

As confidentially submitted to the Securities and Exchange Commission on May 10, 2013.  
 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**  
 (State or other jurisdiction of  
 incorporation or organization)

**8731**  
 (Primary Standard Industrial  
 Classification Code Number)

**26-0084895**  
 (I.R.S. Employer  
 Identification Number)

**20374 Seneca Meadows Parkway**  
**Germantown, Maryland 20876**  
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(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

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**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.

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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 apply to list our common stock on \_\_\_\_\_ under the symbol "\_\_\_\_\_."

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 discount	\$ _____	\$ _____
Proceeds to us, before expenses	\$ _____	\$ _____

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.

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Through and including \_\_\_\_\_, 2013 (the 25<sup>th</sup> 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. While we believe these industry publications and third-party research, surveys and studies are reliable, we have not independently verified such data.

## 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.

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 and cellular systems 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. 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. 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 network that enables us to continually ***learn*** and create optimal conditions for our gene programs.
- **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 163 employees primarily engaged in research and development, 78 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 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.

### **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](http://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        shares  
this offering

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 to fund continued investment in our research and development platforms, further our business development efforts to consummate new collaboration agreements with new companies across our various commercial divisions and for general corporate purposes. See "Use of proceeds" on page 40.

Proposed            symbol                      "                      "

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The number of shares of common stock to be outstanding after this offering is based on (i) 9,907,669 shares of common stock outstanding on December 31, 2012, (ii) 112,906,464 shares of common stock into which all of our redeemable convertible preferred stock outstanding as of December 31, 2012 will be converted upon the completion of this offering, (iii) 19,047,619 shares of common stock into which the shares of Series F preferred stock issued between December 31, 2012 and 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:

- 4,048,672 shares of common stock issuable upon the exercise of outstanding options at a weighted average exercise price of \$3.37 per share, of which 1,415,109 shares are vested as of December 31, 2012;

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- 5,111,066 shares of our common stock reserved for future issuance under our 2008 Equity Incentive Plan as of December 31, 2012; and
- 894,423 shares of common stock issuable upon the exercise of warrants outstanding as of December 31, 2012 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 and the consolidated balance sheet data as of December 31, 2012 from our audited consolidated financial statements and related notes appearing elsewhere in this prospectus. Our historical results are not necessarily indicative of the results that may be achieved in the future. 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 47 and "Management's discussion and analysis of financial condition and results of operations," beginning on page 49. Our audited consolidated financial statements have been prepared in U.S. dollars in accordance with U.S. GAAP.

	<u>Years ended December 31,</u>	
	<u>2012</u>	<u>2011</u>
	<b>(In thousands, except share and per share amounts)</b>	
<b>Statement of Operations Data:</b>		
Revenues:		
Collaboration revenues	\$ 13,706	\$ 5,118
Other revenues	219	3,053
Total revenues	<u>13,925</u>	<u>8,171</u>
Operating expenses:		
Research and development	64,185	70,386
General and administrative	24,897	18,300
Other operating expenses	—	1,912
Total operating expenses	<u>89,082</u>	<u>90,598</u>
Loss from operations	<u>(75,157)</u>	<u>(82,427)</u>
Total other expense, net	(6,443)	(2,853)
Equity in net loss of affiliate	(274)	—
Net loss	<u>\$ (81,874)</u>	<u>\$ (85,280)</u>
Accretion of dividends on redeemable convertible preferred stock, not declared	<u>(21,994)</u>	<u>(13,868)</u>
Net loss attributable to common shareholders	<u>\$ (103,868)</u>	<u>\$ (99,148)</u>
Net loss attributable to common shareholders per share, basic and diluted	<u>\$ (10.73)</u>	<u>\$ (10.81)</u>
Weighted average shares outstanding, basic and diluted	9,683,984	9,171,140
<b>Unaudited Pro forma information(1)</b>		
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

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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.

The following summary consolidated balance sheet data as of December 31, 2012 is presented:

- on an actual basis;
- on a pro forma basis 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 receipt of gross proceeds of \$150.0 million, net of issuance costs of \$3.1 million, from the issuance of Series F preferred stock between December 31, 2012 and April 30, 2013; (iii) 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 (iv) the conversion of aggregate cumulative dividends on our series preferred stock of \$50,459 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 December 31, 2012	
	Actual	Pro forma Pro forma as adjusted(1)
		(unaudited)
		(In thousands)
<b>Balance Sheet Data:</b>		
Cash and cash equivalents	\$ 10,403	\$ 157,303
Other current assets	3,130	3,130
Equity securities	83,116	83,116
Other long-term assets	54,997	54,997
Total assets	151,646	298,546
Accounts payable, accrued expenses and other current liabilities, excluding current portion of deferred revenue	6,754	6,754
Deferred revenue, current and non-current	58,636	58,636
Other long-term liabilities	1,150	1,150
Redeemable convertible preferred stock	406,659	—
Additional paid in capital	—	553,559
Accumulated deficit	(321,553)	(321,553)
Total shareholders' equity (deficit)	(321,553)	232,006

(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

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adjusted cash and cash equivalents, total assets and total shareholders' 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 shareholders' 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 shareholders' 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 shareholders' 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. As of December 31, 2012, we had an accumulated deficit of \$321.6 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;

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- 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;

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- 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; and
- our ability to use our net operating loss carryforwards to offset future taxable income.

