enable, can provide an environmentally friendly, socially acceptable, effective and economically viable solution.
- **Specialty Processes**. We believe our suite of proprietary and complementary technologies has the potential to be used to introduce effective solutions for applications such as activated microbial filtration, waterborne pathogen elimination, and de-nitrification of waste and surface water.

Our business model

We believe that because synthetic biology has applicability across many diverse end markets, we cannot take full advantage of synthetic biology with internal development programs alone. To address this, we have devised our business model to allow us to focus on our core expertise in synthetic biology while bringing many different commercial products to market via collaborations in a broad range of industry markets, thus minimizing and leveraging the use of our own capital.

Our business model is built around the formation of ECCs. An ECC is an agreement with a collaborator to develop products based on our technologies in a specifically defined field. We

seek collaborators that have expertise within a specific industry segment and the commitment to provide resources for the development and commercialization of products within that industry segment. In our ECCs, we provide expertise in the engineering of gene programs and cellular systems, and our collaborators are responsible for providing market and product development expertise, as well as regulatory, sales and marketing capabilities.

This business model allows us to leverage our capabilities and capital across numerous product development programs and a broader landscape of end markets than we would be capable of addressing on our own. Our ECC business model also allows us to participate in the potential upside from products that are enabled by our technologies across an extensive range of industries, without the need for us to invest considerable resources in bringing individual progress to market. Additionally, the flexibility of the business model allows us to collaborate with a range of counterparts, from small innovative companies to global multinational conglomerates.

We began signing ECCs in 2011 and we are currently party to nine such agreements and one exclusive research collaboration agreement under which our counterparty has the option to enter into an ECC with us.

Our ECCs

Our ECCs typically share a number of key features. Each ECC is an agreement with a collaborator to develop products based on our technologies in one or more specifically defined fields. These fields may be narrowly defined (representing, for example, a specific therapeutic approach for a single indication) or may be broad (representing, for example, an entire class of related products). In each case, we and the collaborator precisely define the field based on factors such as the expertise of the collaborator, the relative markets for the prospective products, the collaborator's resources available to commit to the ECC and our expectations as to other prospective ECCs in related areas. Regardless of the size of the field, under each ECC we grant the collaborator exclusive rights to our services and our suite of technologies to develop and commercialize products within the field. So long as our collaboration continues, the parties agree that each will not, alone or with another party, develop and commercialize products within the field of the ECC. The licensed technologies include those that we control as of the execution of the ECC as well as any technologies that we develop or acquire throughout the duration of the ECC.

We realize three general categories of revenue under our ECCs. First, for providing access to our technologies, we generally receive technology access fees either in cash or as an equity interest in the collaborator. These payments may be upfront or upon the achievement of developmental milestones or both. Second, through the duration of the ECC, we receive reimbursements from our collaborator to cover our time and material costs expended performing our obligations under the ECC. Reimbursable expenses may be for the time of our own personnel, materials we produce at our facilities or pass-through costs for the time and materials of third-party contractors. Third, we share in the potential future revenues, through royalties or other similar arrangements, derived from the commercialization of the product(s) that are enabled by our technologies.

Each of our ECCs is designed to continue in perpetuity unless terminated. Given the relatively long development cycle for many of the products that could be enabled by our technologies, as

well as our belief that we can enable the continual improvement of product offerings, it is our expectation that our ECCs will continue for many years and result in the development of multiple products. Each of our collaborators, however, retains the right to terminate the ECC for any reason by providing us written notice a certain period of time prior to such termination, generally ninety days. The ECC is also terminable by either party upon the other party's breach of material provisions of the ECC. The failure of our collaborator to exercise diligent efforts to develop products within the field of the ECC constitutes such a breach.

In the event one of our ECCs terminates we are entitled to immediately pursue another collaboration within the field of the terminated ECC. Moreover, technologies and product candidates in a relatively early stage of development revert to us, along with data, materials and the rights to all applicable regulatory filings related to the reverted products, enabling us to develop those products ourselves or incorporate them into a future collaboration. Product candidates that are at a more advanced stage of development, such as those already generating revenue or being considered for approval by the applicable regulatory body, for example, at the time of the ECC's termination are retained by the former collaborator. The collaborator has the right to develop and commercialize such retained products although we are entitled to the royalties or other compensation to which we would be entitled as if the ECC were still in effect. Upon termination, we retain any technology access fees or other payments to which we are entitled through the date of termination.

In our ECCs, we retain rights to our existing intellectual property and generally any intellectual property developed using, or otherwise incorporating, our technologies. In addition, we are generally responsible for controlling the prosecution and enforcement of this intellectual property with the exception of the enforcement of patents directed solely and specifically to products developed within the field of each ECC.

Each of our ECCs requires the collaborator to indemnify us for all liability related to products produced pursuant to the ECC and to obtain insurance coverage related to product liability.

ZIOPHARM Oncology

Effective January 6, 2011, we entered into an ECC with ZIOPHARM Oncology, Inc. (NASDAQ: ZIOP), or ZIOPHARM, a publicly traded small molecule late-stage oncology drug development company, to develop and commercialize therapeutics in the field of cancer treatment in humans. The lead product candidates of this ECC include DC-IL-12 and Ad-IL-12 for the treatment of melanoma and breast cancer. DC-IL-12 has completed a Phase I human clinical trial to establish the drug's safety. Ad-IL-12 is currently in multiple Phase II human clinical studies.

Both of these programs are focused on the regulatable expression of Interleukin-12 (IL-12). IL-12 is a naturally occurring anticancer cytokine central to the initiation and regulation of cellular anti-cancer immune responses. Until now, the use of IL-12 as a cancer therapeutic has been limited due to significant toxicities observed with its systemic use at doses high enough to exhibit a therapeutic effect.

Both of the IL-12 programs of this ECC deliver genetic vectors coding for the IL-12 gene directly to tumors. DC-IL-12 uses a patient's own dendritic cells as the delivery vehicle, whereas Ad-IL-12 uses adenovirus. Once the vector is delivered intratumorally, it is controlled by Intrexon's proprietary on/off biologic switch called the RheoSwitch Therapeutic System, or RTS. RTS maintains the gene program in an inactive state within a cell, until such a time as the patient

takes a pill containing an orally available small molecule ligand. In the presence of the ligand, which is otherwise biologically inert, RTS is activated allowing expression of IL-12 at a specified therapeutic level and for a predetermined duration. RTS thereby regulates IL-12 expression to achieve a targeted clinically active level of IL-12 at the tumor while limiting broader systemic exposure and toxicities from the cytokine.

This ECC is also investigating the use of IL-12 in combination therapy with selected immunomodulators for solid tumors. This Multi-Inducible Cancer Immunomodulator, or MICI, program has multiple ongoing projects designed to identify proper cytokine candidates and develop vectors for cancer therapeutic applications. Three programs have been selected for development. Each is based on our multigenic expression platform, where two or more therapeutic proteins are expressed from a single DNA vector. Recent results from the MICI program have demonstrated successful expression of multigenic therapeutic proteins. Under both the DC-IL-12 and Ad-IL-12 programs, we are responsible for manufacturing the drug product and small molecule activator ligand. ZIOPHARM reimburses us for these manufacturing costs.

Pursuant to the ECC, ZIOPHARM received a license to our technologies within the field of cancer treatment in humans as defined more specifically in the ECC. We received 3,636,926 shares of ZIOPHARM's common stock valued at $17.5 million as an upfront technology access fee. On October 24, 2012 upon the dosing of the first patient of a Phase II clinical trial, we received 3,636,926 shares of ZIOPHARM's common stock valued at $18.3 million as milestone consideration, which is the sole milestone under this ECC. Subject to certain expense allocations, ZIOPHARM will pay us 50 percent of the quarterly net profits derived from the sale of products developed under the ECC.

Upon execution of this ECC, we purchased 2,426,235 shares of ZIOPHARM common stock with a value of $11.6 million, and we agreed to purchase up to $50.0 million of ZIOPHARM common stock in conjunction with securities offerings that may be conducted by ZIOPHARM in the future, subject to certain conditions and limitations. To date, we have purchased approximately $21.0 million of ZIOPHARM common stock in such securities offerings, and our remaining obligation on this purchase commitment is approximately $29.0 million.

Elanco

Effective November 28, 2011, we entered into an ECC with Elanco, the animal health division of Eli Lilly and Company (NYSE: LLY). Elanco is a world leader in developing products and services that enhance animal health, wellness and performance. The lead programs of this ECC are currently in the research phase for various applications with respect to the treatment and prevention of diseases in companion animals and livestock.

Pursuant to the ECC, we received an upfront technology access fee in cash and are entitled to additional amounts up to an aggregate of $2.25 million per product candidate based on the occurrence of separate performance, regulatory and sales-based milestones. Elanco will pay us royalties in the mid- to upper-single digits and lower- double digits based on net sales of products developed under the ECC. Elanco holds a right of first refusal to participate in the development of any product outside of the field intended to treat one of the target indications covered by the ECC.

Fibrocell

Effective October 5, 2012, we entered into an ECC with Fibrocell Science, Inc. (OTCBB: FCSC), or Fibrocell, a publicly traded biotechnology company commercializing fibroblasts for therapeutic applications. The lead therapeutic program of this ECC is currently in the research phase for the treatment of recessive dystrophic epidermolysis bullosa, or RDEB, a rare, genetically based blistering disorder. RDEB is an autosomal recessive disorder characterized by the loss of collagen type VII, an important protein component of the anchoring fibers that connect the dermis to the epidermis. Our proposed treatment for this disease will provide collagen VII produced by autologous, gene-modified fibroblasts.

We are also working with Fibrocell to improve the process efficiency and cost of goods related to the manufacture of LAVIV™, Fibrocell's autologous cellular product indicated for improvement of the appearance of moderate to severe nasolabial fold wrinkles in adults.

Pursuant to the ECC, Fibrocell received a license to our technologies to develop and commercialize genetically modified and non-genetically modified autologous fibroblasts and autologous dermal cells in the United States for both aesthetic and therapeutic indications. We received a technology access fee of 1,317,520 shares of Fibrocell's common stock valued at $7.6 million as upfront consideration. The number of shares received reflects a 1-for-25 reverse stock split of Fibrocell's common stock effective April 30, 2013. On a quarterly basis, Fibrocell will pay us royalties of 7 percent of net sales up to $25.0 million and 14 percent of net sales above $25.0 million on products developed from the ECC. If Fibrocell uses our technologies to improve the production of LAVIV or new Fibrocell products not developed under the ECC, Fibrocell will pay us a quarterly royalty equal to 33 percent of the cost of goods sold savings generated by the improvement.

Oragenics

Effective June 5, 2012, we entered into an ECC with Oragenics, Inc. (OTCBB: OGEN), or Oragenics, a publicly traded company in the field of oral care probiotics and a developer of therapeutic products including novel antibiotics. The lead therapeutic program of this ECC is currently in the research phase. The objective of this ECC is to develop and commercialize lantibiotics, a novel class of broad-spectrum antibiotics, for the treatment of infectious diseases, including methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant *Enterococcus faecalis*, *Clostridium difficile*, Mycobacterium tuberculosis and anthrax, in humans and companion animals.

Pursuant to the ECC, Oragenics received a license to our technologies within the field of lantibiotics for the treatment of infectious diseases in humans and companion animals. We received a technology access fee of 4,392,425 shares of Oragenics' common stock valued at $6.6 million as upfront consideration. Upon the achievement of certain milestones, we are entitled to receive additional consideration equal, in aggregate, to 10 percent of Oragenics' outstanding shares, excluding shares issuable upon the conversion of certain derivative securities. At Oragenics' option, such consideration can be paid in stock or cash, in which case such payment shall be based on the fair market value of the shares otherwise issuable. Oragenics will pay us 25 percent of the quarterly profits derived from the sale of products developed from the ECC on a product-by-product basis.

Synthetic Biologics

Effective August 6, 2012, we entered into an ECC with Synthetic Biologics, Inc. (NYSE: SYN), or Synthetic Biologics. The lead therapeutic program of this ECC is currently in preclinical development.

Pursuant to the ECC, Synthetic Biologics received a license to our technologies to develop and commercialize a series of monoclonal antibody therapies for the treatment of certain infectious diseases defined in the ECC. Upon shareholder approval on October 5, 2012, we received 3,552,210 shares of Synthetic Biologics common stock valued at $7.8 million as an upfront technology access fee. We are entitled to additional consideration payable either in cash or common stock at the option of Synthetic Biologics upon the achievement of certain regulatory milestones for each product candidate developed under the ECC. Upon the filing by Synthetic Biologics of an investigational new drug application with the U.S. Food and Drug Administration, or FDA, we will receive cash or common stock at the option of Synthetic Biologics valued at $2.0 million. Upon the first to occur of either the first commercial sale of a product developed under the ECC or the granting of marketing approval of a product developed under the ECC, we will receive cash or common stock at the option of Synthetic Biologics valued at $3.0 million. The ECC initially targets three infectious diseases, and Synthetic Biologics may elect to target up to five more infectious diseases by paying us a field expansion fee of $2.0 million in either cash or common stock for each additional infectious disease selected. The lead therapeutic programs of this ECC are currently in preclinical development. They include the development of monoclonal antibody therapies for the treatment of pertussis and Acinetobacter infections. The pertussis program is focused on the development of a monoclonal antibody to treat pertussis infections, more commonly known as whooping cough, by targeting and neutralizing the pertussis toxin, in order to reduce the mortality rate in infants and potentially shorten the duration of chronic cough in afflicted adults. According to the World Health Organization, each year, B. pertussis infection causes an estimated 300,000 deaths worldwide, primarily among young, unvaccinated infants. The ECC is also working to develop a mAb therapy for the treatment of Acinetobacter infections. Many strains of Acinetobacter are multidrug-resistant and pose an increasing global threat to hospitalized patients, wounded military personnel and those affected by natural disasters. Based on its public filings, Synthetic Biologics believes that a treatment for Acinetobacter infections represents a billion dollar market opportunity.

On a quarterly basis, Synthetic Biologics will pay us tiered royalties as a percentage in the upper-single to lower-double digits of net sales of products developed under the ECC.

Previously, in November 2011, we entered into an ECC with Synthetic Biologics to develop and commercialize a gene therapeutic product using RTS for the treatment of pulmonary arterial hypertension. In April 2013, we terminated the ECC for lack of support by Synthetic Biologics.

AquaBounty

AquaBounty Technologies, Inc. (AIM: ABTX), or AquaBounty, is a biotechnology company using biological sciences and molecular technology to enable the large-scale, efficient, and environmentally sustainable production of high quality finfish. Its lead product, AquAdvantage Salmon®, or AAS, is a new strain of salmon capable of reaching marketable size in around half the time of conventional salmon. By placing the salmon growth hormone under the control of an alternative promoter (gene switch) from the ocean pout, an edible arctic fish, AquaBounty is able to provide a consistent level of salmon growth hormone which speeds growth throughout the

early stages of the salmon's development. Although these fish do not reach a larger final size than conventional salmon, by accelerating growth in the early stages, AAS can reach a marketable size in around half the time. In the case of salmon, this can reduce farming time from approximately 28 to 36 months to approximately 18 months, depending on the desired marketable weight of the fish. The AAS was developed by AquaBounty without using any of our technologies.

On November 16, 2012, we acquired 47.56 percent of AquBounty's common stock from two shareholders. On March 15, 2013, we acquired additional shares from AquaBounty in a private placement increasing our ownership to 53.82 percent. Also, on February 14, 2013, three individuals designated by us, including one of our employees, were appointed to AquaBounty's board of directors and we have the right to appoint a fourth director at AquaBounty's next stockholder meeting.

Effective February 14, 2013, we entered into an ECC with AquaBounty. The objective of this ECC, which is in the research phase, is to develop and commercialize genetically modified finfish for human consumption that are more nutritious, have increased muscle mass, and grow quickly to maturity. Pursuant to the ECC, we will receive 16.7% of quarterly gross profits for each product.

AmpliPhi

Effective March 29, 2013, we entered into an ECC with AmpliPhi BioSciences Corp. (OTCBB: APHB), or AmpliPhi, a developer of bacteriophage-based antibacterial therapies to treat drug resistant infections. The objective of this ECC is to develop and commercialize new bacteriophage-based therapies to target specific antibiotic resistant infections. The target indications of this ECC may include treatment of bacterial infections associated with acute and chronic wounds, the treatment of acute and chronic *P. aeruginosa* lung infections, and the treatment of infections of *C. difficile*. The lead therapeutic program of this ECC is currently in the research phase.

Pursuant to the ECC, we received 24,000,000 shares of common stock of Ampliphi as an upfront technology access fee. We may receive up to $7.5 million in aggregate milestone payments for each product, payable either in cash or equity upon the achievement of certain events. We also are entitled to tiered royalties as a percentage in the upper-single digits of the net product sales of a product developed under the ECC.

Genopaver

Effective March 29, 2013, we entered into an ECC with Genopaver, LLC, or Genopaver, a limited liability company formed by affiliates of Third Security, LLC. Genopaver was formed for the express purpose of entering into the ECC and developing and commercializing products in the field of the fermentative production of alkaloids through genetically modified cell-lines and substrate feeds for use as active pharmaceutical ingredients or as commercially sold intermediates in the manufacture of active pharmaceutical ingredients. The first program under this ECC involves the microbial production of an active pharmaceutical ingredient used primarily in the manufacture of several commonly used pain killers. The purpose of our ECC with Genopaver is to develop a source of this valuable component at a commercially competitive cost. The initial program under this ECC is in the research phase.

Pursuant to the ECC, we received a $3.0 million cash payment as an upfront technology access fee. We are entitled to a royalty as a percentage in the lower-double digits on the gross profits of product sales from a product developed under the ECC.

Soligenix

Effective April 27, 2013, we entered into an ECC with Soligenix, Inc. (OTCQB: SNGX), or Soligenix, a clinical stage biopharmaceutical company focused on developing products to treat inflammatory diseases and biodefense countermeasures. The objective of this ECC is to develop and commercialize human monoclonal antibody therapies for the treatment of melioidosis. Melioidosis is caused by *B. pseudomallei*, a Gram-negative bacteria that is highly resistant to antibiotic treatment regimens. Melioidosis is endemic in Southeast Asia and Northern Australia. It is also considered a high-priority biodefense threat as defined in the 2012 Public Health Emergency Medical Countermeasures Enterprise Strategy established by the U.S. Department of Health and Human Services with the potential for widespread dissemination through aerosol. The lead therapeutic program of this ECC involves the development and commercialization of a human monoclonal antibody therapy for the treatment of meliodosis. Presently, work on this program under the ECC is in the research phase.

Pursuant to the ECC, we received 1,034,483 shares of common stock of Soligenix as an upfront technology access fee. We may receive up to $7.0 million in aggregate milestone payments for each product developed under the ECC payable either in cash or equity upon the achievement of certain events. We are also entitled to a royalty as a percentage in the upper-single to lower-double digits on the net sales generated from a product developed under the ECC.

BioLife Cell Bank

On August 1, 2012, we entered an exclusive research collaboration agreement which gives BioLife Cell Bank, Inc., a privately held company in Dallas, Texas, or BioLife, an option to form an ECC with us to produce new treatments for spinal muscular atrophy, commonly referred to as SMA. SMA is an autosomal-recessive genetic disorder characterized by progressive weakness of the lower motor neurons. SMA is caused by a genetic defect in the SMN1 gene which codes SMN, a protein necessary for survival of motor neurons. SMA is responsible for more infant mortality than any other genetic disease. The program is in the research phase.

Pursuant to the agreement, BioLife received a license to our technologies to research, develop and use adipose-derived and other stem cells for the development and commercialization of an autologous, genetically modified stem-cell therapy for humans for the treatment of SMA. If BioLife exercises its option under the agreement to form an ECC with us, this license will become an exclusive license. If BioLife exercises this option, BioLife will pay us a technology access fee equal to the greater of 15 percent of the fully diluted fair market value of BioLife and $6.8 million, which fee BioLife may pay in either cash or stock. BioLife's option expires on August 1, 2013 unless extended by both parties. The agreement may be terminated by either party in the event of certain material breaches defined in the agreement and may be terminated voluntarily by BioLife upon 90 days' written notice to us provided that no voluntary termination by BioLife can be made before its option to form an ECC with us expires.

If BioLife chooses to exercise the option, BioLife would receive an exclusive license to our technologies within the field of adipose-derived and other stem cells for the development and commercialization of an autologous genetically modified stem cell therapy for humans for the

treatment of SMA. Upon the achievement of certain milestones, we would be entitled to receive additional consideration equal, in aggregate, to 10 percent of the fully diluted equity of BioLife, payable at BioLife's option in either cash or stock. BioLife would pay us 30 percent of the quarterly profits derived from the sale of products developed from the ECC on a product-by-product basis.

Competition

We believe that we are a leader in synthetic biology. We do not believe that we have any direct competitors who provide similar technologies which fully enable the commercialization of products developed using synthetic biology across a broad spectrum of biologically based industries. As a result, we believe our competition is more indirect and general in nature, and falls into three broad categories:

- **Synthetic biology service providers**. There are companies that have competing technologies for individual pieces of our suite of complementary technologies. For example, there are companies that can synthesize DNA, and there are companies that can develop monoclonal antibodies. One portion of our proprietary technology related to DNA synthesis and assembly includes the ability to *de novo* synthesize DNA. We believe the following companies engage in the manufacture of DNA componentry: DNA 2.0, Inc., Blue Heron Biotech, LLC and Life Technologies Corporation. Another portion of our proprietary technology includes development of fully human monoclonal antibodies. Our technology utilizes advanced methods of stimulating antibody production in naïve human B-cells *in vitro* and specifically selecting those cells which produce antibodies that can bind a desired target, such as human toxins, tumor cells or microbial pathogens. We believe the following companies engage in the manufacture of human or human-like monoclonal antibodies: AbD SeroTec (a Bio-Rad Laboratories, Inc. company), Alexion Pharmaceuticals, Inc., XOMA Corporation, Genmab US, Inc., MorphoSys AG, NovImmune SA, Société Des Systèmes Biologiques, or BIOTEM, Adimab, LLC, ProMab Biotechnologies, Inc., Abpro, Inc., AIIM Therapeutics and Open Monoclonal Technology, Inc.
- **Industrial companies who may develop their own approach to synthetic biology**. Rather than becoming a collaborator with us, potential collaborators may decide to invest time and capital to internally develop their own synthetic biology capabilities. For example, large biopharmaceutical companies, energy companies, and ag-bio companies may pursue a proprietary synthetic biology strategy.
- **Industrial companies who may develop competing products using other technologies**. Products enabled by our synthetic biology will face competition in the market, including from products which have been developed using other industrial technologies. For example, large biopharmaceutical companies pursue other technologies for drug development, and large ag-bio companies pursue other technologies for the development of genetically modified crops.

Intellectual property

As we advance technologies across multiple platforms and synthetic biology areas, correspondingly, we apply a multilayered approach for protecting intellectual property relating to the inventions we have developed internally as well as those we have acquired from third parties, such as by assignment or by in-license. We seek patent protection in the United States

and in other countries for our inventions and discoveries, and we develop and protect our key know-how and trade secrets relating to our platform technologies as well as to the products we are developing with our collaborators.

We seek patent protection for our platform technologies, including but not limited to our (i) switch technology, (ii) activator ligands for our switch technology and (iii) cell identification and selection platform. In addition, we seek patents covering specific collaborator's products. With respect to a particular collaborator's product, we may seek patent protection on some or all of the following: the compound itself, its commercial composition, its production and its methods of use.

Through the use of our various platform technologies we seek to design and build proprietary compounds, vectors, methods and processes across a variety of end markets. In particular, we focus our intellectual property on synthetic biology technologies that provide platforms for the design and creation of cells, vectors and components for our collaborators. In addition, we may pursue intermediate and product-specific patents associated with our collaborators' lead programs.

Our success depends, in part, upon our ability to obtain patents and maintain adequate protection for our intellectual property relating to our technologies and products and potential products. We have adopted a strategy of seeking patent protection in the United States and in other jurisdictions globally we deem appropriate under the circumstances, with respect to certain of the technologies used in or relating to our products and processes. As of April 30, 2013, we own at least issued U.S. patents and pending U.S. patent applications relating to certain aspects of our technologies, and we have pursued counterpart patents and patent applications in other jurisdictions around the world, as we have deemed appropriate. We continue to actively develop our portfolio through the filing of new patent applications, divisionals and continuations relating to our technologies, methods and products as we and our collaborators deem appropriate.

We have strategic positioning with respect to our key technologies including patent portfolios directed to: our switch technology covering aspects of our gene switches, such as our RheoSwitch Therapeutic System, and gene modulation systems, vectors, cells and organisms containing these switches, and their use; our activator ligand technology covering aspects of our activator ligands and their use; and our cell identification and selection technology covering aspects of our cell identification and selection platform, including our cell purification, isolation, characterization and manipulation technologies. In these portfolios, the issued U.S. patents and applications, if granted, are scheduled to expire from 2017 to 2034. We have also filed counterpart patents and patent applications in other countries, including Australia, Argentina, Brazil, Canada, China, Europe, Hong Kong, India, Indonesia, Israel, Japan, Korea, Mexico, New Zealand, Philippines, Russia, Singapore, South Africa and Taiwan. In the future we may file in these or additional jurisdictions as deemed appropriate for the protection of our technologies. In these jurisdictions, the issued patents and patent applications, if granted, are scheduled to expire from 2018 to 2032.

Additionally, we complement our intellectual property portfolio with exclusive and non-exclusive patent licenses and options for licenses to third party technologies.

A principal component of our strategy is maximizing the value of our ECCs through our intellectual property that covers our technologies, which is accentuated by intermediate and program-specific intellectual property protections. In addition to owned and in-licensed patents, we solidify our intellectual property protection through a combination of trade secrets, know-

how, confidentiality, nondisclosure and other contractual provisions, and security measures to protect our confidential and proprietary information related to each platform and collaborator program. We regularly assess and review the risks and benefits of protecting our developments through each aspect of intellectual property available to us.

Because we rely on trade secrets, know-how and continuing technological advances to protect various aspects of our core technology, we require our employees, consultants and scientific collaborators to execute confidentiality and invention assignment agreements with us to maintain the confidentiality of our trade secrets and proprietary information. Our confidentiality agreements generally provide that the employee, consultant or scientific collaborator will not disclose our confidential information to third parties. These agreements also provide that inventions conceived by the employee, consultant or scientific collaborator in the course of working for us will be our exclusive property. Additionally, our employees agree to take certain steps to facilitate our assertion of ownership over such intellectual property. These measures may not adequately protect our trade secrets or other proprietary information. If they do not adequately protect our rights, third parties could use our technologies, and we could lose any competitive advantage we may have. In addition, others may independently develop similar proprietary information or techniques or otherwise gain access to our trade secrets, which could impair any competitive advantage we may have.

Regulatory environment

Regulations affecting Intrexon

Our ongoing research and development relies on evaluations in animals, which may become subject to bans or additional regulations, and, as described below, our research operations are subject to various environmental regulations. However, most of the laws and regulations concerning synthetic biology relate to the end products produced using synthetic biology, but that may change. For example, the Presidential Commission for the Study of Bioethical Issues in December 2010 recommended that the federal government oversee, but not regulate, synthetic biology research. The Presidential Commission also recommended that the federal government lead an ongoing review of developments in the synthetic biology field and that the federal government conduct a reasonable risk assessment before the field release of synthetic organisms. As discussed below, the products our collaborators produce are subject to extensive regulation. Refer to “Risk factors—The markets in which our collaborators are developing products using our technologies are subject to extensive regulation, and we rely on our collaborators to comply with all applicable laws and regulations” for more discussion of regulatory risks.

Environmental regulations affecting both Intrexon and our collaborators

Our collaborators and we are subject to various federal, state and local environmental laws, rules and regulations, including those relating to the discharge of materials into the air, water and ground, the generation, storage, handling, use, transportation and disposal of hazardous materials and the health and safety of employees with respect to laboratory activities required for the development of products and technologies. These laws and regulations require us and our collaborators to obtain environmental permits and comply with numerous environmental restrictions. These laws and regulations also may require expensive pollution control equipment or operation changes to limit actual or potential impacts to the environment.

Our laboratory activities and those of our collaborators inherently involve the use of potentially hazardous materials, which are subject to health, safety and environmental regulations. We design our infrastructure, procedures and equipment to meet our obligations under these regulations. We perform recurring internal and third-party audits and provide employees ongoing training and support, as required. All of our employees must comply with safety instructions and procedures, which are codified in our employment policies.

Federal and state laws and regulations impose requirements on the production, importation, use and disposal of chemicals and genetically modified microorganisms, which impact us and our collaborators. Our collaborators' processes may contain genetically engineered organisms which, when used in an industrial processes, are considered new chemicals under the Toxic Substances Control Act program of the U.S. Environmental Protection Agency, or EPA. These laws and regulations would require our collaborators to obtain and comply with the EPA's Microbial Commercial Activity Notice process to operate. In the European Union, our collaborators may be subject to a chemical regulatory program known as REACH (Registration, Evaluation, Authorization and Restriction of Chemical Substances). Under REACH, our collaborators are required to register their products with the European Commission, and the registration process could result in significant costs or delay the manufacture or sale of our collaborators' products in the European Union.

Regulations affecting our collaborators

Human therapeutics regulation

As discussed above in "Risk factors — Risks related to our dependence on third parties," the products produced by our collaborators enabled by our technology platforms are subject to extensive regulation. We rely on our collaborators' compliance with laws and regulations applicable to the products they produce. We do not independently monitor whether our collaborators comply with applicable laws and regulations. Please see the risk factor entitled "The markets in which our collaborations are developing products using our technologies are subject to extensive regulation, and we rely on our collaborations to comply with all applicable laws and regulations."

Government authorities in the United States, at the federal, state and local level, and in other countries extensively regulate, among other things, the research, development, testing, manufacture, including any manufacturing changes, packaging, storage, recordkeeping, labeling, advertising, promotion, distribution, marketing, import and export of pharmaceutical products such as those being developed by our collaborators. The processes for obtaining regulatory approvals in the United States and in foreign countries, along with subsequent compliance with applicable statutes and regulations, require the expenditure of substantial time and financial resources.

In addition to regulations in the United States, our collaborators will be subject to a variety of foreign regulations governing clinical trials and commercial sales and distribution of the products enabled by our technologies. Whether or not our collaborators obtain FDA approval for a product, they must obtain approval by the comparable regulatory authorities of foreign countries or economic areas, such as the European Union, before they may commence clinical trials or market products in those countries or areas. The approval process and requirements governing the conduct of clinical trials, product licensing, pricing and reimbursement vary greatly from place to place, and the time may be longer or shorter than that required for FDA approval.

Animal health regulation

The sale of animal health products is governed by the laws and regulations specific to each country. In the majority of our target markets, the relevant health authority is separate from those governing human medicinal products. In the United States, the FDA regulates animal health pharmaceuticals, the United States Department of Agriculture, or USDA, regulates veterinary vaccines, and EPA regulates veterinary pesticides. Each U.S. agency has its own rules and regulations with which our collaborators must comply. In Europe, the European Medicines Agency, or EMA, is responsible for the scientific evaluation of medicines, including animal health products being developed by our collaborators with our technology platforms. Most other countries' regulatory agencies will generally refer to the FDA, USDA, European Union and other international animal health entities.

Food product regulation

The manufacturing, marketing and certain areas of research related to some of the potential food products developed by our collaborators are subject to regulation by federal and state governmental authorities in the United States, including the FDA, the USDA, and the EPA. Comparable authorities are involved in other countries, including the EMA. The FDA regulates genetically engineered animals under new animal drug provisions of the law, and the agency must approve them before they are allowed on the market. Following marketing approval, the FDA continues to regulate drug and biological products extensively.

Energy and chemical regulation

Regulation by governmental authorities in the United States and other countries is a significant factor in the development, manufacture and marketing of biofuels. The biofuels developed by our collaborators with our technology platforms may require regulatory approval by governmental agencies prior to commercialization. In the United States, various federal, and, in some cases, state statutes and regulations also govern or impact the manufacturing, safety, storage and use of biofuels. The environmental regulations discussed above also govern the development, manufacture and marketing of energy and chemical products.

Regulations affecting AquaBounty

On December 26, 2012, the FDA published its environmental assessment, or EA, for AAS, along with its Finding of No Significant Impact, or FONSI, in the Federal Register, confirming that an approval of the pending New Animal Drug Application would not have an adverse effect on the environment and opened up a 60 day period for public comment. On February 13, 2013 the FDA extended the period for public comment by an additional 60 days, which expired April 26, 2013.

Prior to the publication of the EA and FONSI, in September 2010, the FDA had held a public meeting of its Veterinary Medicine Advisory Committee to review its findings regarding AAS.

The conclusion of its panel of experts was that AAS is indistinguishable from other farmed Atlantic salmon, is safe to eat and does not pose a threat to the environment under its conditions of use. Subsequently, the FDA initiated an EA in compliance with its obligations under the U.S. National Environmental Policy Act, which requires that all federal agencies consider the possible environmental impacts of any action that they authorize.

While we do not expect any further requirements prior to FDA approval for sale to the public and the public comment period on the EA and FONSI have closed as re-scheduled, the FDA has not provided AquaBounty with an indication of the process or associated timing that will occur subsequent to the conclusion of the re-scheduled period for public comment.

Research and development

As of May 31, 2013, we had 148 employees dedicated to research and development. Of these employees, 67 hold advanced degrees in engineering and biology or other sciences, including either a Ph.D., M.D. or D.V.M. We incurred expenses of $11.5 million for the three months ended March 31, 2013, $64.2 million in 2012 and $70.4 million in 2011 on research and development activities. We anticipate that our research and development expenditures will increase substantially as we investigate other applications for our synthetic biotechnologies. Our primary research and development operations are located in leased laboratory facilities in San Diego, California, San Carlos, California, Germantown, Maryland, Durham, North Carolina and Blacksburg, Virginia.

As of May 31, 2013, AquaBounty had seven employees dedicated to research and development. We anticipate that AquaBounty's research and development expenditures will increase as it focuses on bringing AAS to market. AquaBounty's research and development operations are located in laboratory facilities in Massachusetts and Canada.

Manufacturing

In general, we produce small quantities of our compounds in our laboratory facilities for investigational purposes and testing.

AquaBounty has a production facility in the Republic of Panama. This facility is currently used for the purpose of producing AAS.

Sales and marketing

We do not currently have a sales and marketing force related to the end products that are being developed by our collaborators with our technologies, as those efforts must generally be undertaken by the collaborators, nor do we intend to develop such a sale and marketing force in the future. However, we are actively seeking new ECCs and marketing our technological capabilities.

AquaBounty has one employee who works in sales and marketing.

Legal proceedings

We are not party to any legal proceedings the outcome of which, we believe, if determined adversely to us, would individually or in the aggregate have a material adverse effect on our future business, consolidated results of operations, cash flows or financial position. We may, from time to time, be subject to legal proceedings and claims arising from the normal course of business activities.

Facilities

We lease approximately 187,000 square feet of laboratory or combined laboratory and office space which is used in our research and development efforts. We establish the geographic

locations of our research and development operations based on proximity to the relevant market expertise and access to available talent pools. Our primary lab operations under lease include locations in San Diego, California, San Carlos, California, Germantown, Maryland, Durham, North Carolina and Blacksburg, Virginia. We lease an additional 27,000 square feet of administrative offices in Foster City, California, West Palm Beach, Florida, Germantown, Maryland, and Blacksburg, Virginia. The original terms of our leases range from one to five years. See also “Management’s discussion and analysis of financial condition and results of operations — Contractual obligations and commitments” beginning on page 68. The following table shows information about our primary lab operations as of May 31, 2013:

Location	Square footage
Blacksburg, VA	35,456
Durham, NC	32,008
Germantown, MD	56,258
San Carlos, CA	37,076
San Diego, CA	23,409

AquaBounty’s primary operations include locations in Massachusetts, Canada, and Panama. AquaBounty leases or owns 18,000 square feet of laboratory space.

Employees

As of May 31, 2013, we had 204 employees, 148 of whom were primarily engaged in research and development activities. Our workforce includes 77 employees with either a Ph.D., M.D. or D.V.M. and an additional 98 employees with Bachelors or Masters Degrees. None of our employees is represented by a labor union and we consider our employee relations to be good.

As of May 31, 2013, AquaBounty had 13 employees, seven of whom were primarily engaged in research and development activities.

Corporate information

We were founded by Thomas D. Reed, Ph.D., in 1998, as an Ohio limited liability company under the name Genomatix LTD. We were reincorporated as a Virginia corporation in 2004 and changed our name to Intrexon Corporation in 2005. Our principal executive offices are located at 20374 Seneca Meadows Parkway Germantown, Maryland 20876, and our telephone number is (301) 556-9900. Our website is *www.dna.com*.

Management

Executive officers and directors

The following table sets forth certain information regarding our executive officers and directors as of May 31, 2013.

Name	Age	Position(s)
Executive Officers		
Randal J. Kirk	59	Chief Executive Officer and Chairman of the Board
Krish S. Krishnan	48	Chief Operating Officer
Thomas D. Reed, Ph.D.	47	Chief Science Officer and Director
Rick L. Sterling	49	Chief Financial Officer
Donald P. Lehr	38	Chief Legal Officer
Suma M. Krishnan	48	Senior Vice President — Regulatory Affairs
Darryl Webster	53	Senior Vice President — Intellectual Property
Samuel Broder	68	Senior Vice President — Health Sector
Thomas R. Kasser, Ph.D.	58	Senior Vice President — Food Sector
Robert F. Walsh, III	55	Senior Vice President — Energy and Chemicals Sector
Nick Macris	45	Vice President — Environmental Sector
Non-Employee Directors		
Cesar L. Alvarez	65	Director
Steven Frank	53	Director
Larry D. Horner	79	Director
Jeffrey B. Kindler	58	Director
Dean J. Mitchell	57	Director
Robert B. Shapiro	75	Director

Executive officers

Randal J. Kirk, Chief Executive Officer and Chairman of the Board. Mr. Kirk has served as our Chief Executive Officer since April of 2009 and Chairman of the Board since February 2008. Mr. Kirk provides a wealth of strategic, operational and management experience. Mr. Kirk currently serves as the Senior Managing Director and Chief Executive Officer of Third Security, LLC, an investment management firm founded by Mr. Kirk in March 1999. Additionally, Mr. Kirk founded and became Chairman of the Board of New River Pharmaceuticals Inc. (previously traded on NASDAQ prior to its acquisition by Shire plc in 2007) in 1996, and was President and Chief Executive Officer between October 2001 and April 2007. Mr. Kirk currently serves in a number of additional capacities including as a member of the board of directors of Halozyme Therapeutics, Inc. (NASDAQ: HALO) since May 2007 and as a member of the board of directors of ZIOPHARM Oncology, Inc. (NASDAQ: ZIOP) since January 2011. Previously, Mr. Kirk served as a member of the board of directors of Scios, Inc. (previously traded on NASDAQ prior to its acquisition by

Johnson & Johnson) between February 2000 and May 2002, and as a member of the board of directors of Clinical Data, Inc. (previously traded on NASDAQ prior to its acquisition by Forest Laboratories, Inc. in April 2011) from September 2002 to April 2011, and was Chairman of the board of directors from December 2004 to April 2011. Mr. Kirk served on the board of visitors of Radford University from July 2003 to June 2009, was Rector of the board of directors from September 2006 to September 2008, and served on the board of directors of the Radford University Foundation, Inc. from September 1998 to May 2011. He served on the board of visitors of the University of Virginia and Affiliated Schools from July 2009 to October 2012, on the Virginia Advisory Council on Revenue Estimates from July 2006 to October 2012 and on the Governor's Economic Development and Jobs Creation Commission from April 2010 to October 2012. Mr. Kirk received a B.A. in Business from Radford University and a J.D. from the University of Virginia. We believe that Mr. Kirk's business experience, including his extensive business experience as chief executive officer of multiple companies, his experience as an investor, his service on committees of academic institutions and other public company boards, combined with his business acumen and judgment, provide our board of directors with valuable strategic and operational expertise and leadership skills.

Krish S. Krishnan, M.S., M.B.A., Chief Operating Officer. Mr. Krishnan has served as our Chief Operating Officer since 2011. Mr. Krishnan brings many years of experience in the life sciences industry, having held key executive roles at several companies including Chief Executive Officer of Pinnacle Pharmaceuticals, Inc. from 2009 to 2011 and, most notably, his tenure as Chief Financial Officer and Chief Operating Officer from April 2004 until April 2007, and a member of the board of directors from March 2003 until April 2007 of New River Pharmaceuticals, Inc. (previously traded on NASDAQ prior to its acquisition by Shire plc in 2007). Previously, he served as a Senior Managing Director of Third Security, LLC between 2001 and 2008 and as a board member of Biotie Therapies Oyj (BTH1V:Helsinki) between 2008 and 2009. Mr. Krishnan started his career as an engineer with E.I. Dupont de Nemours in Wilmington, Delaware. He received a B.S. in Mechanical Engineering from the Indian Institute of Technology, an M.S. in Engineering from the University of Toledo, and an M.B.A. in Finance from The Wharton School at the University of Pennsylvania.

Thomas D. Reed, Ph.D., Chief Science Officer and Director. Dr. Reed co-founded Intrexon in 1998 and has served as Chief Science Officer since then and has served on the board of directors since 1998. Dr. Reed is a molecular geneticist with over 20 years of experience in recombinant DNA technology. He has developed sophisticated transgenic model systems for studying the role of gene products in neuronal, cardiovascular, and cancer systems. Dr. Reed has published numerous peer-reviewed articles in the fields of subcellular modulation, gene regulation and cardiac function and is an inventor on numerous patents. Dr. Reed received his B.S. in Genetics from the University of California-Davis, an M.S. in Biological Science from Wright State University, and a Ph.D. in Molecular and Developmental Biology from the University of Cincinnati.

Rick L. Sterling, Chief Financial Officer. Mr. Sterling has served as our Chief Financial Officer since 2007. Prior to joining us, he was with KPMG where he worked in the audit practice for over 17 years, with a client base primarily in the healthcare, technology and manufacturing industries. Mr. Sterling's experience includes serving clients in both the private and public sector, including significant experience with SEC filings and Sarbanes-Oxley compliance. He received a B.S. in Accounting and Finance from Virginia Polytechnical Institute and State University and is a licensed Certified Public Accountant.

Donald P. Lehr, Chief Legal Officer. Mr. Lehr has served as our Chief Legal Officer since 2011. From 2009 to 2011 he served as our Associate General Counsel. Mr. Lehr has broad experience in the areas of corporate, securities, and general business law. Prior to joining us, he was at Hogan Lovells LLP (formerly Hogan & Hartson, LLP) in Baltimore, Maryland from 2002 to 2009. While at Hogan, his practice included the representation of privately and publicly held corporations across many industries, including biotechnology, pharmaceuticals, health care, software, technology, and manufacturing. Prior to his time at Hogan, Mr. Lehr served as a judicial clerk for the Honorable Irma S. Raker of the Court of Appeals of Maryland. Mr. Lehr received a B.A. from Swarthmore College and received a J.D. from the University of Maryland School of Law.

Suma M. Krishnan, Senior Vice President — Regulatory Affairs. Mrs. Krishnan has served as our Senior Vice President — Regulatory Affairs since 2012. From 2009 to 2011, Mrs. Krishnan served as Senior Vice President of Product Development at Pinnacle Pharmaceuticals, Inc. From 2007 to 2009, she served as Chief Financial Officer of Light Matters Foundation. Previously, Mrs. Krishnan was Vice President, Product Development at New River Pharmaceuticals Inc. from September 2002 until its acquisition by Shire plc in April 2007. Mrs. Krishnan has 22 years' experience in drug development. Prior to serving at New River Pharmaceuticals Inc., Mrs. Krishnan served in the following capacities: Director, Regulatory Affairs at Shire Pharmaceuticals, Inc., a specialty pharmaceutical company; Senior Project Manager at Pfizer, Inc., a multi-national pharmaceutical company; and a consultant at the Weinberg Group, a pharmaceutical and environmental consulting firm. Mrs. Krishnan began her career as a discovery scientist for Janssen Pharmaceuticals, Inc., a subsidiary of Johnson & Johnson, a multi-national pharmaceutical company, in May 1991. Mrs. Krishnan received an M.S. in Organic Chemistry from Villanova University, an M.B.A. from Institute of Management and Research (India) and an undergraduate degree in Organic Chemistry from Ferguson University (India).

Darryl Webster, Senior Vice President, Intellectual Property. Mr. Webster has served as our Senior Vice President, Intellectual Property since 2010. Mr. Webster has over 25 years of legal experience. During his law firm experience and 20 plus years of corporate IP practice, he has worked in scientific areas that match each of the markets we are targeting. Prior to joining us, Mr. Webster was most recently Senior Patent Counsel at Wyeth Pharmaceuticals, Inc. (now Pfizer Inc.), where he worked from 1993 to 2010. During his sixteen years at Wyeth, he was the lead patent counsel for several key products and areas including a $6B biological, the Asia Pacific Region, and the Wyeth Nutrition business. Before his work at Wyeth, he worked for more than four years in the core chemical and biochemical areas at AlliedSignal Inc., now Honeywell International Inc. Mr. Webster received Bachelors' degrees in Chemistry (Biological Specialization) and Economics from Duke University and a J.D. from the University of Maryland School of Law.

Samuel Broder, Ph.D., Senior Vice President — Health Sector. Dr. Broder has served as our Senior Vice President — Health Sector since 2012. Dr. Broder is an oncologist and medical researcher with particular expertise in the relationship between disorders of the immune system and cancer. Dr. Broder previously served as a science consultant for Intrexon from January 2012 to August 2012. Dr. Broder served as Executive Vice President for Medical Affairs and Chief Medical Officer of Celera Corporation (now a Division of Quest Diagnostics Incorporated) from 1998 to 2010. From 2010 to 2012, Dr. Broder was self-employed as an industry consultant. In the mid-1980s, Dr. Broder's laboratory played a significant role in developing the first three therapeutic agents approved by the U.S. Food and Drug Administration to treat the AIDS virus. In 1989, Dr. Broder received a Presidential appointment to serve as Director of the National Cancer Institute. Dr. Broder held this position for six years, during which time he oversaw the

development of several anti-cancer therapeutic agents. Dr. Broder received both his undergraduate and medical degrees from the University of Michigan.

Thomas R. Kasser, Ph.D., Senior Vice President — Food Sector. Dr. Kasser has served as Senior Vice President — Food Sector since May 2013. Dr. Kasser served as President of Animal Sciences and Agricultural Biotechnology Divisions and Senior Vice President from April 2012 to May 2013 and, prior to that, as President of the Animal Sciences Division from March 2011. Dr. Kasser brings over 25 years of business management experience in the biotechnology and life sciences industries. He was most recently President and Chief Executive Officer of Angionics, Inc., an early-stage biotech company focused on novel anti-angiogenic technology directed at therapies for cancer and ocular diseases from June 2009 to March 2011. Prior to Angionics, he was a Covance Corporate Vice President and General Manager of Covance Research Products Inc. Dr. Kasser had over 20 years of experience at Monsanto Company both in commercial as well as scientific leadership roles, including tenures as General Manager of Monsanto Choice Genetics, Inc., directing new product development for the Nutrition and Consumer products business, and managing clinical safety and efficacy trials under the jurisdiction of the Food and Drug Administration's Center for Veterinary Medicine. Dr. Kasser was designated a Monsanto Fellow in recognition of his scientific and technical excellence. He currently serves on the Board of Directors for AquaBounty Technologies, Inc., an aquaculture biotechnology company. Dr. Kasser received an M.S. in Animal Nutrition from The Pennsylvania State University, an M.B.A. from Washington University — St. Louis and a Ph.D. in Nutrition from the University of Georgia.

Robert F. Walsh, III, Senior Vice President — Energy Sector, and President — Industrial Products Division. Mr. Walsh has served as our Senior Vice President — Energy Sector and President — Industrial Products Division since 2013. Mr. Walsh has over 30 years of experience in the petroleum and chemical industries. Mr. Walsh served as Chief Commercial Officer of ZeaChem Inc., a cellulosic biofuel and biochemical company, from 2013 to 2011. Prior to his time at ZeaChem, Mr. Walsh served as Chief Executive Officer of Aurora Algae, Inc., an algae production company, from 2008 to 2010, and President of LS9, Inc., from 2007 to 2008, an industrial biotechnology company. Mr. Walsh received a B.S. in Chemical Engineering from Purdue University.

Nick Macris, Vice President — Environmental Sector. Mr. Macris has served as our Vice President — Environmental Sector since May 2013 and previously served as our Vice President, Business Development — Agricultural Biotechnology Division from April 2013 to May 2013. Mr. Macris' career spans 15 years in the specialty chemical, water treatment, agricultural chemical and biopesticide industries with many large and small companies including 3M Company, Rohm and Haas (now The Dow Chemical Company) and FMC Corporation. Mr. Macris previously served as the Vice President of Business Development at Marrone Bio Innovations, a natural pesticides company, from May 2007 until March 2013. Mr. Macris has a successful track record of business development, strategy and manufacturing leadership. Mr. Macris earned both a B.S. in Chemistry/Biophysics and an M.E.S in Chemical/Biochemical Engineering from the University of Western Ontario and later an M.B.A from University of Western Ontario — Richard Ivey School of Business.

Non-employee directors

Cesar L. Alvarez. Mr. Alvarez has served as a board member since February 2008. Mr. Alvarez has served since February 2010 as the Executive Chairman of the international law firm of

Greenberg Traurig, LLP, and previously served as its Chief Executive Officer from 1997 until his election as Executive Chairman. Mr. Alvarez also serves on the board of directors of Mednax, Inc. (NYSE:MD), a provider of physician services including newborn, maternal-fetal, pediatric subspecialties, and anesthesia care, Watsco, Inc. (NYSE:WSO), a distributor of air conditioning, heating and refrigeration equipment and related parts and supplies, St. Joe Co. (NYSE:JOE), a real estate development company, and Fairholme Funds, Inc., a family of publicly traded focused investment funds. Mr. Alvarez holds a Bachelor of Science, an M.B.A., and a J.D. from the University of Florida. Mr. Alvarez's qualifications to serve on the board of directors include his management experience at one of the nation's largest law firms with professionals providing services in multiple locations across the country and abroad as well as his many years of corporate experience, both counseling and serving on the boards of directors of publicly traded and private companies.

Steven Frank. Mr. Frank has served as a board member since February 2008. Mr. Frank joined J.P. Morgan Securities LLC in June 2008 and currently serves as Chairman of Global Healthcare Investment Banking. Mr. Frank had previously been the head of Bear Stearns' Worldwide Health Care Investment Banking group in New York for 16 years and has provided general investment banking services to all types of health care companies. Specifically, Mr. Frank has led or played major roles in hundreds of mergers and acquisitions and financing transactions across the spectrum of deal structures. He has specialized in transactions involving pharmaceutical, medical device and biotechnology companies. Prior to joining Bear Stearns in 1993, Mr. Frank served over ten years as an institutional investor, primarily at State Farm Insurance Company, where he managed a life sciences portfolio in excess of $4 billion. Mr. Frank holds a B.S. from Illinois State University and an M.B.A. from the University of Chicago. We believe Mr. Frank's extensive knowledge of our industry and of finance and capital structure strengthen the board of directors' collective qualifications, skills and experience.

Larry D. Horner. Mr. Horner has served as a board member since February 2008. Mr. Horner served as a director of Clinical Data, Inc., a provider of physicians' office and hospital laboratory products, and of New River Pharmaceuticals Inc., a publicly traded specialty pharmaceutical company focused on developing novel pharmaceuticals and improved versions of widely-prescribed drugs, from 1999 until its acquisition by Shire plc in April 2007. From 1994 to 2001, Mr. Horner served as Chairman of the Board of Pacific USA Holdings Corporation, a holding company of companies in real estate and financial services. From 1997 to 2001, Mr. Horner served as Chairman of the Board of Asia Pacific Wire & Cable, Ltd., a publicly traded manufacturer of wire and cable products for the telecommunications and power industries in the Asia Pacific Region. From 1991 to 1994, he served as Managing Director of Arnhold & S. Bleichroeder, Inc., an equity market trading and corporate finance firm. Prior to that, he served as Chairman and Chief Executive Officer of the accounting firm KPMG Peat Marwick. Mr. Horner has served on the boards of directors of Atlantis Plastics, Inc., a manufacturer of plastic films and plastic components, TOUSA, Inc., a homebuilder, and UTStarcom, Inc., a provider of wireline, wireless, optical, and access switching solutions, all of which were then public companies; Mr. Horner served on the audit committee of all three of these companies and as the audit committee financial expert for Atlantis Plastics, Inc. and UTStarcom, Inc. He also previously served on the boards of directors of ConocoPhillips, an energy company, and American General Company. Mr. Horner received a B.S. from the University of Kansas and is a graduate of the Stanford Executive Program. We believe Mr. Horner's extensive management experience as the former Chairman and Chief Executive Officer of one of the world's largest accounting firms, his accounting and financial expertise, and his experience in serving on the boards of directors of

publicly traded and private companies make him well-qualified to serve on our board of directors.

Jeffrey B. Kindler. Mr. Kindler has served as a board member since November 2011. Mr. Kindler is a venture partner with Lux Capital, a venture capital firm; a director of Starboard Capital Partners, a private equity firm; and a principal at Paragon Pharmaceuticals, a private pharmaceutical company. He was Chief Executive Officer and Chairman of the Board of Pfizer, Inc. (NYSE:PFE), a pharmaceutical company, from 2006 until his retirement in December 2010. Prior to that, he was Vice Chairman and General Counsel of Pfizer from 2005 to 2006, Executive Vice President and General Counsel from 2004 to 2005, and Senior Vice President and General Counsel from 2002 to 2004. Prior to joining Pfizer, he was Chairman of Boston Market Corporation from 2000 to 2001, and President of the Partner Brands group of McDonald's Corporation during 2001. Mr. Kinder serves on the board of directors of Chipotle Mexican Grill, Inc. (NYSE: CMG), a chain of Mexican restaurants, and Siga Technologies, Inc (Nasdaq:SIGA) a developer of vaccines and anti-virals). Mr. Kindler serves as a board member for a number of privately-held companies as well as several civic, charitable, educational and other organizations. He brings leadership, extensive business, operating, legal and policy, and corporate strategy experience to our board of directors, as well as tremendous knowledge of our industry and the fundamentals of our business. Mr. Kindler received a B.A. from Tufts University and a J.D. from Harvard Law School.

Dean J. Mitchell. Mr. Mitchell has served as a board member since March 2009. In July 2010, Mr. Mitchell was appointed President and Chief Executive Officer of Lux Biosciences, Inc., a private biopharmaceutical company, and also was appointed a member of its board of directors. He also currently serves on the board of directors of ISTA Pharmaceuticals, Inc., a multi-specialty pharmaceutical company. In 2009, he was appointed as a non-executive director of Talecris Biotherapeutics, Inc., a biopharmaceutical company and producer and marketer of plasma-derived protein therapies. He was previously President and Chief Executive Officer of Alpharma Inc., a global specialty pharmaceutical company, and also was appointed a member of its board of directors in July 2006. Alpharma Inc. was acquired by King Pharmaceuticals, Inc. in December 2008, and Mr. Mitchell ceased to be an officer and a director of Alpharma Inc. on December 29, 2008. Prior to this, he was President and Chief Executive Officer of Guilford Pharmaceuticals Inc., a public company, from December 2004 until its acquisition by MGI Pharma Inc., a public biopharmaceutical company focused in oncology and acute care, in October 2005, and was a non-executive director of MGI Pharma Inc. until its acquisition by Eisai Co., Ltd. in January 2008. Mr. Mitchell was at Bristol-Myers Squibb, a public company, from 2001 until 2004 in several roles including President International, President U.S. Primary Care and Vice President, Strategy. He also spent 15 years at Glaxo SmithKline, a public company, and its predecessor companies, most recently as Senior Vice President, Clinical Development and Product Strategy from 1999 to 2001, and prior to that as Vice President and General Manager, Specialty Divisions, Strategic Planning and Business Development, from 1995 to 1999. He received an M.B.A. from City University Business School, in London, U.K., and a B.Sc. degree in Biology from Coventry University, U.K. Mr. Mitchell has served as a member of the boards of directors of Alpharma, Inc., Guilford Pharmaceuticals, Inc., a pharmaceutical company that produced products for the hospital and neurology markets, MGI Pharma Inc., and Talecris Biopharmaceuticals, all of which were then public companies. Mr. Mitchell brings to our board of directors extensive experience in the pharmaceutical industry, specifically in the areas of management, business and corporate development, sales and marketing and clinical development, as well as his vast experience in service on boards of directors of companies in our industry.

Robert. B. Shapiro. Mr. Shapiro has served as a board member since November 2011. Mr. Shapiro is Co-Founder and Managing Director of Sandbox Industries, a development firm that creates, launches and manages new business concepts. Sandbox Industries also manages venture funds, including the BlueCross BlueShield Venture Partners fund. Mr. Shapiro has served as the Managing Director of Sandbox Industries since its formation in 2004. He was formerly Chairman and Chief Executive Officer of Monsanto from 1995 to 2000. Upon the merger of Monsanto with Pharmacia & Upjohn, he served as Chairman of the newly-formed Pharmacia Corporation. Previously, Mr. Shapiro was President and Chief Operating Officer of Monsanto from 1992 to 1995 and President of Monsanto's Agriculture Group from 1990 to 1992, Chairman and Chief Executive Officer of The NutraSweet Company, a subsidiary of Monsanto, from 1985 to 1990 and President of the NutraSweet Group of G.D. Searle & Co., or Searle, from 1982 to 1985, where he previously served as Vice President and General Counsel. Before joining Searle, Mr. Shapiro was Vice President and General Counsel of General Instrument Corporation from 1972 to 1979. Prior to this, he practiced law in New York City; served in government as Special Assistant to the General Counsel and later to the Undersecretary of the U.S. Department of Transportation; and served as a professor of law at Northeastern University in Boston and the University of Wisconsin in Madison. Mr. Shapiro has served on the boards of directors of the New York Stock Exchange (later NYSE Euronext), Citigroup Inc., Rockwell International, Silicon Graphics Inc., and Sequus Pharmaceuticals, Inc. He currently serves as a director of Theranos Inc., AgraQuest, Inc., Elevance Renewable Sciences, Inc. and Sapphire Energy Inc., all privately-held corporations. Mr. Shapiro has also served on the President's Advisory Committee on Trade Policy, and on the White House Domestic Policy Review of Industrial Innovation. He is a Fellow of the American Academy of Arts and Sciences. Mr. Shapiro is a graduate of Harvard College and holds a J.D. from Columbia University School of Law. As a result of these and other professional experiences, we believe Mr. Shapiro possesses particular knowledge and experience in: strategic planning and leadership of complex organizations; accounting, finance and capital structure; legal, regulatory and government affairs; people management; and board practices of other entities, which strengthen the board of directors' collective qualifications, skills and experience.

Family relationships

There are no family relationships among any of our directors or executive officers, except that Krish S. Krishnan, our Chief Operating Officer, and Suma M. Krishnan, our Senior Vice President of Regulatory Affairs, are husband and wife. Suma M. Krishnan reports directly to our Chief Executive Officer.

Board composition

Our board of directors currently consists of eight members, all of whom were elected as directors pursuant to a shareholders' agreement that we entered into with the holders of our preferred stock. The shareholders' agreement will terminate upon the closing of this offering and there will be no further contractual obligations regarding the election of our directors. Our directors hold office until their successors have been elected and qualified or until the earlier of their resignation or removal.

Our amended and restated articles of incorporation and bylaws that will become effective upon the closing of this offering provide that the authorized number of directors may be changed only by resolution of the board of directors. Our amended and restated articles of incorporation and bylaws that will become effective upon the closing of this offering also provide that any vacancy

on our board of directors, including a vacancy resulting from an enlargement of our board of directors, may be filled only by vote of a majority of our directors then in office, although less than a quorum or by a sole remaining director.

We have no formal policy regarding board diversity. Our priority in selection of board members is identification of members who will further the interests of our shareholders through his or her established record of professional accomplishment, the ability to contribute positively to the collaborative culture among board members, knowledge of our business and understanding of the competitive landscape.

Director independence

Rule 303A.01 of the New York Stock Exchange Listed Company Manual, or NYSE Rules, requires a majority of a listed company's board of directors to be composed of independent directors within one year of listing. In addition, the NYSE Rules require that, subject to specified exceptions, each member of a listed company's audit, compensation and nominating and corporate governance committees be independent and that audit committee members also satisfy independence criteria set forth in Rule 10A-3 under the Securities Exchange Act of 1934, as amended, or the Exchange Act. Under Rule , a director will only qualify as an "independent director" if, in the opinion of our board of directors, that person does not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. In order to be considered independent for purposes of Rule 10A-3, a member of an audit committee of a listed company may not, other than in his or her capacity as a member of the audit committee, the board of directors, or any other board committee, accept, directly or indirectly, any consulting, advisory, or other compensatory fee from the listed company or any of its subsidiaries or otherwise be an affiliated person of the listed company or any of its subsidiaries.

In 2013, our board of directors undertook a review of the composition of our board of directors and its committees and the independence of each director. Based upon information requested from and provided by each director concerning his background, employment and affiliations, including family relationships, our board of directors has determined that each of our directors, with the exception of , is an "independent director" as defined under Rule of 303A.02 the NYSE Rules. Our board of directors also determined that , and , who will compose our audit committee following this offering, and , and , who will comprise our compensation committee following this offering, satisfy the independence standards for such committees established by the Securities and Exchange Commission, or SEC, and the NYSE Rules, as applicable. In making such determinations, our board of directors considered the relationships that each such non-employee director has with our Company and all other facts and circumstances our board of directors deemed relevant in determining independence, including the beneficial ownership of our capital stock by each non-employee director.

Board committees

Our board of directors has established an audit committee, a compensation committee and a nominating and corporate governance committee. Each of these committees will operate under a charter that has been approved by our board of directors.

Audit committee

Effective at the time of this offering, the members of our audit committee will be , and . is the chair of the audit committee. Our board of directors has determined that each of these directors is independent within the meaning of Rule 10A-3 under the Exchange Act. In addition, our board of directors has determined that the chairman qualifies as an audit committee financial expert within the meaning of SEC regulations and the NYSE Rules. In making this determination, our board has considered the formal education and nature and scope of his previous experience, coupled with past and present service on various audit committees. Our audit committee assists our board of directors in its oversight of our accounting and financial reporting process and the audits of our financial statements. Following this offering, our audit committee's responsibilities will include, among other things, overseeing:

- our accounting and financial reporting processes;
- the reliability of the our financial statements;
- the effective evaluation and management of the our financial risks;
- our compliance with laws and regulations; and
- the maintenance of an effective and efficient audit of our annual financial statements by a qualified and independent auditor.

Compensation committee

Effective at the time of this offering, the members of our compensation committee will be , and . is the chair of the compensation committee. Our compensation committee assists our board of directors in the discharge of its responsibilities relating to the compensation of our executive officers. Following this offering, the compensation committee's responsibilities will include, among other things:

- developing and maintaining an executive compensation policy and monitor the results of that policy;
- recommending to the board for approval compensation and benefit plans;
- reviewing and approving annually corporate and personal goals and objectives to serve as the basis for the Chief Executive Officer's compensation, evaluating the Chief Executive Officer's performance in light of those goals and objectives and determining the Chief Executive Officer's compensation based on that evaluation;
- determining and approving the annual compensation for other executive officers;
- retaining or obtaining the advice of a compensation consultant, outside legal counsel or other advisor;
- approving any grants of stock options, restricted stock, performance shares, stock appreciation rights, and other equity-based incentives to the extent provided under the our equity compensation plans;
- reviewing and making recommendations to the board regarding the compensation of non-employee directors;

- reviewing and discussing with management the “Compensation Discussion and Analysis” to the extent required by SEC rules;
- preparing the compensation committee report required by SEC rules; and
- reviewing and recommending to the board for approval our approach with respect to the advisory vote on executive compensation, or say-on-pay, and the frequency of the say-on-pay advisory vote.

Nominating and corporate governance committee

Effective at the time of this offering, the members of our nominating and corporate governance committee will be , and . is the chair of the nominating and corporate governance committee. Upon the completion of this offering, the nominating and corporate governance committee’s responsibilities will include, among other things:

- considering and reviewing periodically the desired composition of the board;
- establishing any qualifications and standards for individual directors;
- identifying, nominating and evaluating candidates for election to the board;
- ensuring that the board is composed of a sufficient number of independent directors to satisfy SEC and requirements and that at least three directors satisfy the New York Stock Exchange financial and accounting experience requirements and the heightened independence standards of the SEC and that at least one of such three members qualifies as an “audit committee financial expert”;
- making recommendations to the board regarding the size of the board, the tenure and classifications of directors, and the composition of the board’s committees;
- monitoring compliance with federal law limitations on direct competition between companies with overlapping officers or directors; and
- considering other corporate governance and related matters as requested by the board.

Compensation committee interlocks and insider participation

None of our executive officers serves, or in the past has served, as a member of the board of directors or compensation committee, or other committee serving an equivalent function, of any entity that has one or more executive officers who serve as members of our board of directors or our compensation committee. None of the members of our compensation committee is an officer or employee of our Company, nor have they ever been an officer or employee of our Company.

Code of business conduct and ethics

We have adopted a written code of business conduct and ethics that applies to our directors, officers and employees, including our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions. Following this offering, a copy of the code will be made available on the Corporate Governance section of our website, which is located at www.dna.com. If we make any substantive amendments to, or grant any waivers from, the code of business conduct and ethics for any officer or director, we will disclose the nature of such amendment or waiver on our website or in a current report on Form 8-K.

Executive and director compensation

In preparing to become a public company, we have begun a thorough review of all elements of our executive and director compensation program, including the function and design of our equity incentive programs. We have begun, and we expect to continue in the coming months, to evaluate the need for revisions to our executive compensation program to ensure our program is competitive with the companies with which we compete for executive talent and is appropriate for a public company.

The tables and discussion below present compensation information for our chief executive officer and our three other most highly compensated officers for the year ended December 31, 2012, whom we refer to collectively as our named executive officers. These officers are:

- Randal J. Kirk, Chief Executive Officer and Chairman of the Board;
- Krish S. Krishnan, Chief Operating Officer;
- Suma M. Krishnan, Senior Vice President of Regulatory Affairs; and
- Thomas D. Reed, Ph.D., Chief Science Officer and Director

We have included Thomas D. Reed, Ph.D. as a named executive officer since his compensation would have been subject to inclusion but for the one time grant of stock options to Suma M. Krishnan upon her commencement of employment during 2012.

Summary compensation table

The following table sets forth the compensation paid or accrued during the fiscal years ended December 31, 2012 and 2011 to our named executive officers.

Name and principal position	Year	Salary ($)(1)	Bonus ($)(2)	Stock awards ($)	Option awards ($)(3)	Non-Equity incentive plan compensation($)	Change in pension value and nonqualified deferred compensation earnings($)	All other compensation ($)(4)(5)	Total ($)
Randal J. Kirk(6)	2012	—	—	—	—	—	—	—	—
Chief Executive Officer and Chairman of the Board	2011	—	—	—	—	—	—	—	—
Krish S. Krishnan	2012	566,667	600,000	—	—	—	—	26,658	1,193,325
Chief Operating Officer	2011(7)	33,564	—	—	2,580,000	—	—	—	2,613,564
Suma M. Krishnan	2012	327,673	98,458		399,450	—	—	9,175	834,756
Senior Vice President of Regulatory Affairs									
Thomas D. Reed, Ph.D.	2012	379,167	120,000	—	—	—	—	73,556	572,723
Chief Science Officer and Director	2011	300,000	—	—	—	—	—	20,549	320,549

(1) Represents salaries before any employee contributions under our 401(k) Plan.

(2) Represents discretionary cash incentive awards paid for performance during the 2012 fiscal year. The actual awards were paid on April 3, 2013.

(3) Represents the grant date fair value computed by us for financial reporting purposes, computed in accordance with FASB ASC Topic 718. For a full description of the assumptions we used in computing these amounts, see Note 11 to our consolidated financial statements for the years ended December 31, 2012 and 2011 which are included elsewhere in this prospectus. The actual value a named

executive officer may receive depends on market prices and there can be no assurance that the amounts reflected in the Option Awards column will actually be realized. No gain to a named executive officer is possible without an appreciation in stock value after the date of grant.

(4) For 2012, includes the following items and amounts. For Mr. Krishnan: 401(k) Plan matching contribution of $7,500; and welfare and life benefits employer premiums of $19,158. For Ms. Krishnan: 401(k) Plan matching contributions of $7,425 and welfare and life benefits employer premiums of $1,749. For Dr. Reed: 401(k) Plan matching contribution of $7,500; welfare and life benefits employer premiums of $13,664; and relocation expenses of $52,392.

(5) For 2011, includes the following items and amounts. For Dr. Reed: 401(k) Plan matching contribution of $7,350; welfare and life benefits employer premiums of $13,199.

(6) We did not compensate Mr. Kirk prior to this offering.

(7) Prior to his commencement of employment with us, we paid Mr. Krishnan $11,000 in consulting fees during 2011.

Narrative to summary compensation table

In 2012, we paid base salaries to Mr. Krishnan, Ms. Krishnan and Dr. Reed of $566,667, $327,673 and $379,167, respectively. As of May 31, 2013, the base salaries of Mr. Krishnan, Ms. Krishnan and Dr. Reed are $700,000, $356,400 and $432,000, respectively. We did not compensate Mr. Kirk for his services during 2012, however, as of the closing of this offering, Mr. Kirk will receive an annual salary of $. Base salaries are used to recognize the experience, skills, knowledge and responsibilities required of all of our employees, including our named executive officers. None of our named executive officers is currently party to an employment agreement or other agreement or arrangement that provides for automatic or scheduled increases in base salary.

Our board of directors may, at its discretion, award bonuses to our named executive officers from time to time. We typically establish bonus targets for our named executive officers and evaluate their performance based on the achievement of specified goals and objectives by each individual employee. Our management may propose bonus awards to the compensation committee of the board of directors primarily based on such achievements. Our board of directors makes the final determination of the eligibility requirements for and the amounts of such bonus awards. For the fiscal year ended December 31, 2012, the bonus target for Mr. Krishnan was $1.2 million, which represents 200 percent of his base salary, and we awarded a bonus of $600,000 to Mr. Krishnan for his operational achievements, including (i) management of our operating divisions to better support existing collaborators; (ii) successful integration of assets and businesses acquired in late 2011 into our existing operations; and (iii) improvements in our DNA manufacturing processes. For the fiscal year ended December 31, 2012, the bonus target for Ms. Krishnan was $165,000, which represents 50 percent of her base salary, and we awarded a bonus of $98,458 to Ms. Krishnan, primarily for her role in supporting the regulatory requirements of existing and prospective collaborators. For the fiscal year ended December 31, 2012, the bonus target for Dr. Reed was $160,000, which represents 40 percent of his base salary, and we awarded a bonus of $120,000 to Dr. Reed for his scientific achievements, including the development of new technical capabilities and other service offerings in order to support existing and prospective collaborators.

Although we do not have a formal policy with respect to the grant of equity incentive awards to our executive officers, or any formal equity ownership guidelines applicable to them, we believe that equity grants provide our executives with a strong link to our long-term performance, create an ownership culture, and help to align the ownership interests of our executives and our shareholders. In addition, we believe that equity grants with a time-based vesting feature promote executive retention because this feature incentivizes our executive officers to remain in our employment during the vesting period.

Outstanding equity awards at fiscal year end

The following table sets forth specified information concerning unexercised stock options and equity incentive plan awards for each of the named executive officers outstanding as of December 31, 2012.

		Option awards				
		Number of securities underlying unexercised options				
Name	Grant date	Exercisable	Unexercisable	Equity incentive plan awards: Number of securities underlying unexercised unearned options	Option exercise price ($)	Option expiration date
Randal J. Kirk	2/20/2008	15,000	—		$ 1.57	2/20/2018
	2/20/2009	5,000	—		$ 1.88	2/20/2019
Krish S. Krishnan	12/5/2011	250,000	750,000(1)		$ 4.07	12/5/2021
Suma M. Krishnan	1/3/2012	—	150,000(2)		$ 4.07	1/3/2022
Thomas D. Reed	2/7/2006	108,400	—		$ 0.77	2/7/2016
	11/15/2007	50,000	—		$ 1.57	11/15/2017
	2/20/2008	15,000	—		$ 1.57	2/20/2018
	2/20/2009	5,000	—		$ 1.88	2/20/2019

(1) These options will vest annually in increments of 250,000 per year on each of December 5, 2013, 2014 and 2015.

(2) These options will vest annually in increments of 37,500 per year on each of January 3, 2013, 2014, 2015 and 2016.

Employment agreements with named executive officers

We do not have formal employment agreements with Mr. Kirk, Mr. Krishnan or Ms. Krishnan. On August 31, 2006, we entered into a Second Amended and Restated Employment Agreement with Dr. Reed. The employment agreement provides for an indefinite term and “at will” employment. The employment agreement provides for an initial annual base salary of $120,000, which was subsequently increased to $432,000 in 2013, and the ability to receive an annual performance bonus. Under the employment agreement, Dr. Reed has agreed (i) not to solicit our customers for a period of 15 months after the termination of his employment, (ii) not to solicit our employees for a period of 15 months after the termination of his employment, (iii) to protect our confidential information and trade secrets and (iv) to assign to us related intellectual property developed during the course of his employment.

Compensation recovery policies

It is the board’s policy that in the event the board determines that a significant restatement or correction of our financial results or other metrics is required for the prior fiscal year for which audited financial statements have been completed, and, had the results or metrics been properly calculated, our officers would have received less compensation, the board has the authority to obtain reimbursement of any portion of any performance based compensation paid or awarded,

whether cash or equity based, to the officers and to other employees responsible for accounting errors resulting in the restatement or correction that is greater than would have been paid or awarded calculated based upon the restated or corrected financial results or metrics. Further, it is the policy of the board to seek recoupment in all instances where Section 304 of the Sarbanes-Oxley Act of 2002 requires us to seek recoupment.

Equity compensation plans and other benefit plans

Intrexon Corporation 2008 Equity Incentive Plan

The Intrexon Corporation 2008 Equity Incentive Plan, as amended, which we refer to as the 2008 Plan, was first adopted by our board of directors and our shareholders in April 2008.

The 2008 Plan provides for the grant of incentive stock options, nonstatutory stock options, stock appreciation rights, or SARs, restricted stock awards, restricted stock unit awards and incentive awards. Our employees, directors, consultants and advisors, and the employees, directors, consultants and advisors of our affiliated entities, are eligible to receive awards under the 2008 Plan; however, incentive stock options may only be granted to our employees or the employees of our affiliated entities. In accordance with the terms of the 2008 Plan, the compensation committee of our board of directors administers the 2008 Plan and, subject to any limitations in the 2008 Plan, selects the recipients of awards and determines, among other things:

- the number of shares of common stock covered by options and the dates upon which those options become exercisable;
- the exercise prices of options;
- the duration of options (subject to certain limitations set forth in the plan);
- the methods of payment of the exercise price of options;
- the number of shares of common stock subject to any SARs and the terms and conditions of those rights, including the term (subject to certain limitations set forth in the plan), the conditions for exercise and payment upon exercise;
- the number of shares of common stock subject to any restricted stock awards and restricted stock unit awards and the terms and conditions of those awards, including the price, if any, restriction period (subject to certain limitations set forth in the plan) and conditions for repurchase (with respect to restricted stock awards); and
- the number of shares of common stock subject to any incentive awards and the terms and conditions of those awards, including the payment terms and award or the dollar amount of any incentive award period (subject to certain limitations set forth in the plan).

In the event of a change in control, as defined in the 2008 Plan, the compensation committee has the discretion to take one or more of the following actions with respect to outstanding awards on or before the date of the change in control:

- provide, upon notice to the participant, that some or all of the outstanding awards shall terminate on or before the change in control without payment to the holder of such award if not exercised by the holder (to the extent such awards are then exercisable or exercisable by the change in control) within a specified reasonable period of time;

- provide that all outstanding awards shall terminate on or before the change in control in consideration for payment to the holders (to the extent such awards are then exercisable or exercisable by the change in control) of the excess, if any, of the fair market value of the common stock subject to the award minus the exercise price or initial value (as applicable); and
- take such other action as the compensation committee determines reasonable to permit the holder of the award to realize the value of the award (to the extent such awards are then exercisable or exercisable by the change in control).

As of March 31, 2013 and December 31, 2012, there were options to purchase an aggregate of 3,953,172 shares and 4,048,672 shares, respectively, of common stock outstanding under the 2008 Plan at a weighted-average exercise price of $3.37 per share. As of March 31, 2013 and December 31, 2012, there were 5,204,566 shares and 5,111,066 shares, respectively, of common stock reserved for future issuance under the 2008 Plan. On and after the effective date of the Intrexon Corporation 2013 Omnibus Incentive Plan described below, which we refer to as the 2013 Plan, we will grant no further stock options or other awards under the 2008 Plan.

Intrexon Corporation 2013 Omnibus Incentive Plan

The 2013 Plan was adopted by our board of directors and approved by our shareholders on , 2013, and will become effective upon the closing of this offering. The 2013 Plan will replace the 2008 Plan. The material terms of the 2013 Plan are summarized below.

Summary of the material terms of the 2013 Plan

Purpose. We established the 2013 Plan to attract, retain and motivate our employees, officers and directors, to promote the success of our business by linking the personal interests of our employees, officers consultants, advisors and directors to those of our shareholders and to encourage stock ownership on the part of management. The 2013 Plan is intended to permit the grant of stock options (both incentive stock options, or ISOs and non-qualified stock options, or NQSOs or, collectively Options, SARS, restricted stock awards, or Restricted Stock Awards, restricted stock units, or RSUs, incentive awards, or Incentive Awards, other stock-based awards, or Stock Based Awards and dividend equivalents, or Dividend Equivalents.

Administration. The 2013 Plan is administered by our Compensation Committee, who has the authority to grant awards to such persons and upon such terms and conditions (not inconsistent with the provisions of the 2013 Plan) as it may consider appropriate. Our Compensation Committee may act through subcommittees or, with respect to awards granted to individuals who are not subject to the reporting and other provisions of Section 16 of the Exchange Act and who are not members of our board of directors or the board of directors of our Affiliates (as defined by the 2013 Plan), delegate to one or more officers all or part of its duties with respect to such awards. Our Compensation Committee may, at its discretion, accelerate the time at which any award may be exercised, become transferable or nonforfeitable or become earned and settled only (i) in the event of the participant's death, disability, retirement or involuntary termination of employment or service (including a voluntary termination of employment or service for good reason) or (ii) in connection with a Change in Control (as defined in the 2013 Plan).

Authorized Shares. Under the 2013 Plan, we may issue a maximum aggregate of shares of common stock, all of which may be issued pursuant to Options, SARs, Restricted Stock Awards, RSUs, Incentive Awards, Stock-Based Awards or Dividend Equivalents. Each share issued in

connection with an award will reduce the number of shares available under the 2013 Plan by one, and each share covered under a SAR will reduce the number of shares available under the 2013 Plan by one, even though the share is not actually issued upon settlement of the SAR. Shares relating to awards that are terminated by expiration, forfeiture, cancellation or otherwise without issuance of shares of common stock, settled in cash in lieu of shares, or exchanged prior to the issuance of shares for awards not involving shares, will again be available for issuance under the 2013 Plan. Shares not issued as a result of net settlement of an award, tendered or withheld to pay the exercise price, purchase price or withholding taxes of an award or shares purchased on the open market with the proceeds of the exercise price of an award will not again be available for issuance under the 2013 Plan.

Written Agreements. All awards granted under the 2013 Plan will be governed by separate written agreements between the participants and us. The written agreements will specify the terms of the particular awards.

Transferability. Generally, an award is non-transferable except by will or the laws of descent and distribution, and during the lifetime of the participant to whom the award is granted, the award may only be exercised by, or payable to, the participant. However, the Compensation Committee may provide that awards, other than ISOs or a Corresponding SAR that is related to an ISO, may be transferred by a participant to any of such class of transferees who can be included in the class of transferees who may rely on a Form S-8 Registration Statement under the Securities Act of 1933 to sell shares issuable upon exercise or payment of such awards. Any such transfer will be permitted only if (i) the participant does not receive any consideration for the transfer, (ii) the Committee expressly approves the transfer and (iii) the transfer is on such terms and conditions as are appropriate for the class of transferees who may rely on the Form S-8 Registration Statement. The holder of the transferred award will be bound by the same terms and conditions that governed the award during the period that it was held by the participant, except that such transferee may only transfer the award by will or the laws of descent and distribution.

Maximum Award Period. No award shall be exercisable or become vested or payable more than ten years after the date of grant. An ISO granted to a Ten Percent Shareholder (as defined in the 2013 Plan) or a corresponding SAR that relates to such an ISO may not be exercisable more than five years after the date of grant.

Compliance With Applicable Law. No award shall be exercisable, vested or payable except in compliance with all applicable federal and state laws and regulations (including, without limitation, tax and securities laws), any listing agreement with any stock exchange to which we are a party, and the rules of all domestic stock exchanges on which our shares may be listed.

Payment. The exercise or purchase price of an award, and any taxes required to be withheld with respect to an award, may be paid in cash or, if the written agreement so provides, the Compensation Committee may allow a participant to pay all or part of the exercise or purchase price, and any required withholding taxes, by tendering shares of common stock, through a broker-assisted cashless exercise, by means of “net exercise” procedure, or any other specified medium of payment.

Shareholder Rights. No participant shall have any rights as our shareholder as a result of issuance of an award until the award is settled by the issuance of common stock (other than a Restricted Stock Award or RSUs for which certain shareholder rights may be granted).

Forfeiture Provisions. Awards do not confer upon any individual any right to continue in our employ or service or in the employ or service of our Affiliates. All rights to any award that a participant has will be immediately forfeited if the participant is discharged from employment or service for "Cause" (as defined in the 2013 Plan).

Types of awards

Options. Both ISOs and NQSOs may be granted under the 2013 Plan. Our Compensation Committee determines the eligible individuals to whom grants of Options will be made, the number of shares subject to each option, the exercise price per share, the time or times at which the option may be exercised, whether any performance or other conditions must be satisfied before a participant may exercise an option, the method of payment by the participant, the method of delivery of shares to a participant, whether the Option is an ISO or a NQSO, and all other terms and conditions of the award. However, the exercise price of an Option may not be less than the fair market value of a share of common stock on the date the Option is granted. No participant may be granted ISOs that are first exercisable in any calendar year for shares of common stock having an aggregate fair value (determined on the date of grant) that exceeds $100,000. With respect to an ISO granted to a participant who is a Ten Percent Shareholder (as defined in the 2013 Plan), the exercise price per share may not be less than 110 percent of the fair market value of the common stock on the date the Option is granted. At the Compensation Committee's discretion, an Option may be granted with or without a Corresponding SAR (as defined below).

SARs. A SAR entitles the participant to receive, upon exercise, the excess of the fair market value on that date of each share of common stock subject to the exercised portion of the SAR over the fair market value of each such share on the date of the grant of the SAR. A SAR can be granted alone or in tandem with an Option. A SAR granted in tandem with an Option is called a Corresponding SAR and entitles the participant to exercise the Option or the SAR, at which time the other tandem award expires with respect to the number of shares being exercised. The Compensation Committee is authorized to determine the eligible individuals to whom grants of SARs will be made, the number of shares of common stock covered by the grant, the time or times at which a SAR may be exercised and all other terms and conditions of the SAR. However, no participant may be granted Corresponding SARs that are related to ISOs which are first exercisable in any calendar year for shares of common stock having an aggregate fair market value (determined on the date of grant) that exceeds $100,000.

Restricted Stock Awards and RSUs. A Restricted Stock Award is the grant or sale of shares of common stock, which may be subject to forfeiture for a period of time or subject to certain conditions. An RSU entitles the participant to receive, upon vesting, shares of our common stock. We will deliver to the participant one share of common stock for each RSU that becomes earned and payable. With regard to Restricted Stock Awards, the Compensation Committee is authorized to determine the eligible individuals to whom grants will be made, the number of shares subject to such grants, the purchase price, if any, to be paid for each share subject to the award of restricted stock, the time or times at which the restrictions will terminate, and all other terms and conditions of the restricted stock. With regards to RSUs, the Compensation Committee is authorized to determine the eligible individuals to whom grants will be made, the number of shares subject to such grants and the vesting conditions entitling a participant to settlement of the RSUs.

Incentive Awards. An Incentive Award entitles the participant to receive cash or common stock when certain conditions are met. The Compensation Committee has the authority to determine the eligible individuals to whom grants are made and all other terms and conditions of the Incentive Award.

Stock-Based Awards. Stock-Based Awards may be denominated or payable in, valued by reference to or otherwise based on shares of common stock, including awards convertible or exchangeable into shares of common stock (or the cash value thereof) and common stock purchase rights and awards valued by reference to the fair market value of the common stock. The Compensation Committee has the authority to determine the eligible individuals to whom grants will be made and all other terms and conditions of Stock-Based Awards. However, the purchase price for the common stock under any Stock-Based Award in the nature of a purchase right may not be less than the fair market value of the shares of the common stock as of the date the award is granted. Cash awards, as an element of or supplement to any other award under the 2013 Plan, may also be granted.

Our Compensation Committee is also authorized under the 2013 Plan to grant shares of common stock as a bonus, or to grant shares of common stock or other awards in lieu of our other obligations or any of our affiliates to pay cash or to deliver other property under the 2013 Plan or under any other of our plans or compensatory arrangements or any of our affiliates.

Dividend Equivalents. Our Compensation Committee may also grant Dividend Equivalents under the 2013 Plan. A Dividend Equivalent is an award that entitles the participant to receive cash, shares of common stock, other awards or other property equal in value to all or a specified portion of dividends paid with respect to shares of our common stock. The Compensation Committee is authorized to determine the eligible individuals to whom grants are made and all other terms and conditions. However, no Dividend Equivalents may be awarded with an Option, SAR or Stock-Based Award in the nature of purchase rights.

Material terms of the performance-based compensation

Awards that are paid to Covered Employees (as defined in the 2013 Plan) are potentially subject to the tax deduction limitations of Section 162(m) of the Code. The limitations of Section 162(m) of the Code do not apply, however, to performance-based compensation that meets certain requirements, including shareholder approval of the eligibility requirements, business criteria for performance goals and individual award limits of the 2013 Plan pursuant to which such awards are made.

Eligibility. Any of our employees or service providers, employees or service providers of our Affiliates (as defined in the 2013 Plan), and nonemployee members of our Board of Directors or of any Board of Directors of our Affiliates is eligible to receive an award under the 2013 Plan.

Award Limits. In any calendar year, no participant may be granted awards that relate to more than shares of Common Stock. For these purposes, an Option and its corresponding SAR will be counted as a single award. For any award stated with reference to a specific dollar limit, the maximum amount payable with respect to any 12-month performance period to any one participant is $ (pro-rated up or down for performance periods greater or less than 12 months). Award limits that are expressed as a number of shares are subject to the adjustment provisions of the 2013 Plan as described below.

Performance Criteria. Our Compensation Committee has the discretion to establish objectively determinable performance conditions for when awards will become vested, exercisable and payable. Objectively determinable performance conditions generally are performance conditions (a) that are established in writing (i) at the time of the grant or (ii) no later than the earlier of (x) 90 days after the beginning of the period of service to which they relate and (y) before the lapse of 25 percent of the period of service to which they relate; (b) that are uncertain of achievement at the time they are established and (c) the achievement of which is determinable by a third party with knowledge of the relevant facts. These performance conditions may be based on one or any combination of metrics related to our financial, market or business performance. The form of the performance conditions also may be measured on a company, affiliate, division, business unit or geographic basis, individually, alternatively or in any combination, subset or component thereof. Performance goals may reflect absolute entity performance or a relative comparison of entity performance to the performance of a peer group of entities or other external measure of the selected performance conditions. Profits, earnings and revenues used for any performance condition measurement may exclude any extraordinary or nonrecurring items. The performance conditions may, but need not, be based upon an increase or positive result under the aforementioned business criteria and could include, for example and not by way of limitation, maintaining the status quo or limiting the economic losses (measured, in each case, by reference to the specific business criteria). An award that is intended to become exercisable, vested or payable on the achievement of performance conditions means that the award will not become exercisable, vested or payable solely on mere continued employment or service. However, such an award, in addition to performance conditions, may be subject to continued employment or service by the participant. The performance conditions may include any or any combination of the following: total return to shareholders or on shareholders' investment; cash flow; return on assets (net or otherwise), capital, equity or sales; stock price (including, but not limited to, growth measures); basic or diluted earnings per share; reduction of outstanding debt; gross, operating or net earnings; tangible net worth; return on investment; cash flow; book value; margins; fair market value of us; market share; expense levels; revenue; earnings before interest and taxes; earnings before interest, taxes, depreciation and/or amortization; EBIT (as defined in the 2013 Plan) or EBITDA (as defined in the 2013 Plan) less capital expenditures; productivity ratios; expense targets; working capital targets; economic value; competitive market metrics; employee retention; lifetime revenue; profits/earnings ratio; leverage ratio; accounts receivable; debt ratings; or peer group comparisons of any of the aforementioned performance conditions.

The foregoing performance conditions represent the criteria on which performance goals may be based under the 2013 Plan for awards that are intended to qualify for the "qualified performance-based compensation" exception to Section 162(m) of the Code. At its sole discretion, our Compensation Committee may grant an award that is subject to the achievement or satisfaction of performance conditions that are not set forth in the 2013 Plan to the extent our Compensation Committee does not intend for such award to constitute "qualified performance-based compensation" within the meaning of Section 162(m) of the Code.

Our Compensation Committee has the discretion to select one or more periods of time over which the attainment of one or more of the foregoing performance conditions will be measured for the purpose of determining when an award will become vested, exercisable or payable, except that the length of the performance period may not be less than one year, except in the case of newly-hired or newly-promoted employees or recapitalization, reorganization, liquidation, sale, spin-off or other disposition or similar event or in the event of the participant's

death, disability, retirement or involuntary termination of employment or service (including a voluntary termination of employment or service for good reason). The Compensation Committee has the authority to adjust goals and awards in the manner set forth in the 2013 Plan.

Change in Control. In the event of a "Change in Control" (as defined in the 2013 Plan) and, with respect to awards that are subject to Section 409A of the Internal Revenue Code of 1986, as amended, or the Code, and such awards, 409A Awards, only to the extent permitted by Section 409A of the Code, our Compensation Committee in its discretion may, on a participant-by-participant basis (a) accelerate the vesting of all unvested and unexercised Options, SARs or Stock-Based Awards in the nature of purchase rights and/or terminate such awards, without any payment therefore, immediately prior to the date of any such transaction after giving the participant at least seven days written notice of such actions; (b) fully vest and/or accelerate settlement of any awards; (c) terminate any outstanding Options, SARs or Stock-Based Awards in the nature of purchase rights after giving the participant notice and a chance to exercise such awards (to the extent then exercisable or exercisable upon the change in control); (d) cancel any portion of an outstanding award that remains unexercised or is subject to restriction or forfeiture in exchange for a cash payment to the participant of the value of the award; or (e) require that the award be assumed by the successor corporation or replaced with interests of an equal value in the successor corporation.

Amendment and Termination. The 2013 Plan expires on , unless terminated earlier by our board of directors. Any award that is outstanding as of the date the 2013 Plan expires will continue in force according to the terms set out in the award agreement. Our board of directors may terminate, amend or modify the 2013 Plan at any time. However, shareholder approval may be required for certain types of amendments under applicable law or regulatory authority. Except as may be provided in an award agreement or the 2013 Plan, no amendment to the 2013 Plan may adversely affect the terms and conditions of any existing award in any material way without the participant's consent.

An amendment will be contingent on approval of our shareholders, to the extent required by law, by the rules of any stock exchange on which our securities are then traded or if the amendment would (i) increase the benefits accruing to participants under the 2013 Plan, including without limitation, any amendment to the 2013 Plan or any agreement to permit a re-pricing or decrease in the exercise price of any outstanding awards, (ii) increase the aggregate number of shares of common stock that may be issued under the 2013 Plan, (iii) modify the requirements as to eligibility for participation in the 2013 Plan or (iv) change the stated performance conditions for performance-based compensation within the meaning of Section 162(m) of the Code. Additionally, to the extent the Compensation Committee deems necessary for the 2013 Plan to continue to grant awards that are intended to comply with the performance-based exception to the deduction limits of Section 162(m) of the Code, the Compensation Committee will submit the material terms of the stated performance conditions to our shareholders for approval no later than the first shareholder meeting that occurs in the fifth year following the year in which our shareholders previously approved the performance goals.

Material U.S. federal income tax consequences of awards under the 2013 Plan

The following discussion summarizes the principal federal income tax consequences associated with awards under the 2013 Plan. The discussion is based on laws, regulations, rulings and court decisions currently in effect, all of which are subject to change.

ISOs. A participant will not recognize taxable income on the grant or exercise of an ISO (although the excess of the fair market value of the common stock over the exercise price will be included for alternative minimum tax purposes). A participant will recognize taxable income when he or she disposes of the shares of common stock acquired under the ISO. If the disposition occurs more than two years after the grant of the ISO and more than one year after its exercise, the participant will recognize long-term capital gain (or loss) to the extent the amount realized from the disposition exceeds (or is less than) the participant's tax basis in the shares of common stock. A participant's tax basis in the common stock generally will be the amount the participant paid for the stock. If common stock acquired under an ISO is disposed of before the expiration of the ISO holding period described above, the participant will recognize as ordinary income in the year of the disposition the excess of the fair market value of the common stock on the date of exercise of the ISO over the exercise price. Any additional gain will be treated as long-term or short-term capital gain, depending on the length of time the participant held the shares. Special rules apply if a participant pays the exercise price by delivery of common stock. We will not be entitled to a federal income tax deduction with respect to the grant or exercise of an ISO. However, in the event a participant disposes of common stock acquired under an ISO before the expiration of the ISO holding period described above, we generally will be entitled to a federal income tax deduction equal to the amount of ordinary income the participant recognizes.

NQSOs. A participant will not recognize any taxable income on the grant of a NQSO. On the exercise of a NQSO, the participant will recognize as ordinary income the excess of the fair market value of the common stock acquired over the exercise price. A participant's tax basis in the common stock is the amount paid plus any amounts included in income on exercise. Special rules apply if a participant pays the exercise price by delivery of common stock. The exercise of a NQSO generally will entitle us to claim a federal income tax deduction equal to the amount of ordinary income the participant recognizes.

SARs. A participant will not recognize any taxable income at the time SARs are granted. The participant at the time of receipt will recognize as ordinary income the amount of cash and the fair market value of the common stock that he or she receives. We generally will be entitled to a federal income tax deduction equal to the amount of ordinary income the participant recognizes.

Restricted Stock Awards and RSUs. With regard to Restricted Stock Awards, a participant will recognize ordinary income on account of a Restricted Stock Award on the first day that the shares are either transferable or not subject to a substantial risk of forfeiture. The ordinary income recognized will equal the excess of the fair market value of the common stock on such date over the price, if any, paid for the stock. However, even if the shares under a Restricted Stock Award are both nontransferable and subject to a substantial risk of forfeiture, the participant may make a special "83(b) election" to recognize income, and have his or her tax consequences determined, as of the date the Restricted Stock Award is made. The participant's tax basis in the shares received will equal the income recognized plus the price, if any, paid for the Restricted Stock Award. We generally will be entitled to a federal income tax deduction equal to the ordinary income the participant recognizes. With regard to RSUs, the participant will not recognize any taxable income at the time RSUs are granted. When the terms and conditions to which the RSUs are subject have been satisfied and the RSUs are paid, the participant will recognize as ordinary income the fair market value of the common stock he or she receives. We generally will be entitled to a federal income tax deduction equal to the ordinary income the participant recognizes.

Incentive Awards. A participant will not recognize any taxable income at the time an Incentive Award is granted. When the terms and conditions to which an Incentive Award is subject have been satisfied and the award is paid, the participant will recognize as ordinary income the amount of cash and the fair market value of the common stock he or she receives. We generally will be entitled to a federal income tax deduction equal to the amount of ordinary income the participant recognizes, subject to the deduction conditions and limits applicable under Section 162(m) of the Code.

Stock-Based Awards. A participant will recognize ordinary income on receipt of cash or shares of common stock paid with respect to a Stock-Based Award. We generally will be entitled to a federal tax deduction equal to the amount of ordinary income the participant recognizes.

Dividend Equivalents. A participant will recognize as ordinary income the amount of cash and the fair market value of any common stock he or she receives on payment of the Dividend Equivalents. To the extent the Dividend Equivalents are paid in the form of other awards, the participant will recognize income as otherwise described herein.

Limitation on Deductions. The deduction for a publicly-held corporation for otherwise deductible compensation to a "covered employee" generally is limited to $1,000,000 per year. An individual is a covered employee if he or she is the chief executive officer or one of the three highest compensated officers for the year (other than the chief executive officer or chief financial officer). The $1,000,000 limit does not apply to compensation payable solely because of the attainment of performance conditions that meet the requirements set forth in Section 162(m) of the Code and the underlying regulations. Compensation is considered performance-based only if (a) it is paid solely on the achievement of one or more performance conditions; (b) two or more "outside directors" set the performance conditions; (c) before payment, the material terms under which the compensation is to be paid, including the performance conditions, are disclosed to, and approved by, the shareholders and (d) before payment, two or more "outside directors" certify in writing that the performance conditions have been met. The 2013 Plan has been designed to enable the Compensation Committee to structure awards that are intended to meet the requirements for performance-based compensation that would not be subject to the $1,000,000 per year deduction limit.

Other Tax Rules. The 2013 Plan is designed to enable our Compensation Committee to structure awards that will not be subject to Section 409A of the Code, which imposes certain restrictions and requirements on deferred compensation. However, our Compensation Committee may grant awards that are subject to Section 409A of the Code. In that case, the terms of such 409A Award will be (a) subject to the deferral election requirements of Section 409A of the Code; and (b) may only be paid upon a separation from service, a set time, death, disability, a change in control or an unforeseeable emergency, each within the meanings of Section 409A of the Code. Our Compensation Committee shall not have the authority to accelerate or defer a 409A Award other than as permitted by Section 409A of the Code. Moreover, any payment on a separation from service of a "Specified Employee" (as defined in the 2013 Plan) will not be made until six months following the participant's separation from service (or upon the participant's death, if earlier) as required by Section 409A of the Code.

Equity compensation plan information

The following table provides certain information with respect to our 2008 Plan as of December 31, 2012:

Number of securities to be issued upon exercise of outstanding options, warrants and rights(a)(1)	Weighted-average exercise price of outstanding options, warrants and rights (b)(1)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)(1)
4,048,672	$ 3.37	5,111,066

(1) Excludes securities to be issued upon exercise of 894,423 warrants at a weighted-average exercise price per share of $0.45 issued in conjunction with the acquisition of Agarigen, Inc. in 2011.

401(k) Plan

We provide a 401(k) Plan to all eligible employees as defined in the plan. Subject to annual limits set by the Internal Revenue Service, we match 100 percent of eligible employee contributions up to a maximum of 3 percent of an employee's salary and vesting in our match is ratable over three years from an employee's date of employment.

Limitation of liability and indemnification

Our amended and restated articles of incorporation provide that we will indemnify our directors and officers with respect to certain liabilities, expenses and other amounts imposed upon them because of having been a director or officer, except in the case of willful misconduct or a knowing violation of criminal law. See the "Description of capital stock — Indemnification and limitation of directors' and officers' liability" section of this prospectus for a further discussion of these arrangements.

Non-employee director compensation

Through May 9, 2013, all non-employee directors received annual compensation of $10,000, payable at the first meeting of the board of directors for the calendar year, and an additional $1,500 per meeting. Members of a board committee received $1,500 per committee meeting that did not take place in connection with a full meeting of the board of directors. Non-employee directors had the option in lieu of cash to receive payments in shares of common stock (valued at the fair market value at the time of issuance). Newly appointed non-employee directors received a one-time grant of options to purchase 40,000 shares of common stock (with an exercise price equal to the fair market value on the date of grant) with one-fourth of such options vesting each year on the anniversary of appointment to the board of directors. All non-employee directors received an annual grant of options to purchase 5,000 shares of common stock (with an exercise price equal to the fair market value on the date of grant), with one-fourth of such options vesting on January 1st of each year.

On May 9, 2013, the board of directors adopted an updated non-employee director compensation plan, to be effective as of the next meeting of the board of directors. Under the plan, all non-employee directors receive annual compensation of $35,000, payable at the first meeting of the board of directors for the calendar year, and an additional $1,500 per meeting ($750 per special telephonic meeting). Each board committee chair receives $5,000 annually,

payable at the first regularly scheduled meeting of the board of directors for the calendar year and members of a board committee receive $750 per committee meeting. Non-employee directors also receive reimbursement for reasonable expenses incurred in attending board of directors and committee meetings. Non-employee directors have the option in lieu of cash to receive payments in shares of common stock (valued at the fair market value at the time of issuance). Newly appointed non-employee directors receive a one-time grant of options to purchase 40,000 shares of common stock (with an exercise price equal to the fair market value on the date of grant) with one-fourth of such options vesting each year on the anniversary of appointment to the board of directors, subject to continued board service. All non-employee directors are entitled to an annual grant of options to purchase 15,000 shares of common stock (with an exercise price equal to the fair market value on the date of grant), which options vest upon grant.

The following table discloses all compensation provided to the non-employee directors for the most recently completed fiscal year ending December 31, 2012:

Name(1)	Equity awards ($)(1)	Option awards ($)(2)	Total($)
Cesar L. Alvarez	$17,509	$13,315	$30,824
Steven Frank	$16,007	$13,315	$29,322
Larry D. Horner	$17,509	$13,315	$30,824
Jeffrey B. Kindler	$16,007	$13,315	$29,322
Dean J. Mitchell	$17,509	$13,315	$30,824
Robert B. Shapiro	$17,509	$13,315	$30,824

(1) Our directors may elect to take any portion of their director fees in shares of our common stock instead of cash. During 2012, all of our directors elected to take all such director fees in shares of our common stock. Represents the grant date fair market value of such stock awards computed in accordance with FASB ASC Topic 718. This amount does not reflect the actual cash value that will be recognized by each of the non-employee directors when such shares are sold.

(2) Represents the grant date fair market value of such stock awards computed in accordance with FASB ASC Topic 718. This amount does not reflect the actual cash value that will be recognized by each of the non-employee directors when such options are exercised and the underlying shares are sold. All outstanding option-based awards for the non-employee directors as of December 31, 2012, are set out in the following table:

	Option awards				
		Number of securities underlying unexercised options			
Name	Grant date	(#) Exercisable	(#) Unexercisable	Option exercise price ($)	Option expiration date
Cesar L. Alvarez	2/20/2008	15,000	—	$ 1.57	2/20/2018
	2/20/2009	5,000	—	$ 1.88	2/20/2019
	6/30/2010	2,500	2,500	$ 1.88	6/30/2020
	3/7/2011	1,250	3,750	$ 3.38	3/7/2021
	12/2/2011	3,750	11,250	$ 4.07	12/2/2021
	3/15/2012	—	5,000	$ 4.07	3/15/2022
Steven Frank	2/20/2008	15,000	—	$ 1.57	2/20/2018
	2/20/2009	5,000	—	$ 1.88	2/20/2019
	6/30/2010	2,500	2,500	$ 1.88	6/30/2020
	3/7/2011	1,250	3,750	$ 3.38	3/7/2021
	12/2/2011	3,750	11,250	$ 4.07	12/2/2021
	3/15/2012	—	5,000	$ 4.07	3/15/2022
Larry D. Horner	2/20/2008	15,000	—	$ 1.57	2/20/2018
	2/20/2009	5,000	—	$ 1.88	2/20/2019
	6/30/2010	2,500	2,500	$ 1.88	6/30/2020
	3/7/2011	1,250	3,750	$ 3.38	3/7/2021
	12/2/2011	3,750	11,250	$ 4.07	12/2/2021
	3/15/2012	—	5,000	$ 4.07	3/15/2022
Jeffrey B. Kindler	12/2/2011	10,000	30,000	$ 4.07	12/2/2021
	3/15/2012	—	5,000	$ 4.07	3/15/2022
Dean J. Mitchell	3/17/2009	15,000	—	$ 1.88	3/17/2019
	6/30/2010	2,500	2,500	$ 1.88	6/30/2020
	3/7/2011	1,250	3,750	$ 3.38	3/7/2021
	12/2/2011	3,750	11,250	$ 4.07	12/2/2021
	3/15/2012	—	5,000	$ 4.07	3/15/2022
Robert B. Shapiro	12/2/2011	10,000	30,000	$ 4.07	12/2/2021
	3/15/2012	—	5,000	$ 4.07	3/15/2022

Certain relationships and related person transactions

The following is a description of transactions since January 1, 2010 to which we have been a party, in which the amount involved exceeded or will exceed $120,000, and in which any of our directors, executive officers or beneficial owners of more than five percent of our voting securities, or affiliates or immediate family members of any of our directors, executive officers or beneficial owners of more than five percent of our voting securities, had or will have a direct or indirect material interest.

Our Company has historically been owned, funded and managed by, Randal J. Kirk, our Chief Executive Officer, and affiliates of Mr. Kirk, for the purpose of exploiting our synthetic biotechnology. As a result, we have engaged in a variety of financial and operational transactions with Mr. Kirk and these affiliates. In accordance with the requirements of the SEC, we describe below all such transactions in which we have engaged since January 1, 2010. All of these transactions have been approved by a majority of the independent and disinterested members of the board of directors.

We believe that each of these transactions were on terms no less favorable to us than terms we could have obtained from unaffiliated third parties. It is our intention to ensure that all future transactions, if any, between us and our officers, directors, principal shareholders and their affiliates or immediate family members, are approved by the nominating and governance committee or a majority of the independent and disinterested members of the board of directors, and are on terms no less favorable to us than those that we could obtain from unaffiliated third parties.

Private placements of securities

We have funded our operations over the past three years principally with proceeds from private placements of our preferred stock. Since January 1, 2010, we issued and sold an aggregate of 19,803,685 shares of our Series D convertible preferred stock at a purchase price per share of $3.38 for an aggregate purchase price of $66.9 million, 38,095,239 shares of our Series E convertible preferred stock at a purchase price per share of $5.25 for an aggregate purchase price of $200.0 million, and 19,047,619 shares of our Series F preferred stock at a purchase price per share of $7.88 for an aggregate purchase price of $150.0 million.

The following table sets forth the number of shares of preferred stock that were issued to our directors, executive officers and holders of more than five percent of our voting securities, and affiliates or immediate family members of our directors, executive officers and holders of more than five percent of our voting securities, in connection with our various preferred stock financings and the aggregate cash purchase price paid by such persons and entities. Each share of preferred stock in the table below will convert into one share of our common stock upon completion of this offering.

Purchaser	Date of purchase	Class of preferred stock	Number of shares purchased* (#)	Price per share* ($)	Aggregate consideration ($)
Kirkfield, L.L.C.(1)(2)	February 19, 2010	Series D	2,958,580	3.38	10,000,000
Marcus E. Smith(3)	February 19, 2010	Series D	14,793	3.38	50,000
Robert M. Patzig(3)	February 19, 2010	Series D	7,397	3.38	25,002
Melodye A. Koppler(4)	February 19, 2010	Series D	10,000	3.38	33,800
Clifton Herndon II(3)	February 19, 2010	Series D	7,500	3.38	25,350
Shelly B. Fisher(5)	February 19, 2010	Series D	5,000	3.38	16,900
Jeffrey T. Perez(3)	February 19, 2010	Series D	6,000	3.38	20,280
Robert P. Beech(6)	February 19, 2010	Series D	2,959	3.38	10,001
Ronald B. Herberman(7)	February 19, 2010	Series D	15,000	3.38	50,700
Thomas David Reed Living Trust(8)	October 29, 2010	Series D	1,480	3.38	5,002
Shelly B. Fisher(5)	October 29, 2010	Series D	3,000	3.38	10,140
NRM VI Holdings I, LLC(9)	October 29, 2010	Series D	4,437,870	3.38	15,000,001
Robert M. Patzig(3)	October 29, 2010	Series D	14,793	3.38	50,000
Melodye A. Koppler(4)	October 29, 2010	Series D	10,000	3.38	33,800
John F. Fisher(10)	October 29, 2010	Series D	4,438	3.38	15,000
Donald P. Lehr(11)	October 29, 2010	Series D	14,793	3.38	50,000
Darryl Webster(12)	October 29, 2010	Series D	15,000	3.38	50,700
Ronald B. Herberman(7)	October 29, 2010	Series D	10,000	3.38	33,800
Kirkfield, L.L.C.(1)(2)	January 6, 2011	Series D	2,958,580	3.38	10,000,000
Clifton Herndon II(3)	January 6, 2011	Series D	10,000	3.38	33,800
Melodye A. Koppler(4)	January 6, 2011	Series D	10,000	3.38	33,800
Jeffrey T. Perez(3)	January 6, 2011	Series D	1,500	3.38	5,070
Marcus E. Smith(3)	January 6, 2011	Series D	10,000	3.38	33,800
Robert M. Patzig(3)	January 6, 2011	Series D	7,000	3.38	23,660
Ronald B. Herberman(7)	January 6, 2011	Series D	10,000	3.38	33,800
Kirkfield, L.L.C.(1)(2)	February 18, 2011	Series D	591,716	3.38	2,000,000
JPK 2008, LLC(1)	February 18, 2011	Series D	44,518	3.38	150,471
JPK 2009, LLC(1)	February 18, 2011	Series D	212,387	3.38	717,868
MGK 2008, LLC(1)	February 18, 2011	Series D	45,445	3.38	153,604
MGK 2009, LLC(1)	February 18, 2011	Series D	231,864	3.38	783,700
ZSK 2008, LLC(1)	February 18, 2011	Series D	22,259	3.38	75,235
ZSK 2009, LLC(1)	February 18, 2011	Series D	35,243	3.38	119,121
Jeffrey T. Perez(3)	February 25, 2011	Series D	3,000	3.38	10,140
Shelly B. Fisher(5)	February 25, 2011	Series D	5,000	3.38	16,900
Melodye A. Koppler(4)	February 25, 2011	Series D	10,000	3.38	33,800
Donald P. Lehr(11)	February 25, 2011	Series D	7,397	3.38	25,002
Kirkfield L.L.C.(1)(2)	February 25, 2011	Series D	416,312	3.38	1,407,135
JPK 2008, LLC(1)	February 25, 2011	Series D	31,321	3.38	105,865
JPK 2009, LLC(1)	February 25, 2011	Series D	149,428	3.38	505,067
MGK 2008, LLC(1)	February 25, 2011	Series D	31,974	3.38	108,072
MGK 2009, LLC(1)	February 25, 2011	Series D	163,131	3.38	551,383
ZSK 2008, LLC(1)	February 25, 2011	Series D	24,796	3.38	83,810
ZSK 2009, LLC(1)	February 25, 2011	Series D	15,661	3.38	52,934
R.J. Kirk Declaration of Trust(1)	May 26, 2011	Series E	2,976,756	5.25	15,627,969
Third Security Incentive 2010 LLC(1)(13)	May 26, 2011	Series E	958,680	5.25	5,033,070
Third Security Senior Staff 2008 LLC(1)(14)	May 26, 2011	Series E	1,917,360	5.25	10,066,140
Third Security Staff 2010 LLC(1)(14)	May 26, 2011	Series E	1,917,360	5.25	10,066,140
JPK 2008, LLC(1)	May 26, 2011	Series E	49,980	5.25	262,395

Purchaser	Date of purchase	Class of preferred stock	Number of shares purchased* (#)	Price per share* ($)	Aggregate consideration ($)
JPK 2009, LLC(1)	May 26, 2011	Series E	422,375	5.25	2,217,469
MGK 2008, LLC(1)	May 26, 2011	Series E	49,980	5.25	262,395
MGK 2009, LLC(1)	May 26, 2011	Series E	448,185	5.25	2,352,971
ZSK 2008, LLC(1)	May 26, 2011	Series E	40,968	5.25	215,082
ZSK 2009, LLC(1)	May 26, 2011	Series E	38,510	5.25	202,178
NRM VI Holdings I, LLC(9)	December 23, 2011	Series E	3,047,620	5.25	16,000,005
Kapital Joe, LLC(1)	January 10, 2012	Series E	4,344,964	5.25	22,811,061
Larry D. Horner(15)	January 10, 2012	Series E	100,000	5.25	525,000
Robert B. Shapiro Revocable Trust(16)	January 10, 2012	Series E	66,667	5.25	350,002
Cesar L. Alvarez(15)	January 10, 2012	Series E	95,238	5.25	500,000
Robert M. Patzig(3)	January 10, 2012	Series E	4,750	5.25	24,938
Jeffrey Kindler(15)	January 10, 2012	Series E	20,000	5.25	105,000
Kapital Joe, LLC(1)	April 12, 2012	Series E	678,806	5.25	3,563,732
MGK 2011, LLC(1)	April 12, 2012	Series E	452,537	5.25	2,375,819
Robert B. Shapiro Revocable Trust(16)	April 12, 2012	Series E	66,667	5.25	350,002
John F. Fisher(10)	April 12, 2012	Series E	4,765	5.25	25,016
Mascara Kaboom, LLC(1)	October 26, 2012	Series E	1,904,762	5.25	10,000,000
Mascara Kaboom, LLC(1)	November 13, 2012	Series E	2,715,309	5.25	14,255,372
Kapital Joe, LLC(1)	March 1, 2013	Series F	1,904,762	7.88	15,000,001
Mascara Kaboom, LLC(1)	March 1, 2013	Series F	1,904,762	7.88	15,000,001
Kapital Joe, LLC(1)	April 30, 2013	Series F	1,149,474	7.88	9,052,108
Mascara Kaboom, LLC(1)	April 30, 2013	Series F	1,149,474	7.88	9,052,108
Third Security Senior Staff 2008 LLC(1)	April 30, 2013	Series F	299,532	7.88	2,358,815
Third Security Staff 2010, LLC(1)	April 30, 2013	Series F	299,532	7.88	2,358,815
Third Security Incentive 2010, LLC(1)	April 30, 2013	Series F	149,766	7.88	1,179,407
JPK 2008, LLC(1)	April 30, 2013	Series F	42,794	7.88	337,003
JPK 2009, LLC(1)	April 30, 2013	Series F	312,890	7.88	2,464,009
JPK 2012, LLC(1)	April 30, 2013	Series F	128,508	7.88	1,012,001
Kellie L. Banks (2009) Long Term Trust(1)	April 30, 2013	Series F	19,808	7.88	155,988
MGK 2008, LLC(1)	April 30, 2013	Series F	42,794	7.88	337,003
MGK 2009, LLC(1)	April 30, 2013	Series F	362,286	7.88	2,853,002
MGK 2011, LLC(1)	April 30, 2013	Series F	141,588	7.88	1,115,006
ZSK 2008, LLC(1)	April 30, 2013	Series F	39,492	7.88	311,000
ZSK 2009, LLC(1)	April 30, 2013	Series F	33,016	7.88	260,001
Jeffrey Kindler(15)	April 30, 2013	Series F	12,700	7.88	100,013

(1) An affiliate of Mr. Kirk.

(2) Of the shares originally purchased by Kirkfield, L.L.C., 6,216,638 shares were subsequently transferred to affiliates of Mr. Kirk and an additional 708,550 shares were transferred to non-affiliates

(3) A managing director of Third Security, LLC, which is an affiliate of Mr. Kirk.

(4) Spouse of Doit L. Koppler, a managing director of Third Security, LLC, which is an affiliate of Mr. Kirk.

(5) Spouse of Theodore J. Fisher, a managing director of Third Security, LLC, which is an affiliate of Mr. Kirk.

(6) Previously served as our Chief Executive Officer.

(7) Previously served as our Chief Medical Officer

(8) Affiliate of Thomas D. Reed, a member of our board of directors and chief science officer.

(9) A private equity fund affiliated with Mr. Kirk.

(10) Father of Theodore J. Fisher, a managing director of Third Security, LLC, which is an affiliate of Mr. Kirk.

(11) Our Chief Legal Officer.

(12) Our Senior Vice President of Intellectual Property.

(13) Of these shares, 577,727 were issued pursuant to the conversion of convertible bridge notes with outstanding principal and interest of $3,033,067 on the date of conversion. The remaining 380,953 of these shares were purchased for cash.

(14) Of these shares, 1,155,454 were issued pursuant to the conversion of convertible bridge notes with outstanding principal and interest of $6,066,133. The remaining 761,906 of these shares were purchased for cash.

(15) A member of our board of directors.

(16) An affiliate of Robert B. Shapiro.

Transactions with Third Security, LLC and affiliates

2011 promissory notes

On April 8, 2011, we issued convertible promissory notes to certain affiliates of Mr. Kirk in connection with a bridge financing. Third Security Staff 2010 LLC and Third Security Senior Staff 2008 LLC each purchased a convertible promissory note with an original outstanding principal balance of up to $10,000,000, and Third Security Incentive 2010 LLC purchased a convertible promissory note with an original outstanding principal balance of up to $5,000,000. The notes had a simple interest rate of 12 percent per annum and were structured to automatically convert into our Series E preferred stock at the same per share price paid by the other investors in our Series E convertible preferred stock. On May 26, 2011, at the initial closing of the issuance of our Series E preferred stock, all of the outstanding principal and interest on these notes converted into shares of Series E preferred stock at a conversion rate of $5.25 per share of Series E preferred stock. The notes held by Third Security Staff 2010 LLC and Third Security Senior Staff 2008 LLC each had an outstanding principal and interest balance of $6,066,133 and each converted into 1,155,454 shares of our Series E preferred stock on May 26, 2011. The notes held by Third Security Incentive 2010 LLC had an outstanding principal and interest balance of $3,033,067 and converted into 577,727 shares of our Series E preferred stock on May 26, 2011. All shares of Series E preferred stock issued as a result of these conversions are included in the table under “Private placements of securities” section above.

Halozyme

Effective June 6, 2011, we entered into a collaboration and license agreement with Halozyme Therapeutics, Inc., or Halozyme, under which Halozyme granted to us a worldwide exclusive license for the use of rHuPH20 enzyme in the development of a subcutaneous injectable formulation of our recombinant human alpha 1-antitrypsin. Mr. Kirk is a member of Halozyme’s board of directors. Prior to the transaction, Mr. Kirk, beneficially owned 15,387,869 shares of Halozyme’s outstanding common stock, and as of May 31, 2013, beneficially owned 19,801,286 shares, or 17.5 percent of Halozyme’s outstanding common stock. Pursuant to the agreement, we paid a nonrefundable upfront license fee of $9,000,000 to Halozyme. In addition, so long as the agreement is in effect, we are required to pay an annual exclusivity fee of $1,000,000 to Halozyme beginning on June 6, 2012 and continuing on each anniversary of the effective date of the agreement thereafter until a certain development event occurs. Halozyme is entitled to receive payments from us for research and development services and supply of rHuPH20 active pharmaceutical ingredient we request. In addition, Halozyme is entitled to receive additional cash payments from us potentially totaling $44,000,000 for each product for use in a specified field and $10,000,000 for each product for use outside that specified field upon achievement of development and regulatory milestones with respect to those products. Halozyme also is entitled to receive royalty payments in the high single to lower double digits from us on product sales at a royalty rate which increases based upon increases in net sales of product and a cash payment of $10,000,000 upon our achievement of a specified sales volume of product sales. Unless terminated earlier in accordance with its terms, the agreement continues in effect until the later of (i) expiration of the last to expire of the valid claims of Halozyme patents covering rHuPH20 or other specified patents developed under the collaboration which valid claim covers a product developed under the collaboration, and (ii) expiration of the last to expire royalty term for a product developed under the collaboration. The royalty term of a product developed under the agreement, with respect to each country, consists of the period equal to the longer of: (a) the

duration of any valid claim of Halozyme patents covering rHuPH20 or other specified patents developed under the collaboration which valid claim covers the product in such country or (b) 10 years following the date of the first commercial sale of such product in such country. We may terminate the agreement prior to expiration for any reason on a product-by-product basis upon 90 days' prior written notice to Halozyme.

Cyntellect

Effective August 31, 2011, we acquired certain assets and assumed certain liabilities of Cyntellect, Inc. in exchange for 4,176,905 shares of our common stock valued at $17,000,000. At the time of the purchase, Mr. Kirk was a member of the board of directors of Cyntellect. Prior to the purchase, affiliate entities of Mr. Kirk, NRM VI Holdings I, LLC and New River Management V, LP, held notes with outstanding balances of $4.2 million and $12 million, respectively, and NRM VI Holdings I, LLC held 93.1 percent of the senior preferred stock. Following the transaction, Cyntellect distributed the 4,176,905 shares of our common stock. Due to the outstanding debt and the liquidation preference of the senior preferred stock, NRM VI Holdings I, LLC and New River Management V, LP acquired 1,476,006 and 2,680,767 shares, respectively, of our common stock with an approximate value at the time of $6,007,000 and $10,910,000, respectively. Through May 2012, we subleased a portion of one of our facilities to Cyntellect. The sublease included rent and a portion of applicable facility expenses.

Genopaver

Effective March 29, 2013, we entered into an ECC with Genopaver, which is a limited liability company formed for the express purpose of entering into the ECC and developing and commercializing products identified through the ECC. Genopaver is an affiliate of Third Security, LLC. Under the ECC, we received $3,000,000 as a technology access fee. We will be reimbursed for research and development services as provided for in the ECC. We are entitled to a royalty on the gross profits of product sales from a product developed from the ECC.

Chief Executive Officer position

Mr. Kirk assumed the role of our Chief Executive Officer in April 2009 and served on a part-time basis in that capacity through 2011. In 2012, Mr. Kirk began serving in this role on a full-time basis. Although Mr. Kirk has not received compensation for his service as Chief Executive Officer, we recorded $388,000 in compensation expense for the three months ended March 31, 2013 and $1,550,000, $210,000, and $490,000 for the years ended December 31, 2012, 2011, and 2010, respectively, based on the estimated salary and benefits appropriate for the role.

Transactions with other shareholders

At March 31, 2013, December 31, 2012 and 2011, we leased two office facilities from an affiliate of Virginia Tech Foundation, a preferred shareholder. During the three months ended March 31, 2013 and the years ended December 31, 2012 and 2011, we incurred rent and other facility expenses related to these facilities of $226,000, $903,000 and $783,000, respectively. During 2010, we leased one facility from an affiliate of Virginia Tech Foundation and incurred rent and other facility expenses related to this facility of $595,000.