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.

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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 December 31, 2012 the aggregate original cost basis of these securities was \$92.1 million and the market value was \$83.1 million. Through April 30, 2013, the market value of these equity securities, exclusive of equity securities received in 2013, has decreased approximately \$32.1 million from the market value at December 31, 2012. 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. These annual limitations may result in a significant portion of our net operating losses and research and development tax credits expiring prior to utilization. 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

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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, 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; however, that coverage would 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.***

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. 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;

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- 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

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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

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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.

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-

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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 United States 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 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

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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 required to invest additional funds in AquaBounty. If we fail to invest these additional funds, we may not retain control over 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 loss of AquaBounty broodstock would result in the loss of AquaBounty's commercial technology.***

AquaBounty's AAS intellectual property resides in the 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 \_\_\_\_\_, 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

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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;

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- 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

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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 April 30, 2013, our executive officers, directors and beneficial holders of five percent or more of our outstanding stock owned approximately 71 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 April 30, 2013, Mr. Kirk and shareholders affiliated with him beneficially own approximately 71 percent of our voting stock. Following this offering, Mr. Kirk and his affiliates will control approximately            percent of our common

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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 Equity and Cash 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;

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- 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

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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 Exchange Act 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 on which our securities are to be listed. 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.

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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. The amounts and timing of our actual expenditures may vary significantly depending on numerous factors, including the status of and results from ongoing research and development and additional ECCs into which we may enter. 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 December 31, 2012 on:

- an actual basis;
- on a pro forma basis after giving effect to (i) the issuance of 19,047,619 shares of Series F preferred stock 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 receipt of gross proceeds of \$150.0 million, net of issuance costs of \$3.1 million, from the issuance of Series F preferred stock between December 31, 2012 and April 30, 2013; (iii) 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 (iv) the conversion of aggregate cumulative dividends on our series preferred stock of \$50,459 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 December 31, 2012		
	Actual	Pro forma	Pro forma as adjusted
	(Unaudited)		
	(In thousands, except share amounts)		
Cash and cash equivalents	\$ 10,403	\$ 157,303	
Redeemable convertible preferred stock, no par value; 112,906,464 shares authorized, 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	406,659	—	
Shareholders' equity (deficit):			
Common stock, no par value, 160,000,000 shares authorized, 9,907,699 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	—	553,559	
Accumulated deficit	(321,553)	(321,553)	
Total shareholders' equity (deficit)	(321,553)	232,006	
Total capitalization	85,106	232,006	

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

- 4,048,672 shares of common stock issuable upon the exercise of outstanding options at a weighted average exercise price of \$3.37 per share, of which 1,415,109 shares are vested as of December 31, 2012;
- 5,111,066 shares of our common stock reserved for future issuance under our 2008 Equity Incentive Plan as of December 31, 2012;
- 894,423 shares of common stock issuable upon the exercise of warrants outstanding as of December 31, 2012 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 Equity and Cash 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 December 31, 2012, our net tangible book value was \$55.6 million, or \$5.61 per share of common stock. Net tangible book value per share represents the amount of our total tangible assets, which excludes intangible assets, less total liabilities, divided by 9,907,669, the number of shares of common stock outstanding on December 31, 2012.

Our pro forma net tangible book value (deficit) as of December 31, 2012 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 December 31, 2012, after giving effect to (i) the issuance of 19,047,619 shares of Series F preferred stock between December 31, 2012 and April 30, 2013, resulting in the receipt of gross proceeds of \$150.0 million, net of issuance costs of \$3.1 million, 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 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.

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 December 31, 2012 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.

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

Assumed initial public offering price per share		\$
Historical net tangible book value per share as of December 31, 2012	\$ 5.61	
Increase per share due to the issuance of Series F preferred stock and the conversion of those shares into common stock	\$	
Decrease per share due to conversion of our preferred stock into common stock	\$( )	
Decrease per share due to conversion of dividends on our preferred stock into shares of common stock	\$	
Pro forma net tangible book value per share as of December 31, 2012		\$
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 December 31, 2012, 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.

	<u>Shares purchased</u>		<u>Total consideration</u>		<u>Average price Per share</u>
	<u>Number</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	
Existing investors before this offering	141,861,752	%	\$510,052,531	%	\$ 3.60
Investors purchasing shares in this offering					\$
Total		100%		100%	\$

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The table above is based on (i) 9,907,669 shares of common stock outstanding on December 31, 2012, (ii) 112,906,464 shares of common stock into which all of our preferred stock outstanding as of December 31, 2012 will be converted upon the completion of this offering and (iii) 19,047,619 shares of common stock into which the shares of Series F preferred stock issued between December 31, 2012 and April 30, 2013 will be converted upon the completion of this offering.