We may contract with the University of Pittsburgh Medical Center, a common shareholder, to provide certain research and clinical services. During the three months ended March 31, 2013 and the years ended December 31, 2012, 2011, and 2010 we incurred total expenses for work performed under such contracts of $50,000, $91,000, $202,000, and $597,000, respectively.

In 2011, we paid a transaction fee in conjunction with the closing of our Series E Preferred Stock to Perella Weinberg Partners which employs certain of our preferred shareholders. In 2013, we paid transaction fees in conjunction with the sale of our Series F Preferred Stock to two financial services firms which employ certain of our preferred shareholders.

Transactions with ECC parties

ZIOPHARM

Pursuant to an ECC, a securities purchase agreement and a stock issuance agreement, dated as of January 6, 2011, we granted to ZIOPHARM a worldwide exclusive license to use certain specified patents and other intellectual property in the field of oncology as defined in the ECC. In consideration for this license, we received 3,636,926 shares of ZIOPHARM's outstanding common stock with a value, at the time, of $17,457,000. Concurrently, pursuant to the securities purchase agreement, we purchased an additional 2,426,235 shares of ZIOPHARM common stock with an agreed value, at the time, of $11,646,000 and we agreed to purchase up to an additional $50,000,000 of common stock in conjunction with securities offerings that may be conducted by ZIOPHARM in the future, subject to certain conditions and limitations. On February 7, 2011, we purchased 1,910,000 shares of ZIOPHARM common stock with an agreed value, at the time, of $10,983,000 in the first such securities offering and on January 20, 2012, we purchased 1,923,075 shares of ZIOPHARM common stock with an agreed value, at the time, of $10,000,000 in the second such securities offering. At December 31, 2012, we had approximately $29,000,000 remaining on our purchase commitment. On October 24, 2012, we received 3,636,926 additional shares of ZIOPHARM common stock with a value, at the time, of $18,330,000 as a result of the achievement of a clinical milestone as contemplated in the original ECC. In conjunction with the original transactions on January 6, 2011, Mr. Kirk joined the board of directors of ZIOPHARM. As of May 31, 2013, Mr. Kirk, together with his affiliates (excluding us), beneficially owned 1,423,252 shares, or 1.7 percent of ZIOPHARM's outstanding common stock. On March 21, 2012, we received $10,000,000 from ZIOPHARM as a prepayment of research and development services to be provided in conjunction with the ECC. At March 31, 2013 and December 31, 2012, $3,432,000 and $4,862,000 remained outstanding, respectively; such amount is refundable to ZIOPHARM in the event the ECC is terminated.

Synthetic Biologics

Pursuant to an ECC, a securities purchase agreement and a stock issuance agreement, dated as of November 18, 2011, we granted to Synthetic Biologics a worldwide exclusive license to use certain specified patents and other intellectual property for the treatment of pulmonary arterial hypertension, or PAH. In consideration for this license, we received 3,123,558 shares of Synthetic Biologics' outstanding common stock with a value, at the time, of $1,687,000. Pursuant to a second ECC, dated as of August 6, 2012, we granted to Synthetic Biologics a worldwide exclusive license to use certain specified patents and other intellectual property in connection with the research, development, use, importing, manufacture, sale and offer for sale of monoclonal antibody therapies for the treatment of eight specific target infectious disease indications. In

consideration for this license upon Synthetic Biologics' shareholders' approval on October 5, 2012, we received an additional 3,552,210 shares of Synthetic Biologics' outstanding common stock with a value, at the time, of $7,815,000. On October 29, 2012, pursuant to a stock purchase agreement, an affiliate entity of Mr. Kirk, NRM VII Holdings I, LLC, invested $5,000,000 in Synthetic Biologics and received 3,125,000 shares of Synthetic Biologics' outstanding common stock. As of May 31, 2013, Mr. Kirk, together with his affiliates (excluding us), beneficially owned 3,125,000 shares, or 7.0 percent of Synthetic Biologics' outstanding common stock. In conjunction with the collaboration, we are entitled to, at our election, purchase up to 19.99 percent of securities offerings that may be conducted by Synthetic Biologics in the future, subject to certain conditions and limitations. We have also been granted the right to make purchases of Synthetic Biologics' common stock in the open market up to an additional 10 percent of Synthetic Biologics' common stock. We have made no purchases of Synthetic Biologics' common stock pursuant to these arrangements. On December 17, 2012, we received $2,500,000 from Synthetic Biologics as a prepayment of research and development services to be provided in conjunction with the ECC. At March 31, 2013 and December 31, 2012, $1,992,000 and $2,367,000 remained outstanding, respectively; such amount is refundable to Synthetic Biologics in the event that the August 2012 ECC is terminated.

Oragenics

Pursuant to an ECC, a securities purchase agreement and a stock issuance agreement, all dated as of June 5, 2012, we granted to Oragenics an exclusive license to use our proprietary technologies and other intellectual property to develop and commercialize lantibiotics for the treatment of infectious diseases in humans and companion animals. Pursuant to the stock issuance agreement, we received 4,392,425 shares of Oragenics' outstanding common stock in partial consideration of this license grant with a value, at the time, of $6,588,000. On July 30, 2012, pursuant to a stock purchase agreement, an affiliate entity of Mr. Kirk, NRM VII Holdings I, LLC, invested $1,286,000 in Oragenics and received 857,555 shares of Oragenics' outstanding common stock. As of May 31, 2013, Mr. Kirk, together with his affiliates (excluding us), beneficially owned 857,555 shares, or 3.1 percent, of Oragenics' outstanding common stock. In conjunction with the ECC, we are entitled to, at our election, purchase up to 30 percent of securities offerings that may be conducted by Oragenics in the future, subject to certain conditions and limitations. We have made no purchases of Oragenics' common stock pursuant to these arrangements.

Fibrocell Science

Pursuant to an ECC, a securities purchase agreement and a stock issuance agreement, all dated as of October 5, 2012, we granted to Fibrocell Science an exclusive license to use our proprietary technologies and other intellectual property to research, develop, use, import, export, make, have made, sell and offer for sale certain products in the United States in the field of the development of autologous, gene-modified fibroblasts for therapeutic purposes. Pursuant to the stock issuance agreement, we received 1,317,520 shares of Fibrocell's outstanding common stock in partial consideration of this license grant with a value, at the time, of $7,576,000. Concurrently, pursuant to the securities purchase agreement, an affiliate entity of Mr. Kirk, NRM VII Holdings I, LLC, invested $20,000,000 in Fibrocell and received 8,000,000 shares of Fibrocell's outstanding common stock. As of May 31, 2013, Mr. Kirk, together with his affiliates (excluding us), beneficially owned 8,000,000 shares, or 30.5 percent, of Fibrocell's outstanding common stock. The share amounts above reflect a 1-for-25 reverse stock split of Fibrocell's common stock effective April 30, 2013.

AquaBounty

On November 16, 2012, we acquired 48,631,444 shares of common stock of AquaBounty, representing 47.56 percent of the then outstanding shares of AquaBounty, for $6,000,000 through a definitive purchase agreement with an existing AquaBounty shareholder and its affiliate. On November 29, 2012, we entered into a promissory note purchase agreement, or promissory note, with AquaBounty. The promissory note permits us to loan up to $500,000 to AquaBounty. Draws on the promissory note by AquaBounty accrue annual interest of 3 percent and mature no later than May 28, 2013. As of December 31, 2012, AquaBounty had drawn $200,000 on the promissory note. In January and February 2013, AquaBounty drew $200,000 and $100,000, respectively, on the promissory note. On February 14, 2013, we entered into an ECC with AquaBounty with the intent to enhance productivity and develop products in aquaculture. Also, on February 14, 2013, three individuals designated by us, including one of our employees, were appointed to AquaBounty's board of directors. On March 15, 2013, we acquired 18,714,814 shares of AquaBounty for $4,907,000 in a private subscription offering increasing our ownership in AquaBounty to 53.82 percent. In conjunction with this share purchase, AquaBounty repaid the $500,000 promissory note plus accrued interest in its entirety.

Agreements with our shareholders

In connection with our preferred stock financings, we entered into an investor rights agreement with the purchasers of our preferred stock and certain holders of our common stock. The investor rights agreement provides those certain holders of our preferred stock with the right to demand that we file a registration statement, subject to certain limitations, and to request that their shares be covered by a registration statement that we are otherwise filing. See "Description of capital stock — Registration rights" for additional information.

The investor rights agreement also provides for rights of first refusal and co-sale rights in respect of sales of securities by certain holders of our capital stock. The investor rights agreement further provides holders of our preferred stock with a participation right to purchase their *pro rata* share of new securities that we may propose to sell and issue, subject to specified exceptions. The investor rights agreement also contains provisions with respect to the election of our board of directors and its composition. The rights of first refusal, co-sale rights and participation rights under this agreement do not apply to this offering, and the rights under the investor rights agreement will terminate upon the closing of this offering other than certain registration rights for certain holders of our preferred stock.

Severance and change in control agreements

We have entered into an employment agreement with our founder and Chief Science Officer, Dr. Thomas D. Reed. See "Executive and director compensation — Employment agreements with named executive officers" for a further discussion of these arrangements.

Indemnification of officers and directors

Our amended and restated articles of incorporation provide that we will indemnify our directors and officers with respect to certain liabilities, expenses and other accounts imposed upon them because of having been a director or officer, except in the case of willful misconduct or a knowing violation of criminal law. See the "Description of capital stock" section of this prospectus for a further discussion of these arrangements.

Policies and procedures for related person transactions

Our board of directors has adopted a written related policy with respect to related person transactions, which will become effective at the time of this offering. This policy governs the review, approval or ratification of covered related person transactions. The audit committee of our board of directors manages this policy.

For purposes of this policy, a “related person transaction” is a transaction, arrangement or relationship (or any series of similar transactions, arrangements or relationships) in which we (or any of our subsidiaries) were, are or will be a participant, and the amount involved exceeds $120,000 and in which any related person had, has or will have a direct or indirect interest. For purposes of determining whether a transaction is a related person transaction, the audit committee relies upon Item 404 of Regulation S-K, promulgated under the Securities Exchange Act of 1934, as amended.

A “related person” is defined as:

- Any person who is, or at any time since the beginning of our last fiscal year was, one of our directors or executive officers or a nominee to become one of our directors;
- Any person who is known to be the beneficial owner of more than five percent of any class of our voting securities;
- Any immediate family member of any of the foregoing persons, which means any child, stepchild, parent, stepparent, spouse, sibling, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law or sister-in-law of the director, executive officer, nominee or more than five percent beneficial owner, and any person (other than a tenant or employee) sharing the household of such director, executive officer, nominee or more than five percent beneficial owner; and
- Any firm, corporation, or other entity in which any of the foregoing persons is employed or is a general partner or principal or in a similar position or in which such person has a ten percent or greater beneficial ownership interest.

The policy generally provides that we may enter into a related person transaction only if:

- the audit committee pre-approves such transaction in accordance with the guidelines set forth in the policy,
- the transaction is on terms comparable to those that could be obtained in arm’s length dealings with an unrelated third party and the audit committee (or the chairperson of the audit committee) approves or ratifies such transaction in accordance with the guidelines set forth in the policy,
- the transaction is approved by the disinterested members of the board of directors, or
- the transaction involves compensation approved by the compensation committee of the board of directors.

In the event a related person transaction is not pre-approved by the audit committee and our management determines to recommend such related person transaction to the audit committee, such transaction must be reviewed and by the audit committee. After review, the audit committee will approve or disapprove such transaction. When our Chief Legal Officer, in

consultation with our Chief Executive Officer or our Chief Financial Officer, determines that it is not practicable or desirable for us to wait until the next audit committee meeting, the chairperson of the audit committee possesses delegated authority to act on behalf of the audit committee. The audit committee (or the chairperson of the audit committee) shall approve only those related person transactions that are in, or not inconsistent with, our best interests and the best interests of our shareholders, as the audit committee (or the chairperson of the audit committee) determines in good faith.

The audit committee has determined that certain types of related person transactions shall be deemed to be pre-approved by the audit committee. Our related person transaction policy provides that the following transactions, even if the amount exceeds $120,000 in the aggregate, shall be considered to be pre-approved by the audit committee:

- any employment of certain named executive officers that would be publicly disclosed;
- director compensation that would be publicly disclosed;
- transactions with other companies where the related person's only relationship is as a director or owner of less than ten percent of said company (other than a general partnership), if the aggregate amount involved does not exceed the greater of $200,000 or five percent of that company's consolidated gross revenues;
- transactions where all shareholders receive proportional benefits;
- transactions involving competitive bids;
- transactions with a related person involving the rendering of services at rates or charges fixed in conformity with law or governmental authority; and
- transactions with a related person involving services as a bank depositary of funds, transfer agent, registrar, trustee under a trust indenture or similar services.

In addition, the audit committee will review the policy at least annually and recommend amendments to the policy to the board of directors from time to time.

The policy provides that all related person transactions will be disclosed to the audit committee, and all material related person transactions will be disclosed to the board of directors. Additionally, all related person transactions requiring public disclosure will be properly disclosed, as applicable, on our various public filings.

The audit committee will review all relevant information available to it about the related person transaction. The policy provides that the audit committee may approve or ratify the related person transaction only if the audit committee determines that, under all of the circumstances, the transaction is in, or is not inconsistent with, our best interests. The policy provides that the audit committee may, in its sole discretion, impose such conditions as it deems appropriate on us or the related person in connection with approval of the related person transaction.

Principal shareholders

The following table sets forth information regarding beneficial ownership of our share capital as of May 31, 2013 by:

- each person, or group of affiliated persons, known by us to beneficially own more than 5 percent of our shares of common stock;
- each of our directors;
- each of our named executive officers; and
- all of our directors and current named executive officers as a group.

The percentage ownership information under the column entitled “Before offering” is based on an aggregate of shares of common stock outstanding as of May 31, 2013, which includes (i) 131,954,083 shares of common stock resulting from the automatic conversion of all outstanding shares of our redeemable convertible preferred stock upon the consummation of the offering, as if this conversion had occurred as of May 31, 2013 and (ii) the conversion of aggregate dividends on our redeemable convertible preferred stock into approximately shares of our common stock, based on an assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, upon completion of this offering. The percentage ownership information under the column entitled “After offering” is based on the sale of shares of common stock in this offering.

Information with respect to beneficial ownership has been furnished by each director, officer or beneficial owner of more than five percent of our shares of common stock. We have determined beneficial ownership in accordance with the rules of the SEC. These rules generally attribute beneficial ownership of securities to persons who possess sole or shared voting power or investment power with respect to those securities. In addition, the rules include shares of common stock issuable pursuant to the exercise of options or warrants that are either immediately exercisable or exercisable on or before July 30, 2013, which is 60 days after May 31, 2013. These shares are deemed to be outstanding and beneficially owned by the person holding those options or warrants for the purpose of computing the percentage ownership of that person, but they are not treated as outstanding for the purpose of computing the percentage ownership of any other person. Unless otherwise indicated, the persons or entities identified in this table have sole voting and investment power with respect to all shares shown as beneficially owned by them, subject to applicable community property laws.

Except as otherwise noted below, the address for each person or entity listed in the table is c/o Intrexon Corporation, 20374 Seneca Meadows Parkway, Germantown, Maryland 20876.

Name and address of beneficial owner	Number of shares beneficially owned(1)	Percentage of shares beneficially owned	
		Before offering	After offering
Randal J. Kirk(2)	99,989,704		
Krish S. Krishnan	250,000		
Suma M. Krishnan	37,500		
Thomas D. Reed Ph.D.(3)	759,909		
Cesar L. Alvarez	85,250		
Steven Frank	37,533		
Larry D. Horner	137,902		
Jeffrey B. Kindler	50,233		
Dean J. Mitchell	32,631		
Robert B. Shapiro(4)	150,965		
Named executive officers and directors as a group (10 persons)	101,531,627		

* Represents beneficial ownership of less than 1 percent of our outstanding shares of common stock.

(1) The amounts in this column include shares of common stock to which certain persons had the right to acquire beneficial ownership within 60 days after May 31, 2013 pursuant to the exercise of options: Randal J. Kirk, 20,000 shares; Krish S. Krishnan, 250,000 shares; Suma M. Krishnan, 37,500 shares; Thomas D. Reed, 178,400 shares; Cesar L. Alvarez, 31,250 shares; Steven Frank, 31,250 shares; Larry D. Horner, 31,250 shares; Jeffrey B. Kindler, 11,250 shares; Dean J. Mitchell, 26,250 shares; Robert B. Shapiro, 11,250 shares; and executive officers and directors as a group, 590,900 shares. The share amounts in this column exclude shares of common stock issuable upon conversion of the aggregate dividends on any shares of redeemable convertible preferred stock beneficially held by these individuals.

(2) Includes shares held by the following entities over which Mr. Kirk (or an entity over which he exercises exclusive control) exercises exclusive control: 295,858 shares held by ADC 2010, LLC, 168,613 shares held by JPK 2008, LLC, 1,161,380 shares held by JPK 2009, LLC, 1,346,508 shares held by JPK 2012, LLC, 8,078,006 shares held by Kapital Joe, LLC, 215,617 shares held by Kellie L. Banks (2009) Long Term Trust, 7,674,307 shares held by Mascara Kaboom, LLC, 170,193 shares held by MGK 2008, LLC, 1,269,766 shares held by MGK 2009, LLC, 1,556,125 shares held by MGK 2011, LLC, 1,977,666 shares held by New River Management IV, LP, 37,232,315 shares held by New River Management V, LP, 2,815,632 shares held by NewVa Capital Partners, LP, 22,232,773 shares held by NRM VI Holdings I, LLC, 7,687,256 shares held by R.J. Kirk Declaration of Trust, 1,108,446 shares held by Third Security Incentive 2010 LLC, 2,216,892 shares held by Third Security Senior Staff 2008 LLC, 295,514 shares held by Third Security Staff 2001 LLC, 2,216,892 shares held by Third Security Staff 2010 LLC, 127,515 shares held by ZSK 2008, LLC, and 122,430 shares held by ZSK 2009, LLC.

(3) Includes 138,750 shares issued to Thomas David Reed, Trustee of the Thomas David Reed Living Trust dated February 4, 2011, an affiliate of Thomas D. Reed, and 442,759 shares issued to Jacquelyn Ann Reed, Trustee of the Jacquelyn Ann Reed Living Trust dated February 4, 2011, an affiliate of Thomas D. Reed.

(4) Includes 133,334 shares held in the Robert B. Shapiro Revocable Trust, an affiliate of Robert B. Shapiro.

Description of capital stock

The following description summarizes information about our capital stock. This information does not purport to be complete and is subject to, and qualified in its entirety by reference to, the terms of our amended and restated articles of incorporation and amended and restated bylaws, which are included as exhibits to the registration statement of which this prospectus forms a part, and the applicable provisions of Virginia law, the state in which we are incorporated.

As of May 31, 2013, our authorized capital stock consists of 185,000,000 shares of common stock, no par value per share, and 131,954,083 shares of preferred stock, no par value per share.

As of May 31, 2013, there were 9,923,331 shares of common stock outstanding and held of record by 136 shareholders. This amount excludes (i) the issuance of 10,868,655 shares of Series F preferred stock issued on April 30, 2013 and the conversion of those shares into 10,868,655 shares of common stock upon completion of this offering; (ii) the conversion of 121,085,428 shares of our preferred stock outstanding as of March 31, 2013 into 121,085,428 shares of common stock upon completion of this offering; and (iii) the conversion of aggregate cumulative dividends on our series preferred stock of $ into approximately shares of our common stock, based on an initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, upon completion of this offering. Upon completion of this offering, there will be shares of common stock outstanding. All outstanding shares of common stock are, and the shares of common stock to be issued pursuant to this offering will be, fully paid and nonassessable.

Common stock

Shares of our common stock have the following rights, preferences and privileges:

Voting rights

Each outstanding share of common stock is entitled to one vote on all matters submitted to a vote of our shareholders, including the election of directors. Holders of our common stock do not have cumulative voting rights in the election of directors, and therefore the holders of a plurality of the shares of common stock voting for the election of directors may elect all of our directors standing for election.

Dividends

Holders of common stock are entitled to receive dividends if and when dividends are declared by our board of directors out of assets legally available for the payment of dividends, subject to preferential rights of outstanding shares of preferred stock, if any.

Liquidation

In the event of a liquidation, dissolution or winding up of the affairs of our Company, whether voluntary or involuntary, after payment of our debts and other liabilities and making provision for the holders of outstanding shares of preferred stock, if any, we will distribute the remainder of our assets ratably among the holders of shares of common stock.

Rights and preferences

The common stock has no preemptive, redemption, conversion or subscription rights. The rights, powers, preferences and privileges of holders of common stock are subject to, and may be impaired by, the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

Fully paid and nonassessable

All outstanding shares of common stock are fully paid and non-assessable, and the shares of common stock to be issued upon the closing of this offering will be fully paid and non-assessable.

Stock options

As of May 31, 2013, options to purchase 5,014,584 shares of our common stock were outstanding, of which options to purchase 1,629,584 shares of our common stock were exercisable.

Warrants

As of May 31, 2013, we had outstanding warrants to purchase shares of our common stock that, upon the closing of this offering, will be exercisable for an aggregate of 894,423 shares of our common stock. Each of these warrants was and remains exercisable in full.

Registration rights

We have entered into an investors' rights agreement with certain of our shareholders. Upon the closing of this offering, holders of a total of shares of our common stock as of , including for this purpose shares of our common stock issuable upon conversion of our preferred stock upon the closing of this offering, shares issuable upon exercise of outstanding options to purchase shares of our common stock, and shares issuable upon exercise of outstanding warrants to purchase shares of our common stock, will have the right to require us to register these shares under the Securities Act under specified circumstances and will have incidental registration rights as described below. After registration pursuant to these rights, these shares will become freely tradable without restriction under the Securities Act.

Demand registration rights

Certain holders, or Demand Holders, have demand registration rights. Beginning on the 180th day after the effective date of the registration statement of which this prospectus forms a part, subject to specified limitations set forth in the investor rights agreement, at any time the Demand Holders who are holders of at least 75 percent of the then-outstanding registrable securities, as defined in the investor rights agreement, of all Demand Holders as a class, acting together, may demand in writing that we register their registrable securities under the Securities Act. We are not obligated to file a registration statement pursuant to this demand provision on more than two occasions, subject to specified exceptions.

In addition, at any time after we become eligible to file a registration statement on Form S-3 under the Securities Act, subject to specified limitations, the holders of registrable securities may demand in writing that we register on Form S-3 the registrable securities held by them so long as the total amount of registrable securities being registered has an aggregate offering price of at

least $500,000. We are not obligated to file a Form S-3 pursuant to this provision within 12 months of the effective date of any other Form S-3 registration statement that we may file.

Incidental registration rights

If we propose to file a registration statement to register any of our securities under the Securities Act for our own account, other than pursuant to a Form S-4 or Form S-8, the holders of our registrable securities are entitled to notice of registration and, subject to specified exceptions, we will be required to register the registrable securities then held by them that they request that we register. The holders of these registrable securities may be deemed to have such rights with respect to this offering. To the extent these rights exist, they have been waived with respect to this offering by written agreement of a majority in interest of the holders (which includes the holders of at least a majority in interest of the holders of preferred stock, voting together as a single class on an as-converted to common stock basis) in accordance with the terms of the investor rights agreement.

Expenses

Pursuant to the investor rights agreement, we are required to pay all registration expenses, including all registration, filing and qualification fees, printers' and accounting fees, fees and expenses incurred in connection with complying with state securities or "blue sky" laws, fees and expenses of listing registrable securities on any securities exchange on which shares of our common stock are then listed, fees and disbursements of our counsel, but excluding any underwriting discounts and commissions, related to any demand or incidental registration. The investor rights agreement contains customary cross-indemnification provisions, pursuant to which we are obligated to indemnify the selling shareholders in the event of material misstatements or omissions in the registration statement attributable to us, and they are obligated to indemnify us for material misstatements or omissions in the registration statement attributable to them.

Preferred stock

Upon the closing of this offering, there will be no shares of preferred stock issued or outstanding. Our amended and restated articles of incorporation authorize our board to designate and issue from time to time one or more series of preferred stock without shareholder approval. Our board may fix and determine the preferences, limitations and relative rights of each series of preferred stock issued. Because our board has the power to establish the preferences and rights of each series of preferred stock, it may afford the holders of any series of preferred stock preferences and rights, voting or otherwise, senior to the rights of holders of our common stock. It is not possible to state the actual effect of the issuance of any shares of preferred stock upon the rights of holders of common stock until our board determines the specific rights of the holders of preferred stock. However, the effects might include:

- restricting dividends on our common stock;
- diluting the voting power of our common stock;
- impairing liquidation rights of our common stock; or
- delaying or preventing a change in control of us without further action by our shareholders.

We have no present plans to issue any shares of preferred stock.

Anti-takeover effects of provisions of our charter and bylaws and of Virginia law

Our amended and restated articles of incorporation, bylaws and Virginia law contain provisions that may have the effect of impeding the acquisition of control of us by means of a tender offer, a proxy contest, open market purchases or otherwise in a transaction not approved by our board of directors. These provisions are designed to reduce, or have the effect of reducing, our vulnerability to, coercive takeover practices and inadequate takeover bids. The existence of these provisions could limit the price that investors might otherwise pay in the future for shares of common stock. In addition, these provisions make it more difficult for our shareholders, should they choose to do so, to remove our board of directors or management.

Articles of incorporation and bylaws

Preferred stock

Our amended and restated articles of incorporation authorize our board to establish one or more series of preferred stock and to determine, with respect to any series of preferred stock, the preferences, rights and other terms of such series. See “Preferred stock” above for additional information. Under this authority, our board could create and issue a series of preferred stock with rights, preferences or restrictions that have the effect of discriminating against an existing or prospective holder of our capital stock as a result of such holder beneficially owning or commencing a tender offer for a substantial amount of our common stock. One of the effects of authorized but unissued and unreserved shares of preferred stock may be to render it more difficult for, or to discourage an attempt by, a potential acquiror to obtain control of us by means of a merger, tender offer, proxy contest or otherwise, and thereby protect the continuity of our management. The issuance of shares of preferred stock may have the effect of delaying, deferring or preventing a change in control of our Company without any action by our shareholders.

Qualification and election of directors

Our bylaws provide that to be eligible to be a nominee for election to our board of directors, a person must submit a written questionnaire regarding his or her background and qualifications and must agree to other representations as set forth in our bylaws. In addition, we have adopted a director resignation policy. The director resignation policy is incorporated into our bylaws and Corporate Governance Guidelines and provides that any nominee for director in an uncontested election who receives a greater number of votes “withheld” from his or her election than votes “for” his or her election must tender his or her resignation to the board of directors for consideration in accordance with the procedures set forth in our Corporate Governance Guidelines. The Nominating and Corporate Governance Committee will then evaluate the best interests of us and our shareholders and will recommend to the board of directors the action to be taken with respect to the tendered resignation. Following the board of directors determination, we will promptly publicly disclose the board of directors’ decision of whether or not to accept the resignation and an explanation of how the decision was reached, including, if applicable, the reasons for rejecting the resignation.

Board vacancies; removal

Our amended and restated articles of incorporation provide that any vacancy occurring on our board of directors may be filled by a majority of directors then in office, even if less than a quorum.

Special meetings of shareholder

Our bylaws provide that the vote of 25 percent of shareholders is required to call a special meeting, and that shareholders may only conduct business at special meetings of shareholders that was specified in the notice of the meeting.

Advance notification of shareholder nominations and proposals

Our amended and restated bylaws establish advance notice procedures with respect to shareholder proposals and the nomination of persons for election as directors, other than nominations made by or at the direction of our board.

Virginia anti-takeover statutes

Affiliated transactions statute

Virginia law contains provisions governing affiliated transactions. In general, these provisions prohibit a Virginia corporation from engaging in affiliated transactions with any holder of more than 10 percent of any class of its outstanding voting shares, or an interested shareholder, for a period of three years following the date that such person became an interested shareholder unless:

- a majority of (but not fewer than two) disinterested directors of the corporation and the holders of two-thirds of the voting shares, other than the shares beneficially owned by the interested shareholder, approve the affiliated transaction; or
- before or on the date the person became an interested shareholder, a majority of disinterested directors approved the transaction that resulted in the shareholder becoming an interested shareholder.

Affiliated transactions subject to this approval requirement include mergers, share exchanges, material dispositions of corporate assets not in the ordinary course of business, any dissolution of the corporation proposed by or on behalf of an interested shareholder or any reclassification, including reverse stock splits, recapitalizations or mergers of the corporation with its subsidiaries, which increases the percentage of voting shares owned beneficially by an interested shareholder by more than five percent.

Virginia law permits a corporation to exempt itself from this statutory provision by placing a statement to that effect in its articles of incorporation. Our amended and restated articles of incorporation do not specifically address the Virginia statute regarding affiliated transactions; therefore, we are subject to this provision.

Control share acquisitions statute

Virginia law also contains provisions relating to control share acquisitions, which are transactions causing the voting strength of any person acquiring beneficial ownership of shares of a Virginia public corporation to meet or exceed certain threshold percentages (20 percent, 33 1/3 percent or 50 percent) of the total votes entitled to be cast for the election of directors. Shares acquired in a control share acquisition have no voting rights unless:

- the voting rights are granted by a majority vote of all outstanding shares other than those held by the acquiring person or any officer or employee director of the corporation; or
- the articles of incorporation or bylaws of the corporation provide that these Virginia law provisions do not apply to acquisitions of its shares.

The acquiring person may require that a special meeting of the shareholders be held within 50 days of the acquiring person's request to consider the grant of voting rights to the shares acquired in the control share acquisition. If voting rights are not granted and the corporation's articles of incorporation or bylaws permit, the acquiring person's shares may be repurchased by the corporation, at its option, at a price per share equal to the acquiring person's cost. Virginia law grants dissenters' rights to any shareholder who objects to a control share acquisition that is approved by a vote of disinterested shareholders and that gives the acquiring person control of a majority of the corporation's voting shares.

Our amended and restated articles of incorporation provide that this second statutory provision does not apply to our Company; therefore, we are not subject to this provision.

Indemnification and limitation of directors' and officers' liability

The Virginia Stock Corporation Act and our articles of incorporation provide for indemnification of our directors and officers in a variety of circumstances, which may include liabilities under the Securities Act. Virginia law provides that, unless limited by its articles of incorporation, a corporation must indemnify a director or officer who entirely prevails in the defense of any proceeding to which he was a party because he is or was a director or officer of the corporation against reasonable expenses incurred by him in connection with the proceeding. Virginia law permits a corporation to indemnify, after a determination has been made that indemnification of the director is permissible in the circumstances because he has met the following standard of conduct, an individual made a party to a proceeding because he is or was a director against liability incurred in the proceeding if:

- he conducted himself in good faith;
- he believed in the case of conduct in his official capacity with the corporation, that his conduct was in its best interests and in all other cases that his conduct was at least not opposed to its best interests; and
- in the case of any criminal proceeding, he had no reasonable cause to believe his conduct was unlawful.

A Virginia corporation may not indemnify a director in connection with a proceeding by or in the right of the corporation in which the director was adjudged liable to the corporation or in connection with any other proceeding charging improper personal benefit to him, whether or not involving action in his official capacity, in which he was adjudged liable on the basis that

personal benefit was improperly received by him, unless in either case a court orders indemnification and then only for expenses. In addition, the Virginia Stock Corporation Act permits a corporation to advance reasonable expenses to a director or officer upon the corporation's receipt of:

- a written affirmation by the director or officer of his good faith belief that he has met the standard of conduct necessary for indemnification by the company; and
- a written undertaking by the director or on the director's behalf to repay the amount paid or reimbursed by the corporation if it is ultimately determined that the director is not entitled to indemnification and did not meet the relevant standard of conduct.

In addition, Virginia law permits a corporation to make any further indemnity, including indemnity with respect to a proceeding by or in the right of the corporation, and to make additional provision for advances and reimbursement of expenses, to any director or officer that may be authorized by the articles of incorporation or any bylaw made by the shareholders or any resolution adopted by the shareholders, except an indemnity against his willful misconduct or a knowing violation of the criminal law.

Our articles of incorporation require indemnification of directors and officers with respect to certain liabilities, expenses, and other amounts imposed on them by reason of having been a director or officer, except in the case of willful misconduct or a knowing violation of criminal law. We also carry insurance on behalf of directors, officers, employees or agents which may cover liabilities under the Securities Act.

Insofar as the foregoing provisions permit indemnification of directors, officers or persons controlling us for liability arising under the Securities Act, we have been informed that in the opinion of the SEC, this indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Listing on the New York Stock Exchange

We intend to apply to have our common stock listed on the New York Stock Exchange under the symbol "XON."

Authorized but unissued shares

The authorized but unissued shares of common stock and preferred stock are available for future issuance without shareholder approval, subject to any limitations imposed by the New York Stock Exchange listing rules. These additional shares may be used for a variety of corporate finance transactions, acquisitions and employee benefit plans. The existence of authorized but unissued and unreserved common stock and preferred stock could make it more difficult or discourage an attempt to obtain control of us by means of a proxy contest, tender offer, merger or otherwise.

Transfer agent and registrar

The transfer agent and registrar for the common stock is .

Shares eligible for future sale

Prior to this offering, there has been no public market for our common stock, and a liquid public trading market for our common stock may not develop or be sustained after this offering. Future sales of significant amounts of our common stock, including shares issued upon exercise of outstanding options or warrants or in the public market after this offering, or the anticipation of those sales, could adversely affect the public market prices prevailing from time to time and could impair our ability to raise capital through sales of our equity securities. We intend to apply to have our common stock listed on the New York Stock Exchange under the symbol “XON.”

Based on the number of shares of common stock outstanding as of May 31, 2013, upon the closing of this offering, and after giving effect to (i) the issuance of the shares of our common stock offered in this offering, (ii) the conversion of our outstanding shares of preferred stock into 131,954,083 shares of common stock upon the closing of this offering, and (iii) the conversion of aggregate cumulative dividends on our series preferred stock of $ into approximately shares of our common stock, based on an initial public offering price of $ per share, which is the midpoint of the estimated offering price set forth on the cover page of this prospectus, we will have outstanding an aggregate of shares of common stock, assuming no exercise of outstanding options or warrants. Of these shares, the shares sold by us (assuming that the underwriters do not exercise their over-allotment option), in this offering will be freely tradable without restriction or further registration under the Securities Act, except for any shares purchased by our “affiliates,” as that term is defined in Rule 144 under the Securities Act, whose sales would be subject to the Rule 144 resale restrictions described below, other than the holding period requirement.

The remaining shares of common stock will be “restricted securities,” as that term is defined in Rule 144 under the Securities Act and will further be subject to either restrictions on transfer under the lock-up agreements described below or restrictions on transfer for a period of 180 days from the effectiveness of the registration statement of which this prospectus forms a part under stock option agreements entered into between us and the holders of those shares. Following the expiration of these restrictions, these shares will become eligible for public sale if they are registered under the Securities Act or if they qualify for an exemption from registration under Rules 144 or 701 under the Securities Act, which are summarized below.

In addition, of the 5,014,584 shares of common stock that were issuable pursuant to stock options outstanding as of May 31, 2013, options to purchase 1,629,584 shares of common stock had vested and were exercisable as of May 31, 2013. Upon exercise, these shares will be eligible for sale, subject to the lock-up agreements and securities laws described below. All of the 894,423 shares of common stock that were issuable pursuant to warrants outstanding as of May 31, 2013, were exercisable as of May 31, 2013 and upon issuance these shares will be eligible for sale, subject to the lock-up agreements and securities laws described below.

Rule 144

Affiliate resales of restricted securities

In general, beginning 90 days after the effective date of the registration statement of which this prospectus forms a part, a person who is an affiliate of ours, or who was an affiliate at any time during the 90 days before a sale, who has beneficially owned shares of our common stock for at

least six months would be entitled to sell in “broker’s transactions” or certain “riskless principal transactions” or to market makers, a number of shares within any three-month period that does not exceed the greater of:

- one percent of the number of shares of our common stock then outstanding, which will equal approximately shares immediately after this offering; or
- the average weekly trading volume in our common stock on during the four calendar weeks preceding the filing of a notice on Form 144 with respect to such sale.

Affiliate resales under Rule 144 are also subject to the availability of current public information about us. In addition, if the number of shares being sold under Rule 144 by an affiliate during any three-month period exceeds 5,000 shares or has an aggregate sale price in excess of $50,000, the seller must file a notice on Form 144 with the SEC and concurrently with either the placing of a sale order with the broker or the execution directly with a market maker.

Non-affiliate resales of restricted securities

In general, beginning 90 days after the effective date of the registration statement of which this prospectus forms a part, a person who is not an affiliate of ours at the time of sale, and has not been an affiliate at any time during the three months preceding a sale, and who has beneficially owned shares of our common stock for at least six months but less than a year, is entitled to sell such shares subject only to the availability of current public information about us. If such person has held our shares for at least one year, such person can resell under Rule 144(b)(1) without regard to any Rule 144 restrictions, including the 90-day public company requirement and the current public information requirement.

Non-affiliate resales are not subject to the manner of sale, volume limitation or notice filing provisions of Rule 144.

Rule 701

In general, under Rule 701, any of an issuer’s employees, directors, officers, consultants or advisors who purchases shares from the issuer in connection with a compensatory stock or option plan or other written agreement before the effective date of a registration statement under the Securities Act is entitled to sell such shares 90 days after such effective date in reliance on Rule 144. An affiliate of the issuer can resell shares in reliance on Rule 144 without having to comply with the holding period requirement, and non-affiliates of the issuer can resell shares in reliance on Rule 144 without having to comply with the current public information and holding period requirements.

Lock-up agreements

Our executive officers and directors and the holders of substantially all of our outstanding stock have agreed with the underwriters, subject to certain exceptions, not to dispose of or hedge any of their common stock or securities convertible into or exchangeable for shares of common stock for a period through the date 180 days after the date of this prospectus, except with the prior written consent of the representatives of the underwriters.

The representatives of the underwriters currently do not anticipate shortening or waiving any of the lock-up agreements and do not have any pre-established conditions for such modifications or

waivers. The representatives of the underwriters may, however, with the approval of our board of directors, release for sale in the public market all or any portion of the shares subject to the lock-up agreements.

Registration rights

Subject to the lock-up agreements described above, upon the closing of this offering, the holders of an aggregate of shares of our common stock will have the right to require us to register these shares under the Securities Act under specified circumstances. After registration pursuant to these rights, these shares will become freely tradable without restriction under the Securities Act. See “Description of capital stock — Registration rights” for additional information regarding these registration rights.

Stock options and warrants

As of May 31, 2013, we had outstanding options to purchase 5,014,584 shares of common stock, of which options to purchase 1,629,584 shares of common stock were vested and exercisable. Following this offering, we intend to file registration statements on Form S-8 under the Securities Act to register all of the shares of common stock subject to outstanding options and options and other awards issuable pursuant to the Intrexon Corporation 2008 Equity Incentive Plan and the Intrexon Corporation 2013 Omnibus Incentive Plan.

As of May 31, 2013, we also had outstanding and exercisable warrants to purchase 894,423 shares of common stock (calculated on an as-converted basis). Any shares purchased by our non-affiliates pursuant to the cashless exercise features of our warrants will be freely tradable under Rule 144(b)(1), subject in certain cases to the 180-day lock-up period described above. Any shares purchased through the exercise of these warrants for cash will be eligible for sale subject to the lock-up agreements and securities laws described above.

Certain material U.S. federal income and estate tax considerations

The following is a general discussion of the material U.S. federal income and estate tax considerations applicable to non-U.S. holders (as defined below) with respect to their purchase, ownership and disposition of shares of our common stock. This discussion is for general information only and is not tax advice. Accordingly, all prospective non-U.S. holders of our common stock should consult their own tax advisors with respect to the U.S. federal, state, local and non-U.S. tax consequences of the purchase, ownership and disposition of our common stock. For purposes of this discussion, a non-U.S. holder means a beneficial owner of our common stock who is not for U.S. federal income tax purposes:

- an individual who is a citizen or resident of the United States;
- a corporation or any other organization treated as a corporation for U.S. federal income tax purposes, created or organized in the United States or under the laws of the United States or of any state thereof or the District of Columbia;
- an estate, the income of which is subject to U.S. federal income tax regardless of its source; or
- a trust if (1) a U.S. court is able to exercise primary supervision over the trust's administration and one or more U.S. persons have the authority to control all of the trust's substantial decisions or (2) the trust has a valid election in effect under applicable U.S. Treasury Regulations to be treated as a U.S. person.

This discussion is based on current provisions of the U.S. Internal Revenue Code of 1986, as amended, which we refer to as the Code, existing and proposed U.S. Treasury Regulations promulgated thereunder, current administrative rulings and judicial decisions, all as in effect as of the date of this prospectus, all of which are subject to change or to differing interpretation, possibly with retroactive effect. Any change could alter the tax consequences to non-U.S. holders described in this prospectus. We assume in this discussion that a non-U.S. holder holds shares of our common stock as a capital asset (generally, property held for investment).

This discussion does not address all aspects of U.S. federal income and estate taxation that may be relevant to a particular non-U.S. holder in light of that non-U.S. holder's individual circumstances, nor does it address any aspects of U.S. state, local or non-U.S. taxes. This discussion also does not consider any specific facts or circumstances that may apply to a non-U.S. holder and does not address the special tax rules applicable to particular non-U.S. holders, such as:

- insurance companies;
- tax-exempt organization;
- financial institutions;
- brokers or dealers in securities;
- regulated investment companies;
- pension plans;
- controlled foreign corporations;

- passive foreign investment companies;
- owners that hold our common stock as part of a straddle, hedge, conversion transaction, synthetic security or other integrated investment; and
- certain U.S. expatriates.

In addition, this discussion does not address the tax treatment of partnerships or persons who hold their common stock through partnerships or other pass-through entities for U.S. federal income tax purposes. A partner in a partnership or other pass-through entity that will hold our common stock should consult his, her or its own tax advisor regarding the tax consequences of acquiring, holding and disposing of our common stock through a partnership or other pass-through entity, as applicable.

Distributions on our common stock

Distributions on our common stock generally will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. If a distribution exceeds our current and accumulated earnings and profits, the excess will be treated as a tax-free return of the non-U.S. holder's investment, up to such holder's tax basis in the common stock. Any remaining excess will be treated as capital gain, subject to the tax treatment described below in "Gain on sale, exchange or other disposition of our common stock."

Dividends paid to a non-U.S. holder generally will be subject to withholding of U.S. federal income tax at a 30 percent rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence. However, dividends that are treated as effectively connected with a trade or business conducted by a non-U.S. holder within the United States (and, if an applicable income tax treaty so provides, that are attributable to a permanent establishment or a fixed base maintained by the non-U.S. holder within the United States), are generally exempt from the 30 percent withholding tax if the non-U.S. holder satisfies applicable certification and disclosure requirements. However, such U.S. effectively connected income, net of specified deductions and credits, is taxed at the same graduated U.S. federal income tax rates applicable to United States persons (as defined in the Code). Any U.S. effectively connected income received by a non-U.S. holder that is a corporation may also, under certain circumstances, be subject to an additional "branch profits tax" at a 30 percent rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence.

A non-U.S. holder of our common stock who claims the benefit of an applicable income tax treaty between the United States and such holder's country of residence generally will be required to (a) provide a properly executed Internal Revenue Service, or IRS, Form W-8BEN (or successor form) and certify under penalty of perjury that such holder is not a U.S. person as defined under the Code and is eligible for treaty benefits or (b) if our common stock is held through certain foreign intermediaries, satisfy the relevant certification requirements of applicable U.S. Treasury Regulations. Special certification and other requirements apply to certain non-U.S. holders that are pass-through entities rather than corporations or individuals. Non-U.S. holders are urged to consult their tax advisors regarding their entitlement to benefits under a relevant income tax treaty.

A non-U.S. holder that is eligible for a reduced rate of U.S. withholding tax under an income tax treaty may obtain a refund of any excess amounts withheld by timely filing a claim for refund with the IRS.

Gain on sale, exchange or other disposition of our common stock

In general, a non-U.S. holder will not be subject to any U.S. federal income tax on any gain realized upon such holder's sale, exchange or other disposition of shares of our common stock unless:

- the gain is effectively connected with the non-U.S. holder's conduct of a U.S. trade or business and, if an applicable income tax treaty so provides, is attributable to a permanent establishment or a fixed base maintained by such non-U.S. holder in the United States, in which case the non-U.S. holder generally will be taxed at the graduated U.S. federal income tax rates applicable to U.S. persons (as defined in the Code) and, if the non-U.S. holder is a foreign corporation, the branch profits tax described above in "Distributions on our common stock" also may apply;
- the non-U.S. holder is a nonresident alien individual who is present in the United States for 183 days or more in the taxable year of the disposition and certain other conditions are met, in which case the non-U.S. holder will be subject to a 30 percent tax (or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence) on the net gain derived from the disposition, which may be offset by certain U.S. source capital losses of the non-U.S. holder, if any; or
- we are, or have been, a "U.S. real property holding corporation," which we do not believe that we are (and we do not believe we are likely to become one in the future).

U.S. federal estate tax

Shares of our common stock that are owned or treated as owned at the time of death by an individual who is not a citizen or resident of the United States, as specifically defined for U.S. federal estate tax purposes, are considered U.S. situs assets and will be included in the individual's gross estate for U.S. federal estate tax purposes. Such shares, therefore, may be subject to U.S. federal estate tax, unless an applicable estate tax or other treaty provides otherwise.

Backup withholding and information reporting

We must report annually to the IRS and to each non-U.S. holder the gross amount of the distributions on our common stock paid to such holder and the tax withheld, if any, with respect to such distributions. Non-U.S. holders may have to comply with specific certification procedures to establish that the holder is not a United States person (as defined in the Code) in order to avoid backup withholding at the applicable rate with respect to dividends on our common stock (assuming that the payor does not have actual knowledge or reason to know that such holder is a U.S. person).

Information reporting and backup withholding will generally apply to the proceeds of a disposition of our common stock by a non-U.S. holder effected within the United States or conducted through certain United States-related financial intermediaries, unless the holder certifies its status as a non-U.S. holder and satisfies certain other requirements, or otherwise

establishes an exemption (and assuming that the payor does not have actual knowledge or reason to know that such holder is a U.S. person). Non-U.S. holders should consult their own tax advisors regarding the application of the information reporting and backup withholding rules to them.

Copies of information returns may be made available to the tax authorities of the country in which the non-U.S. holder resides or is incorporated under the provisions of a specific treaty or agreement.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules from a payment to a non-U.S. holder can be refunded or credited against the non-U.S. holder's U.S. federal income tax liability, if any, provided that an appropriate claim is timely filed with the IRS.

Recent legislation relating to foreign entities

Recent legislation generally imposes a U.S. federal withholding tax at a rate of 30 percent on dividends on, or gross proceeds from the sale or other disposition of, our common stock paid to (i) a foreign financial institution unless such foreign financial institution agrees to verify, report and disclose its U.S. accountholders and meets certain other specified requirements or (ii) a non-financial foreign entity that is the beneficial owner of the payment unless such entity certifies that it does not have any substantial U.S. owners or provides the name, address and taxpayer identification number of each substantial U.S. owner and such entity meets certain other specified requirements. This legislation is effective with respect to dividends paid after December 31, 2013 and to gross proceeds from a sale or other disposition of our common stock occurring after December 31, 2016. Under certain circumstances, a non-U.S. holder may be eligible for refunds or credits of the tax. Non-U.S. holders should consult their own tax advisors regarding the possible implications of this legislation on their investment in our common stock.

Underwriting

We are offering the shares of common stock described in this prospectus through a number of underwriters. J.P. Morgan Securities LLC and Barclays Capital Inc. are acting as joint book-running managers of the offering and J.P. Morgan Securities LLC is acting as representative of the underwriters. We have entered into an underwriting agreement with the J.P. Morgan Securities LLC on behalf of the underwriters. Subject to the terms and conditions of the underwriting agreement, we have agreed to sell to the underwriters, and each underwriter has severally agreed to purchase, at the public offering price less the underwriting discounts and commissions set forth on the cover page of this prospectus, the number of shares of common stock listed next to its name in the following table:

Name	Number of Shares
J.P. Morgan Securities LLC	
Barclays Capital Inc.	
Total	

The underwriters are committed to purchase all the shares of common stock offered by us if they purchase any shares. The underwriting agreement also provides that if an underwriter defaults, the purchase commitments of non-defaulting underwriters may also be increased or the offering may be terminated.

The underwriters propose to offer the shares of common stock directly to the public at the initial public offering price set forth on the cover page of this prospectus and to certain dealers at that price less a concession not in excess of $ per share. After the initial public offering of the shares, the offering price and other selling terms may be changed by the underwriters. Sales of shares made outside of the United States may be made by affiliates of the underwriters. The representatives have advised us that the underwriters do not intend to confirm discretionary sales in excess of five percent of the shares of common stock offered in this offering. The offering of the shares of common stock by the underwriters is subject to receipt and acceptance and subject to the underwriters' right to reject any order in whole or in part.

The underwriters have an option to buy up to additional shares of common stock from us to cover sales of shares by the underwriters which exceed the number of shares specified in the table above. The underwriters have 30 days from the date of this prospectus to exercise this over-allotment option. If any shares are purchased with this over-allotment option, the underwriters will purchase shares in approximately the same proportion as shown in the table above. If any additional shares of common stock are purchased, the underwriters will offer the additional shares on the same terms as those on which the shares are being offered.

The underwriting fee is equal to the public offering price per share of common stock less the amount paid by the underwriters to us per share of common stock. The underwriting fee is $ per share. The following table shows the per share and the total underwriting fee to be paid to the underwriters assuming both no exercise and full exercise of the underwriters' option to purchase additional shares.

	Without over-allotment exercise	With full over-allotment exercise
Per Share	$	$
Total	$	$

We estimate that the total expenses of this offering, including registration, filing and listing fees, printing fees and legal and accounting expenses, but excluding the underwriting fee, will be approximately $. We have agreed to reimburse the underwriters for all expenses related to the clearance of this offering with the Financial Industry Regulatory Authority (in an amount not to exceed $30,000) and all expenses incurred in connection with the registration or qualification of the shares issued in this offering under state or foreign or blue sky laws (in an amount not to exceed $30,000).

A prospectus in electronic format may be made available on the web sites maintained by one or more underwriters, or selling group members, if any, participating in the offering. The underwriters may agree to allocate a number of shares to underwriters and selling group members for sale to their online brokerage account holders. Internet distributions will be allocated by the representatives to underwriters and selling group members that may make Internet distributions on the same basis as other allocations.

We have agreed that we will not (i) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, or otherwise transfer or dispose of, directly or indirectly, or file with the SEC a registration statement under the Securities Act relating to, any shares of our common stock or securities convertible into or exchangeable or exercisable for any shares of our common stock, or publicly disclose the intention to make any offer, sale, pledge, disposition or filing, or (ii) enter into any swap or other arrangement that transfers all or a portion of the economic consequences associated with the ownership of any shares of common stock or any such other securities (regardless of whether any such transaction described in (i) or (ii) is to be settled by the delivery of shares of common stock or such other securities, in cash or otherwise), in each case without the prior written consent of J.P. Morgan Securities LLC for a period of 180 days after the date of this prospectus, other than the shares of our common stock to be sold hereunder; any options exercisable for common stock granted under company stock plans in the ordinary course of business consistent with past practice; and any shares of our common stock issued upon the exercise of options granted under company stock plans or outstanding warrants.

Our directors and executive officers, and holders of a substantial majority of our common stock and securities convertible into or exchangeable for our common stock have entered into lock-up agreements with the underwriters prior to the commencement of this offering pursuant to which each of these persons or entities, with limited exceptions, for a period of 180 days after the date of this prospectus, may not, without the prior written consent of J.P. Morgan Securities LLC, (1) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, or otherwise transfer or dispose of, directly or indirectly, any shares of our common stock or any securities convertible into or exercisable or exchangeable for our common stock (including, without limitation, common stock or such other securities which may be deemed to be beneficially owned by such directors, executive officers, shareholders, managers and members in accordance with the rules and regulations of the SEC and securities which may be issued upon exercise of a stock option or

warrant), or publicly disclose the intention to make any offer, sale, pledge or disposition, (2) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the common stock or such other securities, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of common stock or such other securities, in cash or otherwise, or (3) make any demand for or exercise any right with respect to the registration of any shares of our common stock or any security convertible into or exercisable or exchangeable for our common stock. These lock-up restrictions are subject to limited exceptions that are specified in the lock-up agreements.

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act of 1933, or the Securities Act.

We intend to apply to have our common stock approved for listing on the New York Stock Exchange under the symbol “XON.”

In connection with this offering, the underwriters may engage in stabilizing transactions, which involves making bids for, purchasing and selling shares of common stock in the open market for the purpose of preventing or retarding a decline in the market price of the common stock while this offering is in progress. These stabilizing transactions may include making short sales of the common stock, which involves the sale by the underwriters of a greater number of shares of common stock than they are required to purchase in this offering, and purchasing shares of common stock on the open market to cover positions created by short sales. Short sales may be “covered” shorts, which are short positions in an amount not greater than the underwriters’ over-allotment option referred to above, or may be “naked” shorts, which are short positions in excess of that amount. The underwriters may close out any covered short position either by exercising their over-allotment option, in whole or in part, or by purchasing shares in the open market. In making this determination, the underwriters will consider, among other things, the price of shares available for purchase in the open market compared to the price at which the underwriters may purchase shares through the over-allotment option. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the common stock in the open market that could adversely affect investors who purchase in this offering. To the extent that the underwriters create a naked short position, they will purchase shares in the open market to cover the position.

The underwriters have advised us that, pursuant to Regulation M of the Securities Act, they may also engage in other activities that stabilize, maintain or otherwise affect the price of the common stock, including the imposition of penalty bids. This means that if the representatives of the underwriters purchase common stock in the open market in stabilizing transactions or to cover short sales, the representatives can require the underwriters that sold those shares as part of this offering to repay the underwriting discount received by them.

These activities may have the effect of raising or maintaining the market price of the common stock or preventing or retarding a decline in the market price of the common stock, and, as a result, the price of the common stock may be higher than the price that otherwise might exist in the open market. If the underwriters commence these activities, they may discontinue them at any time. The underwriters may carry out these transactions on the , in the over-the-counter market or otherwise.

Prior to this offering, there has been no public market for our common stock. The initial public offering price will be determined by negotiations among us and the representatives of the

underwriters. In determining the initial public offering price, we and the representatives of the underwriters expect to consider a number of factors including:

- the information set forth in this prospectus and otherwise available to the representatives;
- our prospects and the history and prospects for the industry in which we compete;
- an assessment of our management;
- our prospects for future earnings;
- the general condition of the securities markets at the time of this offering;
- the recent market prices of, and demand for, publicly traded common stock of generally comparable companies; and
- other factors deemed relevant by the underwriters and us.

Neither we nor the underwriters can assure investors that an active trading market will develop for our shares of common stock, or that the shares will trade in the public market at or above the initial public offering price.

The underwriters and their respective affiliates are full-service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. Certain of the underwriters and their affiliates have provided in the past to us and our affiliates and may provide from time to time in the future certain commercial banking, financial advisory, investment banking and other services for us and such affiliates in the ordinary course of their business, for which they have received and may continue to receive customary fees and commissions. In addition, from time to time, certain of the underwriters and their affiliates may effect transactions for their own account or the account of customers, and hold on behalf of themselves or their customers, long or short positions in our debt or equity securities or loans, and may do so in the future. Steven Frank, one of our directors, currently serves as Chairman of Global Healthcare Investment Banking at J.P. Morgan Securities LLC, the lead underwriter in this offering.

Selling restrictions

General

Other than in the United States, no action has been taken by us or the underwriters that would permit a public offering of the securities offered by this prospectus in any jurisdiction where action for that purpose is required. The securities offered by this prospectus may not be offered or sold, directly or indirectly, nor may this prospectus or any other offering material or advertisements in connection with the offer and sale of any such securities be distributed or published in any jurisdiction, except under circumstances that will result in compliance with the applicable rules and regulations of that jurisdiction. Persons into whose possession this prospectus comes are advised to inform themselves about and to observe any restrictions relating to the offering and the distribution of this prospectus. This prospectus does not constitute an offer to sell or a solicitation of an offer to buy any securities offered by this prospectus in any jurisdiction in which such an offer or a solicitation is unlawful.

United Kingdom

Each underwriter has represented and agreed that:

(1) it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the FSMA) received by it in connection with the issue or sale of our common shares in circumstances in which Section 21(1) of the FSMA does not apply to us; and

(2) it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to our common shares in, from or otherwise involving the United Kingdom.

European economic area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a "Relevant Member State") an offer to the public of any shares which are the subject of the offering contemplated by this prospectus (the "Shares") may not be made in that Relevant Member State, except that an offer to the public in that Relevant Member State of any Shares may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

(1) to any legal entity which is a qualified investor as defined in the Prospectus Directive;

(2) to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150, natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the representatives for any such offer; or

(3) in any other circumstances falling within Article 3(2) of the Prospectus Directive;

provided that no such offer of Shares shall result in a requirement for the publication by us or any underwriter of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer to the public" in relation to any Shares in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any Shares to be offered so as to enable an investor to decide to purchase any Shares, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State, the expression "Prospectus Directive" means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in the Relevant Member State, and the expression "2010 PD Amending Directive" means Directive 2010/73/EU.

Legal matters

The validity of the common stock being offered will be passed upon for us by Troutman Sanders LLP, Richmond, Virginia. The underwriters are represented by Goodwin Procter LLP, Boston, Massachusetts, in connection with certain legal matters related to this offering.

Experts

The consolidated financial statements of Intrexon Corporation as of December 31, 2012 and December 31, 2011, and for each of the two years in the period ended December 31, 2012, included in this prospectus have been so included in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

The financial statements of Immunologix, Inc. as of October 20, 2011 and for the period from January 1, 2011 through October 20, 2011, included in this prospectus have been so included in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

The financial statements of GT Life Sciences, Inc. as of October 5, 2011 and for the period from January 1, 2011 through October 5, 2011, included in this prospectus have been so included in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

Market and industry data

Unless otherwise indicated, information contained in this prospectus concerning the pharmaceutical industry, including our market opportunity, is based on information from independent industry analysts, third-party sources and management estimates. Management estimates are derived from publicly available information released by independent industry analysts and third-party sources, as well as data from our internal research, and are based on assumptions made by us based on such data and our knowledge of such industry and market, which we believe to be reasonable. In addition, while we believe the market opportunity information included in this prospectus is generally reliable and is based on reasonable assumptions, such data involves risks and uncertainties and are subject to change based on various factors, including those discussed under the heading “Risk factors.”

Where you can find more information

We have filed with the SEC a registration statement on Form S-1 under the Securities Act, with respect to the shares of common stock being offered by this prospectus. This prospectus does not contain all of the information in the registration statement and its exhibits. For further information with respect to us and the shares of common stock offered by this prospectus, we refer you to the registration statement and its exhibits. Statements contained in this prospectus as to the contents of any contract or any other document referred to are not necessarily complete, and in each instance, we refer you to the copy of the contract or other document filed as an exhibit to the registration statement. Each of these statements is qualified in all respects by this reference.

You can read our SEC filings, including the registration statement, over the Internet at the SEC's website at www.sec.gov. You may also read and copy any document we file with the SEC at its public reference facilities at 100 F Street NE, Washington, D.C. 20549. You may also obtain copies of these documents at prescribed rates by writing to the Public Reference Section of the SEC at 100 F Street NE, Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the public reference facilities. You may also request a copy of these filings, at no cost, by writing us at Marie L. Rossi, Ph.D., Intrexon Corporation, 20374 Seneca Meadows Parkway, Germantown, Maryland 20876 or telephoning us at (301) 556-9944.

Upon the closing of this offering, we will be subject to the information reporting requirements of the Exchange Act, and we will file reports, proxy statements and other information with the SEC. These reports, proxy statements and other information will be available for inspection and copying at the public reference room and web site of the SEC referred to above. We also maintain a website at *www.dna.com*, at which, following the closing of this offering, you may access these materials free of charge as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. The information contained in, or that can be accessed through, our website incorporated by reference in, and is not part of, this prospectus.

Table of Contents

Index to the Financial Statements

Table of Contents

Intrexon Corporation and Subsidiaries

Consolidated Financial Statements

March 31, 2013, and December 31, 2012 and 2011

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Intrexon Corporation

In our opinion, the accompanying consolidated balance sheets and the related consolidated statements of operations, consolidated statements of shareholders' deficit and consolidated statements of cash flows present fairly, in all material respects, the financial position of Intrexon Corporation and its subsidiaries at December 31, 2012 and December 31, 2011, and the results of their operations and their cash flows for each of the two years in the period ended December 31, 2012 in conformity with accounting principles generally accepted in the United States of America. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits of these statements in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

/s/ PricewaterhouseCoopers LLP
Charlotte, North Carolina
May 10, 2013

Intrexon Corporation and Subsidiaries
Consolidated Balance Sheets

(Amounts in thousands, except share and per share data)	March 31, 2013	December 31, 2012	December 31, 2011
	(Unaudited)		
Assets			
Current assets			
Cash and cash equivalents	$ 59,724	$ 10,403	$ 19,628
Short-term investments	274	260	258
Receivables			
Trade	181	141	20
Related parties	3,554	531	272
Other	26	35	1,050
Prepaid expenses and other	2,255	2,163	1,750
Total current assets	66,014	13,533	22,978
Equity securities	56,147	83,116	39,097
Property, plant and equipment, net	18,939	18,687	18,484
Intangible assets, net	43,681	29,506	32,533
Goodwill	13,846	—	—
Investment in affiliate	—	5,726	—
Other assets	1,058	1,078	1,736
Total assets	$ 199,685	$151,646	$114,828

The accompanying notes are an integral part of these consolidated financial statements.

Intrexon Corporation and Subsidiaries
Consolidated Balance Sheets

(Amounts in thousands, except share and per share data)	Pro forma liabilities, redeemable convertible preferred stock and total equity as of March 31, 2013	March 31, 2013	December 31, 2012	December 31, 2011
	(Unaudited)	(Unaudited)		
Liabilities, Redeemable Convertible Preferred Stock and Total Equity (Deficit)				
Current liabilities				
Accounts payable	$ 704	$ 704	$ 632	$ 3,100
Accrued compensation and benefits	3,873	3,873	3,766	1,325
Other accrued liabilities	2,641	2,641	2,208	3,982
Deferred revenue	9,886	9,886	9,963	1,402
Capital lease obligations, current	37	37	49	71
Current portion of long term debt	52	52	—	—
Related party payables	310	310	99	279
Subscriptions payable	—	200	—	7,440
Total current liabilities	17,503	17,703	16,717	17,599
Capital lease obligations, net of current portion	34	34	42	97
Long term debt, net of current portion	2,165	2,165	—	—
Deferred revenue	51,206	51,206	48,673	15,519
Other long term liabilities	1,033	1,033	1,108	1,191
Total liabilities	71,941	72,141	66,540	34,406
Commitments and contingencies (Note 12)				
Series A redeemable convertible preferred stock, no par value; $1.21 stated value (liquidation preference of $1,427, $1,406 and $1,327 as of March 31, 2013 (unaudited) and December 31, 2012 and 2011, respectively); 705,400 shares authorized, issued and outstanding at March 31, 2013 (unaudited) and December 31, 2012 and 2011; 705,400 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	1,379	1,358	802
Series B redeemable convertible preferred stock, no par value; $0.72 stated value (liquidation preference of $717, $709 and $679 as of March 31, 2013 (unaudited) and December 31, 2012 and 2011, respectively); 694,000 shares authorized, issued and outstanding at March 31, 2013 (unaudited) and December 31, 2012 and 2011; 694,000 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	677	669	639
Series B-1 redeemable convertible preferred stock, no par value; $0.83 stated value (liquidation preference of $1,395, $1,380 and $1,320 as of March 31, 2013 (unaudited) and December 31, 2012 and 2011, respectively); 1,212,360 shares authorized, issued and outstanding at March 31, 2013 (unaudited) and December 31, 2012 and 2011; 1,212,360 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	1,375	1,360	1,300
Series C redeemable convertible preferred stock, no par value; $1.10 stated value (liquidation preference of $7,269, $7,162 and $6,757 as of March 31, 2013 (unaudited) and December 31, 2012 and 2011, respectively); 4,546,360 shares authorized, issued and outstanding at March 31, 2013 (unaudited) and December 31, 2012 and 2011; 4,546,360 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	7,241	7,134	6,729
Series C-1 redeemable convertible preferred stock, no par value; $1.57 stated value (liquidation preference of $34,735, $34,222 and $32,285 as of March 31, 2013 (unaudited) and December 31, 2012 and 2011, respectively); 15,934,528 shares authorized, issued and outstanding at March 31, 2013 (unaudited) and December 31, 2012 and 2011; 15,934,528 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	34,714	34,201	32,264
Series C-2 redeemable convertible preferred stock, no par value; $1.88 stated value (liquidation preference of $45,283 and $44,614 and $42,089 as of March 31, 2013 (unaudited) and December 31, 2012 and 2011, respectively); 18,617,020 shares authorized, issued and outstanding at March 31, 2013 (unaudited) and December 31, 2012 and 2011; 18,617,020 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	45,181	44,512	41,987
Series C-3 redeemable convertible preferred stock, no par value; $1.88 stated value (liquidation preference of $30,260, $29,819 and $28,131 as of March 31, 2013 (unaudited) and December 31, 2012 and 2011, respectively); 13,297,872 shares authorized, issued and outstanding at March 31, 2013 (unaudited) and December 31, 2012 and 2011; 13,297,872 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	30,211	29,770	28,082
Series D redeemable convertible preferred stock, no par value; $3.38 stated value (liquidation preference of $77,480, $76,347 and $72,019 as of March 31, 2013 (unaudited) and December 31, 2012 and 2011, respectively); 19,803,685 shares authorized, issued and outstanding at March 31, 2013 (unaudited) and December 31, 2012 and 2011; 19,803,685 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	77,385	76,252	71,924

(Amounts in thousands, except share and per share data)	Pro forma liabilities, redeemable convertible preferred stock and total equity as of March 31, 2013	March 31, 2013	December 31, 2012	December 31, 2011
	(Unaudited)	(Unaudited)		
Series E redeemable convertible preferred stock, no par value; $5.25 stated value (liquidation preference of $217,266, $214,086 and $120,621 as of March 31, 2013 (unaudited) and December 31, 2012 and 2011, respectively); 38,095,239 shares and 28,571,429 shares authorized at December 31, 2012 and 2011, respectively; 38,095,239 shares and 22,285,716 shares issued and outstanding at December 31, 2012 and 2011, respectively; 38,095,239 shares authorized, issued and outstanding at March 31, 2013 (unaudited); 38,095,239 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	214,583	211,403	117,954
Series F redeemable convertible preferred stock, no par value; $7.88 stated value (liquidation preference of $64,727 as of March 31, 2013 (unaudited)); 19,047,619 shares authorized and 8,178,964 shares issued and outstanding at March 31, 2013 (unaudited); 19,047,619 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	63,200	—	—
Total equity (deficit)				
Common stock, no par value, 185,000,000 shares, 160,000,000 shares and 155,000,000 shares authorized as of March 31, 2013 (unaudited) and December 31, 2012 and 2011, respectively; 9,909,669, 9,907,669 and 9,544,312 shares issued and outstanding as of March 31, 2013 (unaudited) and December 31, 2012 and 2011, respectively; and shares authorized and shares issued and outstanding pro forma (unaudited)	—	—	—	—
Additional paid-in capital	476,146	—	—	—
Accumulated deficit	(363,471)	(363,471)	(321,553)	(221,259)
Accumulated other comprehensive loss	(9)	(9)	—	—
Total Intrexon shareholders' equity (deficit)	112,666	(363,480)	(321,553)	(221,259)
Noncontrolling interest	15,078	15,078	—	—
Total equity (deficit)	127,744	(348,402)	(321,553)	(221,259)
Total liabilities, redeemable convertible preferred stock and total equity (deficit)	$ 199,685	$ 199,685	$ 151,646	$ 114,828

The accompanying notes are an integral part of these consolidated financial statements.

Intrexon Corporation and Subsidiaries
Consolidated Statements of Operations

(Amounts in thousands, except share and per share data)	Three months ended March 31,		Year ended December 31,	
	2013	2012	2012	2011
	(Unaudited)			
Revenues				
Collaboration revenues	$ 3,864	$ 1,554	$ 13,706	$ 5,118
Other revenues	112	64	219	3,053
Total revenues	3,976	1,618	13,925	8,171
Operating Expenses				
Research and development	11,502	18,979	64,185	70,386
General and administrative	6,480	7,760	24,897	18,300
Other	—	—	—	1,912
Total operating expenses	17,982	26,739	89,082	90,598
Operating loss	(14,006)	(25,121)	(75,157)	(82,427)
Other Income (Expense)				
Unrealized appreciation (depreciation) in fair value of equity securities	(29,369)	11,215	(6,290)	(2,675)
Gain on previously held equity investment	7,415	—	—	—
Interest expense	(14)	(7)	(57)	(183)
Investment income	5	1	5	6
Other expense	(3)	—	(101)	(1)
Total other income (expense)	(21,966)	11,209	(6,443)	(2,853)
Equity in net loss of affiliate	(390)	—	(274)	—
Net loss	$ (36,362)	$ (13,912)	$ (81,874)	$ (85,280)
Net loss attributable to the noncontrolling interest	51	—	—	—
Net loss attributable to Intrexon	$ (36,311)	$ (13,912)	$ (81,874)	$ (85,280)
Accretion of dividends on redeemable convertible preferred stock, not declared	(6,405)	(5,460)	(21,994)	(13,868)
Net loss attributable to common shareholders	$ (42,716)	$ (19,372)	$ (103,868)	$ (99,148)
Net loss attributable to common shareholders per share, basic and diluted	$ (4.31)	$ (2.03)	$ (10.73)	$ (10.81)
Weighted average shares outstanding, basic and diluted	9,908,047	9,548,468	9,683,984	9,171,140
Unaudited pro forma net loss per common share (Note 14):				
Net loss per common share — basic and diluted				
Weighted average common shares — basic and diluted				

The accompanying notes are an integral part of these consolidated financial statements.

Intrexon Corporation and Subsidiaries
Consolidated Statements of Comprehensive Loss

(Amounts in thousands)	Three months ended March 31, 2013	Three months ended March 31, 2012	Year ended December 31, 2012	Year ended December 31, 2011
		(Unaudited)		
Net loss	$(36,362)	$(13,912)	$(81,874)	$(85,280)
Other comprehensive loss — foreign currency translation adjustments	(17)	—	—	—
Comprehensive loss	(36,379)	(13,912)	(81,874)	(85,280)
Comprehensive loss attributable to the noncontrolling interest	59	—	—	—
Comprehensive loss attributable to Intrexon	$(36,320)	$(13,912)	$(81,874)	$(85,280)

The accompanying notes are an integral part of these consolidated financial statements.

Intrexon Corporation and Subsidiaries
Consolidated Statements of Shareholders' and Total Deficit

(Amounts in thousands, except share data)	Common stock Shares	Common stock Amount	Additional paid-in capital	Accumulated other comprehensive loss	Accumulated deficit	Total Intrexon shareholders' deficit	Noncontrolling Interest	Total deficit
Balances at December 31, 2010	4,125,612	$ —	$ —	$ —	$ (127,734)	$ (127,734)	$ —	$ (122,734)
Stock-based compensation expense	—	—	983	—	—	983	—	983
Exercises of stock options	132,720	—	184	—	—	184	—	184
Acquisitions	5,283,766	—	4,237	—	—	4,237	—	4,237
Contribution of services by shareholder	—	—	210	—	—	210	—	210
Shares issued to nonemployee members of the Board of Directors	2,214	—	9	—	—	9	—	9
Accretion of dividends on redeemable convertible preferred shares	—	—	(5,623)	—	(8,245)	(13,868)	—	(13,868)
Net loss	—	—	—	—	(85,280)	(85,280)	—	(95,280)
Balances at December 31, 2011	9,544,312	—	—	—	(221,259)	(221,259)	—	(221,259)
Stock-based compensation expense	—	—	1,458	—	—	1,458	—	1,458
Exercises of stock options	340,497	—	473	—	—	473	—	473
Contribution of services by shareholder	—	—	1,550	—	—	1,550	—	1,550
Shares issued to nonemployee members of the Board of Directors	22,860	—	93	—	—	93	—	93
Accretion of dividends on redeemable convertible preferred shares	—	—	(3,574)	—	(18,420)	(21,994)	—	(21,994)
Net loss	—	—	—	—	(81,874)	(81,874)	—	(81,874)
Balances at December 31, 2012	9,907,669	—	—	—	(321,553)	(321,553)	—	(321,553)
Stock-based compensation expense (unaudited)	—	—	407	—	—	407	(20)	387
Exercises of stock options (unaudited)	2,000	—	3	—	—	3	4	7
Contribution of services by shareholder (unaudited)	—	—	388	—	—	388	—	388
Accretion of dividends on redeemable convertible preferred shares (unaudited)	—	—	(798)	—	(5,607)	(6,405)	—	(6,405)
Adjustments for noncontrolling interest (unaudited)	—	—	—	—	—	—	15,153	15,153
Net loss (unaudited)	—	—	—	—	(36,311)	(36,311)	(51)	(36,362)
Other comprehensive loss (unaudited)	—	—	—	(9)	—	(9)	(8)	(17)
Balances at March 31, 2013 (unaudited)	9,909,669	$ —	$ —	$ (9)	$ (363,471)	$ (363,480)	$ 15,078	$ (348,402)

The accompanying notes are an integral part of these consolidated financial statements.

Intrexon Corporation and Subsidiaries
Consolidated Statements of Cash Flows

(Amounts in thousands)	Three months ended March 31, 2013	Three months ended March 31, 2012	Year ended December 31, 2012	Year ended December 31, 2011
	(Unaudited)			
Cash flows from operating activities				
Net loss	$(36,362)	$(13,912)	$(81,874)	$(85,280)
Adjustments to reconcile net loss to net cash used in operating activities:				
Depreciation and amortization	1,871	1,891	7,984	4,338
Loss on disposal of property and equipment	3	—	101	1
Unrealized (appreciation) depreciation on equity securities	29,369	(11,215)	6,290	2,675
Collaboration revenue recognized upon achievement of milestone	—	—	(3,591)	—
Equity in net loss of affiliate	390	—	274	—
Gain on previously held equity investment	(7,415)	—	—	—
Stock-based compensation expense	387	153	1,458	983
Contribution of services by shareholder	388	388	1,550	210
Shares issued to nonemployee members of the Board of Directors	—	67	93	9
Changes in operating assets and liabilities:				
Receivables:				
Trade	(36)	(239)	(121)	33
Related parties	(3,223)	(4)	(93)	(239)
Other	18	929	1,015	(400)
Prepaid expenses and other	109	(1,026)	(413)	(772)
Other assets	42	84	658	(614)
Accounts payable	(66)	546	(1,229)	(388)
Accrued compensation and benefits	12	874	2,441	(2,249)
Other accrued liabilities	42	(323)	(806)	1,204
Deferred revenue	56	8,949	4,997	(2,245)
Related party payables	211	(224)	(180)	(215)
Other long term liabilities	(75)	57	(83)	1,191
Net cash used in operating activities	(14,279)	(13,005)	(61,529)	(81,758)
Cash flows from investing activities				
Purchases of short term investments	—	(1)	(2)	(188)
Purchases of equity securities	—	(10,000)	(10,000)	(22,628)
Acquisitions of businesses, net of cash received	512	—	—	(28,662)
Investment in affiliate	—	—	(6,000)	—
Purchases of property and equipment	(181)	(5,663)	(7,491)	(13,003)
Proceeds from sale of property and equipment	—	—	23	84
Issuance of related party note receivable	(300)	—	(200)	—
Proceeds from related party notes receivable	500	—	34	300
Net cash provided by (used in) investing activities	531	(15,664)	(23,636)	(64,097)

The accompanying notes are an integral part of these consolidated financial statements.

Intrexon Corporation and Subsidiaries
Consolidated Statements of Cash Flows

(Amounts in thousands)	Three months ended March 31, 2013	Three months ended March 31, 2012	Year ended December 31, 2012	Year ended December 31, 2011
	(Unaudited)			
Cash flows from financing activities				
Proceeds from issuance of Series D redeemable convertible preferred shares	—	—	—	26,442
Proceeds from issuance of Series E redeemable convertible preferred shares	—	25,560	75,560	101,835
Proceeds from issuance of Series F redeemable convertible preferred shares	64,409	—	—	—
Proceeds from issuance of subscriptions payable	200	16,664	—	7,440
Proceeds from short-term borrowings	—	—	—	15,000
Payments of capital lease obligations	(20)	(20)	(77)	(115)
Proceeds from stock option exercises	7	3	473	184
Payment of stock issuance costs	(1,527)	(6)	(16)	(2,675)
Net cash provided by financing activities	63,069	42,201	75,940	148,111
Net increase (decrease) in cash and cash equivalents	49,321	13,532	(9,225)	2,256
Cash and cash equivalents				
Beginning of period	10,403	19,628	19,628	17,372
End of period	$ 59,724	$ 33,160	$10,403	$ 19,628
Supplemental disclosure of cash flow information				
Cash paid during the period for interest	$ 2	$ 5	$ 12	$ 18
Significant noncash financing and investing activities				
Conversion of subscriptions payable into Series D redeemable convertible preferred shares	$ —	$ —	$ —	2,500
Conversion of subscriptions payable into Series E redeemable convertible preferred shares	—	7,440	7,440	—
Conversion of short-term borrowings and accrued interest into Series E redeemable convertible preferred shares	—	—	—	15,165
Accretion of dividends on redeemable convertible preferred shares	6,405	5,460	21,994	13,868
Stock received as consideration for collaboration agreements	2,400	—	21,979	19,144
Stock received as consideration upon achievement of milestone	—	—	18,330	—
Equity instruments issued in acquisitions	—	—	—	4,237
Purchases of equipment included in accounts payable and other accrued liabilities	—	—	24	2,231

The accompanying notes are an integral part of these consolidated financial statements.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

1. Organization and Basis of Presentation

Intrexon Corporation (the “Company” or “Intrexon”) was formed in 1998. The Company is a Virginia corporation. During 2011, the Company formed or acquired three subsidiaries in connection with certain acquisitions (Note 3). On March 15, 2013, the Company began consolidating AquaBounty Technologies, Inc. (“AquaBounty”) (Note 6). Intrexon uses synthetic biology for the fabrication of distinct products for collaboration with partners. The Company has operations in California, Florida, Maryland, North Carolina, South Carolina and Virginia. There are currently no treatments or products in production.

These consolidated financial statements are presented in U.S. dollars and are prepared under accounting principles generally accepted in the United States of America (“U.S. GAAP”).

2. Summary of Significant Accounting Policies

Principles of Consolidation

The accompanying consolidated financial statements reflect the operations of the Company and its wholly owned subsidiaries. All intercompany accounts and transactions have been eliminated.

Unaudited Financial Information

The accompanying consolidated interim balance sheet as of March 31, 2013, the consolidated statements of operations, of comprehensive loss, and cash flows for the three months ended March 31, 2013 and 2012, and the consolidated statement of shareholders’ and total deficit for the three months ended March 31, 2013 are unaudited. The unaudited interim consolidated financial statements have been prepared in accordance with U.S. GAAP on the same basis as the audited consolidated financial statements. In the opinion of management, the unaudited interim consolidated financial statements include all adjustments, consisting of normal recurring adjustments, necessary for a fair statement of the Company’s financial position as of March 31, 2013 and the Company’s results of its operations and cash flows for the three months ended March 31, 2013 and 2012. The results for the three months ended March 31, 2013 are not necessarily indicative of results to be expected for the year ending December 31, 2013 or any future period. All references to March 31 in these footnotes are unaudited.

Revenue Recognition

The Company generates revenue through contractual agreements with collaborative partners (known as exclusive channel collaborations, “ECC” or “ECCs”) whereby the partners obtain exclusive access to the Company’s proprietary technology for use in the research, development and commercialization of products and/or treatments in a contractually specified field of use. Generally, the terms of these collaborative agreements provide that the Company receive some or all of the following: (i) upfront payments upon consummation of the agreement, (ii) reimbursements for costs incurred by the Company for research and development and/or

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

manufacturing efforts related to specific application provided for in the agreement, (iii) milestone payments upon the achievement of specified development, regulatory and commercial activities, and (iv) royalties on sales of products arising from the collaboration.

The Company's collaboration agreements typically contain multiple elements, or deliverables, including technology licenses, research and development services, and in certain cases manufacturing services. Effective January 1, 2011, the Company adopted the provisions of Accounting Standards Update ("ASU") No. 2009-13, *Revenue Recognition (Topic 605): Multiple Deliverable Revenue Arrangements* ("ASU 2009-13"). In accordance with the provisions of ASU 2009-13, the Company identifies the deliverables within the agreements and evaluates which deliverables represent separate units of accounting. Analyzing the agreements to identify deliverables requires the use of judgment. A deliverable is considered a separate unit of accounting when the deliverable has value to the collaborative partner on a standalone basis based on the consideration of the relevant facts and circumstances for each agreement.

Consideration received is allocated at the inception of the agreement to all identified units of accounting based on their relative selling price. When available, the relative selling price for each deliverable is determined using vendor specific objective evidence ("VSOE") of selling price or third-party evidence of selling price, if VSOE does not exist. If neither VSOE nor third-party evidence of selling price exists, the Company uses its best estimate of the selling price ("BESP") for the deliverable. The amount of allocable consideration is limited to amounts that are fixed or determinable. The consideration received is allocated among the separate units of accounting, and the applicable revenue recognition criteria are applied to each of the separate units. The Company recognizes the revenue allocated to each unit of accounting as we deliver the related goods or services. If the Company determines that certain deliverables should be treated as a single unit of accounting, then the revenue is recognized using either a proportional performance or straight-line method, depending on whether the Company can reasonably estimate the level of effort required to complete its performance obligations under an arrangement and whether such performance obligations are provided on a best-efforts basis. As the Company cannot reasonably estimate its performance obligations related to its collaborators, the Company recognizes revenue on a straight-line basis over the period it expects to complete its performance obligations.

The terms of the Company's agreements may provide for milestone payments upon achievement of certain defined events. The Company applies ASU No. 2010-17, *Revenue Recognition — Milestone Method* ("ASU 2010-17" or "Milestone Method"). Under the Milestone Method, the Company recognizes consideration that is contingent upon the achievement of a milestone in its entirety as revenue in the period in which the milestone is achieved only if the milestone is substantive in its entirety. A milestone is considered substantive when it meets all of the following criteria:

(1) The consideration is commensurate with either the entity's performance to achieve the milestone or the enhancement of the value of the delivered item or items as a result of a specific outcome resulting from the entity's performance to achieve the milestone;

(2) The consideration relates solely to past performance; and

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

(3) The consideration is reasonable relative to all of the deliverables and payment terms with the arrangement.

In the event that a milestone is not considered substantive, the Company recognizes the milestone consideration as revenue using the same method applied to upfront payments.

Research and development services are a deliverable satisfied by the Company in accordance with the terms of the collaboration agreements and the Company considers these services to be inseparable from the license to the core technology; thus, reimbursements of services performed are recognized as revenue. Further, because reimbursement (i) is contingent upon performance of the services by the Company, (ii) does not include a profit component, and (iii) does not relate to any future deliverable, the revenue is recognized during the period in which the related services are performed and collection of such amounts is reasonable assured. Payments received from manufacturing services will be recognized when the earnings process related to the manufactured materials has been completed. Royalties to be received under the agreements will be recognized as earned.

The Company also generates revenue from other licenses of certain technologies and rental and other income from sublease agreements. License revenue is recognized on a straight-line basis over the term of the license agreement. Deferred revenue is recorded on the consolidated balance sheet when cash is received prior to the period in which the revenue is earned. Sublease and laboratory services revenues are recognized in the period in which they are earned.

Research and Development

The Company considers that regulatory and other uncertainties inherent in the research and development of new products preclude it from capitalizing such costs. Research and development expenses include salaries and related costs of research and development personnel, and the costs of consultants, facilities, materials and supplies associated with research and development projects as well as various laboratory studies. Indirect research and development costs include depreciation, amortization and other indirect overhead expenses.

The Company has research and development arrangements with third parties that include upfront and milestone payments. At December 31, 2012 and 2011, the Company had research and development commitments with third parties totaling $3,164 and $6,220, respectively, of which $1,431 and $1,665, respectively, had not yet been incurred. The commitments are generally cancellable by the Company at any time upon written notice. At March 31, 2013 (unaudited), the Company had research and development commitments with third parties totaling $3,181, of which $1,184 had not yet been incurred.

Cash and Cash Equivalents

All highly liquid investments with an original maturity of three months or less at the date of purchase are considered to be cash equivalents. Cash balances at a limited number of banks may periodically exceed insurable amounts. The Company believes that it mitigates its risk by

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

investing in or through major financial institutions. Recoverability of investments is dependent upon the performance of the issuer. At December 31, 2012 and 2011, the Company had cash equivalent investments in highly liquid money market accounts at major financial institutions of $9,384 and $18,833, respectively. At March 31, 2013 (unaudited), the Company had cash equivalent investments in highly liquid money market accounts at major financial institutions of $52,590.

Short-term Investments

Short-term investments include certificates of deposit with original maturities between three months and one year. The carrying amount of short-term investments approximates fair value due to the short maturities of these instruments, and there are no unrealized gains or losses associated with these instruments. Certificates of deposit classified as short-term investments totaled $260 and $258 at December 31, 2012 and 2011, respectively. Certificates of deposit classified as short-term investments totaled $274 at March 31, 2013 (unaudited).

Equity Securities

The Company holds equity securities received and/or purchased from certain collaborative partners. Other than securities accounted for using the equity method discussed below, the Company elected the fair value option to account for its equity securities held in these partners. These equity securities are recorded at fair value at each reporting date. Unrealized gains and losses resulting from fair value adjustments are reported in the consolidated statement of operations. These equity securities are classified as noncurrent in the consolidated balance sheet as the Company does not currently intend to sell these equity securities within one year. The Company has not sold any of these equity securities to date.

The Company records the fair value of securities received on the date the collaboration is consummated or the milestone is achieved using the closing, quoted price of the collaborator’s security on that date, assuming the transfer of consideration is considered perfunctory. If the transfer of the consideration is not considered perfunctory, the Company considers the specific facts and circumstances to determine the appropriate date on which to evaluate fair value. The Company also evaluates whether any discounts for trading restrictions or other basis for lack of marketability should be applied to the fair value of the securities at inception of the collaboration. In the event the Company concludes that a discount should be applied, the fair value of the securities is adjusted at inception of the collaboration and re-evaluated at each reporting period thereafter.

Fair Value of Financial Instruments

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset and liability. As a basis for considering such assumptions, the Company uses a three-tier fair value hierarchy that prioritizes the inputs used in

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

its fair value measurements. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). The three levels of the fair value hierarchy are as follows:

Level 1	Quoted prices in active markets for identical assets and liabilities;
Level 2	Other than quoted prices included in Level 1 inputs that are observable for the asset or liability, either directly or indirectly; and
Level 3	Unobservable inputs for the asset or liability used to measure fair value to the extent that observable inputs are not available.

As discussed in “Equity Securities” above, the Company elected the fair value option for the equity securities held in certain collaborative partners.

Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk consist principally of cash and cash equivalents and short-term investments.

Equity Method Investment

Through March 15, 2013, the Company accounted for its investment in AquaBounty, a biotechnology company focused on improving productivity in commercial aquaculture, using the equity method of accounting as the Company had the ability to exercise significant influence over, but not control, the operating activities of AquaBounty. Under the equity method of accounting, the Company included its pro-rata share of AquaBounty’s operating results, adjusted for accretion of basis difference, on a separate line in the consolidated statement of operations called “Equity in net loss of affiliate.” On the consolidated balance sheet as of December 31, 2012, the Company presented its investment in AquaBounty as a separate non-current asset called “Investment in affiliate.” The excess cost over the Company’s pro-rata share of AquaBounty’s net assets was identifiable intangible assets and equity-method goodwill. This equity-method goodwill was not amortized; however, the investment in AquaBounty was analyzed for impairment on a periodic basis or if an event occurred or circumstances changed that indicate the carrying amount may be impaired. See Note 6 for additional discussion of AquaBounty acquisition and resulting consolidation on March 15, 2013.

Variable Interest Entities

The Company identifies entities that either (1) do not have sufficient equity investment at risk to permit the entity to finance its activities without additional subordinated financial support or (2) in which the equity investors lack an essential characteristic of a controlling financial interest as variable interest entities (“VIE or VIEs”). The Company performs an initial and on-going evaluation of the entities with which the Company has variable interests to determine if any of these entities are a VIE. If an entity is identified as a VIE, the Company performs an assessment to

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

determine whether the Company has both (1) the power to direct activities that most significantly impact the VIE's economic performance and (2) have the obligation to absorb losses from or the right to receive benefits of the VIE that could potentially be significant to the VIE. If the Company has both these criterion, the Company is identified as the primary beneficiary of the VIE. As of December 31, 2011, the Company did not identify any VIEs. As of December 31, 2012, the Company's investment in affiliate, AquaBounty, is identified as a VIE. The Company is not the primary beneficiary for this entity as the Company does not have the power to direct the activities that most significantly impact the economic performance of the VIE. As of December 31, 2012, the total carrying value of the Company's investment in the VIE was $5,726, which is the investment in AquaBounty. On March 15, 2013, we began consolidating AquaBounty in our results of operations and financial position as a result of our ownership in AquaBounty exceeding 50% (Note 6). The Company's maximum exposure to loss related to this VIE as of December 31, 2012 was limited to the carrying value of the investment in affiliate. As of March 31, 2013 (unaudited), two of our collaborators, AmpliPhi Biosciences Corporation ("AmpliPhi") and Genopaver, LLC ("Genopaver"), were identified as VIEs. We are not the primary beneficiary for either of these entities as we do not have the power to direct the activities that most significantly impact the economic performance of the VIEs. As of March 31, 2013 (unaudited), the total carrying value of the Company's investment in the VIEs was $2,400, which is equal to the value of the equity securities holdings in those VIEs.

Property, Plant and Equipment

Property, plant and equipment are stated at cost, less accumulated depreciation and amortization. Major additions or betterments are charged to the property accounts while repairs and maintenance are generally expensed as incurred. Depreciation and amortization is calculated on the straight-line method over the estimated useful lives of the assets. The estimated useful lives of these assets are as follows:

	Years
Building	13
Furniture and fixtures	7
Lab equipment	2–7
Computer hardware	5–7
Software	3–5

Leasehold improvements are amortized over the shorter of the useful life of the asset or the applicable lease term, generally one to four years.

Goodwill

Goodwill is an asset that represents the future economic benefits arising from other assets acquired in a business combination that are not individually identified and separately recognized (Note 6). Goodwill is reviewed for impairment at least annually. In September 2011, the FASB issued ASU 2011-08, *Testing Goodwill for Impairment*, which provides the entity the option to perform a qualitative assessment to determine whether it is more-likely-than-not that the fair

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

value of a reporting unit is less than its carrying amount prior to performing the two-step goodwill impairment test. If this is the case, the two-step goodwill impairment test is required. If it is more-likely-than-not that the fair value of a reporting unit is greater than the carrying amount, the two-step goodwill impairment test is not required.

If the two-step goodwill impairment test is required, first, the fair value of the reporting unit is compared with its carrying amount (including goodwill). If the fair value of the reporting unit is less than its carrying amount, an indication of goodwill impairment exists for the reporting unit and the entity must perform step two of the impairment test. Under step two, an impairment loss is recognized for any excess of the carrying amount of the reporting unit's goodwill over the implied fair value of that goodwill. The implied fair value of goodwill is determined by allocating the fair value of the reporting unit in a manner similar to a purchase price allocation and the residual fair value after this allocation is the implied fair value of the reporting unit goodwill. Fair value of the reporting unit is determined using a discounted cash flow analysis. If the fair value of the reporting unit exceeds its carrying amount, step two does not need to be performed.

The Company intends to perform its annual impairment review of goodwill in the fourth quarter, or sooner if a triggering event occurs prior to the annual impairment review.

Intangible Assets

Intangible assets subject to amortization consist of patents and related technologies acquired as a result of the Company's mergers and acquisitions (Note 3) and a favorable lease asset acquired upon the assumption of a lease agreement. These intangible assets subject to amortization were recorded at fair value at the date of acquisition and are stated net of accumulated amortization. Indefinite-lived intangible assets consist of in-process research and development acquired as a result of a step acquisition (Note 6) and is recorded at fair value at the date of the step acquisition.

The Company applies the provisions of ASC Topic 350, *Intangibles, Goodwill and Other*, which requires the amortization of long-lived intangible assets to reflect the pattern in which the economic benefits of the intangible asset are expected to be realized. The intangible assets are amortized over their remaining estimated useful lives, ranging from seven to fourteen years for the patents and related technologies, and through the end of the original lease term, February 1, 2013, for the favorable lease asset.

Impairment of Long-Lived Assets

Long-lived assets to be held and used, including property, plant and equipment and intangible assets subject to amortization, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. Conditions that would necessitate an impairment assessment include a significant decline in the observable market value of an asset, a significant change in the extent or manner in which an asset is used, or a significant adverse change that would indicate that the carrying amount of an asset or group of assets is not recoverable.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Indefinite-lived intangible assets, including in-process research and development, are tested for impairment annually, or more frequently if events or circumstances between annual tests indicate that the asset may be impaired. Impairment losses on indefinite-lived intangible assets are recognized based solely on a comparison of their fair value to carrying value, without consideration of any recoverability test. The Company monitors the progression of its in-process research and development, as the likelihood of success is contingent upon regulatory approval.

Income Taxes

Income taxes are accounted for under the asset and liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to both differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases as well as operating loss and tax credit carryforwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date of the change. Valuation allowances are established when necessary to reduce deferred tax assets to the amount expected to be realized.

The Company identifies any uncertain income tax positions and recognizes the effect of income tax positions only if those positions are more likely than not of being sustained. Recognized income tax positions are measured at the largest amount that is greater than 50% likely of being realized. Changes in recognition or measurement are reflected in the period in which the change in judgment occurs. The Company records interest, if any, related to unrecognized tax benefits as a component of interest expense. Penalties, if any, are recorded in general and administrative expenses.

Unaudited Pro Forma Balance Sheet Information

In May 2013, the Company's board of directors authorized the management of the Company to file a registration statement with the Securities and Exchange Commission ("SEC") for the Company to sell shares of its common stock to the public. If the contemplated offering is completed, all of the redeemable convertible preferred stock outstanding, plus the cumulative dividends payable to the convertible preferred shareholders, will convert into shares of common stock. The cumulative dividends convert into common shares at a price per share equal to the fair market value of a common share at the time of conversion. The unaudited pro forma balance sheet information at March 31, 2013 gives effect to the conversion of all outstanding shares of the convertible preferred stock, plus accrued but unpaid preferred stock dividends, and subscriptions payable.

Net Loss per Share and Unaudited Pro Forma Net Loss per Share

Basic net loss per share is calculated by dividing net loss attributable to common shareholders by the weighted average shares outstanding during the period, without consideration of common stock equivalents. Diluted net loss per share is calculated by adjusting weighted average shares

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

outstanding for the dilutive effect of common stock equivalents outstanding for the period, determined using the treasury-stock method. For purposes of the diluted net loss per share calculation, preferred stock, stock options and warrants are considered to be common stock equivalents but are excluded from the calculation of diluted net loss per share because their effect would be anti-dilutive and, therefore, basic and diluted net loss per share were the same for all periods presented.

The calculations for the unaudited pro forma basic and diluted net loss per share assume the conversion of all outstanding shares of redeemable convertible preferred stock, plus the cumulative dividends payable to the convertible preferred shareholders, into shares of common stock upon the closing of a qualified initial public offering, as if the conversions had occurred at the beginning of the period or issuance date, if later. The unaudited pro forma net loss used in the calculations of unaudited pro forma basic and diluted net loss per share has been adjusted to remove the cumulative preferred stock dividends.

Segment Information

The Company has determined that it operates in one segment. The Company uses synthetic biology for the creation of distinct products for collaboration with partners. All of the Company's revenues are derived in the United States of America. As of December 31, 2012 and 2011, all of the Company's assets are located in the United States of America.

Recently Issued Accounting Pronouncements

In May 2011, the FASB issued ASU No. 2011-04, *Fair Value Measurement (Topic 820): Amendments to Achieve Common Fair Value Measurement and Disclosure Requirements in U.S. GAAP and IFRSs*. The new standards do not extend the use of fair value but, rather, provide guidance about how fair value should be applied where it already is required or permitted under International Financial Reporting Standards ("IFRS") or U.S. GAAP. For U.S. GAAP, most of the changes are clarifications of existing guidance or wording changes to align with IFRS. The Company adopted this amendment on January 1, 2012. The adoption of this amendment did not have a material impact on the Company's consolidated financial statements.

In June 2011, the FASB issued ASU No. 2011-05, *Comprehensive Income (Topic 220): Presentation of Comprehensive Income* ("ASU 2011-05"). Under this ASU, an entity will have the option to present the components of net income and comprehensive income in either one or two consecutive financial statements. The ASU eliminates the option in U.S. GAAP to present other comprehensive income in the statement of changes in equity. An entity should apply the ASU retrospectively. In December 2011, the FASB decided to defer the effective date of those changes in ASU 2011-05 that relate only to the presentation of reclassification adjustments in the statement of income by issuing ASU 2011-12, *Comprehensive Income (Topic 220): Deferral of the Effective Date for the Amendments to the Presentation of Reclassifications of Items Out of Accumulated Other Comprehensive Income in ASU 2011-05.* The Company has implemented the provisions of ASU 2011-05 as of January 1, 2012. The adoption of this amendment did not have a material impact on the Company's consolidated financial statements.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

In February 2013, the FASB issued ASU No. 2013-02, *Reporting of Amounts Reclassified Out of Accumulated Other Comprehensive Income* ("ASU 2013-02"). ASU 2013-02 requires that companies present either in a single note or parenthetically on the face of the financial statements, the effect of significant amounts reclassified from each component of accumulated other comprehensive income based on its source and the income statement line items affected by the reclassification. If a component is not required to be reclassified to net income in its entirety, companies would instead cross reference to the related footnote for additional information. ASU 2013-02 is effective for interim and annual reporting periods beginning after December 15, 2012. The Company will implement the provisions of ASU 2013-02 as of January 1, 2013. The adoption of this amendment did not have a material impact on the Company's consolidated financial statements.

In December 2011, the FASB issued ASU No. 2011-11, *Balance Sheet (Topic 210): Disclosures about Offsetting Assets and Liabilities* ("ASU 2011-11"). ASU 2011-11 requires an entity to disclose information about offsetting and related arrangements to enable users of financial statements to understand the effect of those arrangements on its financial position, and to allow investors to better compare financial statements prepared under U.S. GAAP with financial statements prepared under IFRS. The new standards are effective for annual periods beginning January 1, 2013 and interim periods within those annual periods. Retrospective application is required. The Company will implement the provisions of ASU 2011-11 as of January 1, 2013. The adoption of this amendment did not have a material impact on the Company's consolidated financial statements.

Reclassifications

Certain reclassifications have been made to the prior year consolidated financial statements to conform to the current year presentation.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting periods. Actual results could differ from those estimates.

3. Mergers and Acquisitions

Agarigen, Inc.

On January 26, 2011, the Company acquired 100% of the outstanding common stock of Agarigen, Inc. ("Agarigen"), a North Carolina-based company which developed a novel mushroom-based platform for the production of proteins, by merging Agarigen into a newly formed wholly-owned subsidiary. The acquisition allows the Company to combine Agarigen's technology with the Company's technology and capability in a specific agricultural sector. As consideration for the acquisition, the Company paid $1,178 cash and issued 675,750 shares of its common stock at

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

closing. The Company also issued 289,197 options to purchase the Company's common stock at strike prices ranging from $0.23 to $1.13 and issued warrants to purchase up to 894,423 shares of the Company's common stock at a price per share of $0.45. The results of Agarigen's operations subsequent to January 26, 2011 have been included in the consolidated financial statements.

The fair value of the total consideration transferred was $3,773. The acquisition date fair value of each class of consideration transferred was as follows:

Cash	$1,178
Common shares	1,014
Stock options and warrants	1,581
	$3,773

The fair value of the shares of the Company's common stock issued was based upon the value of the Company's common stock at the acquisition date determined under an option-pricing method as prescribed by the American Institute of Certified Public Accountants Practice Aid, *Valuation of Privately-Held Company Equity Securities Issued as Compensation* ("AICPA Practice Aid"). The option-pricing method treats common stock and preferred stock as call options on the enterprise's equity value, with exercise prices based on the liquidation preferences of the preferred stock. The fair value of stock options and warrants issued were determined in accordance with ASC Topic 718, *Compensation — Stock Compensation*. The estimated fair value of assets acquired and liabilities assumed at the acquisition date is as follows:

Cash	$ 334
Trade receivables	53
Other receivables	436
Prepaid expenses and other	11
Property and equipment	30
Intangible assets	3,122
Other assets	3
Total assets acquired	3,989
Accounts payable	60
Accrued compensation and benefits	65
Other accrued liabilities	91
Total liabilities assumed	216
Net assets acquired	$3,773

The fair value of acquired intangible assets was determined using the relief-from-royalty method, a variation of the income approach that estimates the benefit of owning the intangible assets rather than paying royalties for the right to use comparable assets. The acquired intangible assets are being amortized over the expected useful life of nine years and consist of acquired patents and related technology.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

The Company paid $110 of acquisition related costs, which are included in general and administrative expenses in the accompanying consolidated statement of operations for the year ended December 31, 2011.

The warrants were fully vested upon issuance, have an exercise price of $0.45 per share and expire in December 2017. The Company considered the applicable provisions of ASC No. 480, *Distinguishing Liabilities and Equity* and ASC No. 815, *Derivatives and Hedging* and determined the warrants should be classified as shareholders' equity.

GT Life Sciences, Inc.

On October 5, 2011, the Company acquired 100% of the outstanding common stock of GT Life Sciences, Inc. ("GT Life"), a California company, by merging a newly formed wholly-owned subsidiary with and into GT Life. The acquisition allows the Company to combine GT Life's technology with the Company's technology and capability for the development and deployment of high value production cell lines. The Company paid $14,250 cash at closing, which was the acquisition date fair value of the total consideration transferred. The results of GT Life's operations subsequent to October 5, 2011 have been included in the consolidated financial statements.

The estimated fair value of assets acquired and liabilities assumed at the acquisition date is as follows:

Cash	$ 21
Other receivables	161
Related party receivable	33
Prepaid expenses and other	1
Property and equipment	32
Intangible assets	14,094
Total assets acquired	14,342
Accounts payable	55
Accrued compensation and benefits	29
Other accrued liabilities	8
Total liabilities assumed	92
Net assets acquired	$14,250

The fair value of acquired intangible assets was determined using the multi-period excess earnings method, a variation of the income approach. The multi-period excess earnings method estimates the value of an intangible asset equal to the present value of the incremental after-tax cash flows attributable to the intangible asset. The acquired intangible assets are being amortized over the expected useful life of thirteen years and consist of acquired patents and related technology.

The Company paid $276 of acquisition related costs, which are included in general and administrative expenses in the accompanying consolidated statement of operations for the year ended December 31, 2011.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Immunologix, Inc.

On October 21, 2011, the Company acquired 100% of the outstanding preferred and common stock of Immunologix, Inc. ("Immunologix"), a South Carolina-based company specializing in therapeutic antibodies, by merging a newly formed wholly-owned subsidiary with and into Immunologix. The acquisition allows the Company to combine Immunologix's antibody technology with the Company's existing technology and capability. The Company paid $12,758 cash and issued 268,389 shares of its common stock at closing. The results of Immunologix's operations from October 21, 2011 have been included in the consolidated financial statements.

The transaction also includes a contingent consideration arrangement which may require the Company to pay the former shareholders of Immunologix 50% of revenue generated from Immunologix's antibody technology in a specific target defined in the agreement up to a maximum of $2,000. The potential undiscounted amount of all future payments that could be required under the contingent consideration arrangement is between $0 and $2,000. The fair value of the contingent consideration arrangement is estimated at $0 based on the risk-adjusted valuation performed by the Company.

The fair value of the total consideration transferred was $13,850. The acquisition date fair value of each class of consideration transferred was as follows:

Cash	$12,758
Common shares	1,092
	$13,850

The fair value of the shares of the Company's common stock issued was based upon the value of the Company's common stock at acquisition date determined by using a probability-weighted expected return method ("PWERM") as prescribed by the AICPA Practice Aid. The PWERM estimates the value of an enterprise's common stock based upon an analysis of current and future values for the enterprise assuming possible liquidity events. The PWERM considers the various terms of the Company's redeemable convertible preferred stock, including the rights for each share class, at the date in the future upon which these rights will either be executed or abandoned. The estimated fair value of assets acquired and liabilities assumed at the acquisition date is as follows:

Cash	$ 19
Other receivables	1
Prepaid expenses and other	6
Property and equipment	141
Intangible assets	13,921
Total assets acquired	14,088
Accounts payable	87
Accrued compensation and benefits	76
Long-term debt	75
Total liabilities assumed	238
Net assets acquired	$13,850

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

The fair value of acquired intangible assets was determined using the multi-period excess earnings method, a variation of the income approach. The multi-period excess earnings method estimates the value of an intangible asset equal to the present value of the incremental after-tax cash flows attributable to the intangible asset. The acquired intangible assets are being amortized over the expected useful life of thirteen years and consist of acquired patents and related technology.

The Company paid $293 of acquisition related costs, which are included in general and administrative expenses in the accompanying consolidated statement of operations for the year ended December 31, 2011.

Other Acquisition

In April 2011, the Company acquired certain tangible and intangible assets that were considered a business in accordance with ASC 805, *Business Combinations ("ASC 805")*, from a private California company for consideration of $1,400, including $850 cash and 162,722 shares of the Company's common stock valued at $550. The acquired intangible assets, which consist of acquired patents and related technology, are being amortized over the expected useful life of thirteen years.

Unaudited Condensed Pro Forma Financial Information

The results of operations of the mergers and acquisitions discussed above are included in the consolidated statements of operations beginning on their respective acquisition dates. The following unaudited condensed pro forma financial information for the year ended December 31, 2011 is presented as if the acquisitions had been consummated on January 1, 2011:

(Unaudited)	2011 Pro forma
Revenues	$ 9,146
Net loss	(89,116)
Accretion of dividends on redeemable convertible preferred stock, not declared	(13,868)
Net loss attributable to common shareholders	$ (102,984)
Net loss attributable to common shareholders per share, basic and diluted	$ (10.86)

4. Collaboration Revenue

Ziopharm Oncology, Inc. ECC

Effective January 6, 2011, the Company entered into a worldwide ECC with Ziopharm Oncology, Inc. ("Ziopharm"), a publicly traded small molecule late-stage oncology drug development company. Under the ECC, Ziopharm received a license to the Company's technology platform within the field of oncology as defined more specifically in the agreement. Upon execution of the ECC, the Company received 3,636,926 shares of Ziopharm's common stock valued at $17,457

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

as upfront consideration. The Company is entitled to additional shares of common stock representing the lesser of (i) the original shares received or (ii) the number of shares representing 7.495% of Ziopharm's outstanding shares at the date of the dosing of the first patient in a Phase II clinical trial of a product candidate created, produced or developed by Ziopharm using the Company's technology ("Ziopharm Milestone"). The Company receives reimbursement payments for research and development services provided and manufacturing services for Company materials provided to Ziopharm during the ECC. Subject to certain expense allocations, Ziopharm will pay the Company 50% of the quarterly net profits derived from the sale of products developed from the ECC. Ziopharm is responsible for conducting preclinical and clinical development of product candidates, as well as for other aspects of commercialization or manufacturing of product candidates. The term of the ECC commenced on January 6, 2011 and continues until terminated pursuant to the ECC agreement. The ECC may be terminated by either party in the event of certain material breaches defined in the agreement and may be terminated voluntarily by Ziopharm upon 90 days written notice to the Company provided that no voluntary termination by Ziopharm can be made during the first two years of the ECC. See Note 13 for additional transactions with Ziopharm.

The Company identified the deliverables at the inception of the ECC which include the license to the Company's technology platform, two clinical-stage product candidates, services to transition the two clinical-stage product candidates, participation on the joint steering committee ("JSC"), the research and development services, and any manufacturing services to be provided. The Company grouped the deliverables into three units of accounting based on the nature of the deliverables and the separation criteria: (i) the two clinical-stage product candidates and related services to transition these product candidates to Ziopharm ("Ziopharm Unit of Accounting 1"), which had standalone value to Ziopharm at inception of the ECC; (ii) the license to the Company's technology platform, the Company's participation on the JSC and research and development services to be provided ("Ziopharm Unit of Accounting 2"), as these deliverables could not be separated; and (iii) manufacturing services to be provided for any Company materials in an approved product from the ECC ("Ziopharm Unit of Accounting 3"), which have standalone value and are contingent due to uncertainties on whether an approved product would be developed and require manufacturing by the Company. As VSOE and third party evidence of selling price was not available or practical, the BESP for each unit of accounting was determined using a historical cost approach due to the early stage of development of the Company's technology. In establishing BESP for Ziopharm Unit of Accounting 1, the Company used the accumulated costs incurred as of the ECC by the Company on the two clinical programs that were transferred to Ziopharm to approximate the cost to recreate the deliverables included in this unit of accounting. In establishing BESP for Ziopharm Unit of Accounting 2, the Company used the accumulated costs incurred as of the ECC by the Company on its technology platform licensed to Ziopharm to approximate the cost to recreate the deliverables included in this unit of accounting. The upfront consideration was allocated to Ziopharm Unit of Accounting 1 and Ziopharm Unit of Accounting 2 based on the relative selling price method. Ziopharm Unit of Accounting 3 was determined to be a contingent deliverable at the inception of the ECC due to the uncertainties surrounding whether an approved product would be developed and require manufacturing by the Company. As a result of the relative selling price method, $1,115 of the

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

upfront consideration was allocated to Ziopharm Unit of Accounting 1, all of which was recognized as collaboration revenue for the year ended December 31, 2011 since the Company had completed its obligations to deliver this unit of accounting. The remaining $16,342 of upfront consideration was allocated to Ziopharm Unit of Accounting 2 and will be recognized over the expected life of the Company's technology platform using a straight-line approach. The Company recognized $1,257 of this allocated amount as collaboration revenue in each of the years ended December 31, 2012 and December 31, 2011. The remaining balance of $13,828 of upfront consideration allocated to Ziopharm Unit of Accounting 2 is recorded as deferred revenue at December 31, 2012, of which $1,257 is expected to be recognized in 2013. For the three months ended March 31, 2013 (unaudited), the Company recognized $314 as collaboration revenue. As of March 31, 2013 (unaudited), the remaining balance of $13,514 of upfront consideration allocated to Ziopharm Unit of Accounting 2 is included as deferred revenue.

The Company recognizes the reimbursement payments received for research and development services provided pursuant to the agreement in the period when the services are performed and collection is reasonably assured. On March 21, 2012, the Company received $10,000 from Ziopharm as a prepayment of research and development services to be provided in conjunction with the ECC. The Company recorded this amount as deferred revenue and recognizes collaboration revenue as services are performed. The Company recognized $6,333 of collaboration revenue for research and development services performed in the year ended December 31, 2012, of which $5,138 was applied against the $10,000 prepayment received. The balance of $4,862 is included in deferred revenue on the December 31, 2012 consolidated balance sheet. Any remaining balance of this prepayment is refundable to Ziopharm in the event the ECC is terminated. The Company recognized $2,724 of collaboration revenue for research and development services performed in the year ended December 31, 2011, of which $215 is included in related party receivables on the December 31, 2011 consolidated balance sheet. For the three months ended March 31, 2013 (unaudited), the Company recognized $1,430 of collaboration revenue for research and development services performed, all of which was applied against the prepayment balance. As of March 31, 2013 (unaudited), there was a remaining balance of $3,432 from the prepayment which was included in deferred revenue on the consolidated balance sheet.

At inception of the agreement, the Company determined that the Ziopharm Milestone is not substantive and cannot be recognized when earned in accordance with ASU 2010-17 as the Milestone Method substantive criteria discussed in Note 2 were not met. On October 24, 2012, the Ziopharm Milestone was achieved and the Company received 3,636,926 shares of Ziopharm's common stock valued at $18,330 as milestone consideration, which is the sole milestone under this ECC. Since the Ziopharm Milestone was not substantive, the Company allocated the milestone consideration to Ziopharm Unit of Accounting 1 and Ziopharm Unit of Accounting 2 using the same relative selling price allocation as the upfront consideration. As a result, $1,171 of the milestone consideration was allocated to Ziopharm Unit of Accounting 1 and immediately recognized as collaboration revenue for the year ended December 31, 2012 and the remaining $17,159 was allocated to Ziopharm Unit of Accounting 2. The Company recognized $2,420 of the milestone consideration allocated to Ziopharm Unit of Accounting 2 as collaboration revenue at the date the Ziopharm Milestone was achieved, which represented the amount that would have

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

been recognized from inception of the ECC through the milestone achievement date had the payment been received upfront. The remaining $14,739 was recorded as deferred revenue and will be recognized over the expected life of the Company's technology platform using a straight-line approach. The Company recognized $220 of this deferred milestone consideration for the year ended December 31, 2012 and the remaining $14,519 is included as deferred revenue on the December 31, 2012 consolidated balance sheet of which $1,320 is expected to be recognized in 2013. For the three months ended March 31, 2013 (unaudited), the Company recognized $330 as collaboration revenue. As of March 31, 2013 (unaudited), the remaining balance of $14,189 of deferred milestone consideration is included as deferred revenue.

Royalties related to product sales will be recognized when earned as the payments relate directly to products that have been fully developed and for which the Company has satisfied all of its obligations.

Synthetic Biologics, Inc. ECCs

Effective November 18, 2011, the Company entered into a worldwide ECC with Synthetic Biologics, Inc. ("Synthetic Biologics"), a publicly traded company focused on the development of innovative disease-modifying medicines for serious illnesses. Under the ECC, at the transaction effective date, Synthetic Biologics received a license to the Company's technology platform within a designated field ("Field One"). Upon execution of the ECC, the Company received 3,123,558 shares of Synthetic Biologics' common stock valued at $1,687 as upfront consideration. The Company is entitled to additional shares of common stock representing the lesser of (i) the original shares received or (ii) the number of shares representing 9.995% of Synthetic Biologics' outstanding shares at the date of the dosing of the first patient in a Phase II clinical trial of a product candidate created, produced or developed by Synthetic Biologics using the Company's technology ("Synthetic Biologics Field One Milestone"). The Company will receive reimbursement payments for research and development services provided pursuant to the agreement and manufacturing services for Company materials provided to Synthetic Biologics during the ECC. Subject to certain expense allocations, Synthetic Biologics will pay the Company 50% of the quarterly net profits derived from the sale of products developed from the ECC. Synthetic Biologics is responsible for conducting preclinical and clinical development of product candidates, as well as for other aspects of commercialization or manufacturing of the product candidates. The term of the ECC commenced on November 18, 2011 and continues until terminated pursuant to the ECC agreement. The ECC may be terminated by either party in the event of certain material breaches defined in the agreement and may be terminated voluntarily by Synthetic Biologics upon 90 days written notice to the Company provided that no voluntary termination by Synthetic Biologics can be made during the first 18 months of the ECC.

The Company identified the deliverables at the inception of the ECC which include the license to the Company's technology platform, participation on the JSC, the research and development services and any manufacturing services to be provided. The Company grouped the deliverables into two units of accounting based on the nature of the deliverables and the separation criteria: (i) the license to the Company's technology platform, the Company's participation on the JSC and

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

research and development services to be provided (“Synthetic Biologics Field One Unit of Accounting 1”), as these deliverables could not be separated, and (ii) manufacturing services to be provided for any Company materials in an approved product from the ECC (“Synthetic Biologics Field One Unit of Accounting 2”), which have standalone value and are contingent due to uncertainties on whether an approved product would be developed and require manufacturing by the Company. As VSOE and third party evidence of selling price was not available or practical, the BESP for each unit of accounting was determined using a historical cost approach due to the early stage of development of the Company’s technology. In establishing BESP for Synthetic Biologics Field One Unit of Accounting 1, the Company used the accumulated costs incurred as of the ECC by the Company on its technology platform licensed to Synthetic Biologics to approximate the cost to recreate the deliverables included in this unit of accounting. All upfront consideration was allocated to Synthetic Biologics Field One Unit of Accounting 1. Synthetic Biologics Field One Unit of Accounting 2 was determined to be a contingent deliverable at the inception of the ECC due to the uncertainties surrounding whether an approved product would be developed and require manufacturing by the Company. The $1,687 of upfront consideration was allocated to Synthetic Biologics Field One Unit of Accounting 1 and will be recognized over the expected life of the Company’s technology platform using a straight-line approach. The Company recognized $130 and $22 of collaboration revenue for the years ended December 31, 2012 and December 31, 2011, respectively. The remaining $1,535 is recorded as deferred revenue at December 31, 2012, of which $130 is expected to be recognized in 2013. For the three months ended March 31, 2013 (unaudited), the Company recognized $32 as collaboration revenue. As of March 31, 2013 (unaudited), the remaining balance of $1,503 of upfront consideration is included as deferred revenue.

At inception of the agreement, the Company determined that the Synthetic Biologics Milestone is not substantive and cannot be recognized when earned in accordance with ASU 2010-17 as the Milestone Method substantive criteria discussed in Note 2 were not met. Royalties related to product sales will be recognized when earned as the payments relate directly to products that have been fully developed and for which the Company has satisfied all of its obligations.

On August 6, 2012, the Company entered into its second worldwide ECC with Synthetic Biologics. Under this ECC, at the transaction effective date, Synthetic Biologics received a license to the Company’s technology platform within a second designated field (“Field Two”). Upon Synthetic Biologics’ shareholders’ approval on October 5, 2012, the Company received a technology access fee of 3,552,210 shares of Synthetic Biologics common stock valued at $7,815 as upfront consideration. Upon the filing by Synthetic Biologics of an investigational new drug application with the U.S. Food and Drug Administration, or FDA, the Company will receive cash or common stock at the option of Synthetic Biologics valued at $2,000. Upon the first to occur of either the first commercial sale of a product developed under the ECC or the granting of regulatory approval of a product developed under the ECC, the Company will receive cash or common stock at the option of Synthetic Biologics valued at $3,000. The ECC initially targets three infectious diseases and Synthetic Biologics may elect to target up to five more infectious diseases by paying the Company a field expansion fee of $2,000 in either cash or common stock for each additional infectious disease selected. The regulatory milestones and field expansion fee(s) are referred to

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

as the “Synthetic Biologics Field Two Milestones.” The Company receives reimbursement payments for research and development services provided pursuant to the agreement and manufacturing services for preclinical Company materials provided to Synthetic Biologics during the ECC. The Company has the option to propose, and Synthetic Biologics can select, the Company to be the bulk manufacturer of products developed from the ECC. On a quarterly basis, Synthetic Biologics will pay the Company royalties with percentages ranging from upper-single digits to lower double digits of net sales of products developed from the ECC. Synthetic Biologics is responsible for conducting preclinical and clinical development of product candidates, as well as for other aspects of commercialization and manufacturing of the product candidates. The term of the ECC commenced on August 6, 2012 and continues until terminated pursuant to the ECC agreement. The ECC may be terminated by either party in the event of certain material breaches defined in the agreement and may be terminated voluntarily by Synthetic Biologics upon 90 days written notice to the Company provided that no voluntary termination by Synthetic Biologics can be made during the first 18 months of the ECC.

The Company identified the deliverables at the inception of the ECC which include the license to the Company’s technology platform, participation on the JSC, the research and development services and the potential manufacturing services of a product(s) to be provided if the Company is elected as the manufacturer. The Company grouped the deliverables into two units of accounting based on the nature of the deliverables and the separation criteria: (i) the license to the Company’s technology platform, the Company’s participation on the JSC and research and development services to be provided (“Synthetic Biologics Field Two Unit of Accounting 1”), as these deliverables could not be separated, and (ii) the potential manufacturing services to be provided for a product(s) from the ECC (“Synthetic Biologics Field Two Unit of Accounting 2”), which have standalone value and are contingent due to uncertainties on whether an approved product would be developed and require manufacturing by the Company. As VSOE and third party evidence of selling price was not available or practical, the BESP for each unit of accounting was determined using a historical cost approach due to the early stage of development of the Company’s technology. In establishing BESP for Synthetic Biologics Field Two Unit of Accounting 1, the Company used the accumulated costs incurred as of the ECC by the Company on its technology platform licensed to Synthetic Biologics to approximate the cost to recreate the deliverables included in this unit of accounting. All up-front consideration was allocated to Synthetic Biologics Field Two Unit of Accounting 1. Synthetic Biologics Field Two Unit of Accounting 2 was determined to be a contingent deliverable at the inception of the ECC due to the uncertainties surrounding whether any approved products would be developed and whether the Company is elected by Synthetic Biologics to be the manufacturer of any approved products. The $7,815 of upfront consideration was allocated to Synthetic Biologics Field Two Unit of Accounting 1 and will be recognized over the expected life of the Company’s technology platform using a straight-line approach. The Company recognized $163 of collaboration revenue for the year ended December 31, 2012. The remaining $7,652 is recorded as deferred revenue at December 31, 2012, of which $651 is expected to be recognized in 2013. For the three months ended March 31, 2013 (unaudited), the Company recognized $163 as collaboration revenue. As of March 31, 2013 (unaudited), the remaining balance of $7,489 of upfront consideration is included as deferred revenue.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

At inception of the agreement, the Company determined that the Synthetic Biologics Field Two Milestones are not substantive and cannot be recognized when earned in accordance with ASU 2010-17 as the Milestone Method substantive criteria discussed in Note 2 were not met. Royalties related to product net sales will be recognized when earned as the Company has determined that these sales based milestones are not considered a milestone payment under ASU 2010-17.

The Company recognizes the reimbursement payments received for research services in the period when the services are performed and collection is reasonably assured. The Company recognized $327 of collaboration revenue for research and development services performed in the year ended December 31, 2012 for both ECCs with Synthetic Biologics. On December 17, 2012, the Company received $2,500 from Synthetic Biologics as a prepayment of research and development services to be provided in conjunction with the two ECCs. The Company recorded this amount as deferred revenue and recognizes collaboration revenue as services are performed. Of the $327 of collaboration revenue recognized in the year ended December 31, 2012, $133 was applied against the $2,500 prepayment received. The balance of $2,367 is included in deferred revenue on the December 31, 2012 consolidated balance sheet. Any remaining balance of this prepayment is refundable to Synthetic Biologics in the event both ECCs are terminated. For the three months ended March 31, 2013 (unaudited), the Company recognized $375 of collaboration revenue for research and development services performed, all of which was applied against the prepayment balance. As of March 31, 2013 (unaudited), there was a remaining balance of $1,992 from the prepayment which was included in deferred revenue on the consolidated balance sheet.