The table above does not include:

- 4,048,672 shares of common stock issuable upon the exercise of outstanding options at a weighted average exercise price of \$3.37 per share, of which 1,415,109 shares are vested as of December 31, 2012;
- 5,111,066 shares of our common stock reserved for future issuance under our 2008 Equity Incentive Plan as of December 31, 2012;
- 894,423 shares of common stock issuable upon the exercise of warrants outstanding as of December 31, 2012 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 Equity and Cash 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 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 49.

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. Our audited consolidated financial statements have been prepared in U.S. dollars in accordance with U.S. GAAP.

Our historical results are not necessarily indicative of the results that may be expected in the future.

	Years ended December 31,	
	2012	2011
	(In thousands, except share and per share amounts)	
<b>Statement of Operations Data:</b>		
Revenues:		
Collaboration revenues	\$ 13,706	\$ 5,118
Other revenues	219	3,053
Total revenues	13,925	8,171
Operating expenses:		
Research and development	64,185	70,386
General and administrative	24,897	18,300
Other operating expenses	—	1,912
Total operating expenses	89,082	90,598
Loss from operations	(75,157)	(82,427)
Total other expense, net	(6,443)	(2,853)
Equity in net loss of affiliate	(274)	—
Net loss	\$ (81,874)	\$ (85,280)
Accretion of dividends on redeemable convertible preferred stock, not declared	(21,994)	(13,868)
Net loss attributable to common shareholders	\$ (103,868)	\$ (99,148)
Net loss per share, basic and diluted	\$ (10.73)	\$ (10.81)
Weighted average shares outstanding, basic and diluted	9,683,984	9,171,140
<b>Unaudited pro forma information<sup>(1)</sup></b>		
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

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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.

	<b>December 31,</b>	
	<b>2012<sup>(2)</sup></b>	<b>2011</b>
	<b>(In thousands, except share and per share amounts)</b>	
<b>Balance Sheet Data:</b>		
Cash and cash equivalents	\$ 10,403	\$ 19,628
Other current assets	3,130	3,350
Equity securities	83,116	39,097
Other long-term assets	54,997	52,753
Total assets	151,646	114,828
Accounts payable, accrued expenses and other current liabilities, excluding current portion of deferred revenue	6,754	16,197
Deferred revenue, current and non-current	58,636	16,921
Other long-term liabilities <sup>(1)</sup>	1,150	1,288
Redeemable convertible preferred stock	406,659	301,681
Total shareholders' deficit	(321,553)	(221,259)

(1) Other long-term liabilities includes \$42 related to capital leases.

(2) 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.

# 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 47 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

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 and cellular systems 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. 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."

## 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

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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 Immunogix are found elsewhere in this prospectus.

### **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 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;

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- costs related to lab 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.

### **Equity in net income (loss) of affiliate**

For 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, we accounted for our investment in AquaBounty Technologies, Inc., or 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 will consolidate AquaBounty beginning on March 15, 2013.

## Results of operations

### 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
<b>Total</b>	<b>\$5,851</b>	<b>\$2,394</b>	<b>\$ 3,457</b>	<b>\$7,855</b>	<b>\$ 2,724</b>	<b>\$ 5,131</b>	<b>\$13,706</b>	<b>\$ 5,118</b>	<b>\$ 8,588</b>

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 Oncology, Inc., or 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, Inc., or 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;

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- 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, Inc., or 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. 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;
- Lab 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

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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 lab 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,

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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. On March 15, 2013, we acquired 18,714,814 additional shares of AquaBounty increasing our ownership in AquaBounty to 53.82 percent. As such AquaBounty will be consolidated on our results of operations and financial position beginning on March 15, 2013.

## **Liquidity and capital resources**

### ***Sources of liquidity***

We have incurred losses from operations since our inception in 1998 and as of December 31, 2012, we had an accumulated deficit of \$321.6 million. Since our inception through December 31, 2012, we have funded our operations principally with the proceeds received from \$359.0 million of preferred stock and the receipt of \$12.5 million in prepayments of services by our collaborators. As of December 31, 2012, we had cash and cash equivalents of \$10.4 million. Cash in excess of immediate requirements is invested in money market funds in order to maintain liquidity and capital preservation.

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Between March 1, 2013 and April 30, 2013, we received gross proceeds of \$150.0 million, net of offering expenses of \$3.1 million, from the issuance of 19,047,619 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:

	Years ended, December 31,	
	2012	2011
	(in thousands)	
Net cash provided by (used in):		
Operating activities	\$ (61,529)	\$ (81,758)
Investing activities	(23,636)	(64,097)
Financing activities	75,940	148,111
Net increase (decrease) in cash and cash equivalents	\$ (9,225)	\$ 2,256

#### *Cash flows from operating activities:*

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 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 \$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 Redeemable Convertible Preferred Stock, or 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 December 31, 2012, we consummated six new collaborations with five new collaborators. As a result of these new collaborations, we received (i) upfront and milestone consideration totaling \$59.6 million, of which \$51.4 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 \$10.5 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 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 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.