See Notes 13 and 16 for further discussion related to the Synthetic Biologics ECCs.

Elanco ECC

Effective November 28, 2011, the Company entered into a worldwide ECC with Elanco, the animal health division of Eli Lilly and Company (“Elanco”). The Company received cash upfront and is entitled to additional amounts up to an aggregate of $2,250 per product candidate based on the occurrence of separate performance, regulatory and sales-based milestones. The Company receives reimbursement payments for research services provided to Elanco during the ECC up to a certain maximum per calendar year. Elanco will pay the Company royalties with percentages ranging from mid-to-upper single digits to lower double digits based on net sales of products developed from the ECC. The term of the ECC commenced on November 28, 2011 and continues until terminated pursuant to the agreement. The ECC may be terminated by either party in the event of certain material breaches and may be voluntarily terminated in its entirety or on target-by-target basis upon 90 days written notice to the Company or 180 days written notice if the Company is performing research services on a product target.

The Company identified the deliverables at the inception of the ECC which are the license to the Company’s technology platform, participation on the ECC’s JSC, the research services and potential manufacturing services. The Company grouped the deliverables into two units of accounting based on the nature of the deliverables and the separation criteria: (i) the license to the Company’s technology platform, the Company’s participation on the JSC and research services to be provided (“Elanco Unit of Accounting 1”), as these deliverables could not be

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

separated, and (ii) if approved by Elanco, manufacturing services to be provided for any Company materials in an approved product from the ECC ("Elanco Unit of Accounting 2"), which have standalone value and are contingent due to uncertainties on whether an approved product would be developed and require manufacturing by the Company. As VSOE and third party evidence of selling price was not available or practical, the BESP for each unit of accounting was determined using a historical cost approach due to the early stage of development of the Company's technology. In establishing BESP for Elanco Unit of Accounting 1, the Company used the accumulated costs incurred as of the ECC by the Company on its technology platform licensed to Elanco to approximate the cost to recreate the deliverables included in this unit of accounting. All the upfront consideration was allocated to Elanco Unit of Accounting 1. Elanco Unit of Accounting 2 was determined to be a contingent deliverable at the inception of the ECC due to the uncertainties surrounding whether an approved product would be developed and whether the Company would be approved by Elanco to provide such manufacturing. The upfront consideration was allocated to Elanco Unit of Accounting 1 and will be recognized over the expected life of the Company's technology platform using a straight-line approach.

The Company recognizes the reimbursement payments received for research services provided pursuant to the agreement in the period when the services are performed and collection is reasonably assured. The Company recognized $587 of collaboration revenue for research and development services performed in the year ended December 31, 2012, of which $102 is included as trade receivables on the December 31, 2012 consolidated balance sheet. For the three months ended March 31, 2013 (unaudited), the Company recognized $88 of collaboration revenue for research and development services performed, of which $54 is included as trade receivables on the March 31, 2013 unaudited consolidated balance sheet.

At inception of the agreement, the Company determined that the performance milestone is substantive and can be recognized when earned in accordance with ASU 2010-17 as the milestone met all the criteria required by ASU 2010-17 to be considered substantive. The regulatory milestone is not substantive as the milestone did not meet all of the criteria required by ASU 2010-17 to be considered substantive. The sales-based milestone and royalties will be recognized when earned as the payments relate directly to products that have been fully developed and for which the Company has satisfied all of its obligations.

Oragenics, Inc. ECC

Effective June 5, 2012, the Company entered into a worldwide ECC with Oragenics, Inc. ("Oragenics"), a publicly traded company focused on becoming the world leader in novel antibiotics against infectious disease and probiotics for oral health for humans and pets. Under the ECC, at the transaction effective date, Oragenics received a license to the Company's technology platform within the field of lantibiotics for the treatment of infectious diseases in humans and companion animals as defined more specifically in the agreement. Upon execution of the ECC, the Company received a technology access fee of 4,392,425 shares of Oragenics' common stock valued at $6,588 as upfront consideration. The Company is entitled to receive additional shares of common stock, or at Oragenics' option, receive a cash payment based upon

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

the fair market value of the shares, upon the separate achievement of certain regulatory milestones of the first product candidate developed from the ECC ("Oragenics Milestones"). The Oragenics Milestones include: (i) 1% of Oragenics' outstanding shares as defined in the ECC agreement at the date of the filing of the first Investigative New Drug Application with the U.S. Food and Drug Administration ("U.S. FDA") for a product candidate created, produced or developed using the Company's technology ("Oragenics Product"); (ii) 1.5% of Oragenics' outstanding shares as defined in the ECC agreement at the date of the dosing of the first patient in the first Phase II clinical trial of an Oragenics Product; (iii) 2% of Oragenics' outstanding shares as defined in the ECC agreement at the date of the dosing of the first patient in the first Phase III clinical trial of an Oragenics Product; (iv) 2.5% of Oragenics' outstanding shares as defined in the ECC agreement at the date of the first New Drug Application or Biologics License Application with the U.S. FDA for an Oragenics Product, or alternatively the first equivalent regulatory filing with a foreign agency; and (v) 3% of Oragenics' outstanding shares as defined in the ECC agreement at the date of the granting of the first regulatory approval of an Oragenics Product. The Company receives reimbursement payments for research and development services provided pursuant to the agreement during the ECC and manufacturing services for Company materials provided to Oragenics during the ECC. Oragenics will pay the Company 25% of the quarterly profits derived from the sale of products developed from the ECC.

Oragenics is responsible for funding the further development of lantibiotics toward the goal of commercialization, conducting preclinical and clinical development of product candidates, as well as for other aspects of commercialization or manufacturing of the product candidates. The term of the ECC commenced on June 5, 2012 and continues until terminated pursuant to the ECC agreement. The ECC may be terminated by either party in the event of certain material breaches defined in the agreement and may be terminated voluntarily by Oragenics upon 90 days written notice to the Company provided that no voluntary termination by Oragenics can be made during the first 18 months of the ECC. See Note 13 for additional arrangements with Oragenics.

The Company identified the deliverables at the inception of the ECC which include the license to the Company's technology platform, participation on the JSC, the research and development services and any manufacturing services to be provided. The Company grouped the deliverables into two units of accounting based on the nature of the deliverables and the separation criteria: (i) the license to the Company's technology platform, the Company's participation on the JSC and research and development services to be provided ("Oragenics Unit of Accounting 1"), as these deliverables could not be separated, and (ii) any manufacturing services to be provided for any Company materials in an approved product from the ECC ("Oragenics Unit of Accounting 2"), which have standalone value and are contingent due to uncertainties on whether an approved product would be developed and require manufacturing by the Company. As VSOE and third party evidence of selling price was not available or practical, the BESP for each unit of accounting was determined using a historical cost approach due to the early stage of development of the Company's technology. In establishing BESP for Oragenics Unit of Accounting 1, the Company used the accumulated costs incurred as of the ECC by the Company on its technology platform licensed to Oragenics to approximate the cost to recreate the deliverables included in this unit of accounting. All upfront consideration was allocated to Oragenics Unit of Accounting 1. Oragenics

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Unit of Accounting 2 was determined to be a contingent deliverable at the inception of the ECC due to the uncertainties surrounding whether an approved product would be developed and require manufacturing by the Company and whether the Company would elect to be the manufacturer. The $6,588 of upfront consideration was allocated to Oragenics Unit of Accounting 1 and will be recognized over the expected life of the Company's technology platform using a straight-line approach. The Company recognized $320 of collaboration revenue for the year ended December 31, 2012. The remaining balance of $6,268 is recorded as deferred revenue at December 31, 2012, of which $549 is expected to be recognized in 2013. For the three months ended March 31, 2013 (unaudited), the Company recognized $137 as collaboration revenue. As of March 31, 2013 (unaudited), the remaining balance of $6,131 of upfront consideration is included as deferred revenue.

The Company recognizes the reimbursement payments received for research services in the period when the services are performed and collection is reasonably assured. The Company recognized $516 of collaboration revenue for research and development services performed in the year ended December 31, 2012, of which $270 is included as related party receivables on the December 31, 2012 consolidated balance sheet. For the three months ended March 31, 2013 (unaudited), the Company recognized $379 of collaboration revenue for research and development services performed, of which $224 is included as related party receivables on the March 31, 2013 unaudited consolidated balance sheet.

At inception of the agreement, the Company determined that the Oragenics Milestones are not substantive and cannot be recognized when earned in accordance with ASU 2010-17 as the Milestone Method substantive criteria discussed in Note 2 were not met. Royalties related to product sales will be recognized when earned as the payments relate directly to products that have been fully developed and for which the Company has satisfied all of its obligations.

Fibrocell Science, Inc. ECC

Effective October 5, 2012, the Company entered into an ECC with Fibrocell Science, Inc. ("Fibrocell"), a publicly traded, autologous cellular therapeutic company focused on the development of innovative products for aesthetic, medical and scientific applications. Under the ECC, at the transaction effective date, Fibrocell received a license to the Company's technology platform to develop and commercialize genetically modified and non-genetically modified autologous fibroblasts and autologous dermal cells in the United States of America. Upon execution of the ECC, the Company received a technology access fee of 1,317,520 shares of Fibrocell's common stock valued at $7,576 as upfront consideration. The number of shares received reflects a 1-for-25 reverse stock split of Fibrocell's common stock effective April 30, 2013. The Company receives reimbursement payments for research and development services provided pursuant to the agreement during the ECC and manufacturing services for Company materials provided to Fibrocell during the ECC. On a quarterly basis, Fibrocell will pay the Company royalties of 7% of net sales up to $25,000 and 14% of net sales above $25,000 on each product developed from the ECC. If Fibrocell uses the Company's technology platform to improve the production of a current or new Fibrocell products not developed from the ECC, Fibrocell will pay

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

the Company a quarterly royalty equal to 33% of the cost of goods sold savings generated by the improvement. Fibrocell is responsible for conducting preclinical and clinical development of product candidates, as well as for other aspects of commercialization and manufacturing of the product candidates. The term of the ECC commenced on October 5, 2012 and continues until terminated pursuant to the ECC agreement. The ECC may be terminated by either party in the event of certain material breaches defined in the agreement and may be terminated voluntarily by Fibrocell upon 90 days written notice to the Company.

The Company identified the deliverables at the inception of the ECC which include the license to the Company's technology platform, participation on the JSC, the research and development services and any manufacturing services to be provided. The Company grouped the deliverables into two units of accounting based on the nature of the deliverables and the separation criteria: (i) the license to the Company's technology platform, the Company's participation on the JSC and research and development services to be provided ("Fibrocell Unit of Accounting 1"), as these deliverables could not be separated, and (ii) any manufacturing services to be provided for any Company materials in an approved product from the ECC ("Fibrocell Unit of Accounting 2"), which have standalone value and are contingent due to uncertainties on whether an approved product would be developed and require manufacturing by the Company. As VSOE and third party evidence of selling price was not available or practical, the BESP for each unit of accounting was determined using a historical cost approach due to the early stage of development of the Company's technology. In establishing BESP for Fibrocell Unit of Accounting 1, the Company used the accumulated costs incurred as of the ECC by the Company on its technology platform licensed to Fibrocell to approximate the cost to recreate the deliverables included in this unit of accounting. All upfront consideration was allocated to Fibrocell Unit of Accounting 1. Fibrocell Unit of Accounting 2 was determined to be a contingent deliverable at the inception of the ECC due to the uncertainties surrounding whether an approved product would be developed and require manufacturing by the Company and whether the Company would elect to be the manufacturer. The $7,576 of upfront consideration was allocated to Fibrocell Unit of Accounting 1 and will be recognized over the expected life of the Company's technology platform using a straight-line approach. The Company recognized $158 of collaboration revenue for the year ended December 31, 2012. The remaining balance of $7,418 is recorded as deferred revenue at December 31, 2012, of which $631 is expected to be recognized in 2013. For the three months ended March 31, 2013 (unaudited), the Company recognized $158 as collaboration revenue. As of March 31, 2013 (unaudited), the remaining balance of $7,260 of upfront consideration is included as deferred revenue.

The Company recognizes the reimbursement payments received for research services in the period when the services are performed and collection is reasonably assured. The Company recognized $61 of collaboration revenue for research and development services performed in the year ended December 31, 2012, of which the entire amount is included as related party receivables on the December 31, 2012 consolidated balance sheet. For the three months ended March 31, 2013 (unaudited), the Company recognized $430 of collaboration revenue for research and development services performed, of which $330 is included as related party receivables on the March 31, 2013 unaudited consolidated balance sheet.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Royalties related to product net sales will be recognized when earned as the payments relate directly to products that have been fully developed and for which the Company has satisfied all of its obligations.

AmpliPhi ECC

Effective March 29, 2013, the Company entered into a worldwide ECC with AmpliPhi, a developer of bacteriophage-based antibacterial therapies to treat drug resistant infections. Under the ECC, at the transaction effective date, AmpliPhi received a license to the Company's technology platform to develop and commercialize new bacteriophage-based therapies to target specific antibiotic resistant infections as defined more specifically in the agreement. Upon execution of the ECC, the Company received a technology access fee of 24,000,000 shares of AmpliPhi's common stock valued at $2,400 as upfront consideration. The Company is entitled to additional consideration up to an aggregate amount of $7.5 million per product payable either in cash or common stock at the option of AmpliPhi, upon the achievement of certain regulatory milestones ("AmpliPhi Milestones"). The Company receives reimbursement payments for research and development services provided pursuant to the agreement during the ECC and manufacturing services for Company materials provided to AmpliPhi during the ECC. On a quarterly basis, AmpliPhi will pay the Company royalties with percentages ranging from upper-single digits to lower-double digits of net sales of products developed under the ECC. AmpliPhi is responsible for conducting preclinical and clinical development of product candidates, as well as other aspects of commercialization and manufacturing of the product candidates. The term of the ECC commenced on March 29, 2013 and continues until terminated pursuant to the ECC agreement. The ECC may be terminated by either party in the event of certain material breaches defined the agreement and may be terminated voluntarily by AmpliPhi upon 90 days written notice to the Company.

The Company identified the deliverables at the inception of the ECC which include the license to the Company's technology platform, participation on the JSC, the research and development services and any manufacturing services to be provided. The Company grouped the deliverables into two units of accounting based on the nature of the deliverables and the separation criteria: (i) the license to the Company's technology platform, the Company's participation on the JSC and research and development services to be provided ("AmpliPhi Unit of Accounting 1"), as these deliverables could not be separated, and (ii) any manufacturing services to be provided for any Company materials in an approved product from the ECC ("AmpliPhi Unit of Accounting 2"), which have standalone value and are contingent due to uncertainties on whether an approved product would be developed and require manufacturing by the Company. As VSOE and third party evidence of selling price was not available or practical, the BESP for each unit of accounting was determined using a historical cost approach due to the early stage of development of the Company's technology. In establishing BESP for AmpliPhi Unit of Accounting 1, the Company used the accumulated costs incurred as of the ECC by the Company on its technology platform licensed to AmpliPhi to approximate the cost to recreate the deliverables included in this unit of accounting. All upfront consideration was allocated to AmpliPhi Unit of Accounting 1. AmpliPhi Unit of Accounting 2 was determined to be a contingent deliverable at the inception of the ECC

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

due to the uncertainties surrounding whether an approved product would be developed and require manufacturing by the Company and whether the Company would elect to be the manufacturer. The $2,400 of upfront consideration, which is included in deferred revenue on the March 31, 2013 unaudited consolidated balance sheet, was allocated to AmpliPhi Unit of Accounting 1 and will be recognized over the expected life of the Company's technology platform using a straight-line approach.

The Company recognizes the reimbursement payments received for research services as collaboration revenue in the period when the services are performed and collection is reasonably assured. At inception of the agreement, the Company determined that the AmpliPhi Milestones are not substantive and cannot be recognized when earned in accordance with ASU 2010-17 as the Milestone Method substantive criteria discussed in Note 2 were not met. Royalties related to product sales will be recognized when earned as the payments relate directly to products that have been fully developed and for which the Company has satisfied all of its obligations.

Genopaver ECC

Effective March 29, 2013, the Company entered into a worldwide ECC with Genopaver, a limited liability company formed by affiliates of Third Security, LLC (Note 13). Genopaver was formed for the purpose of entering into the ECC and developing and commercializing products in the field of the fermentative production of alkaloids through genetically modified cell-lines and substrate feeds for use as active pharmaceutical ingredients or as commercially sold intermediates in the manufacture of active pharmaceutical ingredients. Upon execution of the ECC, the Company received a technology access fee of $3,000 as upfront consideration. The Company receives reimbursement payments for research and development services provided pursuant to the agreement during the ECC. Genopaver will pay the Company a royalty as a percentage in the lower-double digits on the quarterly gross profits of product sales from products developed under the ECC. Genopaver is responsible for the development and commercialization of the product candidates. The term of the ECC commenced on March 29, 2013 and continues until terminated pursuant to the ECC agreement. The ECC may be terminated by either party in the event of certain material breaches defined in the agreement and may be terminated voluntarily by Genopaver upon 90 days written notice to the Company.

The Company identified the deliverables at the inception of the ECC which include the license to the Company's technology platform, participation on the JSC, and the research and development services to be provided. The Company grouped the deliverables into one unit of accounting based on the nature of the deliverables and the separation criteria: (i) the license to the Company's technology platform, the Company's participation on the JSC and research and development services to be provided ("Genopaver Unit of Accounting"), as the deliverables could not be separated. As VSOE and third party evidence of selling price was not available or practical, the BESP for each unit of accounting was determined using a historical cost approach due to the early stage of development of the Company's technology. In establishing BESP for Genopaver Unit of Accounting, the Company used the accumulated costs incurred as of the ECC by the Company on its technology platform licensed to Genopaver to approximate the cost to recreate

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

the deliverables included in the unit of accounting. The $3,000 of upfront consideration, which is included in deferred revenue on the March 31, 2013 unaudited consolidated balance sheet, was allocated to the Genopaver Unit of Accounting and will be recognized over the expected life of the Company's technology platform using a straight-line approach. The $3,000 upfront consideration, which was received in April 2013, is included in related parties receivables on the March 31, 2013 unaudited consolidated balance sheet.

The Company recognizes the reimbursement payments received for research services as collaboration revenue in the period when the services are performed and collection is reasonably assured. Royalties related to product sales will be recognized when earned as the payments relate directly to products that have been fully developed and for which the Company has satisfied all of its obligations.

AquaBounty ECC

On February 14, 2013, the Company entered into an ECC with AquaBounty. The Company will be reimbursed for research and development services as provided for in the ECC agreement. In the event of product sales from a product developed from the ECC, the Company will receive 16.66% of quarterly gross profits for each product. All revenues and expenses related to this ECC will be eliminated in consolidation (Note 6).

5. Fair Value Measurements

The carrying amount of cash and cash equivalents, short-term investments, receivables, prepaid expenses and other current assets, accounts payable, accrued compensation and benefits, other accrued liabilities, and related party payables approximate fair value due to the short maturity of these instruments.

The following table presents the placement in the fair value hierarchy of financial assets that are measured at fair value on a recurring basis, including the items for which the fair value option has been elected, at March 31, 2013 (unaudited):

	Quoted prices in active markets (level 1)	Significant other observable inputs (level 2)	Significant unobservable inputs (level 3)	March 31, 2013
Assets				
Equity securities (Note 4)	$ 40,726	$ 15,421	$ —	$ 56,147
	$ 40,726	$ 15,421	$ —	$ 56,147

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

The following table presents the placement in the fair value hierarchy of financial assets that are measured at fair value on a recurring basis, including the items for which the fair value option has been elected, at December 31, 2012:

	Quoted prices in active markets (level 1)	Significant other observable inputs (level 2)	Significant unobservable inputs (level 3)	December 31, 2012
Assets				
Equity securities (Note 4)	$ 72,988	$ 10,128	$ —	$ 83,116
	$ 72,988	$ 10,128	$ —	$ 83,116

The following table presents the placement in the fair value hierarchy of financial assets that are measured at fair value on a recurring basis, including the items for which the fair value option has been elected, at December 31, 2011:

	Quoted prices in active markets (level 1)	Significant other observable inputs (level 2)	Significant unobservable inputs (level 3)	December 31, 2011
Assets				
Equity securities (Note 4)	$ 39,097	$ —	$ —	$ 39,097
	$ 39,097	$ —	$ —	$ 39,097

There were no financial liabilities measured on a recurring basis at December 31, 2012 and 2011.

The method used to estimate the fair value of the Level 1 assets in the tables above is based on observable market data as these equity securities are publicly-traded. The method used to estimate the fair value of the Level 2 assets in the tables above is based on the quoted market price of the publicly-traded security, adjusted for a discount for lack of marketability.

There were no transfers between levels of the fair value hierarchy in the three months ended March 31, 2013 (unaudited) and years ended December 31, 2012 and 2011.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

6. Investment in AquaBounty

On November 16, 2012, the Company acquired 48,631,444 shares of AquaBounty common stock, representing 47.56% of the then outstanding shares of AquaBounty, for $6,000 through a definitive purchase agreement with an existing AquaBounty shareholder and its affiliate. The carrying amount of the investment in AquaBounty was $5,726 at December 31, 2012. Based on closing quoted market prices (Level 1), the fair value of the investment in AquaBounty was approximately $14,300 at December 31, 2012. Summarized unaudited financial information for AquaBounty as of December 31, 2012 and for the period subsequent to the Company's investment to December 31, 2012 is as follows:

	2012
Current assets	$ 514
Non-current assets	1,962
Total assets	2,476
Current liabilities	706
Non-current liabilities	2,741
Total liabilities	3,447
Net liabilities	$ (971)

	2012
Revenues	$ —
Operating expenses	578
Loss from operations	(578)
Other expense	(1)
Net loss	$ (579)

On November 29, 2012, the Company entered into a promissory note purchase agreement ("promissory note") with AquaBounty. The promissory note allows for the Company to loan up to $500 to AquaBounty. Draws on the promissory note by AquaBounty accrue annual interest of 3% and mature no later than May 28, 2013. As of December 31, 2012, AquaBounty had drawn $200 on the promissory note. This outstanding balance plus accrued interest is included in related party receivables on the December 31, 2012 consolidated balance sheet. In January and February 2013, AquaBounty borrowed additional installments of $200 and $100, respectively, on the promissory note. On March 15, 2013, AquaBounty repaid the $500 promissory note plus accrued interest in its entirety.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

On March 15, 2013, the Company acquired 18,714,814 shares of AquaBounty for $4,907 in a private subscription offering, thereby increasing the Company's ownership in AquaBounty to 53.82%, resulting in us gaining control over AquaBounty, and began consolidating. Commencing on that date, the Company includes AquaBounty in its consolidated results of operations and financial position pursuant to the step acquisition guidance in ASC 805. The Company recognized a gain of $7,415 to account for the difference between the carrying value and the fair value of the previously held 47.56% equity interest. The fair value of the consideration transferred included:

Consideration paid	$ 4,907
Fair value of noncontrolling interest	15,153
Fair value of the Company's investment in affiliate held before the business combination	12,751
Fair value of the consideration transferred	$32,811

The Company used the private subscription price to measure fair value of the Company's previously held investment and noncontrolling interest. The preliminary estimated fair value of assets acquired and liabilities assumed at the acquisition date is shown below:

Cash	$ 5,419
Short-term investments	14
Trade receivables	4
Other receivables	9
Prepaid expenses and other	200
Property, plant and equipment	1,241
Intangible assets	14,900
Other assets	22
Total assets acquired	21,809
Accounts payable	156
Accrued compensation and benefits	94
Other accrued liabilities	395
Long-term debt	2,199
Total liabilities assumed	2,844
Net assets acquired	18,965
Goodwill	13,846
Total consideration	$32,811

The purchase price allocation is considered preliminary and is subject to revision when the valuation of intangible assets is finalized upon receipt of the final valuation report from a third party valuation expert. The preliminary fair value of acquired intangible assets was determined using the multi-period excess earnings method, a variation of the income approach. The multi-period excess earnings method estimates the value of an intangible asset equal to the present value of the incremental after-tax cash flows attributable to the intangible asset. The acquired

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

intangible assets consist of in-process research and development until regulatory approval is obtained, at which point the intangible assets will be accounted for as definite lived intangible assets and amortized over the expected useful life of fifteen years. The goodwill consists of future revenue opportunities and the potential for expansion of AquaBounty products. The goodwill is not expected to be deductible for tax purposes. The purchase price allocation is also subject to revision upon our continued evaluation of the fair value of long term debt.

The results of operations of AquaBounty are included in the consolidated statement of operations beginning on the acquisition date. The following unaudited condensed pro forma financial information for the three months ended March 31, 2013 and 2012 and the year ended December 31, 2012 is presented as if the acquisition had been consummated on January 1, 2012:

	Three months ended March 31,		Year ended December 31,
	2013	2012	2012
		Pro forma	
Revenues	3,976	1,618	13,925
Net loss	(44,214)	(7,756)	(78,651)
Net loss attributable to noncontrolling interest	433	581	2,062
Net loss attributable to Intrexon	(43,781)	(7,175)	(76,589)
Accretion of dividends on redeemable convertible preferred stock, not declared	(6,405)	(5,460)	(21,994)
Net loss attributable to Intrexon common shareholders	(50,186)	(12,635)	(98,583)
Net loss attributable to Intrexon common shareholders per share, basic and diluted	(5.07)	(1.32)	(10.18)

The pro forma net loss for the three months ended March 31, 2013 excludes the $7.4 million non-recurring gain on remeasurement of the Company's previously held investment in AquaBounty. The pro forma net loss for the three months ended March 31, 2012 and the year ended December 31, 2012 includes this non-recurring gain on remeasurement.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

7. Property, Plant and Equipment, net

Property, plant and equipment consist of the following:

	March 31, 2013	December 31, 2012	December 31, 2011
	(unaudited)		
Land	$ 55	$ —	$ —
Building	945	—	—
Furniture and fixtures	863	857	844
Lab equipment	22,543	22,195	18,010
Leasehold improvements	4,978	4,972	3,016
Computer hardware	3,138	3,136	2,897
Construction in progress	—	14	2,024
Software	905	888	665
	33,427	32,062	27,456
Less: Accumulated depreciation and amortization	(14,488)	(13,375)	(8,972)
Property, plant and equipment, net	$ 18,939	$ 18,687	$18,484

Depreciation expense was $1,146 and $1,134 for the three months ended March 31, 2013 and 2012 (unaudited), respectively. Depreciation expense was $4,957 and $3,078 for the years ended December 31, 2012 and 2011, respectively.

The following table reflects the net book value of property and equipment financed through capital leases as of December 31 (Note 12):

	2012	2011
Lab equipment	$ 71	$ 71
Leasehold improvements	143	143
Computer hardware	90	90
	304	304
Less: Accumulated depreciation	(215)	(148)
	$ 89	$ 156

8. Goodwill and Intangible Assets, net

The changes in the carrying amount of goodwill for the three months ended March 31, 2013 (unaudited) are as follows:

Balance as of December 31, 2012	$ —
Acquisitions (unaudited)	13,846
Balance as of March 31, 2013 (unaudited)	$13,846

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

No goodwill or accumulated impairment losses existed as of December 31, 2012 and 2011. There are no accumulated impairment losses as of March 31, 2013 (unaudited).

Intangible assets consist of the following at March 31, 2013 (unaudited):

	Gross Carrying Amount	Accumulated Amortization	Net
Patents and related technologies	$ 34,342	$ (5,561)	$28,781
In-process research and development	14,900	—	14,900
Total	$ 49,242	$ (5,561)	$43,681

Intangible assets consist of the following at December 31, 2012:

	Gross Carrying Amount	Accumulated Amortization	Net
Patents and related technologies	$ 34,342	$ (4,851)	$29,491
Favorable rent asset	646	(631)	15
Total	$ 34,988	$ (5,482)	$29,506

Intangible assets consist of the following at December 31, 2011:

	Gross Carrying Amount	Accumulated Amortization	Net
Patents and related technologies	$ 34,342	$ (2,014)	$32,328
Favorable rent asset	646	(441)	205
Total	$ 34,988	$ (2,455)	$32,533

Amortization expense was $725 and $757 for the three months ended March 31, 2013 and 2012 (unaudited), respectively. Amortization expense was $3,027 and $1,260 for the years ended December 31, 2012 and 2011, respectively. At December 31, 2012, the weighted average useful life for patents and related technology was 12.4 years and the useful life for the favorable rent asset was 3.4 years. Total amortization expense is estimated to be $2,853 for 2013, $2,641 for each year from 2014 through 2017, and $16,098 for the cumulative period thereafter.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

9. Income Taxes

There is no income tax benefit recognized for the three months ended March 31, 2013 and 2012 (unaudited) and for the years ended December 31, 2012 and 2011 due to the Company's history of net losses combined with an inability to confirm recovery of the tax benefits of the Company's losses and other net deferred tax assets. Income tax benefit for the years ended December 31, 2012 and 2011 differed from amounts computed by applying the applicable U.S. federal corporate income tax rate of 34% to loss before income taxes as a result of the following:

	2012	2011
Computed statutory income tax benefit	$(27,837)	$(28,995)
(Increase) reduction in income tax benefit resulting from State income tax benefit, net of federal income taxes	(3,711)	(3,893)
Nondeductible stock based compensation	333	203
Contribution of services by shareholder	527	71
Research and development tax credits	—	(2,515)
Other, net	(238)	477
	(30,926)	(34,652)
Change in valuation allowance for deferred tax assets	30,926	34,652
Total income tax provision	$ —	$ —

The tax effects of temporary differences that comprise the deferred tax assets and liabilities at December 31 are as follows:

	2012	2011
Deferred tax assets		
Equity securities	$ 4,346	$ 1,098
Accrued liabilities	1,910	915
Stock-based compensation	363	178
Deferred revenue	22,684	6,546
Research and development tax credits	5,848	5,556
Net operating loss carryforwards	80,159	70,679
Total deferred tax assets	115,310	84,972
Less: Valuation allowance	113,051	82,125
Net deferred tax assets	2,259	2,847
Deferred tax liabilities		
Property and equipment	478	406
Intangible assets	1,781	2,441
Total deferred tax liabilities	2,259	2,847
Net deferred tax assets (liabilities)	$ —	$ —

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Activity within the valuation allowance for deferred tax assets during the years ended December 31, 2012 and 2011 was as follows:

	2012	2011
Valuation allowance at beginning of year	$ 82,125	$52,036
(Decrease) increase in valuation allowance as a result of		
Mergers and acquisitions, net	—	(4,563)
Current year operations	30,926	34,652
Valuation allowance at end of year	$113,051	$82,125

In assessing the realizability of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Management considers the scheduled reversal of deferred tax liabilities, projected future taxable income and tax planning strategies in making this assessment. Due to the Company's history of net losses incurred from inception, no income tax benefit has been recorded and the corresponding deferred tax assets have been fully reserved as the Company cannot sufficiently be assured that these deferred tax assets will be realized in accordance with the provisions of ASC 740. The components of the deferred tax assets and liabilities as of the date of the mergers and acquisitions by the Company prior to consideration of the valuation allowance are substantially similar to the components of deferred tax assets presented herein.

The American Taxpayer Relief Act of 2012, which retroactively reinstated the federal research and development tax credit for 2012, was not enacted into law until January 2013. Therefore, the deferred tax asset and corresponding increase in the valuation allowance for the amount of the tax credit generated in 2012 will not be reflected until 2013 for financial statement purposes.

The Company's past issuances of stock and mergers and acquisitions have resulted in ownership changes as defined in Section 382 of the Internal Revenue Code of 1986. As a result, utilization of portions of the net operating losses may be subject to annual limitations. As of December 31, 2012, approximately $16,400 of the Company's net operating losses generated prior to 2008 are limited by Section 382 to annual usage limits of approximately $1,500. As of December 31, 2012, approximately $14,800 of the Company's net operating losses were inherited via acquisition and are limited based on the value of the target at the time of the transaction.

At December 31, 2012, the Company has loss carryforwards for federal income tax purposes of approximately $207,000 available to offset future taxable income and federal and state research and development tax credits of $5,848, prior to consideration of annual limitations that may be imposed under Section 382. These carryforwards will begin to expire in 2022.

The Company applies provisions related to the accounting for uncertain income tax positions in ASC 740-10. The Company does not have material unrecognized tax benefits as of December 31, 2012. The Company does not anticipate significant changes in the amount of unrecognized tax benefits in the next 12 months. The Company's tax returns for years 2004 and forward are subject to examination by federal or state tax authorities due to the carryforward of unutilized net operating losses and research and development tax credits.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

10. Redeemable Convertible Preferred Stock and Shareholders' Deficit

The tables below represent a rollforward of the Redeemable Convertible Preferred Stock:

	Series A redeemable convertible preferred stock		Series B redeemable convertible preferred stock		Series B-1 redeemable convertible preferred stock	
	Shares	Amount	Shares	Amount	Shares	Amount
Balances at December 31, 2010	705,400	$ 802	694,000	$ 609	1,212,360	$ 1,240
Issuance of shares	—	—	—	—	—	—
Accretion of dividends	—	—	—	30	—	60
Stock issuance costs	—	—	—	—	—	—
Balances at December 31, 2011	705,400	802	694,000	639	1,212,360	1,300
Issuance of shares	—	—	—	—	—	—
Accretion of dividends	—	556	—	30	—	60
Stock issuance costs	—	—	—	—	—	—
Balances at December 31, 2012	705,400	$ 1,358	694,000	$ 669	1,212,360	$ 1,360
Issuance of shares (unaudited)	—	—	—	—	—	—
Accretion of dividends (unaudited)	—	21	—	8	—	15
Stock issuance costs (unaudited)	—	—	—	—	—	—
Balances at March 31, 2013 (unaudited)	705,400	$ 1,379	694,000	$ 677	1,212,360	$ 1,375

	Series C redeemable convertible preferred stock		Series C-1 redeemable convertible preferred stock		Series C-2 redeemable convertible preferred stock	
	Shares	Amount	Shares	Amount	Shares	Amount
Balances at December 31, 2010	4,546,360	$ 6,346	15,934,528	$ 30,436	18,617,020	$ 39,605
Issuance of shares	—	—	—	—	—	—
Accretion of dividends	—	383	—	1,828	—	2,382
Stock issuance costs	—	—	—	—	—	—
Balances at December 31, 2011	4,546,360	6,729	15,934,528	32,264	18,617,020	41,987
Issuance of shares	—	—	—	—	—	—
Accretion of dividends	—	405	—	1,937	—	2,525
Stock issuance costs	—	—	—	—	—	—
Balances at December 31, 2012	4,546,360	$ 7,134	15,934,528	$ 34,201	18,617,020	$ 44,512
Issuance of shares (unaudited)	—	—	—	—	—	—
Accretion of dividends (unaudited)	—	107	—	513	—	669
Stock issuance costs (unaudited)	—	—	—	—	—	—
Balances at March 31, 2013 (unaudited)	4,546,360	$ 7,241	15,934,528	$ 34,714	18,617,020	$ 45,181

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

	Series C-3 redeemable convertible preferred stock		Series D redeemable convertible preferred stock		Series E redeemable convertible preferred stock	
	Shares	Amount	Shares	Amount	Shares	Amount
Balances at December 31, 2010	13,297,872	$ 26,489	11,240,794	$ 39,019	—	$ —
Issuance of shares	—	—	8,562,891	28,942	22,285,716	117,000
Accretion of dividends	—	1,593	—	3,971	—	3,621
Stock issuance costs	—	—	—	(8)	—	(2,667)
Balances at December 31, 2011	13,297,872	28,082	19,803,685	71,924	22,285,716	117,954
Issuance of shares	—	—	—	—	15,809,523	83,000
Accretion of dividends	—	1,688	—	4,328	—	10,465
Stock issuance costs	—	—	—	—	—	(16)
Balances at December 31, 2012	13,297,872	$ 29,770	19,803,685	$ 76,252	38,095,239	$ 211,403
Issuance of shares (unaudited)	—	—	—	—	—	—
Accretion of dividends (unaudited)	—	441	—	1,133	—	3,180
Stock issuance costs (unaudited)	—	—	—	—	—	—
Balances at March 31, 2013 (unaudited)	13,297,872	$ 30,211	19,803,685	$ 77,385	38,095,239	$ 214,583

	Series F redeemable convertible preferred stock	
	Shares	Amount
Balances at December 31, 2012	—	$ —
Issuance of shares (unaudited)	8,178,964	64,409
Accretion of dividends (unaudited)	—	318
Stock issuance costs (unaudited)	—	(1,527)
Balances at March 31, 2013 (unaudited)	8,178,964	$ 63,200

The Series F Redeemable Convertible Preferred Stock (“Series F”), Series E Redeemable Convertible Preferred Stock (“Series E”), Series D Redeemable Convertible Preferred Stock (“Series D”), Series C-3 Redeemable Convertible Preferred Stock (“Series C-3”), Series C-2 Redeemable Convertible Preferred Stock (“Series C-2”), Series C-1 Redeemable Convertible Preferred Stock (“Series C-1”), Series C Redeemable Convertible Preferred Stock (“Series C”), Series B-1 Redeemable Convertible Preferred Stock (“Series B-1”), Series B Redeemable Convertible Preferred Stock (“Series B”) and Series A Redeemable Convertible Preferred Stock (“Series A”) collectively shall be referred as the “Series Preferred”.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Rights, Preferences and Terms of Capital

The following is a summary of the current rights, preferences and terms of the Company's outstanding equity instruments:

Liquidation Preference

In the event of any liquidation, dissolution, or winding up of the Company, distributions will first be made to the holders of Series F, second to the holders of the Series E, third to the holders of the Series D, fourth to the holders of the Series C-3, fifth to the holders of the Series C-2, sixth to the holders of the Series C-1, seventh to the holders of the Series C, eighth to the holders of Series B and B-1 together as a class, and ninth to the holders of the Series A, and thereafter to the holders of Series F, Series E, Series D, Series C-3, Series C-2, Series C-1, Series C, Series B, Series B-1, Series A and the common who shall receive all remaining funds available for distribution in proportion to the common held by each holder and the common that each of the holders of preferred shares have the right to acquire upon conversion of their preferred stock to common stock.

Optional Redemption

After May 25, 2016, but prior to the occurrence of a qualified IPO, the holders of greater than three-fourths of then issued and outstanding shares of the Series F, Series E, Series D, Series C-3, Series C-2, Series C-1 and Series C, voting as a separate class, may elect by written notice to require the Company to redeem all of the then issued and outstanding shares of Series F, Series E, Series D, Series C-3, Series C-2, Series C-1 and Series C at an amount equal to the stated price adjusted for any stock dividends, combination or splits plus all accrued but unpaid dividends. Upon receipt of such written notice, the Company must notify the holders of the Series B-1, Series B and Series A of the redemption notice, upon which the holders of each of those classes may require the Company to redeem all of the then issued and outstanding shares of such class.

As a result of this optional redemption provision, the Company accretes changes in the redemption value from the date of issuance of all Series Preferred shares with a resultant change to additional paid-in capital or accumulated deficit in the absence of additional paid-in capital. The following table represents the aggregate redemption price per share for each class of Series Preferred:

	March 31, 2013	December 31,	
	(unaudited)	2012	2011
Series F	$ 7.91	$ —	$ —
Series E	5.70	5.62	5.41
Series D	3.91	3.86	3.64
Series C-3	2.28	2.24	2.12
Series C-2	2.43	2.40	2.26
Series C-1	2.18	2.15	2.03
Series C	1.60	1.58	1.49
Series B-1	1.15	1.14	1.09
Series B	1.03	1.02	0.98
Series A	2.02	1.99	1.88

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

The redemption will occur in the following order of preference: Series F, Series E, Series D, Series C-3, Series C-2, Series C-1, Series C, Series B-1 and Series B together as a class, and Series A.

Series A Redeemable Convertible Preferred Stock

Liquidity

In the event of any liquidation, dissolution, or winding up of the Company, all distributions will be made to Series A shareholders in the order described within Liquidation Preference above.

Voting

The holders of Series A shall be entitled to the number of votes on each matter submitted to a vote of the shareholders equal to the number of shares of common stock into which said shares could be converted. Any matter which requires approval of the Series Preferred shall require the approval of a majority of the outstanding Series Preferred.

Dividends

The holders of Series A shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series A stated value. Once declared, dividends will be accrued and compounded annually from the initial date of issue. No dividends have been declared to date.

Conversion

The holders of Series A at any time may elect to convert all or any of their Series A into common stock, fully paid and nonassessable and free from all taxes, liens or charges. The Company will automatically convert all of the outstanding Series A into common stock upon the closing of a qualified IPO, or upon the written election of the holders of a majority of the outstanding Series A. Series A convert to common stock on a one to one basis. Upon automatic conversion of Series A, cumulative dividends are converted to common stock at a price per share equal to the fair market value of a common share at the time of conversion.

Series B and B-1 Redeemable Convertible Preferred Stock

Liquidity

In the event of any liquidation, dissolution, or winding up of the Company, all distributions will be made to Series B and B-1 shareholders in the order described within Liquidation Preference above.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Voting

The holders of Series B and B-1 shall be entitled to the number of votes on each matter submitted to a vote of the shareholders equal to the number of shares of common stock into which said shares could be converted. Any matter which requires approval of the Series Preferred shall require the approval of a majority of the outstanding Series Preferred.

Dividends

The holders of Series B and B-1 shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series B and B-1 stated value. Once declared, dividends will be accrued annually from the initial date of issue and paid quarterly. No dividends have been declared to date.

Conversion

The holders of Series B and B-1 at any time may elect to convert all or any of their Series B and B-1 into common stock, fully paid and nonassessable and free from all taxes, liens or charges. The shares of Series B and B-1 shall be automatically converted into fully paid and nonassessable common stock upon the closing of a qualified IPO or at the election of the holders of a majority of the outstanding Series B and B-1. Series B and B-1 convert to common stock on a one to one basis. Upon automatic conversion of Series B and B-1, cumulative dividends are converted to common stock at a price per share equal to the fair market value of a common share at the time of conversion.

Series C Redeemable Convertible Preferred Stock

Liquidity

In the event of any liquidation, dissolution, or winding up of the Company, all distributions will be made to Series C shareholders in the order described within Liquidation Preference above.

Voting

The holders of Series C shall be entitled to the number of votes on each matter submitted to a vote of the shareholders equal to the number of shares of common stock into which said shares could be converted. Any matter which requires approval of the Series Preferred shall require the approval of a majority of the outstanding Series Preferred.

Dividends

The holders of Series C shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series C stated value. Once

declared, dividends will be accrued and compounded annually from the initial date of issue and paid quarterly. No dividends have been declared to date.

Conversion

The holders of Series C at any time may elect to convert all or any of their Series C into common stock, fully paid and nonassessable and free from all taxes, liens or charges. The shares of Series C shall be automatically converted into fully paid and nonassessable common stock upon the closing of a qualified IPO or at the election of the holders of a majority of the outstanding Series C. Series C convert to common stock on a one to one basis. Upon automatic conversion of Series C, cumulative dividends are converted to common stock at a price per share equal to the fair market value of a common share at the time of conversion.

Series C-1 Redeemable Convertible Preferred Stock

Liquidity

In the event of any liquidation, dissolution, or winding up of the Company, all distributions will be made to Series C-1 shareholders in the order described within Liquidation Preference above.

Voting

The holders of Series C-1 shall be entitled to the number of votes on each matter submitted to a vote of the shareholders equal to the number of shares of common stock into which said shares could be converted. Any matter which requires approval of the Series Preferred shall require the approval of a majority of the outstanding Series Preferred.

Dividends

The holders of Series C-1 shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series C-1 stated value. Once declared, dividends will be accrued and compounded annually from the initial date of issue and paid quarterly. No dividends have been declared to date.

Conversion

The holders of Series C-1 at any time may elect to convert all or any of their Series C-1 into common stock, fully paid and nonassessable and free from all taxes, liens or charges. The shares of Series C-1 shall be automatically converted into fully paid and nonassessable common stock upon the closing of a qualified IPO or at the election of the holders of a majority of the outstanding Series C-1. Series C-1 converts to common stock on a one to one basis. Upon automatic conversion of Series C-1, cumulative dividends are converted to common stock at a price per share equal to the fair market value of a common share at the time of conversion.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Series C-2 Redeemable Convertible Preferred Stock

Liquidity

In the event of any liquidation, dissolution, or winding up of the Company, all distributions will be made to Series C-2 shareholders in the order described within Liquidation Preference above.

Voting

The holders of Series C-2 shall be entitled to the number of votes on each matter submitted to a vote of the shareholders equal to the number of shares of common stock into which said shares could be converted. Any matter which requires approval of the Series Preferred shall require the approval of a majority of the outstanding Series Preferred.

Dividends

The holders of Series C-2 shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series C-2 stated value. Once declared, dividends will be accrued and compounded annually from the initial date of issue and paid quarterly. No dividends have been declared to date.

Conversion

The holders of Series C-2 at any time may elect to convert all or any of their Series C-2 into common stock, fully paid and nonassessable and free from all taxes, liens or charges. The shares of Series C-2 shall be automatically converted into fully paid and nonassessable common stock upon the closing of a qualified IPO or at the election of the holders of a majority of the outstanding Series C-2. Series C-2 converts to common stock on a one to one basis. Upon automatic conversion of Series C-2, cumulative dividends are converted to common stock at a price per share equal to the fair market value of a common share at the time of conversion.

Series C-3 Redeemable Convertible Preferred Stock

Liquidity

In the event of any liquidation, dissolution, or winding up of the Company, all distributions will be made to Series C-3 shareholders in the order described within Liquidation Preference above.

Voting

The holders of Series C-3 shall be entitled to the number of votes on each matter submitted to a vote of the shareholders equal to the number of shares of common stock into which said shares could be converted. Any matter which requires approval of the Series Preferred shall require the approval of a majority of the outstanding Series Preferred.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Dividends

The holders of Series C-3 shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series C-3 stated value. Once declared, dividends will be accrued and compounded annually from the initial date of issue and paid quarterly. No dividends have been declared to date.

Conversion

The holders of Series C-3 at any time may elect to convert all or any of their Series C-3 into common stock, fully paid and nonassessable and free from all taxes, liens or charges. The shares of Series C-3 shall be automatically converted into fully paid and nonassessable common stock upon the closing of a qualified IPO or at the election of the holders of a majority of the outstanding Series C-3. Series C-3 converts to common stock on a one to one basis. Upon automatic conversion of Series C-3, cumulative dividends are converted to common stock at a price per share equal to the fair market value of a common share at the time of conversion.

Series D Redeemable Convertible Preferred Stock

Liquidity

In the event of any liquidation, dissolution, or winding up of the Company, all distributions will be made to Series D shareholders in the order described within Liquidation Preference above.

Voting

The holders of Series D shall be entitled to the number of votes on each matter submitted to a vote of the shareholders equal to the number of shares of common stock into which said shares could be converted. Any matter which requires approval of the Series Preferred shall require the approval of a majority of the outstanding Series Preferred.

Dividends

The holders of Series D shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series D stated value. Once declared, dividends will be accrued and compounded annually from the initial date of issue and paid quarterly. No dividends have been declared to date.

Conversion

The holders of Series D at any time may elect to convert all or any of their Series D into common stock, fully paid and nonassessable and free from all taxes, liens or charges. The shares of Series D shall be automatically converted into fully paid and nonassessable common stock upon the

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

closing of a qualified IPO or at the election of the holders of a majority of the outstanding Series D. Series D converts to common stock on a one to one basis. Upon automatic conversion of Series D, cumulative dividends are converted to common stock at a price per share equal to the fair market value of a common share at the time of conversion.

Series E Redeemable Convertible Preferred Stock

Liquidity

In the event of any liquidation, dissolution, or winding up of the Company, all distributions will be made to Series E shareholders in the order described within Liquidation Preference above.

Voting

The holders of Series E shall be entitled to the number of votes on each matter submitted to a vote of the shareholders equal to the number of shares of common stock into which said shares could be converted. Any matter which requires approval of the Series Preferred shall require the approval of a majority of the outstanding Series Preferred.

Dividends

The holders of Series E shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series E stated value. Once declared, dividends will be accrued and compounded annually from the initial date of issue and paid quarterly. No dividends have been declared to date.

Conversion

The holders of Series E at any time may elect to convert all or any of their Series E into common stock, fully paid and nonassessable and free from all taxes, liens or charges. The shares of Series E shall be automatically converted into fully paid and nonassessable common stock upon the closing of a qualified IPO or at the election of the holders of a majority of the outstanding Series E. Series E converts to common stock on a one to one basis. Upon automatic conversion of Series E, cumulative dividends are converted to common stock at a price per share equal to the fair market value of a common share at the time of conversion.

Series F Redeemable Convertible Preferred Stock

Liquidity

In the event of any liquidation, dissolution, or winding up of the Company, all distributions will be made to Series F shareholders in the order described within Liquidation Preference above.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Voting

The holders of Series F shall be entitled to the number of votes on each matter submitted to a vote of the shareholders equal to the number of shares of common stock into which said shares could be converted. Any matter which requires approval of the Series Preferred shall require the approval of a majority of the outstanding Series Preferred.

Dividends

The holders of Series F shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series F stated value. Once declared, dividends will be accrued and compounded annually from the initial date of issue and paid quarterly. No dividends have been declared to date.

Conversion

The holders of Series F at any time may elect to convert all or any of their Series F into common stock, fully paid and nonassessable and free from all taxes, liens or charges. The shares of Series F shall be automatically converted into fully paid and nonassessable common stock upon the closing of a qualified IPO or at the election of the holders of a majority of the outstanding Series F. Series F converts to common stock on a one to one basis. Upon automatic conversion of Series F, cumulative dividends are converted to common stock at a price per share equal to the fair market value of a common share at the time of conversion.

The following table presents the aggregate and per-share amounts of arrearages in cumulative preferred dividends in ascending order of preference at December 31, 2012:

	Arrearage total	Arrearage per share
Series E Redeemable Convertible Preferred Shares	$ 14,086	$ 0.37
Series D Redeemable Convertible Preferred Shares	9,411	0.48
Series C-3 Redeemable Convertible Preferred Shares	4,819	0.36
Series C-2 Redeemable Convertible Preferred Shares	9,614	0.52
Series C-1 Redeemable Convertible Preferred Shares	9,222	0.58
Series C Redeemable Convertible Preferred Shares	2,162	0.48
Series B-1 Redeemable Convertible Preferred Shares	380	0.31
Series B Redeemable Convertible Preferred Shares	209	0.30
Series A Redeemable Convertible Preferred Shares	556	0.78

Of the arrearage amounts above, $50,459 has been accreted to the redemption price for each Series Preferred on the Company's December 31, 2012 consolidated balance sheet.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

The following table presents the aggregate and per-share amounts of arrearages in cumulative preferred dividends in ascending order of preference at March 31, 2013 (unaudited):

	Arrearage total	Arrearage per share
Series F Redeemable Convertible Preferred Shares	$ 318	$ 0.04
Series E Redeemable Convertible Preferred Shares	17,266	0.45
Series D Redeemable Convertible Preferred Shares	10,544	0.53
Series C-3 Redeemable Convertible Preferred Shares	5,260	0.40
Series C-2 Redeemable Convertible Preferred Shares	10,283	0.55
Series C-1 Redeemable Convertible Preferred Shares	9,735	0.61
Series C Redeemable Convertible Preferred Shares	2,269	0.50
Series B-1 Redeemable Convertible Preferred Shares	395	0.33
Series B Redeemable Convertible Preferred Shares	217	0.31
Series A Redeemable Convertible Preferred Shares	577	0.82

Of the arrearage amounts above, $56,864 has been accreted to the redemption price for each Series Preferred on the Company's March 31, 2013 unaudited consolidated balance sheet.

All shares of common stock are subordinate to the preferred shares with respect to dividend rights and rights upon the event of liquidation, winding up and/or dissolution of the Company.

11. Stock Option Plans

The Company records the fair value of stock options issued to employees and non-employees as of the grant date as stock-based compensation expense. Stock-based compensation expense for employees and non-employees is recognized over the requisite service period, which is typically the vesting period. Stock-based compensation cost that has been included in research and development expenses and general and administrative expenses amounted to $377 and $1,081, respectively, for the year ended December 31, 2012, and $763 and $220, respectively, for the year ended December 31, 2011. Stock-based compensation cost that has been included in research and development expenses and general and administrative expenses amounted to $152 and $255, respectively, for the three months ended March 31, 2013 (unaudited), and $(139) and $292, respectively, for the three months ended March 31, 2012 (unaudited).

On April 18, 2008, the Company adopted the 2008 Equity Incentive Plan (the "2008 Plan") for employees and nonemployees pursuant to which the Company's board of directors may grant share based awards to officers, key employees and nonemployees. During 2011, the 2008 Plan was amended to increase the number of authorized awards under the 2008 plan from 5,000,000 to 10,000,000. Awards issued pursuant to the Company's 2004 Stock Option Plan, the 2004 Stock Option Plan for Nonemployees and the 2006 Stock Option Plan were consolidated into the 2008 Plan and are subject to, and administered under the terms of the 2008 Plan.

Stock options can be granted with an exercise price equal to or greater than the stock's fair market value at the date of grant. Stock options can be granted with an exercise price less than the stock's fair market value at the date of grant if the stock options are replacement options in accordance with certain U.S. Treasury regulations. Virtually all stock options have ten-year terms and vest and become fully exercisable at no more than four years from the date of grant.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

At December 31, 2012, there were 5,111,066 remaining shares available for the Company to grant under the 2008 Plan. The Company uses the Black-Scholes option pricing model to estimate the grant-date fair value of all stock options. The Black-Scholes option pricing model requires the use of assumptions for estimated expected volatility, estimated expected term of stock options, risk-free rate, estimated expected dividend yield, and the fair value of the underlying common stock at the date of grant. Since the Company does not have sufficient history to estimate the expected volatility of our common stock price, expected volatility is based on the average volatility of peer public entities that are similar in size and industry. The Company estimates the expected term of all options based on previous history of exercises. The risk-free rate is based on the U.S. Treasury yield curve in effect at the time of grant for the expected term of the option. The expected dividend yield is 0% as the Company has not declared any common stock dividends to date and does not expect to declare common stock dividends in the near future. The fair value of the underlying common stock is determined based on a valuation of the Company's common stock. Actual forfeitures are recorded when incurred and estimated forfeitures are reviewed and adjusted at least annually. The assumptions used in the Black-Scholes option pricing model for the years ended December 31, 2012 and 2011 are set forth below:

	2012	2011
Valuation assumptions		
Expected dividend yield	0%	0%
Expected volatility	71%—76%	68%—72%
Expected term (years)	6.00	5.37— 6.23
Risk-free interest rate	0.80%—1.10%	1.34%—2.51%

Stock option activity during the years indicated is as follows:

	Number of shares	Weighted average exercise price	Weighted average remaining contractual term
Balances at December 31, 2010	2,534,255	1.55	6.99
Granted	4,251,947	3.70	
Exercised	(132,720)	(1.39)	
Forfeited	(254,125)	(1.91)	
Expired	(73,930)	(1.68)	
Balances at December 31, 2011	6,325,427	2.98	6.67
Granted	960,000	4.07	
Exercised	(340,497)	(1.39)	
Forfeited	(2,119,000)	(3.60)	
Expired	(777,258)	(1.31)	
Balances at December 31, 2012	4,048,672	3.37	7.87
Exercisable at December 31, 2012	1,415,109	2.32	6.43
Vested and Expected to Vest at December 31, 2012(1)	3,840,884	3.34	7.83

(1) The number of stock options expected to vest takes into account an estimate of expected forfeitures.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Total unrecognized compensation costs related to nonvested awards at December 31, 2012 and 2011 were $4,910 and $6,347, respectively, and are expected to be recognized over a weighted-average period of approximately three years.

The weighted average grant date fair value of options granted during 2012 and 2011 was $2.63 and $2.36, respectively. The aggregate intrinsic value of options exercised during 2012 and 2011 was $913 and $264, respectively. The aggregate intrinsic value of options is calculated as the difference between the exercise price of the underlying options and the fair value of the Company's common stock for those shares that had exercise prices lower than the fair value of the Company's common stock.

The following table summarizes additional information about stock options outstanding as of December 31, 2012:

	Options outstanding			Options exercisable		
Exercise price	Number of options	Weighted average remaining life (years)	Aggregate intrinsic value	Number of options	Weighted average remaining life (years)	Aggregate intrinsic value
$0.22	100,212	8.07	$ 385	100,212	8.07	$ 385
$0.77	186,860	3.10	617	186,860	3.10	617
$1.10	40,500	4.25	120	40,500	4.25	120
$1.57	326,000	4.62	815	326,000	4.62	815
$1.88	321,025	6.77	703	220,525	6.72	483
$3.38	297,250	7.64	205	74,500	7.59	51
$4.07	2,776,825	8.77	—	466,512	8.53	—
	4,048,672	7.87	$ 2,845	1,415,109	6.43	$ 2,471

The following table summarizes additional information about stock options outstanding as of December 31, 2011:

	Options outstanding			Options exercisable		
Exercise price	Number of options	Weighted average remaining life (years)	Aggregate intrinsic value	Number of options	Weighted average remaining life (years)	Aggregate intrinsic value
$0.22	254,461	9.07	$ 978	254,461	9.07	$ 978
$0.77	450,940	4.10	1,489	450,940	4.10	1,489
$0.96	102,000	2.84	317	102,000	2.84	317
$1.10	40,500	5.26	120	40,500	5.26	120
$1.12	5,276	9.07	16	5,276	9.07	16
$1.57	547,000	5.54	1,368	538,250	5.54	1,346
$1.88	987,500	7.50	2,163	372,625	7.35	816
$3.38	635,500	8.41	438	—	—	—
$4.07	3,302,250	6.58	—	—	—	—
	6,325,427	6.67	$ 6,889	1,764,052	5.91	$ 5,082

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

The Company currently uses authorized and unissued shares to satisfy share award exercises.

AquaBounty Stock Option Plan (unaudited)

The AquaBounty 2006 Equity Incentive Plan (the "AquaBounty Plan") provides for the issuance of incentive stock options to employees of AquaBounty and non-qualified stock options and awards of restricted and direct stock purchases to its directors, officers, employees and consultants of AquaBounty. Unless otherwise indicated, options issued to employees, directors and non-employees are vested over one to three years and are exercisable for a term of ten years from the date of issuance. As of March 31, 2013 (unaudited), there were 6,076,000 options outstanding under the AquaBounty Plan at a weighted average exercise price of $0.26 per share of which 5,468,667 were exercisable.

12. Commitments and Contingencies

Operating Leases

The Company leases its facilities and certain equipment under noncancelable operating leases. The equipment leases are renewable at the option of the Company. At December 31, 2012, future minimum lease payments under noncancelable operating leases having initial or remaining noncancelable lease terms in excess of one year are as follows:

2013	$ 2,825
2014	2,918
2015	2,492
2016	1,863
2017	927
Thereafter	72
	$11,097

Rent expense, including other facility expenses, was $5,036 and $4,000 in 2012 and 2011, respectively.

During 2011, the Company began subleasing space in two of its facilities to two different entities, one of which is an affiliate of certain preferred shareholders (Note 13). One of these agreements was terminated during 2011 while the other was terminated during 2012. During 2012, the Company began subleasing another of its facilities to another entity. This agreement remained in effect as of December 31, 2012. Rental income under sublease agreements was $151 and $158 for the years ended December 31, 2012 and 2011, respectively. Future rental income for the sublease agreement in effect at the end of 2012 is $365 for each year in 2013 and 2014 and $152 for 2015.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Capital Leases

The Company leases certain lab equipment, computer equipment, and leasehold improvements under capital leases. At December 31, 2012, future minimum lease payments under capitalized lease obligations are as follows:

2013	$54
2014	35
2015	10
	99
Less: Amounts representing interest	(8)
	$91

Research and Development

The Company has commitments with third parties in connection with research and development collaborations. See Note 2 for further discussion.

Long Term Debt (unaudited)

In January 2009, the Atlantic Canada Opportunities Agency (“ACOA”), a Canadian government agency, awarded AquaBounty a grant to provide funding of a research and development project. The total amount available under the award is C$2,872, or USD$2,821 as of March 31, 2013 (unaudited), which AquaBounty can claim over a five year period. All amounts claimed by AquaBounty must be repaid in the form of a 10% royalty on any products commercialized out of this research and development project until fully paid. The timing of repayment is uncertain. As of March 31, 2013 (unaudited), the total amount claimed by AquaBounty is $1,968 and is included in long term debt on the March 31, 2013 unaudited consolidated balance sheet.

In October 2003, AquaBounty obtained a term loan with the ACOA in the amount of C$250, or USD$246 as of March 31, 2013 (unaudited). AquaBounty repays this loan through monthly principal payments and the loan matures in December 2013. The outstanding balance as of March 31, 2013 (unaudited) is $21 and is included in the current portion of long term debt on the March 31, 2013 unaudited consolidated balance sheet.

In August 2003, AquaBounty obtained a term loan with Enterprise PEI, a Canadian provincial government agency, in the amount of C$300, or USD$295 as of March 31, 2013 (unaudited). AquaBounty repays this loan through monthly principal and interest payments and the loan matures in December 2013. The outstanding balance as of March 31, 2013 (unaudited) is $31 and is included in the current portion of long term debt on the March 31, 2013 unaudited consolidated balance sheet.

In November 1999, Technology Partnership Canada (“TPC”), a Canadian government agency, agreed to provide AquaBounty funding up to C$2,965, or USD$2,913 as of March 31, 2013 (unaudited), to support AquaBounty’s research and development. This funding was completed in

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

2003. The funding provided by TPC is repayable to TPC in the form of a 5.2% royalty on revenues generated from AquaBounty's technology. Per the funding agreement with TPC, AquaBounty has no repayment obligations after June 30, 2014 even if the total amount has not been repaid as of such date. As of March 31, 2013 (unaudited), the estimated balance to be paid by June 30, 2014 is $197 and is included in long term debt on the March 31, 2013 unaudited consolidated balance sheet.

Contingencies

The Company may become subject to claims and assessments from time to time in the ordinary course of business. Such matters are subject to many uncertainties and outcomes are not predictable with assurance. The Company accrues liabilities for such matters when it is probable that future expenditures will be made and such expenditures can be reasonably estimated. As of March 31, 2013 and December 31, 2012 and 2011, the Company does not believe that any such matters, individually or in the aggregate, will have a material adverse effect on the Company's business, financial condition, results of operations, or cash flows.

13. Related Party Transactions

Third Security, LLC ("Third Security") and Affiliates

Certain affiliates of Third Security are shareholders of the Series B, B-1, C, C-1, C-2, C-3, D, and E Redeemable Convertible Preferred Stock.

On April 8, 2011, in anticipation of the closing of Series E, the Company issued convertible promissory notes with borrowings up to $25,000 to affiliates of Third Security. Terms of the notes included 12% simple interest annually with principal and interest due on or before June 30, 2011. The principal amount and all accrued interest automatically convert to shares of Series E upon the first sale of Series E. The Company borrowed $15,000 on the notes. The principal amount plus accrued interest of $165 was converted into 2,888,635 shares of Series E on May 26, 2011.

On June 6, 2011, the Company entered into a worldwide exclusive licensing agreement with Halozyme Therapeutics, Inc. ("Halozyme") for the use of Halozyme's proprietary enzyme in one of the Company's targeted therapeutics. The Company and Halozyme are related parties through common ownership by affiliates of Third Security. The Company's CEO also serves on Halozyme's board of directors. Under the terms of the agreement, the Company paid a license fee of $9,000 upon execution of the agreement, which is recorded in research and development expenses on the accompanying consolidated statement of operations. The Company is required to pay an annual exclusivity fee of $1,000 commencing June 6, 2012 and on each anniversary of the effective date of the agreement thereafter until a certain development event occurs. If the Company successfully develops a product candidate using the license in the exclusive field of use and achieves an established sales target, the Company could pay up to $54 million in milestone payments. The Company is obligated to pay tiered royalties on net sales of the approved product. The Company may terminate this agreement in whole or on a product-by-product basis at any time upon 90 days written notice to Halozyme.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Effective August 31, 2011, the Company entered into an asset purchase agreement with Cyntellect, Inc. (“Cyntellect”) to purchase the assets required to operate Cyntellect’s cell processing platform business and assume certain liabilities related to the assets acquired, including assumption of the remaining term on the facility lease. The Company anticipates using the assets acquired to establish the capability to develop proprietary cell lines to be used internally by the Company or with the Company’s collaborative partners. As consideration for the asset purchase, the Company issued 4,176,905 shares of its common stock valued at $17,000. Cyntellect was a related party and under common control by affiliates of Third Security. The Company recorded the transaction as a transaction between entities under common control using the guidance in ASC Subtopic 805-50, *Business Combinations: Related Issues* (“ASC 805-50”). ASC 805-50 requires that assets acquired and liabilities assumed be recorded on the transaction date at the carrying amount in the accounts of the transferring entity. The carrying amounts of the assets acquired and liabilities assumed is as follows:

Cash	$ 88
Other current assets	23
Property and equipment, net	1,724
Other assets	262
Total assets acquired	2,097
Accounts payable	41
Other accrued liabilities	107
Long-term debt	116
Total liabilities assumed	264
Net assets acquired	$1,833

ASC 805-50 also requires that results of operations be presented as if the transaction occurred at the beginning of the period and represent the combined operations of both entities. Financial statements and financial information presented for prior years in which the entities were under common control should also be retrospectively adjusted to furnish comparative information as if the entities were combined. The Company applied these presentation requirements of ASC 805-50.

The Company paid $128 of costs associated with this asset purchase, which are included in general and administrative expenses in the accompanying consolidated statement of operations for the year ended December 31, 2011.

The Company subleased a portion of one of its facilities to Cyntellect. The sublease included rent and a portion of applicable facility expenses. The sublease expired in May 2012. The Company received $64 and $77 of sublease income during 2012 and 2011, respectively.

The Manager of Third Security who is also a member of the Company’s Board of Directors, (“Board Member”) assumed the role of CEO of the Company in April 2009 and served on a part-time basis in that capacity through 2011. In 2012, the CEO began serving in this role on a full-time basis. Although the CEO has not received compensation for his services as CEO, the

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Company recorded $1,550 and $210 in compensation expense for the years ended December 31, 2012 and 2011, respectively, based on the estimated salary and benefits appropriate for the role. The Company recorded $388 in compensation expense for the three months ended March 31, 2013 and 2012 (unaudited), respectively.

Transactions with Other Shareholders

At December 31, 2012 and 2011, the Company leased two office facilities from an affiliate of certain preferred shareholders. The Company has a receivable due from this affiliate in the form of security deposits which are included in other long term assets of $66 at December 31, 2012 and 2011. During 2012 and 2011, the Company incurred rent and other facility expenses of $903 and $783, respectively. The company has a receivable due from this affiliate in the form of security deposits which are included in other assets of $66 at March 31, 2013 (unaudited). During the three months ended March 31, 2013 and 2012 (unaudited), the Company incurred rent and other facility expenses of $226 and $219, respectively.

The Company contracts with a common shareholder to provide certain research and clinical services. During the years ended December 31, 2012 and 2011, the Company incurred total expenses for work performed under such contract of $91 and $202, respectively, of which none was payable at December 31, 2012 and $30 was payable at December 31, 2011. During the three months ended March 31, 2013 and 2012 (unaudited), the Company incurred total expenses for work performed under such contract of $50 and $55, respectively, of which none was payable at March 31, 2013 (unaudited).

In 2011, the Company paid a transaction fee in conjunction with the closing of its Series E to a financial services firm who employs certain preferred shareholders of the Company.

In the three months ended March 31, 2013 (unaudited), the Company paid a transaction fee in conjunction with the closing of the first round of Series F to a shareholder.

Transactions with ECC Parties

On January 6, 2011, in conjunction with the ECC with Ziopharm (Note 4), the Company purchased 2,426,235 shares of common stock at $4.80 per share at closing in a private placement. The Company agreed to purchase up to an additional $50,000 of common stock in conjunction with securities offerings that may be conducted by Ziopharm in the future, subject to certain conditions and limitations. On February 7, 2011, the Company purchased 1,910,000 shares of Ziopharm common stock at $5.75 per share in the first such securities offering. On January 20, 2012, the Company purchased 1,923,075 shares of Ziopharm common stock at $5.20 per share in another securities offering. At December 31, 2012, the Company had approximately $29,000 remaining on its purchase commitment. In conjunction with the ECC and the initial share purchase, the CEO of the Company joined the board of directors of Ziopharm.

In conjunction with the ECC with Synthetic Biologics (Note 4), the Company is entitled to, at its election, purchase up to 19.99% of securities offerings that may be conducted by Synthetic

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

Biologics in the future, subject to certain conditions and limitations. The Company has been granted the right to make purchases of Synthetic Biologics' common stock in the open market up to an additional 10% of Synthetic Biologics' common stock. The Company has made no purchases of Synthetic Biologics' common stock.

In conjunction with the ECC with Oragenics (Note 4), the Company is entitled to, at its election, purchase up to 30% of securities offerings that may be conducted by Oragenics in the future, subject to certain conditions and limitations. The Company has made no purchases of Oragenics' common stock.

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

14. Net Loss per Share

The following table presents the historical computation of basic and diluted net loss per share and the unaudited pro forma basic and diluted net loss per share:

	Three months ended March 31,		Year ended December 31,	
	2013	2012	2012	2011
	(unaudited)			
Historical net loss per share:				
Numerator:				
Net loss	$ (36,311)	$ (13,912)	$ (81,874)	$ (85,280)
Add: Accretion of dividends on redeemable convertible preferred stock, not declared	(6,405)	(5,460)	(21,994)	(13,868)
Net loss attributable to common shareholders	(42,716)	(19,372)	(103,868)	(99,148)
Denominator:				
Weighted average shares outstanding, basic and diluted	9,908,047	9,548,468	9,683,984	9,171,140
Net loss attributable to common shareholders per share, basic and diluted	$ (4.31)	$ (2.03)	$ (10.73)	$ (10.81)
Pro forma net loss per share (unaudited):				
Numerator:				
Net loss attributable to common shareholders used to compute pro forma net loss per share, basic and diluted				
Denominator:				
Weighted average shares outstanding, basic and diluted				
Add: Shares issued upon conversion of all Series Preferred				
Add: Shares issued upon conversion of cumulative dividends on all Series Preferred				
Weighted average shares used in computing pro forma net loss per shares, basic and diluted				
Pro forma net loss attributable to common shareholders per shares, basic and diluted				

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

The following potentially dilutive securities have been excluded from the computations of diluted weighted average shares outstanding as of March 31, 2013 and 2012 (unaudited) and December 31, 2012 and 2011, as they would have been anti-dilutive:

	March 31,		December 31,	
	2013	2012	2012	2011
Shares issuable upon conversion of all Series Preferred	121,085,428	103,382,654	112,906,464	97,096,941
Options	3,953,172	5,549,177	4,048,672	6,325,427
Warrants	894,423	894,423	894,423	894,423
Total	125,933,023	109,826,254	117,849,559	104,316,791

In addition to the potentially dilutive securities in the table above, Series Preferred cumulative dividends convertible into common shares at a price per share equal to the fair market value of a common share at the time of conversion have been excluded from the computation of diluted weighted-average shares outstanding as of March 31, 2013 and 2012 (unaudited) and December 31, 2012 and 2011.

15. Defined Contribution Plan

The Company sponsors a defined contribution plan covering employees who meet certain eligibility requirements. The Company makes contributions to the plan in accordance with terms specified in the plan agreement. The Company's contributions to the plan were $755 and $433 in 2012 and 2011, respectively.

16. Subsequent Events

The Company applies the provisions of ASC 855, Subsequent Events ("ASC 855"), which provides general standards of accounting for and disclosures of events that occur after the consolidated balance sheet date, but before consolidated financial statements are issued or are available to be issued. ASC 855 also requires entities to disclose the date through which subsequent events were evaluated as well as the rationale for why that date was selected. The Company evaluated subsequent events through May 10, 2013, the date on which the consolidated financial statements were issued.

On April 30, 2013, the Company issued Series F for total gross proceeds of $85,591, net of $1,600 issuance costs, including $1,500 paid to a shareholder.

On April 16, 2013, the Company terminated its ECC with Synthetic Biologics in Field One. As a result of this termination, all licenses granted by the Company under the ECC for use in Field One reverted back to the Company. As a result of this termination, the Company recognized the remaining $1,503 of upfront consideration as collaboration revenue in April 2013.

On April 27, 2013, the Company entered into an ECC with Soligenix, Inc. ("Soligenix"). The Company is entitled to receive 1,034,483 common shares of Soligenix as a technology access fee. The Company will be reimbursed for research and development services performed as provided

Intrexon Corporation and Subsidiaries
Notes to Consolidated Financial Statements
(Amounts in thousands, except share and per share data)

for in the ECC agreement. The Company may receive up to $7,000 in aggregate milestone payments for each product developed under the ECC, payable either in cash or common stock upon achievement of certain events. The Company is also entitled to a royalty as a percentage in the upper-single to lower double digits on the net sales generated from products developed under the ECC.

Through April 30, 2013, the Company's balance of equity securities has decreased approximately $32,123 from the balance as of December 31, 2012, exclusive of equity securities received in 2013.

17. Subsequent Events (unaudited)

For its interim consolidated financial statements as of March 31, 2013 and for the three months then ended, the Company evaluated subsequent events through June 14, 2013, the date on which those financial statements were issued.

From April 1, 2013 through May 31, 2013, the Company has issued 1,227,500 stock options from the 2008 Plan to employees and consultants.

GT Life Sciences, Inc.

Financial Statements
October 5, 2011

Report of Independent Auditors

To the Board of Directors of Intrexon Corporation:

We have audited the accompanying balance sheet of GT Life Sciences, Inc. as of October 5, 2011, and the related statements of operations, of stockholders' equity and of cash flows for the period from January 1, 2011 to October 5, 2011. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of GT Life Sciences, Inc. at October 5, 2011, and the results of its operations and its cash flows for the period then ended in conformity with accounting principles generally accepted in the United States of America.

/s/ PricewaterhouseCoopers LLP
Charlotte, North Carolina
May 10, 2013

GT Life Sciences, Inc.
Balance Sheet
Period ended October 05, 2011

Assets	
Current assets	
Cash	$ 21,693
Grant receivable	63,203
Related party note receivable	33,486
Income tax receivable	97,346
Total current assets	215,728
Property and equipment, net	138,070
Total assets	$ 353,798
Liabilities	
Current liabilities	
Accounts payable	$ 54,698
Accrued expenses	213,447
Total liabilities	268,145
Commitments and contingencies (Note 8)	
Stockholders' Equity	
Common stock, $0.001 par value, 15,000,000 shares authorized, 11,197,768 shares issued and outstanding	11,197
Additional paid-in capital	615,136
Accumulated deficit	(540,680)
Total stockholders' equity	85,653
Total liabilities and stockholders' equity	$ 353,798

The accompanying notes are an integral part of these financial statements.

GT Life Sciences, Inc.
Statement of Operations
Period ended October 5, 2011

	Period ended October 05, 2011
Revenues	
Research and development services	$ 173,077
Research grant revenues	667,326
Total revenues	840,403
Costs and expenses	
Research and development	738,037
Selling, general, and administrative	1,117,991
Total costs and expenses	1,856,028
Loss from operations	(1,015,625)
Other	
Interest income	486
Net loss before provision for income taxes	(1,015,139)
Income tax benefit	144,826
Net loss	$ (870,313)

The accompanying notes are an integral part of these financial statements.

GT Life Sciences, Inc.
Statement of Stockholders' Equity
Period ended October 05, 2011

	Common stock		Additional paid-in capital	Retained earnings (Accumulated deficit)	Total stockholders' equity
	Shares	Amount			
Balances as of December 31, 2010	10,083,435	$ 10,083	$ 59,167	$ 329,633	$ 398,883
Exercise of common stock options	1,114,333	1,114	32,316	—	33,430
Share-based compensation expense	—	—	223,653	—	223,653
Contribution in conjunction with merger	—	—	300,000	—	300,000
Net loss	—	—	—	(870,313)	(870,313)
Balances as of October 05, 2011	11,197,768	$ 11,197	$ 615,136	$ (540,680)	$ 85,653

The accompanying notes are an integral part of these financial statements.

GT Life Sciences, Inc.
Statement of Cash Flows
Period ended October 05, 2011

	Period ended October 05, 2011
Cash flows from operating activities	
Net loss	$ (870,313)
Adjustment to reconcile net loss to net cash used in operating activities	
Depreciation	41,798
Noncash interest income (Note 9)	(486)
Share-based compensation expense	223,653
Deferred income taxes (Note 7)	(48,280)
Changes in operating assets and liabilities	
Prepaid expenses and other assets	13,682
Grant receivable	105,106
Income tax receivable	(97,346)
Accounts payable	9,305
Accrued expenses	(36,891)
Net cash used in operating activities	(659,772)
Cash flows from investing activities	
Purchases of property and equipment	(4,496)
Net cash used in investing activities	(4,496)
Cash flows from financing activities	
Proceeds from exercise of stock options	430
Proceeds from non-refundable deposits received in conjunction with the merger (Note 1)	300,000
Net cash provided by financing activities	300,430
Net decrease in cash	(363,838)
Cash	
Beginning of this year	385,531
End of the year	$ 21,693
Supplemental disclosure of cash flow information	
Cash paid for income taxes	$ 123,493
Significant noncash financing and investing activities	
Related party note receivable issued for option exercise (Note 9)	$ 33,000

The accompanying notes are an integral part of these financial statements.

GT Life Sciences, Inc.
Notes to Financial Statements
Period ended October 05, 2011

1. Description of business and significant accounting policies

GT Life Sciences, Inc. (the “Company” or “GT”) was incorporated as a Delaware corporation on July 2, 2007. The Company was formed as a spin out company of Genomatica, Inc. (Genomatica) to independently and exclusively pursue life science applications of Genomatica’s technology and software platform. GT is a privately held biotechnology company that utilizes a platform in silico modeling of cellular processes that integrates tightly with experimental technologies to drive the discovery and design of new products and processes for the life sciences field. The company uses its platform to provide research and development modeling services to third parties and enter into exclusive and non-exclusive licensing arrangements.

On October 5, 2011, Intrexon Corporation (“Intrexon”), a privately held synthetic biology company, acquired 100% of the outstanding common stock of the company by merging an Intrexon wholly-owned subsidiary with and into the Company. The Company received non-refundable deposits from Intrexon of $300,000 prior to the execution of the merger agreement.

Business Risks

The Company faces risks associated with companies whose products are in development. These risks include, among others, the Company’s need for additional financing to complete its research and development, achieving key technical milestones, defending intellectual property rights, and dependence on key members of management.

Basis of Presentation

These financial statements are prepared in U.S. dollars and are prepared under accounting principles generally accepted in the United States of America. The Company has evaluated subsequent events through May 10, 2013, the date at which the financial statements were available to be issued.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Cash

At certain times during the period, the Company held bank deposits in excess of federally insured limits.

GT Life Sciences, Inc.
Notes to Financial Statements
Period ended October 05, 2011

Property and Equipment

Property and equipment are recorded at cost and depreciated using the straight-line method over their estimated useful lives. The costs of maintenance and repairs are expensed as incurred. Improvements and betterments that add new functionality or extend the useful life of the asset are capitalized.

Long-lived assets, such as property and equipment, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to estimated undiscounted future cash flows expected to be generated by the asset. If the carrying amount of an asset exceeds its estimated future cash flows, then an impairment charge is recognized for the amount by which the carrying value of the asset exceeds the fair value of the asset. There have been no events or changes in circumstances in the period ended October 5, 2011, which would indicate that any of the Company's assets have been impaired.

Intellectual Property

The Company's intellectual property consists primarily of licensed technology and patent rights. The Company files patent applications to protect technology, inventions, and improvements that are considered important to its business. The costs of filing, prosecuting, and maintaining internally developed patents are expensed as general and administrative costs as incurred. The costs of intangible assets that are acquired for use in a particular research and development project and have no alternative future uses are expensed as research and development costs as incurred.

Revenue Recognition

The Company's revenue consists of payments received from grant awards and research and development contract support. The Company records research and development service revenue when the services are performed and collection is reasonably assured. During the period ended October 5, 2011, the Company recorded $173,077 of revenue for research and development services provided to third parties. The Company accounts for the grant revenue on a cost incurred basis in accordance with the terms of the grants. Any of the funding sources may, at its discretion, request reimbursement for expense or return of funds, or both, as a result of noncompliance by the Company with the terms of the grant. During the period ended October 5, 2011, the Company recognized $667,326 in federal funding under a grant with National Institutes of Health.

Research and Development Expenses

Research and development expenses include all direct costs and indirect costs associated with the development of the Company's products and services. These expenses include personnel costs,

GT Life Sciences, Inc.
Notes to Financial Statements
Period ended October 05, 2011

consulting fees, and payments to third parties for provision of research and development services. These costs are charged to expense as incurred.

Share-based Compensation

Employees

The Company applies the fair value method of accounting for share-based compensation which requires all such compensation to employees, including the grant of employee stock options, to be recognized in the income statement based on its fair value at the measurement date (generally the grant date). Fair value of the common stock was determined by management. The expense associated with share-based compensation is recognized on a straight-line basis over the service period of each award.

Nonemployees

For share-based compensation granted to nonemployees, the measurement date is generally considered to be the date when all services have been rendered or the date that options are fully vested.

During the period ending October 5, 2011, the Company recorded $223,653 in share-based compensation expense.

Determining the appropriate fair value model and the related assumptions requires judgment. The fair value of each option grant is estimated using a Black-Scholes option-pricing model on the date of grant. No options were granted during 2011.

Due to limited historical data, the Company estimates stock price volatility based on the actual volatility of comparable publicly traded companies over the expected life of the option. The expected term represents the average time that options that vest are expected to be outstanding. The Company does not have sufficient history of exercise of stock options to estimate the expected term of employee stock options and thus continues to calculate expected life based on the mid-point between the vesting date and the contractual term which is in accordance with the simplified method. The expected term for share-based compensation granted to nonemployees is the contractual life. The risk-free rate is based on the United States Treasury yield curve during the expected life of the option.

Income Taxes

Deferred tax assets and liabilities are determined based on the temporary differences between the financial statement carrying amounts and the tax basis of assets and liabilities using the enacted tax rates in effect in the years in which the differences are expected to reverse. In estimating future tax consequences, all expected future events are considered other than enactment of changes in the tax law or rates.

GT Life Sciences, Inc.
Notes to Financial Statements
Period ended October 05, 2011

The Company recognizes the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by the taxing authorities based on the technical merits of the position. The tax benefits recognized in the financial statements from such a position should be measured based on the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement.

The determination of recording or releasing income tax valuation allowance is made, in part, pursuant to an assessment performed by management regarding the likelihood that the Company will generate future taxable income against which benefits of its deferred tax assets may or may not be realized. This assessment requires management to exercise significant judgment and make estimates with respect to its ability to generate taxable income in future periods.

2. Comprehensive Loss

For the period ended October 5, 2011, the comprehensive loss was equal to the net loss; therefore, a separate statement of comprehensive loss is not included in the accompanying financial statements.

3. Property and Equipment

Property and equipment consists of the following:

	Estimated useful life (in years)	October 05, 2011
Lab equipment	5	$ 213,613
Computer hardware and software	3	41,519
Less: Accumulated depreciation		(117,062)
Property and equipment, net		$ 138,070

Depreciation expense for the period ended October 5, 2011 was $41,798.

4. Accrued Expenses

Major categories of accrued expenses as of October 5, 2011 are summarized below:

Payroll and related costs	$ 29,285
Professional fees	7,660
Merger transaction costs	176,502
Total accrued expenses	$213,447

GT Life Sciences, Inc.
Notes to Financial Statements
Period ended October 05, 2011

5. Stockholders' Equity

Capital Structure

Authorized Shares

The Company is authorized to issue up to 15,000,000 shares of its capital stock. The authorized stock is designated as 15,000,000 shares of common stock at a par value of $0.001 per share. The Company reserves a number of shares of unissued common stock sufficient to effect the exercise of all outstanding options to purchase the Company's common stock.

Common Stock

Issuance of Stock

During the period ended October 5, 2011, the Company issued 1,114,333 shares of common stock through the exercise of stock options at exercise prices of $0.03 per share, receiving proceeds of $430 and issued a related party note receivable for $33,000 (Note 9).

6. Stock Option Plan

During 2007, the Company adopted the 2007 Equity Incentive Plan (the "Plan"). The total number of shares authorized under the Plan as of October 5, 2011, was 6,100,000. Of this amount, 3,220,000 shares are available for future grants as of October 5, 2011. Eligible participants include employees, directors and consultants. The Plan permits the granting of incentive stock options and nonstatutory stock options. The terms of the agreements are determined by the Company's Board of Directors. The Company's awards vest based on the terms in the agreements and generally vest over four years and have a term of ten years. As of October 5, 2011, all awards are fully vested due to a change in control (Note 1).

The following summarizes the award activity for the period ending October 5, 2011:

	Available for grants	Grants outstanding	Weighted-average exercise price
Balances as of December 31, 2010	2,080,000	4,020,000	$ 0.03
Options granted in 2011	—	—	$ —
Options cancelled in 2011	25,667	(25,667)	$ 0.03
Exercised in 2011	1,114,333	(1,114,333)	$ 0.03
Balances as of October 5, 2011	3,220,000	2,880,000	$ 0.03

The options exercised during 2011 had no intrinsic value.

GT Life Sciences, Inc.
Notes to Financial Statements
Period ended October 05, 2011

The following summarizes certain information about stock options vested and expected to vest as of October 5, 2011:

	Number of options	Weighted-average remaining contractual life (in years)	Weighted-average exercise price
Outstanding	2,880,000	0	$ 0.03
Exercisable	2,880,000	0	$ 0.03

The following table summarizes certain information about all stock options outstanding as of October 5, 2011:

Exercise price	Number of options	Weighted-average remaining contractual life (in years)	Number of options exercisable
$ 0.03	2,880,000	0	2,880,000

On October 5, 2011, $120,475 of total unrecognized compensation cost related to unvested stock options was recorded due to acceleration of vesting required for a change in control (Note 1).

As of October 5, 2011, the total fair value and intrinsic value of vested shares was $2,851,200 and $2,764,800 respectively.

7. Income Taxes

The components of income tax expense / (benefit) as of October 5, 2011 are as follows:

Current expense	
Federal	$ (97,346)
State	800
Total current expense/(benefit)	(96,546)
Deferred expense	
Federal	(37,566)
State	(10,714)
Total deferred expense/(benefit)	(48,280)
Total income tax expense/(benefit)	$(144,826)

GT Life Sciences, Inc.
Notes to Financial Statements
Period ended October 05, 2011

The Company's total deferred tax assets and deferred tax liability as of October 5, 2011 are as follows:

Deferred tax assets	
Accrued expenses	$ 13,045
Net operating loss carryforwards	916,370
Research and development tax credits	77,515
Less: valuation allowance	(953,566)
Net deferred tax assets	53,364
Deferred tax liability	
Property and equipment	53,364
Total net deferred tax assets	$ —

Taxes computed at the statutory federal income tax rate of 34% are reconciled to the provision (benefit) for income taxes as follows:

	Amount
Income tax benefit at statutory rate	$(345,147)
State taxes (net of federal benefit)	(183,081)
Stock-based compensation	(696,308)
Federal research and development tax credit	(45,770)
Other, net	171,914
Change in valuation allowance	953,566
Income tax benefit	$(144,826)

The Company has established a valuation allowance against its deferred tax assets due to the uncertainty surrounding the realization of such assets.

As of October 5, 2011, the Company has net operating loss carryforwards of $2.25 million available to offset future federal and state taxable income which begin to expire in 2031 for federal and state tax purposes.

The Tax Reform Act of 1986 contains provisions which limit the ability to utilize the net operating loss carryforwards in the case of certain events including significant changes in ownership interests. If the Company's net operating loss carryforwards are limited and the Company has taxable income which exceeds the permissible yearly net operating loss carryforward, the Company would incur a federal income tax liability even though net operating loss carryforwards would be available in future years.

The Company adopted the provisions of ASC 740-10 related to uncertain tax positions effective January 1, 2009. The Company determined that no liability related to unrecognized tax benefits was required as of January 1, 2009. As of October 5, 2011, the Company continues to have no unrecognized tax benefits. The Company does not reasonably expect any change to the amount of unrecognized tax benefits within the next twelve months.

GT Life Sciences, Inc.
Notes to Financial Statements
Period ended October 05, 2011

The Company recognizes interest and penalties related to uncertain tax positions in the provision for income taxes. As of the date of adoption and as of October 5, 2011, the Company had no interest or penalties related to uncertain tax positions.

The 2009 through 2011 tax years of the Company are open to examination by federal tax and state tax authorities. The Company has not been informed by any tax authorities for any jurisdiction that any of its tax years is under examination as of October 5, 2011.

8. Commitments

Leases

The Company leases its facility from Genomatica, a related party, on a month to month basis. During the period ended October 5, 2011, the Company paid approximately $3,660 per month.

9. Related Party Transactions

During the period ended October 5, 2011, the Company issued a note receivable to an officer. As of October 5, 2011, the note receivable had a principal balance of $33,000 and accrued interest of $486 (Note 1).

During the period ended October 5, 2011, the Company rented facilities and obtained shared services from Genomatica for a total cost of $50,411 (Note 8).

10. Subsequent Events

Other than the Company’s merger discussed in Note 1, there have been no subsequent events.

Immunologix, Inc.

Financial Statements

October 20, 2011

Report of Independent Auditors

To the Board of Directors of Intrexon Corporation:

We have audited the accompanying balance sheet of Immunologix, Inc. as of October 20, 2011, and the related statement of operations, of stockholders' deficit and of cash flows for the period from January 1, 2011 to October 20, 2011. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Immunologix, Inc. at October 20, 2011, and the results of its operations and its cash flows for the period then ended in conformity with accounting principles generally accepted in the United States of America.

/s/ PricewaterhouseCoopers LLP
Charlotte, North Carolina
May 10, 2013

Immunologix, Inc.
Balance Sheet
Period ended October 20, 2011

Assets	
Current assets	
Cash and cash equivalents	$ 19,451
Prepaid expenses and other assets	6,249
Total current assets	25,700
Property and equipment, net	139,719
Total assets	$ 165,419
Liabilities	
Current liabilities	
Accounts payable	$ 87,399
Accrued expenses	269,070
Current portion of capital lease obligation (Note 9)	18,711
Total current liabilities	375,180
Capital lease obligation, net of current portion (Note 9)	56,637
Total liabilities	431,817
Commitments and contingencies (Note 9)	
Series A convertible preferred stock, $0.001 par value, 1,099,721 shares authorized, issued and outstanding (liquidation value $4,378,270) (Note 6)	4,357,582
Series B convertible preferred stock, $0.001 par value, 1,025,000 shares authorized, 228,135 shares issued and outstanding (liquidation value $931,077) (Note 6)	926,835
Stockholders' Deficit	
Common stock, $0.001 par value, 10,000,000 shares authorized, 2,700,502 shares issued and outstanding	2,701
Accumulated deficit	(5,553,516)
Total stockholders' deficit	(5,550,815)
Total liabilities, convertible preferred stock, and stockholders' deficit	$ 165,419

The accompanying notes are an integral part of these financial statements.

Immunologix, Inc.
Statement of Operations
Period ended October 20, 2011

	Period ended October 20, 2011
Revenues	
License revenue	$ 35,000
Research grant revenue	100,000
Total revenues	135,000
Costs and Expenses	
Research and development	440,475
Selling, general, and administrative	734,919
License royalties	4,167
Total costs and expenses	1,179,561
Loss from operations	(1,044,561)
Other	
Interest income	692
Interest expense	(6,096)
Total other	(5,404)
Net loss	$ (1,049,965)

The accompanying notes are an integral part of these financial statements.

Immunologix, Inc.
Statement of Stockholders' Deficit
Period ended October 20, 2011

	Common stock		Additional paid-in capital	Accumulated deficit	Total stockholders' deficit
	Shares	Amount			
Balances as of December 31, 2010	2,656,780	$ 2,657	$ 77,996	$ (683,147)	$ (602,494)
Exercise of common stock options	11,100	11	1,654	—	1,665
Share-based compensation expense	—	—	45,723	—	45,723
Issuance of common stock for services and license	32,622	33	4,861	—	4,894
Accretion to redemption value on convertible preferred stock			(130,234)	(3,820,404)	(3,950,638)
Net loss	—	—	—	(1,049,965)	(1,049,965)
Balances as of October 20, 2011	2,700,502	$ 2,701	$ —	$ (5,553,516)	$ (5,550,815)

The accompanying notes are an integral part of these financial statements.

Immunologix, Inc.
Statement of Cash Flows
Period ended October 20, 2011

	Period ended October 20, 2011
Cash flows from operating activities	
Net loss	$ (1,049,965)
Adjustment to reconcile net loss to net cash used in operating activities	
Depreciation	28,087
Share-based compensation expense	45,723
Common stock issued for services and license	4,894
Changes in operating assets and liabilities	
Prepaid expenses and other assets	(1,250)
Grants receivable	244,479
Accounts payable	11,297
Accrued expenses	182,591
Net cash used in operating activities	(534,144)
Cash flows from investing activities	
Purchases of property and equipment	(22,120)
Net cash used in investing activities	(22,120)
Cash flows from financing activities	
Repayments of capital lease (Note 9)	(14,389)
Proceeds from issuance of Series B convertible preferred stock (Note 6)	250,948
Payments of stock issuance costs	(4,242)
Proceeds from exercise of stock options	1,665
Net cash provided by financing activities	233,982
Net decrease in cash and cash equivalents	(322,282)
Cash and cash equivalents	
Beginning of this year	341,733
End of the year	$ 19,451
Supplemental disclosure of cash flow information	
Cash paid during the period for interest	$ 6,096
Significant noncash financing and investing activities	
Accretion to redemption value on convertible preferred stock	$ 3,950,638

The accompanying notes are an integral part of these financial statements.

Immunologix, Inc.
Notes to Financial Statements
Period ended October 20, 2011

1. Description of Business and Significant Accounting Policies

Immunologix, Inc. (the “Company” or “IMX”) was incorporated as a Delaware corporation on September 25, 2008. The Company is founded on a proprietary method of converting naïve B-cells to fully mature human antibodies targeting any antigen.

On October 21, 2011, Intrexon Corporation (“Intrexon”), a privately held synthetic biology company, acquired 100% of the outstanding preferred and common stock of the company by merging an Intrexon wholly-owned subsidiary with and into the Company.

Business Risks

The Company faces risks associated with companies whose products are in development. These risks include, among others, the Company’s need for additional financing to complete its research and development, achieving key technical milestones, defending intellectual property rights, and dependence on key members of management.

Basis of Presentation

These financial statements are prepared in U.S. dollars and are prepared under accounting principles generally accepted in the United States of America. The Company has evaluated subsequent events through May 10, 2013, the date at which the financial statements were available to be issued.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Cash and Cash Equivalents

The Company considers all highly liquid investments that have maturities of three months or less when acquired to be cash equivalents. At certain times during the period, the Company held bank deposits in excess of federally insured limits.

Property and Equipment

Property and equipment are recorded at cost and depreciated using the straight-line method over their estimated useful lives. The costs of maintenance and repairs are expensed as incurred. Improvements and betterments that add new functionality or extend the useful life of the asset are capitalized.

Immunologix, Inc.
Notes to Financial Statements
Period ended October 20, 2011

Long-lived assets, such as property and equipment, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to estimated undiscounted future cash flows expected to be generated by the asset. If the carrying amount of an asset exceeds its estimated future cash flows, then an impairment charge is recognized for the amount by which the carrying value of the asset exceeds the fair value of the asset. There have been no events or changes in circumstances during the period ended October 20, 2011, which would indicate that any of the Company's assets have been impaired.

Intellectual Property

The Company's intellectual property consists primarily of licensed technology and patent rights. The Company files patent applications to protect technology, inventions, and improvements that are considered important to its business. The costs of filing, prosecuting, and maintaining internally developed patents are expensed as general and administrative costs as incurred. The costs of intangible assets that are acquired for use in a particular research and development project and have no alternative future uses are expensed as research and development costs as incurred.

Revenue Recognition

The Company's revenue consists primarily of payments received from grant awards and payments received from license agreements. The Company accounts for the grant revenue on a cost incurred basis in accordance with the terms of the grants. Any of the funding sources may, at its discretion, request reimbursement for expense or return of funds, or both, as a result of noncompliance by the Company with the terms of the grant. During the period ended October 20, 2011, the Company recognized $100,000 in federal funding under the University Startup Assistance Program with South Carolina Research Authority ("SCRA").

The Company accounts for license agreements when there is evidence of an arrangement, the fee is fixed or determinable and collection is reasonably assured. The amount of revenue recognized at any time is limited to the amounts that have become due under the terms of the agreement.

Research and Development Expenses

Research and development expenses include all direct costs and indirect costs associated with the development of the Company's biopharmaceutical products. These expenses include personnel costs, consulting fees, and payments to third parties for provision of research, development, and manufacturing services. These costs are charged to expense as incurred.

Share-based Compensation

Employees

The Company applies the fair value method of accounting for share-based compensation which requires all such compensation to employees, including the grant of employee stock options, to be recognized in the income statement based on its fair value at the measurement date (generally the

Immunologix, Inc.
Notes to Financial Statements
Period ended October 20, 2011

grant date). Fair value of the common stock was determined by management. The expense associated with share-based compensation is recognized on a straight-line basis over the service period of each award. The Company uses authorized and unissued shares to satisfy share award exercises.

Nonemployees

For share-based compensation granted to nonemployees the measurement date is generally considered to be the date when all services have been rendered or the date that options are fully vested.

During the period ending October 20, 2011, the Company recorded $45,723 in share-based compensation expense.

Determining the appropriate fair value model and the related assumptions requires judgment. The fair value of each option grant is estimated using a Black-Scholes option-pricing model on the date of grant as follows as of October 20, 2011:

Estimated dividend yield	0.00 %
Expected stock price volatility	93.19%
Risk-free interest rate	1.43%
Expected life of options (years)	5.64
Weighted-average fair value per share	$ 0.66

Due to limited historical data, the Company estimates stock price volatility based on the actual volatility of comparable publicly traded companies over the expected life of the option. The expected term represents the average time that options that vest are expected to be outstanding. The Company does not have sufficient history of exercise of stock options to estimate the expected term of employee stock options and thus continues to calculate expected life based on the mid-point between the vesting date and the contractual term which is in accordance with the simplified method. The expected term for share-based compensation granted to nonemployees is the contractual life. The risk-free rate is based on the United States Treasury yield curve during the expected life of the option.

Income Taxes

Deferred tax assets and liabilities are determined based on the temporary differences between the financial statement carrying amounts and the tax basis of assets and liabilities using the enacted tax rates in effect in the years in which the differences are expected to reverse. In estimating future tax consequences, all expected future events are considered other than enactment of changes in the tax law or rates.

The Company recognizes the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by the taxing authorities based on the technical merits of the position. The tax benefits recognized in the financial statements

Immunologix, Inc.
Notes to Financial Statements
Period ended October 20, 2011

from such a position should be measured based on the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement.

The determination of recording or releasing income tax valuation allowance is made, in part, pursuant to an assessment performed by management regarding the likelihood that the Company will generate future taxable income against which benefits of its deferred tax assets may or may not be realized. This assessment requires management to exercise significant judgment and make estimates with respect to its ability to generate taxable income in future periods.

2. Comprehensive Loss

For the period ended October 20, 2011, the comprehensive loss was equal to the net loss; therefore, a separate statement of comprehensive loss is not included in the accompanying financial statements.

3. Property and Equipment

Property and equipment consists of the following:

	Estimated useful life (in years)	October 20, 2011
Lab equipment	5	$ 187,061
Less: Accumulated depreciation		(47,342)
Property and equipment, net		$ 139,719

Depreciation expense for the period ended October 20, 2011 was $28,087.

4. Accrued Expenses

Major categories of accrued expenses as of October 20, 2011 are summarized below:

Payroll and related costs	$ 76,296
Merger Transaction costs	192,774
Total accrued expenses	$269,070

5. Significant Agreements

License agreement

On March 10, 2010, the Company entered into a license agreement (the “License”) with MUSC Foundation for Research Development (the “Foundation”). The License allows the Company to develop and commercialize certain patent rights relating to methods of discovery of human monoclonal antibodies and compositions of matter thereof. The Company incurred fees and

Immunologix, Inc.
Notes to Financial Statements
Period ended October 20, 2011

patent costs of $4,167 to the Foundation during the period ended October 20, 2011 for the License. All license fees have been recorded as research and development expense in these financial statements.

The License requires the Company to reimburse the Foundation for the maintenance of U.S. and foreign patent rights. The Corporate License is a worldwide sublicenseable agreement and remains in full effect for the life of the last-to-expire patents included in the patent rights, which is approximately ten years. The License requires Foundation approval for certain sublicenses and minimum royalties of at least 0.5% to the Foundation to be included in the sublicense agreements.

The License requirements include that the Company raise $200,000 in grant, debt and/or equity financing by the first anniversary of the License, and an additional $200,000 by the second anniversary; establish and maintain a scientific advisory board; enter a laboratory lease; complete a pilot run of licensed method within nine months; and execute at least 15 contracts for the provision of services or grant of rights within five years.

During the term of the License, the Company must pay all fees and costs relating to the filing, prosecution and maintenance of the patent rights. The Company did not incur any patent legal fees related to this license from the effective date through October 20, 2011 other than those included in the reimbursement amount paid to the Foundation above.

The Company has issued 483,402 shares of common stock to the Foundation, representing 12% of the Company's then issued and outstanding capital stock. Additional shares are required to be issued to maintain the 12% ownership until the Company raised $3,000,000 of equity capital. In accordance with the anti-dilution provision, the Company issued 32,622 additional shares of common stock in 2011. The fair value of the 483,402 shares of common stock issued to the Foundation of $72,510 was recorded as research and development expense.

The License may be terminated by the Foundation if the Company fails to meet certain milestones within specified timeframes. As of October 20, 2011, the Company was in compliance with its obligations.

The Company is required to use commercially-reasonable efforts to develop three specified products or processes and introduce them into commercial markets. The Foundation will earn a royalty equal to a specified percentage of net sales, subject to the following minimum annual royalties starting on the first anniversary of the license agreement (March 10th of each year):

	Minimum royalty
First anniversary	$ 25,000
Second anniversary	$ 75,000
Third anniversary	$ 200,000
Fourth anniversary	$ 400,000
Fifth anniversary and each anniversary thereafter	$ 750,000

Immunologix, Inc.
Notes to Financial Statements
Period ended October 20, 2011

Sales of licensed products or services since the effective date through October 20, 2011 have not met a level which would exceed the minimum royalty.

The terms of the License were renegotiated and amended in conjunction with the Company's merger.

6. Convertible Preferred Stock

The table below represents a rollforward of the Convertible Preferred Stock:

	Series A convertible preferred stock		Series B convertible preferred stock	
	Shares	**Amount**	**Shares**	**Amount**
Balances as of December 31, 2010	1,099,721	$1,087,073	—	$ —
Issuance of Series B Convertible Preferred Stock	—	—	228,135	250,948
Stock issuance costs	—	—	—	(4,242)
Accretion to redemption value on convertible preferred stock	—	3,270,509	—	680,129
Balances as of October 20, 2011	1,099,721	$4,357,582	228,135	$ 926,835

The Company reserves a number of shares of unissued common stock sufficient to effect the conversion of its issued and outstanding shares of convertible preferred stock.

Preferred Stock

Series A Convertible Preferred Stock (the "Series A")

Dividends

The holders of the Series A are entitled to receive noncumulative cash dividends, on each issued and outstanding share of Series A when and as declared by the Board of Directors. Any declared but unpaid dividends are payable upon a Liquidation Event or conversion of the applicable shares of preferred stock to common stock. No dividends have been declared on the Series A, and there were no declared but unpaid dividends on Series A as of October 20, 2011.

Voting rights

The holders of the Series A are entitled to a number of votes equal to the number of shares of common stock into which their shares can be converted. Together with the holders of the common stock, the holders of the Series A, voting together as a single class, are entitled to elect two members of the Board of Directors.

Immunologix, Inc.
Notes to Financial Statements
Period ended October 20, 2011

Liquidation preference

In the event of a liquidation, dissolution, or winding up of the Company, or in the event the Company merges with or is acquired by another entity, the holders of the Series A are entitled to be paid an amount equal to $1.00 per share, plus any declared but unpaid dividends. Once the preceding liquidation preferences have been paid, any remaining assets would be distributed pro rata among the holders of the Series A and common stock.

Conversion

At any time at the option of the holder, each share of Series A is convertible into one share of common stock, subject to certain antidilution adjustments. In the event of an initial public offering of at least $25,000,000 or the vote of at least a majority of the outstanding holders of Series A, the Series A will be automatically converted.

Protective Provisions

Approval of holders of at least a majority of the preferred stock is required for certain significant corporate actions.

Series B Convertible Preferred Stock (the "Series B")

Dividends

The holders of the Series B are entitled to receive noncumulative cash dividends, on each issued and outstanding share of Series B when and as declared by the Board of Directors. Any declared but unpaid dividends are payable upon a Liquidation Event or conversion of the applicable shares of preferred stock to common stock. No dividends have been declared on the Series B, and there were no declared but unpaid dividends on Series B as of October 20, 2011.

Voting rights

The holders of the Series B are entitled to a number of votes equal to the number of shares of common stock into which their shares can be converted. Together with the holders of the common stock, the holders of the Series A, the holders of Series B voting together as a single class, are entitled to elect two members of the Board of Directors.

Liquidation preference

In the event of a liquidation, dissolution, or winding up of the Company, or in the event the Company merges with or is acquired by another entity, the holders of the Series B are entitled to be paid an amount equal to $1.10 per share, plus any declared but unpaid dividends. Once the preceding liquidation preferences have been paid, any remaining assets would be distributed pro rata among the holders of the Series A, Series B, and common stock.

Immunologix, Inc.
Notes to Financial Statements
Period ended October 20, 2011

Conversion

At any time at the option of the holder, each share of Series B is convertible into one share of common stock, subject to certain antidilution adjustments. In the event of an initial public offering of at least $25,000,000 or the vote of at least a majority of the outstanding holders of Series B, the Series B will be automatically converted.

Protective Provisions

Approval of holders of at least a majority of the preferred stock is required for certain significant corporate actions.

As discussed in Note 1, the Company was acquired by Intrexon on October 21, 2011. This acquisition is considered a deemed liquidation event requiring redemption. As the Company deemed that this liquidation event was probable to occur on October 20, 2011, the Company accreted the Series A and Series B values to the respective redemption values as of October 20, 2011.

7. Stock Option Plan

During 2010, the Company adopted the 2010 Stock Plan (the “Plan”). The total number of shares authorized under the Plan as of October 20, 2011 was 200,000. Of this amount, 51,120 shares are available for future grants as of October 20, 2011. Eligible participants include employees, directors and consultants. The Plan permits the granting of incentive stock options, nonstatutory stock options, stock awards, and stock purchase rights. The terms of the agreements are determined by the Company’s Board of Directors. The Company’s awards vest based on the terms in the agreements and generally vest over four years and have a term of ten years. As of October 20, 2011 all awards are fully vested and approximately $45,723 of total unrecognized compensation cost related to unvested stock options was recorded due to a change in control (Note 1).

The following summarizes the award activity for the period ending October 20, 2011:

	Available for grants	Grants outstanding	Weighted-average exercise price
Balances as of December 31, 2010	51,120	124,080	$ .15
Options granted in 2011	(1,000)	1,000	$ .15
Options cancelled in 2011	1,000	(1,000)	$ .15
Exercised in 2011	—	(11,100)	$ .15
Balances as of October 20, 2011	51,120	112,980	$ .15

Immunologix, Inc.
Notes to Financial Statements
Period ended October 20, 2011

The following summarizes certain information about stock options vested and expected to vest as of October 20, 2011:

	Number of options	Weighted-average remaining contractual life	Weighted-average exercise price
		(in years)	
Outstanding	112,980	0	$ 0.15
Exercisable	112,980	0	$ 0.15

The following table summarizes certain information about all stock options outstanding as of October 20, 2011:

Exercise Price	Number of options	Weighted-average remaining contractual life	Number of options exercisable
		(in years)	
$ 0.15	112,080	0	112,080

As of October 20, 2011, the total fair value and intrinsic value of vested shares was $338,940 and $321,993 respectively.

8. Income Taxes

There is no income tax benefit recognized for the period ended October 20, 2011 due to the Company's history of net losses combined with an inability to confirm recovery of the tax benefits of the Company's losses and other net deferred tax assets. Income tax benefit for the period ended October 20, 2011 differed from amounts computed by applying the applicable U.S. federal corporate income tax rate of 34% to loss before income taxes as a result of the following:

Income tax benefit at statutory rate	$(356,988)
State taxes (net of federal benefit)	(36,899)
Stock-based compensation	(93,933)
Research and development tax credits	(22,381)
Other, net	70,753
Change in valuation allowance	439,448
Total income tax provision	$ —

Immunologix, Inc.
Notes to Financial Statements
Period ended October 20, 2011

The tax effects of temporary differences that comprise the deferred tax assets as of October 20, 2011 are as follows:

Property and equipment	$ 715
Intangible assets	56,952
Net operating loss carryforwards	601,968
Federal and state research and development tax credits	36,344
Total deferred tax assets	695,979
Less: valuation allowance	(695,979)
Net deferred tax assets	$ —

The Company has established a valuation allowance against its deferred tax assets due to the uncertainty surrounding the realization of such assets. The valuation allowance increased by $439,448 during the period ended October 20, 2011.

As of October 20, 2011, the Company has net operating loss carryforwards of approximately $1.6 million and federal and state research and development tax credits of $36,344 available to offset future federal and state taxable income which begin to expire in 2030. If the Company's net operating loss carryforwards are limited and the Company has taxable income which exceeds the permissible yearly net operating loss carryforward, the Company would incur a federal income tax liability even though net operating loss carryforwards would be available in future years.

The Company adopted the provisions of ASC 740-10 related to uncertain tax positions effective January 1, 2009. The Company determined that no liability related to unrecognized tax benefits was required as of January 1, 2009. As of October 20, 2011, the Company continues to have no unrecognized tax benefits. The Company does not reasonably expect any change to the amount of unrecognized tax benefits within the next twelve months.

The Company recognizes interest and penalties related to uncertain tax positions in the provision for income taxes. As of the date of adoption and as of October 20, 2011, the Company had no interest or penalties related to uncertain tax positions.

Tax years from 2008 and forward are open to examination by federal tax and state tax authorities. The Company has not been informed by any tax authorities for any jurisdiction that any of its tax years is under examination as of October 20, 2011.

Immunologix, Inc.
Notes to Financial Statements
Period ended October 20, 2011

9. Commitments

Leases

In 2010, the Company entered into leases for office and laboratory space in Charleston, South Carolina (the “Lease”) from SCRA (a shareholder) and certain other office equipment under operating leases. The Company also leases lab equipment under capital leases. Future minimum lease payments under the above lease agreements in the aggregate for the period from October 21, 2011 through December 31, 2011, and years remaining beginning January 1, 2012:

	Operating leases	Capital leases
Remaining in 2011	$ 6,486	$ 4,097
2012	8,166	24,583
2013	2,016	24,583
2014	2,016	24,583
2015	1,680	10,243
	$ 20,364	88,089
Less: Amounts representing interest (9%)		(12,741)
Total obligation under capital leases		75,348
Less: Current portion of obligation under capital leases		(18,711)
Long-term obligation under capital leases		$ 56,637

The Company incurred rent expense of approximately $30,750 in the period ended October 20, 2011 on the noncancelable operating leases.

The equipment under capital leases had a cost of $99,040 and accumulated depreciation of $24,760 as of October 20, 2011. Depreciation expense on these capital leases for the period ended October 20, 2011 was $15,944.

Employment contracts

In 2010, the Company entered into employment contracts with three officers that provide for severance and continuation of benefits in the event of termination by the Company without cause or by the employee for good reason, both as defined in the agreement, upon execution of a release.

10. Related party transactions

During the period ended October 20, 2011, the Company had consulting agreements with three shareholders for a total expense of approximately $6,250 payable in cash. As of October 20, 2011, all expenses had been paid.

Immunologix, Inc.
Notes to Financial Statements
Period ended October 20, 2011

During the period ended October 20, 2011, the Company issued 32,622 shares of common stock to the Foundation, at no cost, subject to stock agreements. The Company recorded $4,894 in expense based on a fair value of $0.15 per share.

11. Subsequent events

Other than the Company's merger discussed in Note 1, there have been no subsequent events.

Table of Contents

Shares

Common Stock

J.P. Morgan

Barclays

Part II
Information not required in prospectus

Item 13. Other expenses of issuance and distribution.

The following table indicates the expenses to be incurred in connection with this offering described in this Registration Statement, other than underwriting discounts and commissions, all of which will be paid by us. All amounts are estimated except the Securities and Exchange Commission registration fee and the FINRA filing fee.

		Amount to be paid
SEC registration fee	$	*
FINRA filing fee		*
NYSE filing fee		*
Printing and engraving expenses		*
Legal fees and expenses		*
Accounting fees and expenses		*
Transfer agent and registrar fees and expenses		*
Miscellaneous expenses		*
Total	$	*

* To be provided by amendment.

Item 14. Indemnification of directors and officers.

Article 10 of Chapter 9 of Title 13.1 of the Code of Virginia, as amended, or the Virginia Stock Corporation Act, permits a Virginia corporation to indemnify any director or officer for reasonable expenses incurred in any legal proceeding in advance of final disposition of the proceeding, if the director or officer furnishes the corporation a written statement of his or her good faith belief that he or she has met the standard of conduct prescribed by the Virginia Stock Corporation Act and furnishes the corporation with a written undertaking to repay any funds advanced if it is ultimately determined that the director has not met the relevant standard of conduct. In addition, a corporation is permitted to indemnify a director or officer against liability incurred in a proceeding if a determination has been made by the disinterested members of the board of directors, special legal counsel or shareholders that the director or officer conducted himself or herself in good faith and otherwise met the required standard of conduct. In a proceeding by or in the right of the corporation, no indemnification shall be made in respect of any matter as to which a director or officer is adjudged to be liable to the corporation, except for reasonable expenses incurred in connection with the proceeding if it is determined that the director or officer has met the relevant standard of conduct. In any other proceeding, no indemnification shall be made if the director or officer is adjudged liable to the corporation on the basis that he or she improperly received a personal benefit. Corporations are given the power to make any other or further indemnity, including advance of expenses, to any director or officer that may be authorized by the articles of incorporation or any bylaw made by the shareholders, or any resolution adopted, before or after the event, by the shareholders, except an indemnity against willful misconduct or a knowing violation of the criminal law. Unless limited by its articles of incorporation, indemnification against the reasonable expenses incurred by a director or officer is mandatory when he or she entirely prevails in the defense of any proceeding to which he or she is a party because he or she is or was a director or officer.

We are a Virginia corporation. Our Amended and Restated Articles of Incorporation contain provisions indemnifying our directors and officers to the extent not prohibited by Virginia law.

Item 15. Recent sales of unregistered securities.

Set forth below is information regarding shares of common stock and preferred stock issued, and options and warrants granted, by us within the past three years that were not registered under the Securities Act of 1933, as amended, or the Securities Act. Included is the consideration, if any, we received for such shares, options and warrants and information relating to the section of the Securities Act, or rule of the Securities and Exchange Commission, under which exemption from registration was claimed.

(a) Issuances of convertible preferred stock

(i) On or about February 19, 2010, we sold 5,250,083 shares of our Series D preferred stock at a purchase price per share of $3.38 for an aggregate purchase price of $17,745,281.

(ii) On or about October 29, 2010, we sold 5,990,711 shares of our Series D preferred stock at a purchase price per share of $3.38 for an aggregate purchase price of $20,248,603.

(iii) On or about January 6, 2011, we sold 5,313,629 shares of our Series D preferred stock at a purchase price per share of $3.38 for an aggregate purchase price of $17,960,074.

(iv) Between February 18, 2011 and February 25, 2011, we sold 3,249,262 shares of our Series D preferred stock at a purchase price per share of $3.38 for an aggregate purchase price of $10,982,502.

(v) On or about May 26, 2011, we sold 19,047,619 shares of our Series E preferred stock at a purchase price per share of $5.25 for an aggregate purchase price of $100,000,000 *less* $2,617,235 paid to Perella Weinberg Partners as placement agent.

(vi) On or about January 10, 2012, we sold 9,523,810 shares of our Series E preferred stock at a purchase price per share of $5.25 for an aggregate purchase price of $50,000,000.

(vii) On or about April 12, 2012, we sold 4,761,905 shares of our Series E preferred stock at a purchase price per share of $5.25 for an aggregate purchase price of $25,000,001.

(viii) Between October 26, 2012 and November 13, 2012, we sold 4,761,905 shares of our Series E preferred stock at a purchase price per share of $5.25 for an aggregate purchase price of $25,000,001.

(ix) On or about March 1, 2013, we sold 8,178,964 shares of our Series F preferred stock at a purchase price per share of $7.88 for an aggregate purchase price of $64,409,342 *less* $1,199,433 paid to Barclays as placement agent and $300,000 to White Rock Capital, Inc. as client referral fees.

(x) On or about April 30, 2013, we sold 10,868,655 shares of our Series F preferred stock at a purchase price per share of $7.88 for an aggregate purchase price of $85,590,658 *less* $100,000 paid to Griffin Securities, Inc. as placement agent and $1,500,000 to White Rock Capital, Inc. as client referral fees.

Other than the placement agents identified above, no underwriters were involved in the foregoing sales of securities. The securities described in this section (a) of Item 15 were issued to investors in reliance upon the exemption from the registration requirements of the Securities Act, as set forth in Section 4(2) under the Securities Act and Regulation D promulgated thereunder relative to transactions by an issuer not involving any public offering, to the extent

an exemption from such registration was required. All purchasers of shares of convertible preferred stock described above represented to us in connection with their purchase that they were accredited investors and were acquiring the shares for their own account for investment purposes only and not with a view to, or for sale in connection with, any distribution thereof and that they could bear the risks of the investment and could hold the securities for an indefinite period of time. The purchasers received written disclosures that the securities had not been registered under the Securities Act and that any resale must be made pursuant to a registration statement or an available exemption from such registration.

(b) Stock option grants

Between January 1, 2010 and May 31, 2013, we granted options to purchase an aggregate of 7,212,947 shares of common stock, with exercise prices ranging from $0.22 to $5.53 per share, to employees, directors and consultants pursuant to our 2008 Equity Incentive Plan. Between January 1, 2010 and May 31**,** 2013, we issued an aggregate of 484,292 shares of common stock upon the exercise of options for aggregate consideration of $676,000.

The stock options, the common stock issuable upon the exercise of such options and the common stock issued in connection with awards of restricted stock as described in this section (b) of Item 15 were issued pursuant to written compensatory plans or arrangements with our employees and directors, in reliance on the exemption from the registration requirements of the Securities Act provided by Rule 701 promulgated under the Securities Act or the exemption set forth in Section 4(2) under the Securities Act and Regulation D promulgated thereunder relative to transactions by an issuer not involving any public offering. All recipients either received adequate information about us or had access, through employment or other relationships, to such information.

(c) Warrant issuances

On January 26, 2011, we issued warrants to purchase an aggregate of 740,234 shares of our common stock at a price of $0.45 per share to three individuals. On November 7, 2011, we issued warrants to purchase an aggregate of 154,189 shares of common stock at a price of $0.45 per share to the same three individuals.

The warrants described in this section (b) of Item 15 were issued to investors in reliance upon the exemption from the registration requirements of the Securities Act, as set forth in Section 4(2) under the Securities Act and Regulation D promulgated thereunder relative to transactions by an issuer not involving any public offering, to the extent an exemption from such registration was required. All persons who received warrants described above represented to us in connection with the issuance that they were accredited investors and were acquiring the warrants, and the common stock issuable upon exercise of the warrants, for their own account for investment purposes only and not with a view to, or for sale in connection with, any distribution thereof and that they could bear the risks of the investment and could hold the securities for an indefinite period of time. The persons received written disclosures that the securities had not been registered under the Securities Act and that any resale must be made pursuant to a registration statement or an available exemption from such registration.

All of the securities described in paragraphs (a), (b) and (c) of this Item 15 are deemed restricted securities for purposes of the Securities Act. All of the certificates representing such securities included appropriate legends setting forth that the securities have not been registered and the applicable restrictions on transfer.

Item 16. Exhibits and financial statement schedules.

(a) Exhibits

The exhibits to the registration statement are listed in the Exhibit index attached hereto and incorporated by reference herein.

(b) Financial statement schedules

Schedules have been omitted because the information required to be set forth herein is not applicable or is shown in the financial statements or notes thereto.

Item 17. Undertakings.

(a) The undersigned registrant hereby undertakes to provide to the underwriter at the closing specified in the underwriting agreements, certificates in such denominations and registered in such names as required by the underwriter to permit prompt delivery to each purchaser.

(b) Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

(c) The undersigned registrant hereby undertakes that:

- For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.
- For the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

Signatures

Pursuant to the requirements of the Securities Act of 1933, the Registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Blacksburg, Commonwealth of Virginia, on .