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Halozyme. Only the \$1.0 million payment due 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 Immunogix 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 Immunogix'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.

## **Net operating losses**

As of December 31, 2012, we had 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.

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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 the net operations losses may be subject to annual limitations. These annual limitations may result in a significant portion of our net operating losses and research and development tax credits expiring prior to utilization. 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 \$10.7 million at December 31, 2012. 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 December 31, 2012 the original aggregate cost basis of these investments was \$92.1 million and the market value was \$83.1 million. 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 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. Through April 30, 2013, our balance of equity securities, exclusive of securities we received in 2013, has decreased approximately \$32.1 million from the balance as of December 31, 2012.

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

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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 December 31, 2012 was \$14.3 million. The fair value of our investment in AquaBounty as of that date 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

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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

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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 \$13.7 million and \$5.1 million of collaboration revenue in the years ended December 31, 2012 and 2011, respectively. As of December 31, 2012, we have \$51.4 million 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 December 31, 2012, our equity securities received from collaborators are valued at \$83.1 million.

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

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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. As such AquaBounty will be 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 be 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 criteria, we are identified as the primary beneficiary of the VIE. As of December 31, 2012, we have identified AquaBounty, our investment in an affiliate, as a VIE. We are not the primary beneficiary for this entity as we do not have the power to direct the activities that most significantly impact the economic performance of the VIE.

### ***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

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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.

**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 amounted to \$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
<b>Valuation Assumptions</b>		
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 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 December 31, 2012 was \$4.9 million 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.

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The following table presents the issuance of each series of preferred stock financing and stock options granted from May 27, 2011 through March 1, 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	N/A	N/A	\$ 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;

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- 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. 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. 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.

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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;

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- 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 April 30, 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:

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### 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; 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 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; 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 the Company, including the execution of the additional ECCs, our deal pipeline, the development of our technologies, our available cash and anticipated future cash requirements.

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### *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.

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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

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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 will implement the provisions of ASU 2013-02 as of January 1, 2013. We believe that the recent pronouncement will not have a material impact on our results of operations and financial condition.

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 will implement the provisions of ASU 2011-11 as of January 1, 2013. We believe that the recent pronouncement will not have a material impact on our results of operations and financial condition.

# 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.

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 and cellular systems 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 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. 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.

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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, which are segments of DNA used as a vehicle to transmit genetic information; 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 network that enables 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 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. We have 163 employees primarily engaged in research and development, 78 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

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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 that incorporates a broad spectrum of DNA assembly methodologies. More important than any one DNA assembly technique, however, is the underlying algorithm for determining the best approach to efficiently assemble our 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* and *ex vivo* 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.

### **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* 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 utilizes the proprietary component library, generation of component variants sequence phylogenetic analysis and structure-based sequence alignment, computer-aided drug discovery, *de novo* and comparative protein modeling, molecular dynamics simulation and free energy analysis, antibody design and humanization, epitope prediction, protein pharmacokinetics optimization, *in silico* support of enzyme engineering to obtain novel catalysis activities, 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 characterize 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.

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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.

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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.

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- **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

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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.

### **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

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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.

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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. 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

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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 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. 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. 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 AquaBounty's common stock from two shareholders. We subsequently acquired additional shares from AquaBounty in a private placement. 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 16.66% 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 are entitled to various milestone payments, payable in either cash or equity in the lower to mid-single-digit millions of dollars, upon 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

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substrate feeds for use as active pharmaceutical ingredients or as commercially sold intermediates in the manufacture of active pharmaceutical ingredients. Programs under this ECC are 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 US Department of Health and Human Services with the potential for widespread dissemination through aerosol. The lead therapeutic program of this ECC is currently 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 are entitled to milestone payments payable in either cash or equity in the lower- to mid-single digit millions of dollars, upon the achievement of development milestones. 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.

### **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.
- **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 2032. We have also filed counterpart patents and patent applications in other countries as we have deemed appropriate.

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.

### **Regulations affecting our ECC collaborators**

As discussed above in “Risk factors — Risks associated with our ECC business model,” the products produced by our collaborators using our technologies are subject to extensive regulation by federal and state governmental authorities in the United States, including the U.S. Food and Drug Administration, the U.S. Department of Agriculture and the U.S. Environmental Protection Agency, and to regulation in foreign countries, including by the European Medicines Agency, or EMA, and under a chemical regulatory program known as REACH (Registration, Evaluation, Authorization and Restriction of Chemical Substances). Our ECCs with our collaborators provide that our collaborators are responsible for compliance with laws and regulations applicable to the products produced under these collaborations. We rely on our collaborators’ compliance with laws and regulations applicable to the products they produce using our technologies, and we do not monitor or provide input to their compliance programs, nor do we independently monitor whether our collaborators comply with applicable laws and regulations. Please see the risk factor entitled “We depend upon our collaborators’ compliance with regulations and we do not independently monitor their compliance with laws and regulations applicable to the products they produce using our technologies.”