INTREXON CORPORATION

By: _____

Randal J. Kirk
Chief Executive Officer and Chairman of the Board of Directors

Power of attorney

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Randal J. Kirk, Rick Sterling and Donald P. Lehr and each of them, as his or her true and lawful attorneys-in-fact and agent, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign the Registration Statement on Form S-1 of Intrexon Corporation, and any or all amendments (including post-effective amendments) thereto and any new registration statement with respect to the offering contemplated thereby filed pursuant to Rule 462(b) of the Securities Act of 1933, as amended, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises hereby ratifying and confirming all that said attorneys-in-fact and agent, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
Randal J. Kirk	Chief Executive Officer and Chairman of the Board of Directors (Principal Executive Officer)	
Rick Sterling	Chief Financial Officer (Principal Accounting and Financial Officer)	
Cesar L. Alvarez	Director	
Steven Frank	Director	
Larry D. Horner	Director	
Jeffrey B. Kindler	Director	
Dean J. Mitchell	Director	
Robert B. Shapiro	Director	

Exhibit index

Exhibit number	Description of exhibit
1.1*	Form of Underwriting Agreement
3.1*	Amended and Restated Articles of Incorporation of the Company
3.2*	Bylaws of the Company
4.1*	Specimen certificate evidencing shares of common stock
4.2*	Warrants to purchase shares of common stock
4.3*	Eighth Amended and Restated Investors' Rights Agreement, dated March 1, 2013, by and among the Company and the holders of the Company's series preferred and certain holders of the Company's common stock
5.1*	Opinion of Troutman Sanders LLP
10.1*†	Intrexon Corporation Amended and Restated 2008 Equity Incentive Plan and Form of Incentive Stock Option Agreement
10.2*†	Intrexon Corporation 2013 Omnibus Incentive Plan and Forms of Award Agreements
10.3#**	Exclusive Channel Partner Agreement, dated as of January 6, 2011, between the Company and ZIOPHARM Oncology, Inc., as amended
10.4**	Stock Purchase Agreement, dated as of January 6, 2011, between the Company and ZIOPHARM Oncology, Inc.
10.5#**	Exclusive Channel Collaboration Agreement, dated as of November 28, 2011, between the Company and Elanco Animal Health, a division of Eli Lilly and Company
10.6#**	Exclusive Channel Collaboration Agreement, dated as of June 5, 2012, between the Company and Oragenics, Inc.
10.7#**	Exclusive Channel Collaboration Agreement, dated as of August 6, 2012, between the Company and Synthetic Biologics, Inc.
10.8#**	Exclusive Channel Collaboration Agreement, dated as of October 5, 2012, between the Company and Fibrocell Science, Inc.
10.9#**	Exclusive Channel Collaboration Agreement, dated as of February 14, 2013, between the Company and AquaBounty Technologies, Inc.
10.10**	Relationship Agreement, dated as of December 5, 2012, between the Company and AquaBounty Technologies, Inc.
10.11#**	Exclusive Channel Collaboration Agreement, dated as of March 29, 2013, between the Company and Ampliphi Biosciences Corporation
10.12#**	Exclusive Channel Collaboration Agreement, dated as of March 29, 2013, between the Company and Genopaver, LLC
10.13#**	Exclusive Channel Collaboration Agreement, dated as of April 27, 2013, between the Company and Soligenix, Inc.
10.14*#†	Second Amended and Restated Employment Agreement, dated as of August 31, 2006, between the Company and Thomas D. Reed
10.15#	Exclusive Research Collaboration Agreement, dated as of August 1, 2012, between the Company and BioLife Cell Bank, Inc.

Exhibit number	Description of exhibit
10.16#	Collaboration and License Agreement, dated as of June 6, 2011, between the Company and Halozyme, Inc.
21.1**	List of Subsidiaries of the Company
23.1*	Consent of PricewaterhouseCoopers LLP
23.2*	Consent of PricewaterhouseCoopers LLP
23.3*	Consent of PricewaterhouseCoopers LLP
23.4*	Consent of Troutman Sanders LLP (included in Exhibit 5)
24.1*	Power of Attorney (included on signature page)

* To be filed by amendment.
** Previously filed
† Indicates management contract or compensatory plan.
# Confidential treatment requested as to certain portions, which portions have been omitted and filed separately with the Securities and Exchange Commission.

Exhibit 10.15

EXECUTION COPY
CONFIDENTIAL

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

EXCLUSIVE RESEARCH COLLABORATION AGREEMENT

THIS EXCLUSIVE RESEARCH COLLABORATION AGREEMENT (the "**Agreement**") is made and entered into effective as of August 1, 2012 (the "**Effective Date**") by and between **INTREXON CORPORATION**, a Virginia corporation with offices at 20358 Seneca Meadows Parkway, Germantown, MD 20876 ("**Intrexon**"), and **BIOLIFE CELL BANK, INC.,** a Delaware corporation having its principal place of business at 11970 N. Central Expressway, Suite 280, Dallas, TX 75243 ("**BioLife**"). Intrexon and BioLife may be referred to herein individually as a "**Party**", and collectively as the "**Parties**."

RECITALS

WHEREAS, Intrexon has expertise in and owns or controls proprietary technology relating to the design and production of DNA vectors or their *in vivo* expression or the control of expression, as well as control over cell function; and

WHEREAS, BioLife now desires to become Intrexon's exclusive research collaborator with respect to such technology for the purpose of developing the SMA Therapeutics Program (as defined herein), and Intrexon is willing to appoint BioLife as a research collaborator in the Field (as defined herein) under the terms and conditions of this Agreement; and

WHEREAS, BioLife desires the option to obtain exclusive commercial rights to Products (as defined herein) developed through the SMA Therapeutics Program, and Intrexon is willing to provide BioLife with such an option under the terms and conditions of this Agreement.

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

ARTICLE 1

DEFINITIONS

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

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

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

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

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

1.4 "**BioLife Indemnitees**" has the meaning set forth in Section 9.1.

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

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

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

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

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

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

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

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

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

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

1.15 "Complementary In-Licensed Third Party IP" has the meaning set forth in Section 3.8(a).

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

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

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

1.18 "**Cost of Goods Sold**" means all Manufacturing Costs that are directly and reasonably attributable to manufacturing of BioLife Product in accordance with US GAAP for commercial sale in the countries where such BioLife Product has been launched.

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

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

1.21 "**Equity Agreements**" has the meaning set forth in Section 5.1(c).

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

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

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

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

1.26 "**Field**" means the production and use of adipose derived and other stem cells for the development and commercialization of an autologous, genetically-modified, stem cell therapy to humans for the treatment of SMA, irrespective of whether such requires regulatory approval.

1.27 "**Fully Loaded Cost**" means the direct cost of the applicable good, product or service plus indirect charges and overheads reasonably allocable to the provision of such good, product or service in accordance with US GAAP. Subject to the approval of a project and its associated budget by the JSC and the terms of Sections 4.6 and 4.7 (as appropriate), Intrexon will bill for its internal direct costs incurred through the use of annualized standard full-time

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

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

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

1.30 "**Initial Phase Research Plan**" has the meaning set forth in Section 2.1(b).

1.31 "**Intrexon Channel Technology**" means Intrexon's current and future technology directed towards the design, identification, culturing, and/or production of genetically modified autologous stem cells, including without limitation the technology embodied in the Intrexon Materials and the Intrexon IP, and specifically including without limitation the following of Intrexon's platform areas and capabilities: (1) UltraVector®, (2) DNA and RNA MOD engineering, (3) protein engineering, (4) transcription control chemistry, (5) genome engineering, and (6) cell system engineering.

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

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

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

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

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

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

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

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

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

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

1.41 "**SMA**" means spinal muscular atrophy, the autosomal recessive disease caused by a genetic defect in the SMN1gene that results in death of neuronal cells in the anterior horn of the spinal cord and subsequent system-wide muscle wasting.

1.42 "**SMA Therapeutics Program**" has the meaning set forth in Section 2.1.

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

1.44 "Manufacturing Costs" means, with respect to BioLife Products, the full-time equivalent costs (under a reasonable accounting mechanism to be agreed upon by the Parties) and out-of-pocket costs of a Party or any of its Affiliates incurred in manufacturing such BioLife Products, including costs and expenses incurred in connection with (1) the development or validation of any manufacturing process, formulations or delivery systems, or improvements to the foregoing; (2) manufacturing scale-up; (3) in-process testing, stability testing and release testing; (4) quality assurance/quality control development; (5) internal and Third Party costs and expenses incurred in connection with qualification and validation of Third Party contract manufacturers, including scale up, process and equipment validation, and initial manufacturing licenses, approvals and inspections; (6) packaging development and final packaging and labeling; (7) shipping configurations and shipping studies; and (8) overseeing the conduct of any of the foregoing. "Manufacturing Costs" shall further include: (a) to the extent that any such BioLife Product is manufactured by a Third Party manufacturer, the out-of-pocket costs incurred by such Party or any of its Affiliates to the Third Party for the manufacture and supply (including packaging and labeling) thereof, and any reasonable out-of-pocket costs and direct labor costs incurred by such Party or any of its Affiliates in managing or overseeing the Third Party relationship determined in accordance with the books and records of such Party or its Affiliates maintained in accordance with US GAAP; and (b) to the extent that any such BioLife Product is manufactured by such Party or any of its Affiliates, direct material and direct labor costs attributable to such BioLife Product, as well as reasonably allocable overhead expenses, determined in accordance with the books and records of such Party or its Affiliates maintained in accordance with US GAAP.

1.45 "**Net Sales**" means, with respect to any BioLife Product, the net sales of such BioLife Product by BioLife or an Affiliate of BioLife (including without limitation net sales of BioLife Product to a non-Affiliate sublicensee but not including net sales by such non-Affiliate sublicensee), as determined in accordance with US GAAP as the gross amount of sales of BioLife Product less the usual and customary discounts as determined in accordance with US

GAAP. In the case of any sale for value, such as barter or counter-trade other than in an arm's length transaction exclusively for cash, Net Sales shall be deemed to be the net sales at which substantially similar quantities of the product are sold for cash in an arm's length transaction in the relevant country. If BioLife Product is sold to any third party together with other products or services, the price of such product, solely for purposes of the calculation of Net Sales, shall be deemed to be no less than the price at which such product would be sold in a similar transaction to a third party not also purchasing the other products or services.

1.46 "**Option Period**" means the longer of (i) the period of time from the Effective Date to the one-year anniversary of the Effective Date, or (ii) upon the written mutual agreement of the Parties to extend the Option Period, the period of time from the Effective Date to the fifteen-month anniversary of the Effective Date.

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

1.48 "**Product Profit**" means Net Sales less Cost of Goods Sold.

1.49 "**Product-Specific Program Patent**" means any issued Intrexon Patent where all the claims are directed to Inventions that relate solely and specifically to BioLife Products. In the event of a disagreement between the Parties as to whether a particular Intrexon Patent is or is not a Product-Specific Program Patent, the Parties shall seek to resolve the issue through discussions at the IPC, provided that if the Parties are unable to resolve the disagreement, the issue shall be submitted to arbitration pursuant to Section 11.2. Any Intrexon Patent that is subject to such a dispute shall be deemed not to be a Product-Specific Program Patent unless and until (a) Intrexon agrees in writing that such Patent is a Product-Specific Program Patent or (b) an arbitrator or arbitration panel determines, pursuant to Article 11, that such Intrexon Patent is a Product-Specific Program Patent.

1.50 "**Product Sublicense**" has the meaning set forth in Section 3.2(c).

1.51 "**Product Sublicensee**" has the meaning set forth in Section 3.2(c).

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

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

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

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

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

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

1.58 "**Stock Issuance Agreement**" has the meaning set forth in Section 5.1(b).

1.59 "**Sublicensing Revenue**" means any cash consideration, or the cash equivalent value of non-cash consideration, regardless of whether in the form of upfront payments, milestones, or royalties, actually received by BioLife or its Affiliate from a Third Party in consideration for a grant of a sublicense under the Intrexon IP or any rights to develop or commercialize BioLife Products, but excluding: (a) any amounts paid as bona fide reimbursement for research and development costs to the extent incurred following such grant; (b) bona fide loans or any payments in consideration for a grant of equity of BioLife to the extent that such consideration is equal to or less than fair market value (i.e. any amounts in excess of fair market value shall be Sublicensing Revenue); (c) any amounts, up to a maximum of ten percent (10%) of net sales per BioLife Product, paid by BioLife to a Third Party for the right to operate under or utilize Third Party owned intellectual property that is used to make or use a BioLife Product underlying the Sublicensing Revenue, and (d) amounts received from sublicensees in respect of any BioLife Product sales that are included in Net Sales.

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

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

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

1.63 "**Technology Access Fee**" has the meaning set forth in Section 5.1.

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

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

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

1.67 "**Third Party IP**" has the meaning set forth in Section 3.8(a).

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

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

1.69 "**US GAAP**" means generally accepted accounting principles in the United States of America.

ARTICLE 2

SCOPE OF CHANNEL COLLABORATION; MANAGEMENT

2.1 Structure.

(a) Generally. The general purpose of the research collaboration described in this Agreement will be to use the Intrexon Channel Technology to research, develop and, subject to exercise by BioLife of the option under Section 5.1 as described herein, commercialize products for use in the Field (collectively, the "**SMA Therapeutics Program**").

(b) Research Phase Activities. The Parties will, with Diligent Efforts after the Effective Date, meet and confer to establish and agree upon a research plan that details certain research activities (and associated goals, timelines, and projected costs for those research activities) that will be conducted by the Parties during the Option Period in support of the SMA Therapeutics Program (the "**Initial Phase Research Plan**"). The Initial Phase Research Plan will be agreed upon as promptly as practicable following the Effective Date, and may thereafter be amended or revised by mutual agreement of the Parties. BioLife agrees that, upon being invoiced by Intrexon, BioLife will reimburse Intrexon, in cash and within thirty (30) days of invoice date, for Intrexon's Fully Loaded Costs in connection with Intrexon's performance under the Initial Phase Research Plan and Intrexon's efforts following execution of the Agreement towards generation of the Initial Phase Research Plan. Intrexon will report to BioLife regarding the status of its activities under the Initial Phase Research Plan, including results and associated data for any activities conducted thereunder.

(c) Post-Option Channel Collaboration. In the event BioLife exercises the option under Section 5.1 during the Option Period, the present Agreement will immediately convert into an exclusive channel collaboration as described herein and BioLife will become Intrexon's exclusive channel collaborator in the Field. As provided below, the JSC will be constituted following the successful exercise of BioLife's option, and the JSC shall thereafter establish, monitor, and govern projects for the SMA Therapeutics Program as described below. Either Party may propose potential projects in the Field for review and consideration by the JSC.

2.2 Committees.

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

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

(b) Formation and Purpose. In the event BioLife exercises the option under Section 5.1 during the Option Period, the Parties shall promptly thereafter confer and then create the Committees listed in the chart below, each of which shall have the purpose indicated in the chart. To the extent that after conferring both Parties agree that a given Committee need not be created until a later date, the Parties may agree to defer the creation of the Committee until one Party informs the other Party of its then desire to create the so-deferred Committee, at which point the Parties will thereafter promptly create the so-deferred Committee and schedule a meeting of such Committee within one (1) month.

Committee	Purpose
Joint Steering Committee ("**JSC**")	Establish projects for the SMA Therapeutics Program and establish the priorities, as well as approve budgets for such projects. Approve all subcommittee projects and plans.
Chemistry, Manufacturing and Controls Committee ("**CMCC**")	Establish project plans and review and approve activities and budgets for chemistry, manufacturing, and controls under the SMA Therapeutics Program.
Clinical/Regulatory Committee ("**CRC**")	Review and approve all research and development plans, clinical projects and publications, and regulatory filings and correspondence under the SMA Therapeutics Program; review and approve itemized budgets with respect to the foregoing.
Commercialization Committee ("**CC**")	Establish project plans and review and approve activities and budgets for commercialization activities under the SMA Therapeutics Program.
Intellectual Property Committee ("**IPC**")	Evaluate intellectual property issues in connection with the SMA Therapeutics Program; review and approve itemized budgets with respect to the foregoing.

2.3 General Committee Membership and Procedure.

(a) Membership. For each Committee, each Party shall designate an equal number of representatives (not to exceed four (4) for each Party) with appropriate expertise to serve as members of such Committee. For the JSC the representatives must all be employees of such Party or an Affiliate of such Party, and for Committees other than the JSC the

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

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

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

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

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

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

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

(b) Casting Vote at CMCC. If a dispute at the CMCC is not resolved pursuant to Section 2.4 above, then (i) in the case of any disputes relating to the Intrexon Materials, the manufacture of a BioLife Product active pharmaceutical ingredient, or the manufacturing of other components of BioLife Products contracted for or manufactured by Intrexon, the Executive Officer of Intrexon shall have the authority to finally resolve such dispute; and (ii) in the case of any other disputes, the Executive Officer of BioLife shall have the authority to finally resolve such dispute.

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

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

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

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

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

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

ARTICLE 3

LICENSE GRANTS

3.1 Licenses to BioLife.

(a) During the Option Period, and subject to the terms and conditions of this Agreement, Intrexon hereby grants to BioLife a limited license under the Intrexon IP to research, develop, and use BioLife Products in the Field in the Territory. Such license shall be exclusive in the Field, and shall be otherwise non-exclusive.

(b) Subject to the exercise by BioLife of the option under Section 5.1 and the terms and conditions of this Agreement, Intrexon hereby grants to BioLife a license under the Intrexon IP to research, develop, use, import, export, make, have made, sell, and offer for sale BioLife Products in the Field in the Territory. Such license shall be exclusive (even as to Intrexon) with respect to any clinical development, selling, offering for sale or other Commercialization of BioLife Products in the Field, and shall be otherwise non-exclusive.

(c) Subject to the exercise by BioLife of the option under Section 5.1 and the terms and conditions of this Agreement, Intrexon hereby grants to BioLife a non-exclusive, royalty-free license to use and display the Intrexon Trademarks, solely in connection with the Commercialization of BioLife Products, in the promotional materials, packaging, and labeling for BioLife Products, as provided under and in accordance with Section 4.9.

3.2 Sublicensing. Except as provided below, BioLife shall not sublicense the rights granted under Section 3.1 to any Third Party, or transfer the Intrexon Materials to any Third Party, or otherwise grant any Third Party the right to research, develop, use, or Commercialize BioLife Products or use or display the Intrexon Trademarks, in each case except with Intrexon's written consent, which written consent may be withheld in Intrexon's sole discretion. Notwithstanding the foregoing, upon successful execution by BioLife of its option under Section 5.1 BioLife (and its Product Sublicensees only to the extent explicitly set forth in Section 3.2(a) below) shall have a limited right to sublicense under the circumstances described in Sections 3.2(a) through 3.2(c) below.

(a) BioLife may transfer, to the extent reasonably necessary, Intrexon Materials that are or express active pharmaceutical ingredients to a Third Party contractor

performing fill/finish responsibilities for BioLife Products, and may in connection therewith grant limited sublicenses necessary to enable such Third Party to perform such activities. If BioLife transfers any Intrexon Materials under this Section 3.2(a), BioLife will take commercially reasonable steps to ensure that the rights of Intrexon in and to the Intrexon Materials and Intrexon IP and under the provisions of Articles 6 and 7 of this Agreement are not violated by any such Third Party contractor. A Product Sublicensee of BioLife may transfer, to the extent reasonably necessary and upon the consent of Intrexon, which consent shall not be unreasonably withheld, Intrexon Materials that are or express active pharmaceutical ingredients to a Third Party contractor performing fill/finish responsibilities for BioLife Products duly sublicensed to that Product Sublicensee, and may in connection therewith grant limited sublicenses to the extent necessary to enable such Third Party to perform such activities. BioLife will require and ensure that if any Product Sublicensee transfers any Intrexon Materials under this Section 3.2(a), that such Product Sublicensee, after obtaining Intrexon's consent, will take commercially reasonable steps to ensure that the rights of Intrexon in and to the Intrexon Materials and Intrexon IP and under the provisions of Articles 6 and 7 of this Agreement are not violated by any such Third Party contractor.

(b) BioLife may, with Intrexon's written consent, sublicense the rights granted under Section 3.1 to an Affiliate, or transfer the Intrexon Materials to an Affiliate, or grant an Affiliate the right to research, develop, use, or Commercialize BioLife Products or use or display the Intrexon Trademarks. In the event that Intrexon consents to any such grant or transfer to an Affiliate, BioLife shall remain responsible for, and be guarantor of, the performance by any such Affiliate and shall cause such Affiliate to comply with the provisions of this Agreement in connection with such performance (as though such Affiliate were BioLife), including any payment obligations owed to Intrexon hereunder.

(c) BioLife may, with Intrexon's written consent, grant a sublicense of the rights granted under Section 3.1 to a Third Party licensee of any BioLife Product (a "**Product Sublicensee**") to the extent necessary to permit such Third Party to research, develop, use, import, export, make, sell, and offer for sale that BioLife Product (a "**Product Sublicense**"), provided, that (i) such Product Sublicense is expressly limited to the appropriate BioLife Product, (ii) does not grant the Product Sublicensee any rights to Intrexon IP other than that incorporated into the BioLife Product at the time of the Product Sublicense, (iii) does not purport to relieve BioLife of any of its obligations under this Agreement, (iv) the Product Sublicensee agrees in writing, in a document in form reasonably acceptable to Intrexon and to which Intrexon is an express third party beneficiary, to abide by the following provisions of this Agreement: Sections 3.1, 3.2(a), 3.3-3.6, 3.8, 3.10, 3.11, and 4.6 and Articles 6, 7, and 10), and (v) the Product Sublicense is presented in full to the JSC by BioLife before execution by BioLife and the prospective Product Sublicensee and as soon as is reasonably practical during negotiations thereof for the purpose of allowing the JSC to review and comment upon the terms and scope of the Product Sublicense agreement.

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

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

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

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

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

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

3.8 Rights to Clinical and Regulatory Data. BioLife shall own and control all clinical data and regulatory filings relating to Commercialization of BioLife Products during the Term. BioLife shall provide at Intrexon's request full copies of all clinical and non-clinical data and reports, regulatory filings, and communications from regulatory authorities that relate

specifically and solely to BioLife Products. To the extent that there exist any clinical and non-clinical data and reports, regulatory filings, and communications from regulatory authorities owned by BioLife or a Product Sublicensee that relate both to BioLife Products and other products produced by BioLife or a Product Sublicensee outside the Field, BioLife shall provide (or require that the Product Sublicensee provide) to Intrexon upon Intrexon's request copies of the portions of such data, reports, filings, and communications that relate to BioLife Products. Intrexon shall be permitted, directly or in conjunction with or through partners or other channel collaborators, to reference this data, reports, filings, and communications relating to BioLife Products in regulatory filings made to obtain regulatory approval for products indicated for use in fields outside the Field. Intrexon shall have the right to use any such information in developing and Commercializing products outside the Field and to license any Third Parties to do so.

3.9 Third Party Licenses.

(a) [*****] shall obtain [*****] any licenses from Third Parties that are required in order to practice the Intrexon Channel Technology in the Field where the licensed intellectual property is directed towards the manufacture of gene constructs, vectors, transgenes, or methods for altering or controlling genetic expression (but excluding intellectual property directed to any stem cells or specific methods of treating humans, collecting or processing autologous stem cells, or delivering cells to humans for purposes of therapy) ("**Supplemental In-Licensed Third Party IP**"). Other than with respect to Supplemental In-Licensed Third Party IP, [*****] shall be solely responsible for obtaining [*****] any licenses from Third Parties that [*****] determines, in its sole discretion, are required in order to lawfully make, use, sell, offer for sale, or import BioLife Products ("**Complementary In-Licensed Third Party IP**"). Supplemental In-Licensed Third Party IP and Complementary In-Licensed Third Party IP are collectively referred to as "**Third Party IP**".

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

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

(c) [*****] shall provide the proposed terms of any license under Complementary In-Licensed Third Party IP and the final version of the definitive license agreement for any Complementary In-Licensed Third Party IP to the IPC for review and discussion prior to signing, and shall consider [*****] comments thereto in good faith. To the extent that [*****] obtains a license under Supplemental In-Licensed Third Party IP, [*****] shall provide the final version of the definitive license agreement for such Supplemental In-Licensed Third Party IP to the IPC. If [*****] acquires rights under any Third Party IP outside the Field, it will do so on a non-exclusive basis unless it obtains the prior written consent of [*****] for such license outside the Field to be exclusive. Any Party that is pursuing a license to any Third Party IP with respect to the Field under this Section 3.9 shall keep the other Party reasonably informed of the status of any negotiations relating thereto. For purposes of clarity, (i) any costs incurred by [*****] in obtaining and maintaining licenses to Supplemental In-Licensed Third Party IP shall be borne solely by [*****], and (ii) any costs incurred by [*****] in obtaining and maintaining licenses to Complementary In-Licensed Third Party IP (and, to the limited extent provided in subsection (b), Supplemental In-Licensed Third Party IP) shall be borne solely by [*****].

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

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

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

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

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

ARTICLE 4

OTHER RIGHTS AND OBLIGATIONS

4.1 Development and Commercialization. Subject to Sections 4.6 and 4.7, BioLife shall be solely responsible for the performance of the SMA Therapeutics Program and the development and, upon successful execution by BioLife of its option under Section 5.1, Commercialization of BioLife Products in the Field. BioLife shall be responsible for all costs incurred in connection with the SMA Therapeutics Program except that Intrexon shall be responsible for the following: (a) costs of establishing manufacturing capabilities and facilities in connection with Intrexon's manufacturing obligation under Section 4.6 (provided, however, that Intrexon may include an allocable portion of such costs, through depreciation and amortization, when calculating the Fully Loaded Cost of manufacturing BioLife Product, to the extent such allocation, depreciation, and amortization is permitted by US GAAP, it being recognized that the majority of non-facilities scale-up costs cannot be capitalized and amortized under US GAAP); (b) costs of basic research with respect to the Intrexon Channel Technology and Intrexon Materials (i.e., platform improvements) but, for clarity, excluding research described in Section 4.7 or research requested by the JSC for the development of a BioLife Product (which research costs shall be reimbursed by BioLife); (c) [*****]; and (d) costs of filing, prosecution and maintenance of Intrexon Patents. The costs encompassed within subsection (a) above shall include the scale-up of Intrexon Materials and related active pharmaceutical ingredients for clinical trials and commercialization of BioLife Products undertaken pursuant to Section 4.6, which shall be at Intrexon's cost whether it elects to conduct such efforts internally or through Third Party contractors retained by either Intrexon or BioLife (with Intrexon's consent).

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

4.3 Information and Reporting. BioLife will keep Intrexon informed about BioLife's efforts to develop and, upon successful execution by BioLife of its option under Section 5.1, commercialize BioLife Products, including reasonable and accurate summaries of

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

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

4.4 Regulatory Matters. At all times after the Effective Date, BioLife shall own and maintain, at its own cost, all regulatory filings and regulatory approvals for BioLife Products that BioLife is developing or, upon successful execution by BioLife of its option under Section 5.1, Commercializing pursuant to this Agreement. As such, BioLife shall be responsible for reporting all adverse events related to such BioLife Products to the appropriate regulatory authorities in the relevant countries, in accordance with the applicable laws and regulations of such countries. To the extent that Intrexon will itself develop, or in collaboration with other third parties develop, Intrexon Materials outside of the Field, Intrexon may request that BioLife and Intrexon establish and execute a separate safety data exchange agreement, which agreement will address and govern the timely exchange of safety information generated by BioLife, Intrexon, and relevant third parties with respect to specific Intrexon Materials. The decision to list or not list Patents in any regulatory filing for a BioLife Product (for example, as required by 21 C.F.R. § 314.53(b)), add or delete a Patent from a regulatory filing, or to otherwise identify a Patent to a third party in compliance with laws or regulations relating to regulatory approvals (for example, in compliance with 42 U.S.C. § 262(a)(1)(A)(k) et seq.) shall be determined by Intrexon, after consultation with BioLife, except with respect to Product Specific Program Patents, which will be mutually determined by the Parties.

4.5 Diligence.

(a) BioLife shall use, and shall require its sublicensees to use, Diligent Efforts to develop and, upon successful execution by BioLife of its option under Section 5.1, commercialize BioLife Products.

(b) Without limiting the generality of the foregoing, Intrexon may, from time to time, notify BioLife that it believes it has identified a Superior Therapy, and in such case

Intrexon shall provide to BioLife its then-available information about such therapy and reasonable written support for its conclusion that the therapy constitutes a Superior Therapy. BioLife shall have the following obligations with respect to such proposed Superior Therapy: (i) within sixty (60) days after such notification, BioLife shall prepare and deliver to the research committee (if prior to execution by BioLife of its option under Section 5.1) or JSC, as applicable, for review and approval a development plan detailing how BioLife will pursue the Superior Therapy (including a proposed budget); (ii) BioLife shall revise the development plan as directed by the committee; and (iii) following approval of the development plan by the committee, BioLife shall use Diligent Efforts to pursue the development of the Superior Therapy under the SMA Therapeutics Program in accordance with such development plan. If BioLife fails to comply with the foregoing obligations, or if BioLife unreasonably exercises its casting vote at the JSC to either (x) prevent the approval of a development plan for a Superior Therapy; (y) delay such approval more than sixty (60) days after delivery of the development plan to the JSC; or (z) approve a development plan that is insufficient in view of the nature and magnitude of the opportunity presented by the Superior Therapy, then Intrexon shall have the termination right set forth in Section 10.2(c) (subject to the limitation set forth therein). For clarity, any dispute arising under this 4.5, including any dispute as to whether a proposed project constitutes a Superior Therapy (as with any other dispute under this Agreement) shall be subject to dispute resolution in accordance with Article 11.

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

4.6 Manufacturing. Intrexon shall have the option and, in the event it so elects, shall use Diligent Efforts, to perform any manufacturing activities in connection with the SMA Therapeutics Program that relate to the Intrexon Materials, the manufacture of bulk drug product, the manufacturing of bulk quantities of other components of BioLife Products, or any earlier steps in the manufacturing process for BioLife Products. To the extent that Intrexon so elects, Intrexon may request that BioLife and Intrexon establish and execute a separate manufacturing and supply agreement, which agreement will establish and govern the production, quality assurance, and regulatory activities associated with manufacture of Intrexon Materials. Except as provided in Section 4.1, any manufacturing undertaken by Intrexon pursuant to the preceding sentence shall be performed in exchange for cash payments equal to Intrexon's Fully Loaded Cost in connection with such manufacturing, on terms to be negotiated by the Parties in good faith. In the event that Intrexon does not manufacture Intrexon Materials, bulk drug product or bulk quantities of other components of BioLife Products, then Intrexon shall provide to BioLife or a contract manufacturer selected by BioLife and approved by Intrexon all Information Controlled by Intrexon that is related to the manufacturing of such Intrexon Materials, bulk drug product or bulk qualities of other components of BioLife Products, for use in the Field and is reasonably necessary to enable BioLife or such contract manufacturer (as appropriate) for the sole purpose of manufacturing such Intrexon Materials, bulk drug product or bulk quantities of other components of BioLife Products, in each case as manufactured by Intrexon. The costs and expenses incurred by Intrexon in carrying out such transfer shall be borne by Intrexon. Any manufacturing Information transferred hereunder to BioLife or its contract manufacturer shall

not be further transferred to any Third Party, including any Product Sublicensee, or any BioLife Affiliate without the prior written consent of Intrexon; provided, however, that Intrexon shall not unreasonably withhold such consent if necessary to permit BioLife to switch manufacturers.

4.7 Support Services. From time to time, on an ongoing basis, BioLife shall request, or Intrexon may propose, that Intrexon perform certain support services with respect to the SMA Therapeutics Program. To the extent that the Parties mutually agree that Intrexon should perform such services, the Parties shall negotiate in good faith the terms under which services would be performed, it being understood that Intrexon would be compensated for such services by cash payments equal to Intrexon's Fully Loaded Cost in connection with such services.

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

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

4.10 Post-Option Exercise Obligations. From and after BioLife's exercise of the option pursuant to Section 5.1, BioLife shall comply with the following additional obligations:

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

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

(ii) a copy of this Agreement;

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

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

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

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

(d) As soon as available but no later than sixty (60) days after the end of each fiscal year, BioLife shall cause to be prepared and Intrexon to be furnished with an audited balance sheet as of the last day of such fiscal year and an audited income statement, a statement of stockholders' equity and statement of cash flows for BioLife for such fiscal year and notes associated with each, in each case prepared in accordance with US GAAP, together with a report of BioLife's independent auditor that such statements have been prepared in accordance with US GAAP and present fairly, in all material respects, the financial position, results of operations and cash flows of BioLife.

(e) Within thirty (30) days after the end of each calendar month and each calendar quarter, beginning with the month during which BioLife exercised the option, BioLife shall furnish the following to Intrexon an unaudited balance sheet as of the last day of such period, and an unaudited income statement, a statement of cash flows and a statement of stockholders' equity for BioLife for such period, in each case prepared in accordance with US GAAP.

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

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

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

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

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

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

ARTICLE 5

COMPENSATION

5.1 Commercialization Option.

(a) Before expiration of the Option Period, BioLife shall have the right, subject to the requirements set forth below, to convert this Agreement into an exclusive channel collaboration agreement and thereby become Intrexon's exclusive channel collaborator in the Field. In partial consideration for BioLife's appointment as an exclusive channel collaborator and the other rights granted to BioLife hereunder, BioLife shall pay to Intrexon a technology

access fee (the "**Technology Access Fee**") with a value equal to the greater of (i) the Fair Market Value of fifteen percent (15%) of the fully-diluted equity of BioLife, as calculated using the treasury stock method in accordance with US GAAP, as of the date of exercise of the option, or (ii) Six Million Seven Hundred Fifty Thousand Dollars ($6,750,000).

(b) "**Fair Market Value**" will be determined by the mutual agreement of BioLife and Intrexon. If the parties cannot agree as to the Fair Market Value within thirty (30) days, then Fair Market Value will be determined as follows:

(i) If BioLife's equity securities are traded on a securities exchange, quotation system or comparable market, then the five-day volume-weighted average per share price of the equity securities on such exchange, quotation or market as of the date of the option exercise multiplied by the number of equity securities of BioLife, on a fully-diluted basis as calculated using the treasury stock method in accordance with US GAAP, will be the Fair Market Value; or

(ii) If clause (i) is not applicable, but BioLife has been evaluated by an independent appraiser, qualified to value business enterprises such as BioLife, in the twenty-four (24) months prior to the date of the option exercise, that value will be used to determine the Fair Market Value; or

(iii) If neither clause (i) nor clause (ii) is applicable, or if within ten (10) business days of receipt either party disputes the Fair Market Value determined under clause (ii) above, then BioLife and Intrexon shall cooperate to engage within ten (10) business days following notice of dispute under this clause (iii) or within ten (10) days after the Parties fail to agree under Section 5.1(b) (as applicable) an independent appraiser qualified to value business enterprises such as BioLife who shall value BioLife, and his determination, to be made within thirty (30) days after his appointment, will be used to determine the Fair Market Value; or

(iv) Either party may dispute the Fair Market Value determined by the appraiser appointed under clause (iii) above by written notice to the other given within ten (10) business days after receiving the appraisal under clause (iii), and in such event BioLife and Intrexon shall cooperate to engage a second independent appraiser within ten (10) business days following notice of dispute, similarly qualified, and the two appraisers shall determine, within twenty (20) days after appointment of the second appraiser, the value of BioLife, and their determination will be used to determine the Fair Market Value. If the two appraisers cannot agree upon the Fair Market Value of BioLife, then the Fair Market Value of BioLife shall be the average of their separate determinations.

(v) A party's failure to give written notice of its dispute in accordance with this Section 5.1(b) will be deemed the party's waiver of dispute. The costs of the appraiser engaged under clause (iii) shall be paid in equal shares by BioLife and Intrexon. The cost of the second appraiser engaged under clause (iv) shall be paid by the disputing party. The value as determined in accordance with this Section 5.1(b) shall be binding on all parties.

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

(c) To execute the option, BioLife shall deliver to Intrexon prior to the expiration of the Option Period, the following:

(i) In the event BioLife elects to pay the Technology Access Fee in cash, cash equal to the Technology Access Fee.

(ii) In the event BioLife elects to pay the Technology Access Fee in shares of BioLife's equity securities:

1. An executed copy of the Stock Issuance Agreement (the "**Stock Issuance Agreement**") substantially in the form attached hereto as Exhibit B.

2. An executed copy of the Registration Rights Agreement (together with the Stock Issuance Agreement, the "**Equity Agreements**"), in the form attached hereto as Exhibit C.

3. One or more stock certificates representing the Technology Access Fee.

(iii) A balance sheet reviewed by BioLife's independent accountants showing that BioLife has as of the date of execution of the option ready access to working capital of at least five million dollars ($5M) under the SMA Therapeutics Program as well as BioLife's projected operating expenses over the succeeding twelve (12) months.

(iv) A certificate, executed by the Executive Officer of BioLife, certifying the items set forth under Section 4.10(f).

5.2 Milestones.

(a) BioLife Equity-Based Milestone. Within thirty (30) days following the dosing of the first patient in the first Phase 2 clinical study with a BioLife Product (the "**Milestone Event**"), BioLife shall pay to Intrexon a milestone fee (the "**Milestone Fee**") with a value equal to the Fair Market Value of ten percent (10%) of the fully-diluted equity of BioLife, as calculated using the treasury stock method in accordance with US GAAP, as of the date of the Milestone Event. The Milestone Fee shall be payable, at BioLife's option, in either shares of BioLife common stock or cash. The determination of Fair Market Value shall be made in accordance with the provisions of Section 5.1. In the event the Milestone Fee is paid in equity securities and the Technology Access Fee was paid in cash, the parties will execute in connection with such payment a stock issuance agreement and registration rights agreement in forms substantially similar to those attached hereto as Exhibit B and Exhibit C, respectively.

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

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

5.4 Revenue Sharing.

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

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

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

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

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

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

(c) itemized calculation of Cost of Goods Sold;

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

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

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

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

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

For three (3) years after each sale of BioLife Product or the incurring of an item included in Cost of Goods Sold, BioLife shall keep (and shall ensure that its Affiliates and, if applicable, (sub)licensees shall keep) complete and accurate records of such sales or Cost of Goods Sold (as the case may be) in sufficient detail to confirm the accuracy of the payment calculations hereunder.

5.7 Audits.

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

(b) If such accounting firm concludes that additional amounts were owed during such period, BioLife shall pay additional amounts, with interest from the date originally due as set forth in Section 5.9, within thirty (30) days of receipt of the accounting firm's written report. If the amount of the underpayment is greater than five percent (5%) of the total amount actually owed for the period audited, then BioLife shall in addition reimburse Intrexon for all costs related to such audit; otherwise, Intrexon shall pay all costs of the audit. In the event of overpayment, any amount of such overpayment shall be fully creditable against amounts payable for the immediately succeeding calendar quarter(s); provided, however, that such credit cannot be applied to reduce the amounts payable by BioLife to Intrexon for any particular calendar quarter by more than twenty-five percent (25%) of the amount otherwise due to Intrexon.

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

5.8 Taxes. The Parties will cooperate in good faith to obtain the benefit of any relevant tax treaties to minimize as far as reasonably possible any taxes which may be levied on any amounts payable hereunder. BioLife shall deduct or withhold from any payments any taxes that it is required by applicable law to deduct or withhold. Notwithstanding the foregoing, if

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

Intrexon is entitled under any applicable tax treaty to a reduction of the rate of, or the elimination of, applicable withholding tax, it may deliver to BioLife or the appropriate governmental authority (with the assistance of BioLife to the extent that this is reasonably required and is expressly requested in writing) the prescribed forms necessary to reduce the applicable rate of withholding or to relieve BioLife of its obligation to withhold tax, and BioLife shall apply the reduced rate of withholding tax, or dispense with withholding tax, as the case may be, provided that BioLife has received evidence of Intrexon's delivery of all applicable forms (and, if necessary, its receipt of appropriate governmental authorization) at least fifteen (15) days prior to the time that the payment is due. If, in accordance with the foregoing, BioLife withholds any amount, it shall make timely payment to the proper taxing authority of the withheld amount, and send to Intrexon proof of such payment within forty-five (45) days following that latter payment.

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

ARTICLE 6

INTELLECTUAL PROPERTY

6.1 Ownership.

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

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

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

(d) Notwithstanding anything to the contrary in this Agreement, any discovery, invention, process, technique, or other technology, whether or not patentable, that is conceived, reduced to practice or developed by BioLife solely or jointly through the use of the Intrexon Channel Technology, Intrexon IP, or Intrexon Materials in breach of the terms and

conditions of this Agreement, together with all patent rights and other intellectual property rights therein, shall be solely owned by Intrexon and shall be included in the Channel-Related Program IP.

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

6.2 Patent Prosecution.

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

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

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

(i) regularly provide the other Party in advance with reasonable information relating to the Prosecuting Party's prosecution of Patents hereunder, including by providing copies of substantive communications, notices and actions submitted to or received from the relevant patent authorities and copies of drafts of filings and correspondence that the

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

Prosecuting Party proposes to submit to such patent authorities (it being understood that, to the extent that any such information is readily accessible to the public, the Prosecuting Party may, in lieu of directly providing copies of such information to such other Party, provide such other Party with sufficient information that will permit such other Party to access such information itself directly);

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

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

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

6.3 Infringement of Patents by Third Parties.

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

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

(c) With respect to any Field Infringement that cannot reasonably be abated through the enforcement of Product-Specific Program Patents pursuant to Section 6.3(b) but can reasonably be abated through the enforcement of Intrexon Patent(s) (other than the Product-Specific Program Patents), Intrexon shall be obligated to choose one of the following courses of action: (i) enforce one or more of the applicable Intrexon Patent(s) in a commercially reasonable manner against such Field Infringement, or (ii) [*****]. Intrexon and BioLife shall bear the costs

and expenses of such enforcement equally. The determination of which Intrexon Patent(s) to assert shall be made by Intrexon in its sole discretion; provided, however, that Intrexon shall consult in good faith with BioLife on such determination. For the avoidance of doubt, Intrexon has no obligations under this Agreement to enforce any Intrexon Patents against, or otherwise abate, any Infringement that is not a Field Infringement.

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

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

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

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

ARTICLE 7

CONFIDENTIALITY

7.1 Confidentiality. Except to the extent expressly authorized by this Agreement or otherwise agreed in writing by the Parties, each Party agrees that it shall keep confidential and shall not publish or otherwise disclose and shall not use for any purpose other than as provided

for in this Agreement any Confidential Information disclosed to it by the other Party pursuant to this Agreement, except to the extent that the receiving Party can demonstrate by competent evidence that specific Confidential Information:

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

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

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

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

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

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

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

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

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

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

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

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

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

7.3 Publicity; Publications. The Parties agree that the public announcement of the execution of this Agreement shall be substantially in the form of a press release mutually agreed to by the Parties. Each Party will provide the other Party with the opportunity to review and comment, prior to submission or presentation, on external reports, publications and presentations (e.g., press releases, reports to government agencies, abstracts, posters, manuscripts and oral presentations) that refer to the SMA Therapeutics Program or programs that are approved by the Parties or, following exercise of the option contained in Section 5.1, the JSC. For such reports, publications, and presentations, the disclosing Party will provide the other Party at least fifteen (15) calendar days for review of the proposed submission or presentation. For reports and manuscripts, the disclosing Party will provide the other Party at least thirty (30) calendar days for review of the report or manuscript. The presenting Party will act in good faith to incorporate the comments of the other Party and shall, in any event, redact any Confidential Information of the other Party and cooperate with the other Party to postpone such submissions or presentations if necessary to provide the other Party with sufficient time to prepare and file any related Patent applications before the submission or presentation occurs, as appropriate.

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

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

7.5 Proprietary Information and Operational Audits.

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

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

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

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

ARTICLE 8

REPRESENTATIONS AND WARRANTIES

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

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

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

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

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

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

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

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

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

(d) Additional Intellectual Property Representations.

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

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

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

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

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

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

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

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

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

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

(xi) None of the Intrexon Patents owned by Intrexon or its Affiliates, and, to Intrexon's knowledge, the Intrexon Patents licensed to Intrexon or its Affiliates, have been adjudged invalid or unenforceable by a court of competent jurisdiction or applicable

government agency, in whole or in part, and there is no pending or, to Intrexon's knowledge, threatened action, suit, proceeding or claim by others challenging the validity or scope of any such Intrexon Patents; and

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

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

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

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

ARTICLE 9

INDEMNIFICATION

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

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

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

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

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

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

ARTICLE 10

TERM; TERMINATION

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

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

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

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

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

(d) This Agreement shall terminate automatically at the end of the Option Period if by that anniversary date BioLife has not exercised its option pursuant to Section 5.1. Intrexon will acknowledge receipt of all items delivered by BioLife under Section 5.1(c), and within five (5) business days of receipt will (i) acknowledge successful execution of the option pursuant to Section 5.1, or (ii) identify to BioLife any material or nonmaterial defects relating to execution of the option. For purposes of this Section 10.2(d), BioLife will not be deemed to have failed to execute its option pursuant to Section 5.1 because of any nonmaterial defect in any agreement, certificate, or instrument, or delivery thereof, required under Section 5.1(c) so long as (i) BioLife has made a bona fide attempt to meet the requirements of Section 5.1(c) before the end of the Option Period and (ii) such nonmaterial defect is cured by BioLife within fifteen (15) days of the end of the Option Period.

10.3 Termination by BioLife. BioLife shall have the right to voluntarily terminate this Agreement in its entirety upon ninety (90) days written notice to Intrexon at any time, provided that such notice may not be given during the Option Period.

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

(a) Retained Products. In the event BioLife exercised the option under Section 5.1 during the Option Period, BioLife shall be permitted to continue the clinical development and Commercialization in the Field of any BioLife Product that, at the time of termination, satisfies at least one of the following criteria (a "**Retained Product**"):

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

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

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

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

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

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

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

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

(e) Licenses to Intrexon. BioLife is automatically deemed to grant to Intrexon a worldwide, fully paid, royalty-free, exclusive (even as to BioLife and its Affiliates), irrevocable, license (with full rights to sublicense) under the BioLife Termination IP, to make, have made, import, use, offer for sale and sell Reverted Products and to use the Intrexon Channel Technology, the Intrexon Materials, and/or the Intrexon IP in the Field, subject to any exclusive

rights held by BioLife in Reverted Products pursuant to Section 10.4(c). The Parties shall also take such actions and execute such other instruments and documents as may be reasonably necessary to document such license to Intrexon.

(f) Regulatory Filings. BioLife shall promptly assign to Intrexon, and will provide full copies of, all regulatory approvals and regulatory filings that relate specifically and solely to Reverted Products. BioLife shall also take such actions and execute such other instruments, assignments and documents as may be necessary to effect the transfer of rights thereunder to Intrexon. To the extent that there exist any regulatory approvals and regulatory filings that relate both to Reverted Products and other products, BioLife shall provide copies of the portions of such regulatory filings that relate to Reverted Products and shall reasonably cooperate to assist Intrexon in obtaining the benefits of such regulatory approvals with respect to the Reverted Products.

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

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

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

(j) Third Party Vendors. At Intrexon's request, BioLife shall promptly provide to Intrexon copies of all agreements between BioLife or its Affiliates and Third Party suppliers, vendors, or distributors that relate to the supply, sale, or distribution of Reverted Products in the Territory. At Intrexon's request, BioLife shall promptly: (A) with respect to

such Third Party agreements relating solely to the applicable Reverted Products and permitting assignment, immediately assign (or cause to be assigned), such agreements to Intrexon, and (B) with respect to all other such Third Party agreements, BioLife shall reasonably cooperate to assist Intrexon in obtaining the benefits of such agreements. BioLife shall be liable for any costs associated with assigning a Third Party agreement to Intrexon or otherwise obtaining the benefits of such agreement for Intrexon, to the extent such costs are directly related to BioLife's breach. For the avoidance of doubt, Intrexon shall have no obligation to assume any of BioLife's obligations under any Third Party agreement.

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

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

10.5 Surviving Obligations. Termination or expiration of this Agreement shall not affect any rights of either Party arising out of any event or occurrence prior to termination, including, without limitation, any obligation of BioLife to pay any amount which became due and payable under the terms and conditions of this Agreement prior to expiration or such termination. The following portions of this Agreement shall survive termination or expiration of this Agreement: Sections 3.1 (as applicable with respect to 10.4(b), 5.5, 5.7, 6.1, 6.2 (with subsection (c) surviving only to the extent relating to Intrexon Patents that are relevant to Retained Products that, to Intrexon's knowledge, are being developed or commercialized at such time, if any), 7.1, 7.2, 7.4, 7.5, 10.4, and 10.5; Articles 9, 11, and 12; and any relevant definitions in Article 1. Further, Article 7 and Sections 4.5(a), 4.5(c), 4.10, 5.2 through 5.8, and 9.5 will survive termination of this Agreement to the extent there are applicable Retained Products.

ARTICLE 11

DISPUTE RESOLUTION

11.1 Disputes. It is the objective of the Parties to establish procedures to facilitate the resolution of disputes arising under this Agreement in an expedient manner by mutual

cooperation and without resort to litigation. In the event of any disputes, controversies or differences which may arise between the Parties out of or in relation to or in connection with this Agreement (other than disputes arising from a Committee), including, without limitation, any alleged failure to perform, or breach, of this Agreement, or any issue relating to the interpretation or application of this Agreement, then upon the request of either Party by written notice, the Parties agree to meet and discuss in good faith a possible resolution thereof, which good faith efforts shall include at least one in-person meeting between the Executive Officers of each Party. If the matter is not resolved within thirty (30) days following the written request for discussions, either Party may then invoke the provisions of Section 11.2. For the avoidance of doubt, any disputes, controversies or differences arising from a Committee pursuant to Article 2 shall be resolved solely in accordance with Section 2.4.

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

binding, and unappealable. For clarity, the arbitrator(s) must select as the only method to resolve the matter at issue one of the two sets of Proposed Terms, and may not combine elements of both Proposed Terms or award any other relief or take any other action.

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

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

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

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

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

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

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

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

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

ARTICLE 12

GENERAL PROVISIONS

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

12.2 LIMITATION OF LIABILITY. NEITHER PARTY SHALL BE LIABLE TO THE OTHER FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, PUNITIVE, OR INDIRECT DAMAGES ARISING FROM OR RELATING TO ANY BREACH OF THIS AGREEMENT, REGARDLESS OF ANY NOTICE OF THE POSSIBILITY OF SUCH DAMAGES. NOTWITHSTANDING THE FOREGOING, NOTHING IN THIS PARAGRAPH IS INTENDED TO LIMIT OR RESTRICT THE INDEMNIFICATION RIGHTS OR OBLIGATIONS OF ANY PARTY UNDER ARTICLE 9, OR DAMAGES AVAILABLE FOR BREACHES OF THE OBLIGATIONS SET FORTH IN ARTICLE 7.

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

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

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

If to Intrexon:	Intrexon Corporation 20358 Seneca Meadows Parkway Germantown, MD 20876 Attention: President, Human Therapeutics Division Fax: (301) 556-9901
with a copy to:	Intrexon Corporation 20358 Seneca Meadows Parkway Germantown, MD 20876 Attention: Legal Department Fax: (301) 556-9902
If to BioLife:	BioLife Cell Bank, Inc. 11970 N. Central Expressway Suite 280 Dallas, TX 75243 Attention: Chief Executive Officer
with a copy to:	[*****]

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

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

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

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

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

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

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

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

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

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

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

[Remainder of page intentionally left blank.]

IN WITNESS WHEREOF, the Parties hereto have duly executed this Exclusive Research Collaboration Agreement.

INTREXON CORPORATION

By: /s/ Jayson M. Rieger

Name: Jayson M. Rieger, Ph.D.

Title: President of Human Therapeutics Division and Senior Vice President

BIOLIFE CELL BANK, INC.

BY: /s/ John D. Harkey, Jr.

Name: John D. Harkey, Jr.

Title: Chairman of the Board

BY: /s/ David G. Genecov

Name: David G. Genecov, M.D.

Title: President

BY: /s/ John A Carbona

Name: John A. Carbona

Title: Chief Executive Officer

Exhibit 10.16

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

COLLABORATION AND LICENSE AGREEMENT

THIS COLLABORATION AND LICENSE AGREEMENT (this "Agreement"), effective as of June 6, 2011 (the "Effective Date") is entered into between HALOZYME, INC., a California corporation ("Halozyme") and INTREXON CORPORATION, a Virginia corporation ("Intrexon").

WHEREAS, Halozyme is the owner or exclusive licensee of certain patents, formulations and know-how related to the PH20 Drug (as defined below);

WHEREAS, Intrexon is the owner or exclusive licensee of certain intellectual property related to the Intrexon Biologic (as defined below);

WHEREAS, Intrexon may seek one or more drug designations in the United States or elsewhere for products derived from or related to the Intrexon Biologic; and

WHEREAS, the parties desire to enter into a collaborative relationship in which the parties will collaboratively develop, and Halozyme will license to Intrexon the right to commercialize, the Product in the Licensed Field in the Territory (each as defined below), all on the terms and conditions of this Agreement.

NOW, THEREFORE, in consideration of the foregoing premises and the mutual covenants herein contained, the parties hereby agree as follows:

1. DEFINITIONS.

1.1 "Affiliate" shall mean, with respect to a party, any entity that controls or is controlled by such party, or is under common control with such party. For purposes of this definition, an entity shall be deemed to control another entity if it owns or controls, directly or indirectly, at least fifty percent (50%) of the voting equity of another entity (or other comparable interest for an entity other than a corporation).

1.2 "API" shall mean the bulk formulation of PH20 Drug [*****].

1.3 "API Specifications" shall mean the specifications for the API set forth in Schedule 1.3.

1.4 "BLA/MAA" shall mean a Biologics License Application ("BLA") submitted to the FDA or a Market Authorization Application ("MAA") submitted to the EMA or MHLW, or any supplemental filing to a BLA or MAA.

1.5 "cGMP" shall mean the principles detailed in the United States Current Good Manufacturing Practices (21 CFR 200, 211 and 600), the "Rules Governing Medicinal Product in The European Community – Volume IV Good Manufacturing Practice for Medicinal Products," and/or "Cooperative Manufacturing Arrangements for Licensed Biologics" FDA-CBER.

1.6 "Clinical Trial" shall mean any human clinical trial in any country the results of which are to evaluate or establish safety, efficacy or dosing, including without limitation pursuant to 21 CFR 312.21, et seq. A "Phase III Clinical Trial" shall mean a pivotal human clinical trial in any country the results of which could be used to establish safety and efficacy of a Product as a basis for a BLA/MAA or that would otherwise satisfy requirements of 21 CFR 312.21(c), or its foreign equivalent.

1.7 "CMO" shall mean contract manufacturing organization.

1.8 "Collaboration Invention" shall mean any invention or discovery, whether or not patentable (including a modification, improvement or new use), that is first conceived or reduced to practice pursuant to Halozyme's activities, Intrexon's activities or both parties' joint activities that is related to the Intrexon Biologic, the PH20 Drug and/or the combination of both, in each case during the term of this Agreement and in connection with work conducted under the Workplan.

1.9 "Collaboration Supported Patents" shall mean (a) all patent applications filed after the Effective Date which claim, and only to the extent it claims, a Collaboration Invention; (b) all patents that have issued or in the future issue from any of the foregoing patent applications, including without limitation utility models, design patents and certificates of invention; and (c) all divisionals, continuations, continuations-in-part, reissues, renewals, re-examinations, extensions or term additions to any such patents and patent applications.

1.10 "Collaboration Supported PH20 Patents" shall mean all Collaboration Supported Patents to the extent claiming or covering PH20 Drug [*****] alone or in combination with any molecule or biologic, but excluding the Collaboration Supported Product Patents.

1.11 "Collaboration Supported Product Patents" shall mean all Collaboration Supported Patents to the extent claiming or covering a Collaboration Invention with respect to PH20 Drug [*****] combined with the Intrexon Biologic.

1.12 "Collaboration Supported Intrexon Biologic Patents" shall mean all Collaboration Supported Patents to the extent claiming or covering the Intrexon Biologic, but excluding the Collaboration Supported Product Patents.

1.13 "Confidential Information" shall mean all information and data that (a) is provided by one party to the other party under this Agreement, and (b) if disclosed in writing or other tangible medium is marked or identified as confidential at the time of disclosure to the recipient, is acknowledged at the time of disclosure to be confidential, or otherwise should reasonably be deemed to be confidential. Notwithstanding the foregoing, Confidential Information of a party shall not include that portion of such information and data which, and only to the extent, the recipient can establish by written documentation: (i) is known to the recipient as evidenced by its written records before receipt thereof from the disclosing party, (ii) is disclosed to the recipient free of confidentiality obligations by a third person who has the right to make such disclosure, (iii) is or becomes part of the public domain through no fault of the recipient, or (iv) the recipient can reasonably establish is independently developed by persons on behalf of recipient without use of the information disclosed by the disclosing party.

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

1.14 "cover" or "covering" as used in relation to a patent or patent right shall include composition of matter claims as well as methods of manufacture or use.

1.15 "DMF" shall mean a Drug Master File filed with the FDA, EMA, MHLW or another foreign equivalent.

1.16 "EMA" shall mean the European Medicines Agency of the European Union, or the successor thereto.

1.17 "Excluded Fields" shall mean [*****].

1.18 "Exclusive Biologic" shall mean, with respect to the Exclusive Field, any molecule or biologic which (1) as of the Effective Date is currently in clinical development to evaluate such product's safety or efficacy for use in the Exclusive Field, or is commercialized for use in the Exclusive Field, and (2) after the Effective Date may at any time during the term of this Agreement be the subject of a clinical study specifically designed to evaluate such product's safety or efficacy for use in the Exclusive Field.

1.19 "Exclusive Field" shall mean genetic emphysema.

1.20 "FDA" shall mean the United States Food and Drug Administration, or any successor entity thereto.

1.21 "First Commercial Sale" shall mean the first sale of the Product by Intrexon, its sublicensee or their respective Affiliates to customers who are not Affiliates in any country after all applicable marketing approvals (if any) have been granted by the applicable governing health authority.

1.22 "FTE" shall mean a full time equivalent of an employee for one calendar year.

1.23 "Fully Burdened Manufacturing Cost" shall mean Halozyme's fully burdened cost to manufacture (or acquire from its third party manufacturer) and supply API, including without limitation costs for testing, packaging, shipping and an allocable share of corporate and overhead costs.

1.24 "Fully Burdened Workplan Cost" shall mean the cost to conduct the research and development activities to be conducted by Halozyme as set forth in the Workplan calculated on an FTE basis at a rate through the first [*****] years of the Agreement at [*****] dollars ($[*****]) per FTE, subject to increase thereafter based on the Producer Price Index for Finished Goods Less Food and Energy (PPILFE), published by the United States Department of Labor in the monthly Labor Review.

1.25 "Grantback Patent" shall mean any issued patent owned or controlled by Intrexon at any time during the term of this Agreement that claims the composition, manufacture or use of PH20 Drug [*****] alone or in combination with any other biologic or molecule, but not to the extent claiming the Intrexon Biologic.

1.26 "Halozyme In-License" shall mean a license, sublicense or other agreement under which Halozyme has acquired, or hereafter acquires, rights to the Licensed IP Rights. Schedule 1.26 sets forth a true and correct list as of the Effective Date of the Halozyme In-Licenses.

1.27 "IND" shall mean an Investigational New Drug application or similar application required to commence human clinical testing of a product submitted to the FDA, or its foreign equivalent.

1.28 "Intrexon Biologic" shall mean that certain alpha-1 anti-trypsin molecule with the amino acid sequence set forth on Schedule 1.28, including any analogs, splice variants, glycoforms, truncated forms, muteins, fusions for extending half life or for purification purposes, point mutations or other derivatives of such inhibitor, whether human or recombinant, provided in each case that (i) such molecule retains at least 25% of the specific activity of purified alpha-1 anti-trypsin molecule with the amino acid sequence set forth in Schedule 1.28, and determined in a human pancreatic elastase assay (ENZO Neutrophil Elastase Colorimetric Drug Discovery Kit) (or such other assay as demonstrated by Intrexon to Halozyme's reasonable satisfaction to be scientifically valid), and (ii) such molecule does not have greater than 0.8 units of activity per milligram of protein, where a unit is the amount of C1-inhibitor activity present in one (1) milliliter of normal, human plasma, as measured by the Behrichrom C-1 inhibitor assay (in accordance with the instructions provided with such assay) or such other assay as demonstrated by Halozyme to Intrexon's reasonable satisfaction to be scientifically valid

1.29 "Intrexon Subcutaneous Product" shall mean the Intrexon Biologic administered through a subcutaneous mode of administration for use with any indication in the Licensed Field, but excluding the Product.

1.30 "Licensed Field" shall mean the diagnosis, prevention, management or treatment of any disease state or condition in humans, but excluding the Excluded Fields.

1.31 "Licensed IP Rights" shall mean, collectively, the Licensed Know-How Rights, Licensed Patent Rights and Licensed Marks.

1.32 "Licensed Know-How Rights" shall mean all of Halozyme's rights (including Halozyme's grantback rights from third parties to the extent sublicensable) in all trade secret and other know-how relating to PH20 Drug [*****] that are necessary or useful to develop, obtain regulatory approval for, manufacture, commercialize or use Products in the Licensed Field.

1.33 "Licensed Marks" shall mean those certain trademarks, trade names, designs and markings owned or licensed by Halozyme and designated from time to time in writing by Halozyme for use by Intrexon under this Agreement in connection with the packaging, labeling, promotion and marketing of Products in the Licensed Field.

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

1.34 "Licensed Patent Rights" shall mean all of Halozyme's rights (including Halozyme's grantback rights from third parties to the extent sublicensable) in (a) all patent applications heretofore or hereafter filed that claim or cover PH20 Drug [*****] alone or in combination with any other composition, as necessary or useful to develop, obtain regulatory approval for, manufacture, commercialize or use Products in the Licensed Field, (b) all patents that have issued or in the future issue from any of the foregoing patent applications, including without limitation utility models, design patents and certificates of invention, and (c) all divisionals, continuations, continuations-in-part, reissues, renewals, extensions or additions to any such patents and patent applications. For clarity, Licensed Patents Rights include Collaboration Supported PH20 Patents.

1.35 "MHLW" shall mean the Ministry of Health, Labour and Welfare of Japan, or the successor thereto.