### **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 April 30, 2013, we had 163 employees dedicated to research and development. Of these employees, 78 hold advanced degrees. We incurred expenses of \$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.

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As of April 30, 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 59. The following table shows information about our primary lab operations as of April 30, 2013:

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

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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 April 30, 2013, we had 214 employees, 163 of whom were primarily engaged in research and development activities. Our workforce includes 78 employees with either a Ph.D., M.D. or D.V.M. and an additional 106 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 April 30, 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](http://www.dna.com).

## Management

### Executive officers and directors

The following table sets forth certain information regarding our executive officers and directors as of April 30, 2013.

Name	Age	Position(s)
<i>Executive Officers</i>		
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
<i>Non-Employee Directors</i>		
Cesar L. Alvarez	65	Director
Steven Frank	53	Director
Larry D. Horner	79	Director
Jeffrey B. Kindler	57	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

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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, 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

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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. 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

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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

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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.

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**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

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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.

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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 \_\_\_\_\_ of the \_\_\_\_\_ 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 \_\_\_\_\_ 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 the \_\_\_\_\_. 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 \_\_\_\_\_ listing 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 \_\_\_\_\_ listing rules. In making this determination, our board has considered the formal education and nature and scope of

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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 \_\_\_\_\_ 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](http://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 two other most highly compensation 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; and
- Thomas D. Reed, Ph.D., Chief Science Officer and Director.

### 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) Chief Executive Officer and Chairman of the Board	2012	—	—	—	—	—	—	—	—
	2011	—	—	—	110	—	—	—	110
Krish S. Krishnan Chief Operating Officer	2012	566,667	600,000	—	645,126	—	—	26,658	1,838,451
	2011(7)	33,564	—	—	45,820	—	—	—	79,384
Thomas D. Reed, Ph.D. Chief Science Officer and Director	2012	379,167	120,000	—	—	—	—	73,556	572,723
	2011	300,000	—	—	2,660	—	—	20,549	323,209

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

(2) Represents discretionary cash incentive awards paid to Mr. Krishnan and Dr. Reed 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 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.

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- (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 and Dr. Reed of \$566,667 and \$379,167, respectively. As of April 30, 2013, the base salaries of Mr. Krishnan and Dr. Reed are \$700,000 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. 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 our achievement of corporate goals and 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, we awarded bonuses to Mr. Krishnan and Dr. Reed in the amounts of \$600,000 and \$120,000, respectively, based on achievement of our corporate goals and their individual achievements of specified objectives.

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.

Name	Grant date	Number of securities underlying unexercised options		Equity incentive plan awards: Number of securities underlying unexercised options	Option awards	
		Exercisable	Unexercisable		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
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.

## Employment agreements with named executive officers

We do not have formal employment agreements with Mr. Kirk or Mr. 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).

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As of December 31, 2012, there were options to purchase an aggregate of 4,048,672 shares of common stock outstanding under the 2008 Plan at a weighted-average exercise price of \$3.37 per share. As of December 31, 2012, there were 5,111,066 shares of common stock reserved for future issuance under the 2008 Plan. On and after the effective date of the Intrexon Corporation 2013 Equity and Cash 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 Equity and Cash 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

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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 the Company is a party, and the rules of all domestic stock exchanges on which the Company's 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).

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### *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.

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**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 other obligations of the Company or any of our Affiliates to pay cash or to deliver other property under the 2013 Plan or under any other plans or compensatory arrangements of the Company 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

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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 the Company; 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.

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*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

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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

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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 1<sup>st</sup> 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,

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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.

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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	\$16,265	\$33,774
Steven Frank	\$16,007	\$16,265	\$32,272
Larry D. Horner	\$17,509	\$16,265	\$33,774
Jeffrey B. Kindler	\$16,007	\$29,125	\$45,132
Dean J. Mitchell	\$17,509	\$16,645	\$34,154
Robert B. Shapiro	\$17,509	\$29,125	\$46,634

(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:

Name	Grant date	Option awards Number of securities underlying unexercised options		Option exercise price (\$)	Option expiration date
		(#) Exercisable	(#) Unexercisable		
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.

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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

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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. 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 April 30, 2013, beneficially owned 19,781,286 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.

### *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

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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, Cytellect 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 Cytellect. 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 Chief Executive Officer of the Company 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 \$1,550,000, \$210,000, and \$490,000 in compensation expense 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 December 31, 2012 and 2011, we leased two office facilities from an affiliate of Virginia Tech Foundation, a preferred shareholder. During 2012 and 2011, we incurred rent and other facility expenses related to these facilities of \$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 years ended December 31, 2012, 2011, and 2010 we incurred total expenses for work performed under such contracts of \$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 April 30, 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 December 31, 2012, \$4,862,000 remained outstanding; 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 April 30, 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

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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 December 31, 2012, \$2,367,000 remained outstanding; 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 antibiotics 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 April 30, 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 April 30, 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

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\$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.

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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.

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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 depository 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 April 30, 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 April 30, 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 April 30, 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 June 29, 2013, which is 60 days after April 30, 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.

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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		
Thomas D. Reed Ph.D.(3)	759,909		
Cesar L. Alvarez	83,171		
Steven Frank	35,183		
Larry D. Horner	135,552		
Jeffrey B. Kindler	47,883		
Dean J. Mitchell	30,552		
Robert B. Shapiro(4)	148,886		
Named executive officers and directors as a group (9 persons)	101,468,140		

\* 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 April 30, 2013 pursuant to the exercise of options: Randal J. Kirk, 20,000 shares; Krish S. Krishnan, 250,000 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 April 30, 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 April 30, 2013, there were 9,910,044 shares of common stock outstanding and held of record by 136 shareholders. This amount excludes (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. 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.

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### ***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 April 30, 2013, options to purchase 3,880,022 shares of our common stock were outstanding, of which options to purchase 1,573,709 shares of our common stock were exercisable.

### **Warrants**

As of April 30, 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.

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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, at any time after the closing of this offering, 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.

### ***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 the Company 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

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public corporation to meet or exceed certain threshold percentages (20 percent, 33 <sup>1</sup>/<sub>3</sub> 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

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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**

We intend to apply to have our common stock listed on \_\_\_\_\_ under the symbol “\_\_\_\_\_.”

## **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 \_\_\_\_\_ 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 \_\_\_\_\_ under the symbol “\_\_\_\_\_.”

Based on the number of shares of common stock outstanding as of April 30, 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 3,880,022 shares of common stock that were issuable pursuant to stock options outstanding as of April 30, 2013, options to purchase 1,573,709 shares of common stock had vested and were exercisable as of April 30, 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 April 30, 2013, were exercisable as of April 30, 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

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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 April 30, 2013, we had outstanding options to purchase 3,880,022 shares of common stock, of which options to purchase 1,573,709 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 Equity and Cash Incentive Plan.

As of April 30, 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;

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- 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.

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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.

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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.

	<b>Without over- allotment exercise</b>	<b>With full over- allotment exercise</b>
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 \$ \_\_\_\_\_.

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

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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 will apply to have our common stock approved for listing on \_\_\_\_\_ under the symbol “ \_\_\_\_\_.”

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.

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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 Immunogix, 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.

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You can read our SEC filings, including the registration statement, over the Internet at the SEC's website at [www.sec.gov](http://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 K. 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](http://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.

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# **Intrexon Corporation and Subsidiaries**

## **Consolidated Financial Statements**

### **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

### December 31, 2012 and 2011

(Amounts in thousands, except share and per share data)	2012	2011
<b>Assets</b>		
<b>Current assets</b>		
Cash and cash equivalents	\$ 10,403	\$ 19,628
Short-term investments	260	258
Receivables		
Trade	141	20
Related parties	531	272
Other	35	1,050
Prepaid expenses and other	2,163	1,750
<b>Total current assets</b>	<b>13,533</b>	<b>22,978</b>
Equity securities	83,116	39,097
Property and equipment, net	18,687	18,484
Intangible assets, net	29,506	32,533
Investment in affiliate	5,726	—
Other assets	1,078	1,736
<b>Total assets</b>	<b>\$151,646</b>	<b>\$114,828</b>

The accompanying notes are an integral part of these consolidated financial statements.