1.36 "Net Sales" shall mean the gross sales price of the Product invoiced by Intrexon, its sublicensee or their respective Affiliates to customers who are not Affiliates (or who are Affiliates but are the end users of the Product) less, to the extent actually paid or accrued by Intrexon, its sublicensee or their respective Affiliates (as applicable): (a) credits, allowances, discounts and rebates to, and chargebacks from the account of, such customers for Product; (b) packaging, freight and insurance costs incurred by Intrexon, its sublicensee or their respective Affiliates (as applicable) in transporting Product to such customers; (c) cash, quantity and trade discounts, rebates, assessments and other price reductions for Product given to such customers under price reduction programs that are consistent with price reductions given for similar products by Intrexon, its sublicensee or their respective Affiliates (as applicable); (d) sales, use, value-added and other direct taxes incurred on the sale of Product to such customers; (e) customs duties, surcharges and other governmental charges incurred in exporting or importing Product to such customers; (f) the amount of any [*****] up to a maximum of [*****] as calculated under clauses (a) – (e) above on a quarterly basis; and (g) any adjustments substantially similar to any of the foregoing.

1.37 "PH20 Drug" shall mean the active compound, recombinant human PH20 hyaluronidase (i.e. a truncated form of native human PH20 hyaluronidase consisting of residues 36-482, inclusive, of the native human PH20 hyaluronidase).

1.38 "[*****]" shall mean a [*****] that consists of any improvement or enhancement to [*****] and intended to [*****].

1.39 "Prior Collaborations" shall have the meaning ascribed to it in Section 2.2.1.

1.40 "Product" shall mean a product that includes (a) the Intrexon Biologic (and, except as otherwise set forth below, no other active pharmaceutical ingredients), and (b) PH20 Drug supplied by Halozyme [*****] to Intrexon pursuant to this Agreement ([*****]), as an active ingredient/excipient for enhancing the dispersion and/or absorption of the Intrexon Biologic, in any liquid injectable formulation, and/or any

lyophilized formulation, which product is promoted, marketed and sold in a co-formulation (e.g., pre-formulated together in a single solution in a single container, in a single package with a single label at a single price). For the avoidance of doubt, the addition of any excipient or adjuvant to the product shall not render such product outside the definition of Product.

1.41 "Royalty Term" shall mean, with respect to each country, the period equal to the longer of (a) if, at the time of the First Commercial Sale of Product in such country, the use, offer for sale, sale or import of Product in such country would infringe a Valid Claim, the term for which such Valid Claim remains in effect and would be infringed, and (b) ten (10) years following the date of the First Commercial Sale of Product in such country.

1.42 "SEC" shall have the meaning ascribed to it in Section 2.1.1.

1.43 "Valid Claim" shall mean a claim of an issued and unexpired patent included within the Licensed Patent Rights or the Collaboration Supported Product Patents, which has not been held permanently revoked, unenforceable or invalid by a decision of a court or other governmental agency of competent jurisdiction, unappealable or unappealed within the time allowed for appeal, and which has not been admitted to be invalid or unenforceable through reissue or disclaimer or otherwise.

1.44 "Workplan" shall have the meaning set forth in Section 5.1.2.

2. REPRESENTATIONS, WARRANTIES AND COVENANTS.

2.1 By Each Party. Each party represents and warrants to the other party as follows:

2.1.1 Organization. Such party is duly organized, validly existing and in good standing under the laws of the jurisdiction in which it is organized.

2.1.2 Authorization and Enforcement of Obligations. Such party (a) has the requisite power and authority and the legal right to enter into this Agreement and to perform its obligations hereunder; and (b) has taken all requisite action on its part to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder. This Agreement has been duly executed and delivered on behalf of such party, and constitutes a legal, valid, binding obligation, enforceable against such party in accordance with its terms.

2.1.3 Consents. All necessary consents, approvals and authorizations of all governmental authorities and other persons or entities required to be obtained by such party in connection with this Agreement have been obtained.

2.1.4 No Conflict. The execution and delivery of this Agreement and the performance of such party's obligations hereunder (a) do not conflict with or violate any requirement of applicable laws, regulations or orders of governmental bodies; and (b) do not conflict with, or constitute a default under, any contractual obligation of such party.

2.1.5 No Debarment. In the course of the development of the Product, neither party shall use, during the Term, any employee or consultant who has been debarred by any regulatory authority, or, to the best of such party's knowledge, is the subject of debarment proceedings by a regulatory authority.

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

2.2 By Halozyme. Halozyme further represents and warrants to Intrexon as follows:

2.2.1 Licensed Patent Rights; Licensed IP Rights. As of the Effective Date, the Licensed Patent Rights have not been held by a court of competent jurisdiction to be invalid or unenforceable, in whole or in part. As of the Effective Date, except as expressly set forth under the heading "Risks Related To Our Industry" in Halozyme's Form 10-K for the year ending December 31, 2010 filled with the Securities and Exchange Commission ("SEC"), Halozyme has not received written notice of any claim or litigation by any third party alleging that any of the Licensed Patent Rights are invalid or unenforceable. Halozyme has the right to grant the licenses under the Licensed IP Rights pursuant to this Agreement.

(a) Schedule 2.2.1(a) sets forth a true and complete list of all Licensed Patent Rights as of the Effective Date, and indicates the current status, date and country of filing and issuance.

(b) [*****]

(c) Neither Halozyme nor any of its Affiliates has received any written notice from any person that the use or practice of the Licensed Patent Rights or Licensed Know-How Rights infringes or misappropriates the intellectual property rights of a third party.

(d) [*****]

(e) All current and former employees and consultants of Halozyme and its Affiliates who are or have been substantively involved in the design, review, evaluation or development of the Licensed Patent Rights or Licensed Know-How Rights have executed written contracts or are otherwise obligated to protect the confidential status and value thereof and to vest in Halozyme or its Affiliates exclusive ownership of the Licensed Patent Rights and Licensed Know-How Rights.

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

(f) The Halozyme In-Licenses, as set forth on Schedule 1.26, sets forth a true and complete list of all agreements to which Halozyme is a party that are necessary or useful for the manufacture, use, sale or importation of PH20 Drug, copies of which have been provided by Halozyme to Intrexon, subject to redaction of confidential or proprietary information provided, however, that such redaction does not unreasonably interfere with Intrexon's understanding of the relevant sections of such agreements. Halozyme has fulfilled all of its obligations and is not in breach or default under such agreements and has not waived or allowed to lapse or terminate any of its rights thereunder.

2.2.2 Halozyme In-Licenses. Halozyme has not received notice of breach or termination of the Halozyme In-Licenses.

2.2.3 SEC Reports. To Halozyme's knowledge, neither Halozyme's Report on Form 10-K for the year ended December 31, 2010, nor any other document filed by Halozyme with the SEC since March 11, 2011, contained a misstatement of a material fact, or failed to state a material fact required to be stated therein or necessary to make the statements made therein not misleading, as of the date such filing was made, in each case relating to the Licensed Patent Rights and Licensed Know-How Rights.

2.2.4 API Specifications. The API Specifications set forth on Schedule 1.3 hereto are consistent with the specifications for API to be provided under the Prior Collaborations. Halozyme's present manufacturing process has produced PH20 Drug with qualities that meet the API Specifications.

2.3 DISCLAIMER OF WARRANTIES. EXCEPT AS OTHERWISE EXPRESSLY SET FORTH ABOVE OR IN SECTION 7.7, HALOZYME MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, REGARDING THE LICENSED IP RIGHTS, INCLUDING WITHOUT LIMITATION, ANY REPRESENTATION OR WARRANTY REGARDING VALIDITY, ENFORCEABILITY, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT.

3. LICENSE.

3.1 License Grant to Intrexon.

3.1.1 On the terms and conditions of this Agreement, Halozyme hereby grants to Intrexon an exclusive worldwide license under the Licensed IP Rights (with the limited right to sublicense pursuant to Section 3.1.2) to develop, make, have made, use, offer for sale, sell and import Products for use in the Licensed Field. Except as expressly set forth in this Agreement, Intrexon shall not use the Licensed IP Rights for any other use.

3.1.2 Intrexon shall have the right to grant sublicenses to (a) third parties solely for the purpose of developing, manufacturing or commercializing such Product in each case jointly with, or for the benefit of, Intrexon and (b) Affiliates. Intrexon shall provide Halozyme with a copy of each sublicense referenced in clause (a) and prompt notice of each sublicense referenced in clause (b), subject to redaction of confidential or proprietary information provided, however, that such redaction does not unreasonably interfere with Halozyme's understanding of the relevant sections of such sublicenses. Any such sublicense

shall be subject and subordinate to the terms and conditions of this Agreement. Intrexon hereby represents that it has the power to bind its Affiliates to the terms and conditions set forth in this Agreement and any Affiliate that receives a sublicense shall be bound by the terms and conditions of this Agreement as if such Affiliate was an original signatory to this Agreement. Notwithstanding the foregoing, Intrexon shall remain liable for a breach of this Agreement by its Affiliate and shall remain responsible for all payments due to Halozyme hereunder.

3.2 No Implied Licenses. Only licenses and rights expressly granted herein shall be of legal force and effect. No license or other right shall be created hereunder by implication, estoppel or otherwise.

3.3 Exclusivity.

3.3.1 Commencing on the Effective Date, neither Halozyme nor any of its Affiliates shall grant to any third party any right to develop, make, have made, use, offer for sale, sell or import any product that consists of PH20 Drug [*****] together with an Exclusive Biologic for use in the Exclusive Field.

3.3.2 Commencing on the Effective Date, neither Halozyme nor any of its Affiliates shall grant to any third party any right to develop, make, have made, use, offer for sale, sell or import any product that consists of PH20 Drug [*****] together with the Intrexon Biologic (with or without any additional active pharmaceutical ingredients) for use in the Licensed Field.

3.3.3 Neither Halozyme nor its Affiliates shall sell or enter into any agreement with any third party to sell PH20 Drug [*****] with an Exclusive Biologic in a kit (i.e., the PH20 Drug [*****] and the biologic or molecule are in separate containers, but packaged together and at a single price) for use in the Exclusive Field.

3.3.4 Halozyme shall include in any future agreements with a third party to develop, make, have made, use, offer for sale, sell or import any product that consists of PH20 Drug [*****] (including products sold as a kit with PH20 Drug or [*****] a covenant prohibiting such third party from using such product in the Exclusive Field.

3.3.5 For the avoidance of doubt, nothing in this Agreement shall restrict Halozyme from granting rights to a Third Party for PH20 Drug [*****] combined with an Exclusive Biologic (except for the Intrexon Biologic) outside the Exclusive Field.

3.4 Excluded Fields. Intrexon shall not seek regulatory approval of the Product, or use or commercialize the Product, for use in any of the Excluded Fields.

4. FINANCIAL TERMS.

4.1 License Fee. Within [*****] business days of the Effective Date, Intrexon shall pay to Halozyme the nonrefundable and noncreditable initial license fee of nine million dollars ($9,000,000).

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

4.2 Exclusivity Fee. Commencing with the first anniversary of the Effective Date, and continuing with each successive anniversary until the initiation of the first Phase III Clinical Trial for the Product, Intrexon shall pay to Halozyme the non-refundable and non-creditable exclusivity fee of [*****] dollars ($[*****]).

4.3 Milestone Payments.

4.3.1 Within thirty (30) days following the achievement of each of the following development milestones, Intrexon shall give written notice to Halozyme and shall pay to Halozyme the corresponding non-refundable and non-creditable milestone payments:

(i) $[*****] [*****];

(ii) $[*****] [*****];

(iii) $[*****] [*****];

(iv) $[*****] [*****];

(v) $[*****] [*****];

(vi) $[*****] [*****];

(vii) $[*****] [*****];

(viii) $[*****] [*****];

(ix) $[*****] [*****];

(x) $[*****] [*****];

(xi) $[*****] [*****];

(xii) $[*****] [*****]

(xiii) $[*****] [*****].

If for whatever reason (other than due to a breach by Intrexon) a milestone payment set forth above is not paid for a Product and the subsequent development event that corresponds to the same indication and to the same country or jurisdiction is achieved for such Product (for example, doing a [*****]), then both the then-achieved milestone payment and the prior unpaid milestone payment shall be payable at the time the then-achieved milestone payment is made. Except for those milestone payments that are due for each disease or indication other than the Exclusive Field, each milestone payment shall be payable only one (1) time, regardless of the number of times that the corresponding event is achieved. If the development of a Product is terminated under this Agreement ("Terminated Product") for any reason and another Product is developed under this Agreement and then achieves an event giving rise to a milestone payment, such milestone payment shall not be made if it had previously been made with respect to the Terminated Product.

4.4 Royalties.

4.4.1 During the applicable Royalty Term, Intrexon shall pay to Halozyme royalties on annual Net Sales by Intrexon, its sublicensees and their respective Affiliates in any country equal to (a) [*****] of the first [*****] dollars ($[*****]) of such annual Net Sales, (b) [*****] of such annual Net Sales in excess of [*****] dollars ($[*****]) up to and including [*****] dollars ($[*****]), (c) [*****] of such annual Net Sales in excess of [*****] dollars ($[*****]) up to and including [*****] dollars ($[*****]), and (d) eleven percent (11%) of such annual Net Sales in excess of [*****] dollars ($[*****]). In any country where either (i) there is no Valid Claim that would be infringed by the making, using, selling, offering for sale or importation of the Product (for clarity, a Valid Claim may be included in the Licensed Patent Rights or the Collaboration Supported Product Patents, so long as it would be infringed by the making, using, selling, offering for sale or importation of the Product in such country), or [*****], then the foregoing royalty rate in such country shall be reduced by [*****] with respect to applicable Net Sales in such country.

4.4.2 If Intrexon, its sublicensees or their respective Affiliates sells a Product to a third party who also purchases other products or services from Intrexon, its sublicensees or their respective Affiliates, and Intrexon, its sublicensees or their respective Affiliates discounts the purchase price of such Product to a greater degree than it generally discounts the price of its other products or services to such customer, then in such case the Net Sales for the sale of such Product to such third party shall equal the arm's length price that third parties would generally pay for the Product alone when not purchasing any other product or service from Intrexon, its sublicensee or their respective Affiliates. For purposes of this provision, "discounting" includes establishing a price for a Product at a discount of [*****] or more from the average sales price for the applicable country of end use or for the applicable region if sales are conducted on a regional basis.

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

4.5 API Price. For all API supplied by Halozyme under Article 7, Intrexon shall pay to Halozyme a price equal to [*****] percent ([*****]%) of the Fully Burdened Manufacturing Cost to Halozyme to manufacture (or have manufactured), store and supply API. As of the date of this Agreement, the Fully Burdened Manufacturing Cost to Halozyme of the API is reasonably estimated at $[*****]/milligram. Halozyme shall invoice Intrexon for all API upon shipment in accordance with Article 7, and Intrexon shall pay each such invoice unless contested within [*****] days after receipt.

4.6 Royalty Reports.

4.6.1 Within [*****] days after the end of the first, second and third calendar quarters of each calendar year and within [*****] days after the end of the fourth quarter during each calendar year, commencing with the calendar quarter in which there is a first commercial sale of a Product, to the extent such information is reasonably available, Intrexon shall furnish to Halozyme a written report showing in reasonably specific detail, on a country-by-country basis, (a) the quantity and aggregate gross sales of all Products sold by Intrexon, its sublicensees and their respective Affiliates during such calendar quarter and the calculation of Net Sales from such gross sales; (b) the calculation of the royalties, if any, which shall have accrued based upon such Net Sales; (c) the withholding taxes, if any, required by law to be deducted with respect to such sales; and (d) the exchange rates, if any, used in determining the amount of United States dollars.

4.6.2 With respect to sales of Products invoiced in United States dollars, all such amounts shall be expressed in United States dollars. With respect to sales of Products invoiced in a currency other than United States dollars, all such amounts shall be expressed both in the currency in which the sale is invoiced and in the United States dollar equivalent. The United States dollar equivalent shall be calculated using the average of the exchange rates (local currency per US$1) published in The Wall Street Journal, Western Edition, under the heading “Currency Trading” on the last business day of each month in the applicable calendar quarter. All royalties payable hereunder shall be calculated based on Net Sales expressed in United States dollars.

4.6.3 Intrexon shall keep, to the extent such information is reasonably available, complete and accurate records in sufficient detail to properly reflect all gross sales and Net Sales and to enable the royalties payable to be determined.

4.6.4 All royalties shown to have accrued by each royalty report provided under this Section 4.6 shall be payable on the date such royalty report is due. Payment of royalties in whole or in part may be made in advance of such due date.

4.7 Audits.

4.7.1 Upon the written request of Halozyme and not more than once in every two years, Intrexon shall permit an independent certified public accounting firm of nationally recognized standing, selected by Halozyme and reasonably acceptable to Intrexon, to have access during normal business hours to such records of Intrexon as may be reasonably necessary to verify the accuracy of the royalty reports hereunder for any year ending not more

than [*****] months prior to the date of such request and which have not previously been audited. The accounting firm shall disclose to Halozyme only whether the reports are correct and the specific details of any discrepancy, but no other information shall be shared. If such accounting firm concludes that additional royalties were owed during the audited period, or that excess royalties were paid during the audited period, Intrexon shall pay such additional royalties, or Halozyme shall provide Intrexon with a credit for such excess royalties, as the case may be, within [*****] days of the date Halozyme delivers to Intrexon such accounting firm's written report so concluding; provided, that, in the case of a credit, if Intrexon is unable to use the full amount of such credit within [*****] months from the date of such report, then Halozyme shall promptly pay to Intrexon the unused amount of such credit. The fees charged by such accounting firm shall be paid by Halozyme; provided, however, if the audit discloses that the royalties payable by Intrexon for such period are more than [*****] percent ([*****]%) of the royalties actually paid for such period, then Intrexon shall pay the reasonable fees and expenses charged by such accounting firm. Halozyme shall treat all financial information subject to review under this Section 4.7.1 as confidential, and shall cause its accounting firm to retain all such financial information in confidence and shall be liable to Intrexon for any improper disclosure by its accounting firm.

4.7.2 Upon the written request of Intrexon and not more than once in every two years, Halozyme shall permit an independent certified public accounting firm of nationally recognized standing, selected by Intrexon and reasonably acceptable to Halozyme, to have access during normal business hours to such records of Halozyme as may be reasonably necessary to verify the accuracy of each of the API transfer price and the Workplan costs hereunder for any year ending not more than [*****] months prior to the date of such request and which have not previously been audited. The accounting firm shall disclose to Intrexon only whether the API transfer price and/or the Workplan cost was correct and the specific details of any discrepancy, but no other information shall be shared. If such accounting firm concludes that Halozyme overcharged for the API transfer price and/or the Workplan cost during the audited period, or that Halozyme undercharged for the API transfer price and/or the Workplan cost during the audited period, Halozyme shall provide Intrexon with a credit for such overcharge, or Intrexon shall make an additional payment in respect of such undercharge, within [*****] days of the date Intrexon delivers to Halozyme such accounting firm's written report so concluding; provided, that, in the case of a credit, if Intrexon is unable to use the full amount of such credit within [*****] months from the date of such report, then Halozyme shall promptly pay to Intrexon the unused amount of such credit. The fees charged by such accounting firm shall be paid by Intrexon; provided, however, if the audit discloses that the API transfer price and/or the Workplan cost charged by Halozyme for such period was more than [*****] percent ([*****]%) of the API transfer price and/or the Workplan cost, as the case may be, actually due for such period, then Halozyme shall pay the reasonable fees and expenses charged by such accounting firm. Intrexon shall treat all financial information subject to review under this Section 4.7.2 as confidential, and shall cause its accounting firm to retain all such financial information in confidence and shall be liable to Halozyme for any improper disclosure by its accounting firm.

4.8 Withholding Taxes. Intrexon shall be entitled to deduct from the royalty payments otherwise due to Halozyme hereunder the amount of any withholding taxes, value-added taxes or other taxes, levies or charges with respect to such royalty payments that are

required to be withheld by Intrexon. Intrexon shall pay to the appropriate governmental authority on behalf of Halozyme such taxes, levies or charges that are withheld. Intrexon shall use reasonable efforts to take such action as may be reasonably requested by Halozyme, and at Halozyme's cost, to minimize any such taxes, levies or charges required to be withheld on behalf of Halozyme by Intrexon, provided that such actions do not, or could not reasonably be expected to, adversely affect or impact Intrexon or any of its Affiliates. Intrexon promptly shall deliver to Halozyme proof of payment of all such taxes, levies and other charges, together with copies of all communications from or with such governmental authority with respect directly related thereto.

4.9 Payment Method. All payments by Intrexon to Halozyme hereunder shall be in United States Dollars in immediately available funds (or funds that will be available on or prior to the date such payment is due) and shall be made by wire transfer to such bank account as designated from time to time by Halozyme to Intrexon. Except with respect to any amounts disputed in good faith, any late payments due hereunder shall bear interest at the rate of [*****]% per month, or the maximum allowable by law if less.

5. PRODUCT DEVELOPMENT AND COMMERCIALIZATION.

5.1 Responsibility.

5.1.1 Except as otherwise set forth in this Section 5.1, Intrexon shall be solely responsible, at its sole cost, for conducting the development, manufacture, regulatory approval and commercialization of Products, and shall own all clinical data, regulatory applications, filings, approvals and licenses for each Product.

5.1.2 Intrexon shall engage Halozyme to conduct development and regulatory work for the PH20 Drug component of each Product and for providing technical assistance regarding the development of each Product. All such activities by Halozyme shall be conducted at the reasonable request of Intrexon pursuant to a mutually acceptable written workplan that is customary in the industry (the "Workplan"). Following the end of each calendar quarter, Halozyme shall invoice Intrexon for the Fully Burdened Workplan Cost to Halozyme to conduct such activities, and Intrexon shall pay each such invoice within [*****] days after receipt.

5.1.3 Halozyme shall provide Intrexon with a full dossier for the PH20 Drug for Intrexon's use in BLA/MAA filings. Such dossier will include chemistry manufacturing and controls sections and pre-clinical pharmacology and toxicology sections. Upon written request from Intrexon, Halozyme will file a DMF for the PH20 Drug as promptly as practicable. Halozyme shall own the DMF for the PH20 Drug component of each Product. Intrexon shall have the right to cross-reference such DMF. In countries where this is not feasible, Halozyme shall provide Intrexon, at Intrexon's cost, with such information in Halozyme's control regarding the PH20 Drug component of each Product as is reasonably necessary for Intrexon to include in the applicable regulatory applications for such Product. Halozyme shall promptly notify Intrexon of any changes to the dossier or DMF for the PH20 Drug.

5.1.4 Promptly following the Effective Date, each party shall appoint a person to act as its alliance manager to coordinate its business activities under this Agreement, and a technical leader to coordinate its technical activities under this Agreement. Each party shall notify in writing the other party as soon as practicable upon making, and changing, any of these appointments. The alliance managers shall be the primary business contacts, and the technical leaders shall be the primary technical contacts, between the parties with respect to their respective activities under this Agreement. Each party shall maintain an alliance project team, with an equal number of representatives as mutually agreed upon by the parties, that consists of at least the alliance manager and technical leader. The purpose of the alliance project team shall be to exchange information and oversee the strategic, technical and operation aspects of the alliance. The alliance project team will have monthly meetings (which will be in person at least once per quarter), unless otherwise agreed to. Among its other responsibilities, the alliance project team shall approve the Workplan, and all amendments thereto. Notwithstanding the foregoing, but subject to Article 6, Intrexon shall have final decision-making authority with respect to the development, manufacturing, regulatory approval and commercialization of the Product. Each party shall be responsible for its own costs in connection with the meetings of the alliance project team. Within [*****] weeks after each meeting of the alliance project team, one party (alternating from meeting to meeting) shall prepare and provide the other party with written minutes of the discussions, decisions and action items from such meeting which shall be subject to the reasonable approval and comment of the other party.

5.1.5 In addition to Section 5.1.3, Intrexon may request Halozyme to provide authorization for regulatory agencies cross-reference appropriate regulatory filings previously made by Halozyme or its Affiliates regarding PH20 Drug which is necessary with respect to obtaining regulatory approval for any Product. Halozyme will not unreasonably withhold letters of authorization.

5.2 Diligence Efforts.

5.2.1 Intrexon shall [*****] to [*****] and following such approval, [*****] to [*****]. For purposes of this Section 5.2, [*****].

5.2.2 Neither Intrexon nor any of its Affiliates shall develop itself, or obtain a license from or otherwise collaborate with a third party to develop an Intrexon Subcutaneous Product.

5.2.3 If Intrexon permanently abandons, or permanently ceases, development, use or commercialization of, the Product in any indication within the Licensed Field, then Intrexon shall promptly deliver written notice to Halozyme of its decision therefore, and the parties shall remove such indication from the Licensed Field.

5.3 Research and Development Reports.

5.3.1 Intrexon shall keep complete and accurate records of its activities conducted under Section 5.1.1 of this Agreement and the results thereof. Within [*****] days after the end of each calendar year until the First Commercial Sale in the United States of a Product, Intrexon shall prepare and provide Halozyme with a reasonably detailed written report of the activities conducted under this Agreement, and the results thereof, through such date of such report, to develop and obtain regulatory approvals to market Products.

5.3.2 Halozyme shall keep complete and accurate records of its activities conducted under Section 5.1.2 of this Agreement and the results thereof. Within [*****] days after the end of each calendar year until the First Commercial Sale in the United States of a Product, Halozyme shall prepare and provide Intrexon with a reasonably detailed written report of the activities conducted under this Agreement, and the results thereof, through such date of such report, to develop and obtain regulatory approvals to market Products.

5.4 Trademarks.

5.4.1 To the extent allowed under applicable law, Intrexon, its sublicensee or their respective Affiliates shall have the right to determine the names and trademarks to use in connection with the promotion, marketing and sale of Products, and shall own and maintain such trademarks for use in connection with the promotion, marketing and sale of Products; provided, however, that, to the extent legally permissible and commercially practicable, Intrexon shall include on all packaging, labeling and marketing and promotional materials regarding any Product the name HALOZYME, and the mark ENHANZE (or such other mark reasonably requested by Halozyme) as a secondary mark, reasonably identifying that such product incorporates technology of Halozyme. The foregoing obligation shall exist so long as such marks are valid in the applicable country of sale. Nothing in this Agreement shall create an obligation on Halozyme to register or otherwise maintain in force any marks. Halozyme shall promptly inform Intrexon, upon Intrexon's reasonable request, as to whether the marks requested for inclusion by Halozyme are properly registered in the applicable country of sale (with any necessary recordation or maintenance fees accounted for) and whether, to Halozyme's knowledge, the requested marks have been determined by a governmental authority to be invalid or unenforceable.

5.4.2 Except as otherwise set forth above, Intrexon, its sublicensees and their respective Affiliates shall not (a) use any of Halozyme's trademarks, or any mark or name confusingly similar thereto, as part of a corporate or business name or in any other manner, or (b) register any trade mark or trade name (including any company name) which is identical to or confusingly similar to or incorporates any trade mark or trade name which Halozyme or any associated company owns or claims rights in. Any goodwill associated with any of Halozyme's names or marks affixed or applied or used in connection with Products shall accrue to the sole benefit of Halozyme.

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

6. REGULATORY MATTERS.

6.1 Notices. Except as otherwise set forth in this Agreement, Intrexon shall not communicate with the FDA or the governing health authorities of any country solely regarding the PH20 Drug incorporated into the Product without the prior consent of Halozyme. If the FDA or the governing health authorities of any country initiates any oral communication with Intrexon solely regarding the PH20 Drug incorporated into the Product, Intrexon shall have the right to respond to such communication to the extent reasonably necessary or appropriate under the circumstances; provided, however, that (a) Intrexon shall use reasonable efforts to limit the communications solely regarding the PH20 Drug incorporated into the Product that are conducted without the participation of Halozyme; (b) promptly thereafter, Intrexon shall provide Halozyme with written notice thereof in reasonably specific detail describing the communications solely regarding the PH20 Drug incorporated into the Product; and (c) Intrexon promptly shall provide Halozyme with copies of all minutes and other materials resulting therefrom (redacting any information that is confidential or proprietary, that does not relate to the PH20 Drug, or that it is unable to legally disclose). Intrexon promptly shall provide Halozyme with copies of all written communications from the FDA or the governing health authorities of any country solely regarding the PH20 Drug incorporated into the Product (redacting any information that is confidential or proprietary, that does not relate to the PH20 Drug, or that it is unable to legally disclose). With respect to any filing, communication or other submission with the FDA or the governing health authorities of any country solely regarding the PH20 Drug incorporated into the Product, (a) Intrexon shall provide Halozyme with an advance copy of the reasonably complete draft thereof; (b) Halozyme shall have a reasonable opportunity to review, comment and consult on such draft; (c) the parties shall discuss Halozyme's comments solely regarding the PH20 Drug incorporated into such Product; (d) Intrexon shall in good faith consider the reasonable comments of Halozyme solely regarding the PH20 Drug incorporated into such Product; and (e) Halozyme shall promptly respond to any inquiry from the FDA or the governing health authorities of any country that initiated communication concerning the PH20 Drug incorporated into the Product, shall keep Intrexon reasonably informed of the subject of such communications, and shall provide Intrexon with copies of any minutes of any such proceedings to the extent such minutes relate to the Product or the Intrexon Biologic. Halozyme shall keep Intrexon updated with respect to the regulatory strategy for the PH20 Drug incorporated into each Product and the consistency thereof with, or any differences from, Halozyme's regulatory strategy for Halozyme's proprietary recombinant human PH20 hyaluronidase technology. Notwithstanding the foregoing, Intrexon shall have the sole right to communicate with the FDA or the governing health authorities of any country regarding the Intrexon Biologic.

6.2 Results. Intrexon shall promptly inform Halozyme in writing, in reasonably specific detail, of any material data, results or other information from each preclinical study or human clinical trial of a Product related to the PH20 Drug component of such Product. Halozyme shall promptly inform Intrexon in writing of any regulatory communication that is received, or of any data, results or other information of which it becomes aware, relating to the PH20 Drug alone or as a component of a Product that may impact the safety or efficacy of a Product; provided, however, that neither party will be required to disclose any data, results or other information (other than safety information) that will result in a breach of any confidentiality obligations with a third party. Each party acknowledges that information exchanged under this provision may contain material, nonpublic information, a party's awareness of which could prohibit that party from (1) buying or selling securities (stock, options, etc.) until after the information has been disclosed to the public and absorbed by the market, and (2) passing the information on to anyone who may buy or sell securities.

6.3 Adverse Event Reporting. Each party shall promptly notify the other party of any information that comes to such party's attention concerning any serious or unexpected adverse event, injury, toxicity or sensitivity reaction, or any unexpected incidence, and the severity thereof, associated with the clinical uses, studies, investigations, tests and marketing of PH20 Drug, the Intrexon Biologic or the Product. For purposes of this Section 6.3, "serious" shall mean an experience which (a) results in the death, a persistent or significant incapacity or substantial disruption of the ability to conduct normal life functions, in-patient hospitalization or prolongation of hospitalization, or (b) is a congenital anomaly, the result of an overdose or life threatening (only if unrelated to primary disease); and "unexpected" shall mean (x) for a nonmarketed Product, an experience that is not identified in nature, severity or frequency in the current clinical investigator's confidential information brochure, and (y) for a marketed product, an event which is not listed in the current labeling for such product, and includes an event that may be symptomatically and pathophysiologically related to an experience listed in the labeling but differs from the event because of increased frequency or greater severity or specificity. Each party further shall immediately notify the other party of any information received regarding any threatened or pending action by an agency that may affect the safety and efficacy claims of the Product. Upon receipt of any such information, the parties shall consult with each other in an effort to arrive at a mutually acceptable procedure for taking appropriate action; provided, however, that nothing contained herein shall restrict either party's right to make a timely report of such matter to any government agency or take other action that it deems to be appropriate or required by applicable law, regulation or court order. Each party shall take all reasonable steps to protect the confidentiality of any patient health and medical information that it has access to and to comply with applicable state and federal privacy laws, as such laws apply to such party.

7. SUPPLY OF API.

7.1 Manufacture and Sale. On the terms and conditions of this Article 7, Halozyme shall manufacture (or have manufactured), sell and deliver to Intrexon all API required by Intrexon, its sublicensees and their respective Affiliates for use in the preclinical development, clinical development and commercialization of the Products, and Intrexon shall purchase from Halozyme all quantities of API required by Intrexon, its sublicensees and their respective Affiliates for use in the preclinical development, clinical development and commercialization of the Products. Intrexon, its sublicensees and their respective Affiliates shall use such API supplied by Halozyme solely for the development, manufacture and commercialization of Products pursuant to this Agreement.

7.2 Manufacturing Practices.

7.2.1 Halozyme shall manufacture, or have manufactured, API under this Article 7 in conformity with the API Specifications and in accordance with all applicable laws and regulations. The API Specifications shall not be amended without the prior written consent of both parties. Halozyme shall notify Intrexon in the event it agrees to modify the specifications for PH20 Drug being provided to any of its other licensees.

7.2.2 Unless the parties otherwise mutually agree or except as otherwise contemplated by this Agreement, Halozyme shall manufacture, or have manufactured, API under this Article 7 in accordance with cGMP as it may be in effect at the time.

7.2.3 Subject to Section 7.2.1, Halozyme shall [*****].

7.2.4 Intrexon shall have the right, at its sole expense, to audit Halozyme and its CMO of PH20 Drug for compliance with applicable laws and regulations and GMP on reasonable notice during normal business hours and not more than once in each calendar year, subject to reasonable confidentiality obligations.

7.2.5 Halozyme shall provide Intrexon with certificates of analysis for all API supplied hereunder based upon a reference standard established by Halozyme in accordance with all applicable rules and regulations and reasonably acceptable to Intrexon.

7.2.6 Upon the reasonable request of Intrexon, Halozyme shall provide Intrexon with such information, including analytical and manufacturing documentation, batch records for API and stability data, in each case requested by Intrexon regarding quality control of API supplied under this Article 7.

7.2.7 All information disclosed or obtained pursuant to this Article 7 shall be Confidential Information of Halozyme.

7.3 Forecasts and Orders.

7.3.1 Not less than [*****] days prior to the first day of each calendar quarter (commencing with the first calendar quarter in which Intrexon, its sublicensees or their respective Affiliates order API from Halozyme hereunder), Intrexon shall prepare and provide Halozyme with a written forecast of its good faith estimated requirements for API under this Section 7.3 for each of the subsequent [*****] calendar quarters. Intrexon shall not (a) increase or decrease the quantity estimated for the [*****] quarterly period of each forecast from the quantity estimated for the [*****] quarterly period of the previous forecast, (b) increase or decrease the quantity estimated for the [*****] quarterly periods of each forecast by more than [*****] percent ([*****]%) of the quantity estimated for the [*****] quarterly periods of the previous forecast, respectively, without the prior express written consent of Halozyme. The quantities estimated for the [*****] quarterly periods of each forecast shall be non-binding, and for planning purposes only.

7.3.2 Intrexon shall be required to purchase [*****] of the quantity forecasted for each API under this Section 7.3 for the first and second quarterly periods of each forecast under Section 7.3.1.

7.3.3 Halozyme shall be required to supply the quantity of API ordered by Intrexon under this Section 7.3 in any calendar quarter up to [*****] percent ([*****]%) of the quantity forecasted for the [*****] quarterly period of the most recent forecast. If Intrexon's

orders in any calendar quarter exceed [*****] percent ([*****]%) of the quantity forecasted for the [*****] quarterly period of the most recent forecast, Halozyme shall use commercially reasonable efforts to supply such excess. Halozyme shall use commercially reasonable efforts to meet Intrexon's delivery requirements specified in accordance with Section 7.3.4. In the event of a shortfall to forecast, Halozyme shall use commercially reasonable efforts to apportion API among Intrexon and its other customers on a pro rata basis according to their respective forecasts.

7.3.4 Intrexon shall make all purchases under this Section 7.3 by submitting firm purchase orders to Halozyme. Each such purchase order shall be in writing in a form reasonably acceptable to Halozyme, and shall specify the quantity of API ordered, the place of delivery and the required delivery date therefor, which shall not be less than [*****] days after the date of such purchase order. No additional terms of any such purchase order shall be binding on Halozyme and are expressly rejected hereby. In the event of a conflict between the terms and conditions of any purchase order and this Agreement, the terms and conditions of this Agreement shall prevail.

7.4 Delivery and Acceptance.

7.4.1 All API supplied under this Agreement shall be shipped [*****] (Incoterms 2010) [*****] to such location as designated by Intrexon. Any change in the location of manufacture or distribution shall require the consent of Intrexon, such consent not to be unreasonably withheld or delayed. Title and risk of loss and damages to the API purchased by Intrexon hereunder shall pass to Intrexon upon receipt by the applicable carrier.

7.4.2 Intrexon shall pay all [*****] applicable to the sale and transport of API purchased by Intrexon under this Section 7.3.4.

7.4.3 If a shipment of API or any portion thereof is not in conformance with the API Specifications, then Intrexon shall have the right to reject such shipment of API unless it is reasonably determinable that only a portion of the shipment fails to conform, in which case Intrexon shall have the right only to reject the portion thereof that fails to so conform. Intrexon shall give written notice to Halozyme of its rejection hereunder, within [*****] days after Intrexon's receipt of such shipment, specifying the grounds for such rejection. Notwithstanding the above, if the nonconformity of the API could not have been ascertained by Intrexon upon reasonable inspection and analysis of the API, then the [*****] day period referred to herein shall not apply, provided that Intrexon notifies Halozyme promptly upon discovery of such nonconformity (but in no event later than [*****] days from the date of the discovery). All or any part of any shipment may be held for Halozyme's disposition, at Halozyme's expense if found to be not in conformance with the API Specifications. Halozyme shall use its commercially reasonable efforts to cure such rejection or replace such nonconforming shipment of API, or portion thereof, within [*****] days after receipt of notice of rejection thereof.

7.4.4 Intrexon's grounds for rejection shall be conclusive unless Halozyme notifies Intrexon, within [*****] days of receipt by Halozyme of the notice of rejection, that it disagrees with such grounds. In the event of such a notice by Halozyme, representative samples of the batch of API in question shall be submitted to a mutually acceptable independent laboratory or consultant (if not a laboratory analysis issue) for analysis or review, the costs of which shall be paid by the party that is determined by the independent laboratory or consultant to have been incorrect in its determination of whether the applicable API should be rejected.

7.5 [*****]. If (a) Halozyme [*****] (b) Halozyme [*****] then Intrexon may [*****]. Within sixty (60) days after the Effective Date, Halozyme will [*****]. Notwithstanding the foregoing, (i) regardless of whether [*****], Intrexon shall [*****] [*****], Halozyme can demonstrate to Intrexon's reasonable satisfaction that Halozyme [*****].

7.6 LIMITATION OF LIABILITY. HALOZYME'S LIABILITY TO INTREXON, AND INTREXON'S REMEDY, UNDER SECTION 7.4.3 SHALL BE THE REJECTION AND REPLACEMENT OF NON-CONFORMING API WITH API THAT CONFORMS WITH THE TERMS AND CONDITIONS OF THIS AGREEMENT WITHIN A COMMERCIALLY REASONABLE TIME. NOTHING IN THIS SECTION 7.6 IS INTENDED TO LIMIT OR RESTRICT THE INDEMNIFICATION RIGHTS OR OBLIGATIONS OF EITHER PARTY UNDER ARTICLE 10.

7.7 Warranty. Halozyme warrants that all API delivered to Intrexon pursuant to this Agreement shall conform with the API Specifications and the certificate of analysis, shall be free from defects in manufacturing, handling, material and workmanship, and shall be manufactured in accordance with cGMP as in effect at the time (unless the parties otherwise mutually agree) and in compliance with applicable laws and regulations. EXCEPT AS

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

OTHERWISE EXPRESSLY SET FORTH IN THIS AGREEMENT, HALOZYME MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO API. HALOZYME DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. NOTHING IN THIS SECTION 7.7 IS INTENDED TO LIMIT OR RESTRICT THE INDEMNIFICATION RIGHTS OR OBLIGATIONS OF EITHER PARTY UNDER ARTICLE 10.

7.8 Supply Strategy. Commencing not later than the [*****] anniversary of the Effective Date, Halozyme shall be responsible for implementing a commercially reasonable supply strategy for API to meet Intrexon's reasonably anticipated forecasts provided pursuant to Section 7.3. Halozyme shall review such supply strategy with Intrexon at least [*****], and prior to implementing any material change required by a CBE-30, a Prior Approval Supplement or equivalent regulatory filing. Halozyme shall notify Intrexon of any annual reportable changes within [*****] days after their submission to FDA.

7.9 Quality Agreement. The parties agree to negotiate and enter into a mutually acceptable quality agreement relating to the supply of API hereunder. Such quality agreement shall be entered into within [*****] days of the Effective Date.

7.10 Supply of API After Expiration of this Agreement. During the [*****] month period before the anticipated expiration of this Agreement, and upon the written request of Intrexon, the parties shall negotiate in good faith the terms and conditions regarding the continued supply of API by Halozyme to Intrexon.

8. INTELLECTUAL PROPERTY RIGHTS.

8.1 Ownership of Intellectual Property. The intellectual property rights and ownership outlined in this Article 8 shall supersede the intellectual property rights and ownership terms of the Material Transfer Agreement dated May 23, 2011 between Halozyme and Intrexon. Each party shall assist the other party in any reasonable manner to obtain, perfect and enforce the other party's rights in any and all countries, in and to all intellectual property as set forth below. In addition, the Parties agree to assign, or cause to be assigned, intellectual property rights in and to all intellectual property as set forth below. The Parties agree that:

8.1.1 Intrexon shall solely own the Collaboration Supported Intrexon Biologic Patents and any unpatentable Collaboration Inventions solely relating to the Intrexon Biologic;

8.1.2 Halozyme shall solely own the Collaboration Supported PH20 Patents and any unpatentable Collaboration Inventions solely relating to the PH20 Drug; and

8.1.3 Intrexon and Halozyme shall jointly own the Collaboration Supported Product Patents and any Collaboration Invention that is not a Collaboration Supported Intrexon Biologic Patent or Collaboration Supported PH20 Patent, or if unpatentable does not solely relate to the Intrexon Biologic or does not solely relate to the PH20 Drug.

8.2 Prosecution, Maintenance and Enforcement.

8.2.1 Intrexon shall have the first right, at its sole expense, to prepare, file, prosecute and maintain the Collaboration Supported Product Patents. Intrexon shall give Halozyme an opportunity to review and comment on the text of each patent application included within the Collaboration Supported Product Patents before filing, shall supply Halozyme with a copy of such patent application as filed, together with notice of its filing date and serial number, and shall give Halozyme an opportunity to review and comment on the text of all correspondence received from any patent office. Intrexon shall consider in good faith the interests of Halozyme in the prosecution of the Collaboration Supported Product Patents. Halozyme shall assist Intrexon, upon request and at Intrexon's sole expense, and to the extent commercially reasonable, in connection therewith. If Intrexon elects not to file any patent application included in the Collaboration Supported Product Patents in any country, or decides to abandon any such pending application or issued patent in any country, then Intrexon shall provide written notice to Halozyme, and Halozyme shall have the right at its sole expense to assume control of the preparation, filing, prosecution and maintenance of such patent application or patent at its own expense.

8.2.2 Intrexon shall have the first right to enforce the Collaboration Supported Product Patents against third party infringers. With respect to any infringement of the Collaboration Supported Product Patents by a third party, if Intrexon fails to abate such infringement or to file an action to abate such infringement within ninety (90) days after a written request from Halozyme to do so, or if Intrexon discontinues the prosecution of any such action after filing without abating such infringement, then Halozyme shall have the right to enforce the Collaboration Supported Product Patents against such third party infringer. With respect any action to enforce the Collaboration Supported Product Patents to abate any infringement by a third party, all monies recovered upon the final judgment or settlement of any such action shall (a) first, be used to reimburse the costs and expenses (including reasonable attorneys' fees and costs) of Halozyme and Intrexon; and (b) second, (i) if Intrexon brings such enforcement action, be treated as Net Sales, except for recovered punitive damages which are to be shared equally between the parties and (ii) if Halozyme brings such enforcement action, be shared equally between the parties.

8.2.3 Intrexon shall have the sole right, at its sole expense, to prepare, file, prosecute, maintain and enforce the Collaboration Supported Intrexon Biologic Patents. Intrexon shall consider in good faith the interests of Halozyme in so doing. Halozyme shall assist Intrexon, upon request and at Intrexon's sole expense, and to the extent commercially reasonable, in connection therewith. Nothing in this Agreement grants any ownership right in the Collaboration Supported Intrexon Biologic Patents to Halozyme, and Intrexon shall remain the sole owner of the Collaboration Supported Intrexon Biologic Patents.

8.2.4 Halozyme shall have the sole right, at its sole expense, to prepare, file, prosecute, maintain and enforce the Collaboration Supported PH20 Patents and Licensed Patent Rights. Halozyme shall consider in good faith the interests of Intrexon in so doing. Intrexon shall assist Halozyme, upon request and at Halozyme's sole expense, and to the extent commercially reasonable, in connection therewith. Nothing in this Agreement grants any ownership right in the Collaboration Supported PH20 Patents or the Licensed Patent Rights to Intrexon, and Halozyme shall remain the sole owner of the Collaboration Supported PH20 Patents and the Licensed Patent Rights.

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

8.2.5 With respect to any substantial and continuing infringement of the Licensed Patent Rights by a third party making, using, offering for sale, selling or importing a product that consists of an Exclusive Biologic combined with PH20 Drug ([*****]) that is directed to the Exclusive Field in a country, on a country-by-country basis, if Halozyme fails to abate such infringement or to file an action to abate such infringement within [*****] days (or [*****] days in the case of a paragraph IV certification) after a written request from Intrexon to do so, or if Halozyme discontinues the prosecution of any such action after filing without abating such infringement, then until such time as such infringement is abated, the royalty rate for the Product in such country shall be reduced by [*****] of the royalty rate set forth in Section 4.4.

8.2.6 With respect any action to enforce the Licensed Patent Rights to abate any infringement of the Licensed Patent Rights by a third party making, using, offering for sale, selling or importing a product that consists of an Exclusive Biologic combined with PH20 Drug ([*****]) that is directed to the Exclusive Field in a country, all monies recovered upon the final judgment or settlement of any such action shall be used (a) first, to reimburse the costs and expenses (including reasonable attorneys' fees and costs) of Halozyme and Intrexon; and (b) the remainder to be shared equally between the parties.

8.3 Grantback License. Intrexon hereby grants to Halozyme a perpetual, royalty-free, fully paid up, nonexclusive, worldwide license under any Grantback Patents for the purpose of developing, making, using, selling, offering for sale or importing PH20 Drug ([*****]) alone or combined with any biologic or molecule, in each case other than (i) Products in the Licensed Field, or (ii) products that consist of an Exclusive Biologic combined with PH20 Drug ([*****]) that is directed to the Exclusive Field. Halozyme shall have the right to grant sublicenses under such rights to any third party provided that such third party has similarly granted to Halozyme a grantback license (with the right to sublicense to Intrexon). If Halozyme is unable to obtain such a grantback license from any such third party, then Halozyme shall not grant a sublicense to such third party under the foregoing license grant from Intrexon, and any such sublicense granted by Halozyme to such third party shall be void. For the avoidance of doubt, the foregoing license grant shall not include rights to any molecule separate from the combination with PH20 Drug ([*****]).

9. CONFIDENTIALITY.

9.1 Confidentiality. During the term of this Agreement and for a period of [*****] following the later of (i) the expiration or earlier termination hereof or (ii) the last commercial sale of a product developed hereunder, each party shall maintain in confidence the Confidential Information of the other party, shall not use or grant the use of the Confidential Information of the other party except as expressly permitted hereby, and shall not disclose the Confidential Information of the other party except on a need-to-know basis to such party's affiliates, directors, officers, employees and consultants, to the extent such disclosure is reasonably necessary in connection with such party's activities as expressly authorized by this Agreement and provided that the recipient of the Confidential Information is subject to an

existing written agreement to hold in confidence and not disclose, use or grant the use of the Confidential Information of the other party except as expressly permitted under this Agreement. Each party shall notify the other party promptly upon discovery of any unauthorized use or disclosure of the other party's Confidential Information. Notwithstanding the foregoing, with respect to any Confidential Information that the disclosing party deems to be a "trade secret" under applicable law, the confidentiality obligations hereunder shall continue with respect to such Confidential Information for so long as it is deemed a trade secret under applicable law.

9.2 Terms of Agreement. Neither party shall disclose any terms or conditions of this Agreement to any third party without the prior consent of the other party; provided, however, that a party may disclose the terms or conditions of this Agreement (a) on a need-to-know basis to its legal and financial advisors to the extent such disclosure is reasonably necessary or (b) to a third party in connection with (i) an equity investment in such party, (ii) a merger, consolidation or similar transaction by such party, (iii) the sale of all or substantially all of the assets of such party or (iv) a collaboration or strategic alliance relating to the subject matter of this Agreement.

9.3 Permitted Disclosures. The confidentiality obligations under this Article 9 shall not apply to the extent that a party is required to disclose information by applicable law, regulation, stock exchange listing or order of a governmental agency or a court of competent jurisdiction; provided, however, that (to the extent practicable) such party shall provide written notice thereof to the other party, consult with the other party with respect to such disclosure and provide the other party sufficient opportunity to object to any such disclosure or to request confidential treatment thereof.

9.4 Publications. Either party may publish the results of its research and/or development under this Agreement in order to obtain recognition within the scientific community and to advance the state of scientific knowledge, and such publication shall be subject to the following procedures. If a party desires to make any such publication (including any oral disclosure made without obligation of confidentiality), such party shall provide the other party with a copy of the proposed written publication at least thirty [*****] prior to submission for publication, or an outline of such oral disclosure at least [*****] days prior to presentation. At the request of the other party, the publishing party shall remove any Confidential Information of the other party therefrom. The other party additionally shall have the right (a) to propose modifications to the publication for patent reasons, and (b) to request a reasonable delay in publication in order to protect patentable information. If the other party requests such a delay, the publishing party shall delay submission or presentation of the publication and shall not proceed with the written publication or the presentation without the prior written consent of the other party, such consent not to be unreasonably withheld (provided that it would be unreasonable (x) for Intrexon to withhold consent if Intrexon's primary reason for doing do is marketing concerns due to the Product performing better than a Intrexon Subcutaneous Product or (y) for Halozyme to withhold consent if Halozyme's primary reason for doing so is marketing concerns due to the Product performing worse than a Intrexon Subcutaneous Product).

9.5 Clinical Trial Registry. Intrexon, in accordance with ClinicalTrials.gov or equivalent regulatory agency policies and procedures, shall have the right to publish all studies, clinical trials and results thereof regarding Product (but not PH20 Drug alone) on the clinical trial registries which are maintained by or on behalf of Intrexon.

10. INDEMNIFICATION AND INSURANCE.

10.1 By Intrexon. Intrexon shall indemnify and hold harmless Halozyme, its Affiliates and their respective directors, officers, employees and agents, from and against all losses, liabilities, damages and expenses, including reasonable attorneys' fees and costs (collectively, "Liabilities"), resulting from any claims, demands, actions or other proceedings by any third party to the extent resulting from (a) the breach of any representation, warranty or covenant by Intrexon under this Agreement; (b) the use by Intrexon, its sublicensees or their respective Affiliates of the Licensed IP Rights beyond the scope of the licenses granted herein; (c) the manufacture, use, sale, handling or storage of Products by Intrexon, its sublicensees or their respective Affiliates, customers or end-users; or (d) the use by Intrexon, its sublicensees or their respective Affiliates of the Confidential Information of Halozyme; provided, however, that the foregoing indemnification obligation shall not apply to the extent the applicable Liability results from clauses (a) – (d) under Section 10.2 below.

10.2 By Halozyme. Halozyme shall indemnify and hold harmless Intrexon, its Affiliates and their directors, officers, employees and agents, from and against all Liabilities resulting from any claims, demands, actions or other proceedings by any third party to the extent resulting from (a) the breach of any representation, warranty or covenant by Halozyme under this Agreement; (b) the use by Halozyme, its sublicensees or their respective Affiliates of the Grantback Patents beyond the scope of the licenses granted herein; (c) the manufacture, use, sale, handling or storage of API by Halozyme or its CMOs or other suppliers; or (d) the use by Halozyme, its sublicensees or their respective Affiliates of the Confidential Information of Intrexon; provided, however, that the foregoing indemnification obligation shall not apply to the extent the applicable Liability results from clauses (a) – (d) under Section 10.1 above.

10.3 Procedure. If a party (the "Indemnitee") intends to claim indemnification under this Section 10.3, it shall promptly notify the other party (the "Indemnitor") in writing of any claim, demand, action or other proceeding for which the Indemnitee intends to claim such indemnification, and the Indemnitor shall have the right to participate in, and, to the extent the Indemnitor so desires, to assume the defense thereof with counsel mutually satisfactory to the parties; provided, however, that an Indemnitee shall have the right to retain its own counsel, with the fees and expenses to be paid by the Indemnitor, if representation of such Indemnitee by the counsel retained by the Indemnitor would be inappropriate due to actual or potential differing interests between the Indemnitee and any other party represented by such counsel in such proceeding. The obligations of this Section 10.3 shall not apply to amounts paid in settlement of any claim, demand, action or other proceeding if such settlement is effected without the consent of the Indemnitor, which consent shall not be withheld or delayed unreasonably. The failure to deliver written notice to the Indemnitor within a reasonable time after the commencement of any such action, if prejudicial to its ability to defend such action, shall relieve the Indemnitor of any obligation to the Indemnitee under this Section 10.3. The Indemnitee, its employees and agents, shall reasonably cooperate with the Indemnitor and its legal representatives in the investigation of any claim, demand, action or other proceeding covered by this Section 10.3.

10.4 Insurance. Each party shall maintain insurance, including Commercial General Liability, Product and Clinical Trials Liability, Workers Compensation and Employer's Liability and Errors and Omissions Liability insurance, with respect to its activities under this Agreement regarding Products in such amount as such party customarily maintains with respect to similar activities for its other products, but not less than the greater of (i) $[*****] each occurrence and aggregate for Commercial General Liability, Product and Clinical Trials Liability and Errors and Omissions Liability insurance and $[*****] limit per accident /disease and a $[*****] disease policy limit Workers Compensation and Employer's Liability or (ii) such amount as is reasonable and customary in the industry. Each party shall maintain such insurance for so long as it continues its activities under this Agreement, and thereafter for [*****] years. Each party retains the right to insure or self-insure at its sole discretion, the above coverage. Each party shall provide the other party [*****] days notice of any material change, cancellation or non-renewal of any required insurance under this Agreement. In the event of a material change, cancellation, or non-renewal in coverage, each party shall replace such coverage to comply with this Agreement so that there is no lapse of coverage for any time period.

11. TERM AND TERMINATION.

11.1 Term. This Agreement shall commence on the Effective Date and, unless earlier terminated pursuant to this Article 11, shall continue in effect until the later of (a) expiration of the last to expire of the Valid Claims, and (b) expiration of the last to expire Royalty Term. Upon the expiration (but not termination) of this Agreement, Intrexon shall have a perpetual, fully paid-up, non-exclusive license under the Licensed Know-How Rights to make, have made, use, sell, offer for sale and import Products for use in the Licensed Field.

11.2 Termination for Breach. If a party has materially breached this Agreement and such material breach shall continue for [*****] days after written notice of such breach was provided to the breaching party by the nonbreaching party, the nonbreaching party shall have the right at its option to terminate this Agreement effective at the end of such [*****] day period.

11.3 Termination by Intrexon. Intrexon may terminate this Agreement in whole or on a Product-by-Product basis at any time upon [*****] days prior written notice to Halozyme.

11.4 Effect of Expiration or Termination.

11.4.1 Expiration or termination of this Agreement shall be without prejudice to any rights which shall have accrued to the benefit of a party prior to such expiration or termination. Without limiting the foregoing, Sections 2.3, 4.7, 6, 7.6, 8, 9, 10, 11.4 and 12 shall survive any expiration or termination of this Agreement.

11.4.2 Except as otherwise expressly set forth in this Agreement, promptly upon the expiration or earlier termination of this Agreement, each party shall return to the other party all tangible items regarding the Confidential Information of the other party and all copies thereof; provided, however, that each party shall have the right to retain one (1) copy for its legal files for the sole purpose of determining its obligations hereunder.

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

11.5 Section 365(n) of the Bankruptcy Code. All rights and licenses granted under or pursuant to any section of this Agreement are, and shall otherwise be deemed to be, for purposes of Section 365(n) of the Bankruptcy Code, licenses of rights to "intellectual property" as defined under Section 101(35A) of the Bankruptcy Code. The Parties shall retain and may fully exercise all of their respective rights and elections under section 365(n) of the Bankruptcy Code.

12. MISCELLANEOUS.

12.1 Governing Law. This Agreement shall be governed by, interpreted and construed in accordance with the laws of the State of Delaware, without regard to the conflicts of law principles thereof.

12.2 Waiver. No waiver by a party hereto of any breach or default of any of the covenants or agreements herein set forth shall be deemed a waiver as to any subsequent and/or similar breach or default.

12.3 Assignment. Neither this Agreement nor any right or obligation hereunder may be assigned or delegated, in whole or part, by either party without the prior express written consent of the other; provided, however, that either party may, without the written consent of the other, assign this Agreement and its rights and delegate its obligations hereunder to an Affiliate, or in connection with the transfer or sale of all or substantially all of its business related to this Agreement, or in the event of its merger, consolidation, change in control or similar transaction. Any permitted assignee shall assume all obligations of its assignor under this Agreement. Any purported assignment in violation of this Section 12.3 shall be void.

12.4 Independent Contractors. The relationship of the parties hereto is that of independent contractors. The parties hereto are not deemed to be agents, partners or joint venturers of the others for any purpose as a result of this Agreement or the transactions contemplated thereby.

12.5 Further Actions. Each party shall execute, acknowledge and deliver such further documents and instruments and to perform all such other acts as may be necessary or appropriate in order to carry out the purposes and intent of this Agreement.

12.6 Notices. All requests and notices required or permitted to be given to the parties hereto shall be given in writing, shall expressly reference the section(s) of this Agreement to which they pertain, and shall be delivered to the other party, effective on receipt, at the appropriate address as set forth below or to such other addresses as may be designated in writing by the parties from time to time during the term of this Agreement.

If to Halozyme: Halozyme, Inc.
11388 Sorrento Valley Road
San Diego, California 92121
Attn: Chief Executive Officer

If to Intrexon: Intrexon Corporation
20358 Seneca Meadows Pkwy
Germantown, Maryland 20876
Attn: Legal Department

12.7 Force Majeure. Nonperformance of a party (other than for the payment of money) shall be excused to the extent that performance is rendered impossible by strike, fire, earthquake, flood, governmental acts or orders or restrictions, failure of suppliers, or any other reason where failure to perform is beyond the reasonable control and not caused by the negligence, intentional conduct or misconduct of the nonperforming party; provided, however, that the nonperforming party shall use commercially reasonable efforts to resume performance as soon as reasonably practicable.

12.8 No Consequential Damages. IN NO EVENT SHALL A PARTY BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THIS AGREEMENT OR THE EXERCISE OF ITS RIGHTS HEREUNDER, INCLUDING WITHOUT LIMITATION LOST PROFITS ARISING FROM OR RELATING TO ANY BREACH OF THIS AGREEMENT, REGARDLESS OF ANY NOTICE OF SUCH DAMAGES. NOTHING IN THIS SECTION 12.8 IS INTENDED TO LIMIT OR RESTRICT THE INDEMNIFICATION RIGHTS OR OBLIGATIONS OF EITHER PARTY UNDER ARTICLE 10.

12.9 Halozyme In-Licenses. Notwithstanding anything to the contrary in this Agreement, the grant of rights by Halozyme under this Agreement shall be subject to and limited in all respects by the terms of the applicable Halozyme In-Licenses pursuant to which Halozyme acquired any Licensed IP Rights, and all rights or sublicenses granted under this Agreement shall be limited to the extent that Halozyme may grant such rights and sublicenses under such Halozyme In-Licenses, in each case to the extent specifically identified on Schedule 1.26. Halozyme shall keep the Halozyme In-Licenses in full force and effect throughout the term of this Agreement.

12.10 Complete Agreement. This Agreement, together with the Schedules hereto, constitutes the entire agreement between the parties regarding the subject matter hereof, and all prior representations, understandings and agreements regarding the subject matter hereof, either written or oral, expressed or implied, are superseded and shall be and of no effect.

12.11 Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed to be an original and together shall be deemed to be one and the same agreement.

12.12 Headings. The captions to the several sections hereof are not a part of this Agreement, but are included merely for convenience of reference only and shall not affect its meaning or interpretation.

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

IN WITNESS WHEREOF, the parties hereto have each caused this Agreement to be executed by their duly-authorized representatives as of the Effective Date.

HALOZYME, INC.

By: /s/ Gregory I. Frost

Name: Gregory I. Frost

Title: President & CEO

INTREXON CORPORATION

By: /s/ Gerardo Zapata

Name: Gerardo Zapata

Title: President Protein Production and SVP

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

SCHEDULE 1.3

API Specifications

[*****]

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

SCHEDULE 1.26

Halozyme In-Licenses

CONFIDENTIAL

[*****]

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

SCHEDULE 1.28

Intrexon Biologic

[*****]

SCHEDULE 2.2.1(a)

Licensed Patent Rights

[*****]