# Intrexon Corporation and Subsidiaries

## Consolidated Balance Sheets

### December 31, 2012 and 2011

(Amounts in thousands, except share and per share data)	Pro forma liabilities, redeemable convertible preferred stock and shareholders' equity as of December 31, 2012 (unaudited)	2012	2011
<b>Liabilities, Redeemable Convertible Preferred Stock and Shareholders' Equity (Deficit)</b>			
<b>Current liabilities</b>			
Accounts payable	\$ 632	\$ 632	\$ 3,100
Accrued compensation and benefits	3,766	3,766	1,325
Other accrued liabilities	2,208	2,208	3,982
Deferred revenue	9,963	9,963	1,402
Capital lease obligations, current	49	49	71
Related party payables	99	99	279
Subscriptions payable	—	—	7,440
Total current liabilities	<u>16,717</u>	<u>16,717</u>	<u>17,599</u>
Capital lease obligations, net of current portion	42	42	97
Deferred revenue	48,673	48,673	15,519
Other long term liabilities	1,108	1,108	1,191
Total liabilities	<u>66,540</u>	<u>66,540</u>	<u>34,406</u>
<b>Commitments and contingencies (Note 12)</b>			
Series A redeemable convertible preferred stock, no par value; \$1.21 stated value (liquidation preference of \$1,406 and \$1,327 as of December 31, 2012 and 2011, respectively); 705,400 shares authorized, issued and outstanding at December 31, 2012 and 2011; 705,400 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	1,358	802
Series B redeemable convertible preferred stock, no par value; \$0.72 stated value (liquidation preference of \$709 and \$679 as of December 31, 2012 and 2011, respectively); 694,000 shares authorized, issued and outstanding at December 31, 2012 and 2011; 694,000 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	669	639
Series B-1 redeemable convertible preferred stock, no par value; \$0.83 stated value (liquidation preference of \$1,380 and \$1,320 as of December 31, 2012 and 2011, respectively); 1,212,360 shares authorized, issued and outstanding at December 31, 2012 and 2011; 1,212,360 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	1,360	1,300
Series C redeemable convertible preferred stock, no par value; \$1.10 stated value (liquidation preference of \$7,162 and \$6,757 as of December 31, 2012 and 2011, respectively); 4,546,360 shares authorized, issued and outstanding at December 31, 2012 and 2011; 4,546,360 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	7,134	6,729
Series C-1 redeemable convertible preferred stock, no par value; \$1.57 stated value (liquidation preference of \$34,222 and \$32,285 as of December 31, 2012 and 2011, respectively); 15,934,528 shares authorized, issued and outstanding at December 31, 2012 and 2011; 15,934,528 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	34,201	32,264
Series C-2 redeemable convertible preferred stock, no par value; \$1.88 stated value (liquidation preference of \$44,614 and \$42,089 as of December 31, 2012 and 2011, respectively); 18,617,020 shares authorized, issued and outstanding at December 31, 2012 and 2011; 18,617,020 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	44,512	41,987
Series C-3 redeemable convertible preferred stock, no par value; \$1.88 stated value (liquidation preference of \$29,819 and \$28,131 as of December 31, 2012 and 2011, respectively); 13,297,872 shares authorized, issued and outstanding at December 31, 2012 and 2011; 13,297,872 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	29,770	28,082
Series D redeemable convertible preferred stock, no par value; \$3.38 stated value (liquidation preference of \$76,347 and \$72,019 as of December 31, 2012 and 2011, respectively); 19,803,685 shares authorized, issued and outstanding at December 31, 2012 and 2011; 19,803,685 shares authorized and no shares issued and outstanding pro forma (unaudited)	—	76,252	71,924

Series E redeemable convertible preferred stock, no par value; \$5.25 stated value (liquidation preference of \$214,086 and \$120,621 as of 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 and no shares issued and outstanding pro forma (unaudited)	—	211,403	117,954
Shareholders' equity (deficit)			
Common stock, no par value, 160,000,000 shares and 155,000,000 shares authorized as of December 31, 2012 and 2011, respectively; 9,907,669 and 9,544,312 shares issued and outstanding as of December 31, 2012 and 2011, respectively; and        shares authorized and        shares issued and outstanding pro forma (unaudited)	—	—	—
Additional paid-in capital	406,659	—	—
Accumulated deficit	(321,553)	(321,553)	(221,259)
Total shareholders' equity (deficit)	85,106	(321,553)	(221,259)
Total liabilities, redeemable convertible preferred stock and shareholders' equity (deficit)	\$ 151,646	\$ 151,646	\$ 114,828

The accompanying notes are an integral part of these consolidated financial statements.

# Intrexon Corporation and Subsidiaries

## Consolidated Statements of Operations

### Years ended December 31, 2012 and 2011

(Amounts in thousands, except share and per share data)	2012	2011
<b>Revenues</b>		
Collaboration revenues	\$ 13,706	\$ 5,118
Other revenues	219	3,053
Total revenues	<u>13,925</u>	<u>8,171</u>
<b>Operating Expenses</b>		
Research and development	64,185	70,386
General and administrative	24,897	18,300
Other	—	1,912
Total operating expenses	<u>89,082</u>	<u>90,598</u>
Operating loss	<u>(75,157)</u>	<u>(82,427)</u>
<b>Other Income (Expense)</b>		
Unrealized depreciation in fair value of equity securities	(6,290)	(2,675)
Interest expense	(57)	(183)
Investment income	5	6
Other expense	(101)	(1)
Total other income (expense)	<u>(6,443)</u>	<u>(2,853)</u>
Equity in net loss of affiliate	<u>(274)</u>	<u>—</u>
Net loss	<u>\$ (81,874)</u>	<u>\$ (85,280)</u>
Accretion of dividends on redeemable convertible preferred stock, not declared	<u>(21,994)</u>	<u>(13,868)</u>
Net loss attributable to common shareholders	<u>\$ (103,868)</u>	<u>\$ (99,148)</u>
Net loss attributable to common shareholders per share, basic and diluted	<u>\$ (10.73)</u>	<u>\$ (10.81)</u>
Weighted average shares outstanding, basic and diluted	9,683,984	9,171,140
Unaudited pro forma net loss per common share (Note 14):		
Net loss per common share — basic and diluted	<u>                    </u>	<u>                    </u>
Weighted average common shares — basic and diluted	<u>                    </u>	<u>                    </u>

The accompanying notes are an integral part of these consolidated financial statements.

## Intrexon Corporation and Subsidiaries Consolidated Statements of Shareholders' Deficit Years ended December 31, 2012 and 2011

(Amounts in thousands, except share data)	Common stock		Additional paid-in capital	Accumulated deficit	Total shareholders' deficit
	Shares	Amount			
<b>Balances at December 31, 2010</b>	4,125,612	\$ —	\$ —	\$ (127,734)	\$ (127,734)
Stock-based compensation expense	—	—	983	—	983
Exercises of stock options	132,720	—	184	—	184
Acquisitions	5,283,766	—	4,237	—	4,237
Contribution of services by shareholder	—	—	210	—	210
Shares issued to nonemployee members of the Board of Directors	2,214	—	9	—	9
Accretion of dividends on redeemable convertible preferred shares	—	—	(5,623)	(8,245)	(13,868)
Net loss	—	—	—	(85,280)	(85,280)
<b>Balances at December 31, 2011</b>	9,544,312	—	—	(221,259)	(221,259)
Stock-based compensation expense	—	—	1,458	—	1,458
Exercises of stock options	340,497	—	473	—	473
Contribution of services by shareholder	—	—	1,550	—	1,550
Shares issued to nonemployee members of the Board of Directors	22,860	—	93	—	93
Accretion of dividends on redeemable convertible preferred shares	—	—	(3,574)	(18,420)	(21,994)
Net loss	—	—	—	(81,874)	(81,874)
<b>Balances at December 31, 2012</b>	9,907,669	\$ —	\$ —	\$ (321,553)	\$ (321,553)

The accompanying notes are an integral part of these consolidated financial statements.

# Intrexon Corporation and Subsidiaries

## Consolidated Statements of Cash Flows

### Years ended December 31, 2012 and 2011

(Amounts in thousands)	2012	2011
<b>Cash flows from operating activities</b>		
Net loss	\$(81,874)	\$(85,280)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	7,984	4,338
Loss on disposal of property and equipment	101	1
Unrealized depreciation on equity securities	6,290	2,675
Collaboration revenue recognized upon achievement of milestone	(3,591)	—
Equity in net loss of affiliate	274	—
Stock-based compensation expense	1,458	983
Contribution of services by shareholder	1,550	210
Shares issued to nonemployee members of the Board of Directors	93	9
Changes in operating assets and liabilities:		
Receivables:		
Trade	(121)	33
Related parties	(93)	(239)
Other	1,015	(400)
Prepaid expenses and other	(413)	(772)
Other assets	658	(614)
Accounts payable	(1,229)	(388)
Accrued compensation and benefits	2,441	(2,249)
Other accrued liabilities	(806)	1,204
Deferred revenue	4,997	(2,245)
Related party payables	(180)	(215)
Other long term liabilities	(83)	1,191
Net cash used in operating activities	<u>(61,529)</u>	<u>(81,758)</u>
<b>Cash flows from investing activities</b>		
Purchases of short term investments	(2)	(188)
Purchases of equity securities	(10,000)	(22,628)
Acquisitions of businesses, net of cash received	—	(28,662)
Investment in affiliate	(6,000)	—
Purchases of property and equipment	(7,491)	(13,003)
Proceeds from sale of property and equipment	23	84
Issuance of related party note receivable	(200)	—
Proceeds from related party notes receivable	34	300
Net cash used in investing activities	<u>(23,636)</u>	<u>(64,097)</u>

The accompanying notes are an integral part of these consolidated financial statements.

## Intrexon Corporation and Subsidiaries Consolidated Statements of Cash Flows Years ended December 31, 2012 and 2011

(Amounts in thousands)	2012	2011
<b>Cash flows from financing activities</b>		
Proceeds from issuance of Series D redeemable convertible preferred shares	—	26,442
Proceeds from issuance of Series E redeemable convertible preferred shares	75,560	101,835
Proceeds from issuance of subscriptions payable	—	7,440
Proceeds from short-term borrowings	—	15,000
Payments of capital lease obligations	(77)	(115)
Proceeds from stock option exercises	473	184
Payment of stock issuance costs	(16)	(2,675)
Net cash provided by financing activities	75,940	148,111
Net increase (decrease) in cash and cash equivalents	(9,225)	2,256
<b>Cash and cash equivalents</b>		
Beginning of year	19,628	17,372
End of year	\$10,403	\$ 19,628
<b>Supplemental disclosure of cash flow information</b>		
Cash paid during the year for interest	\$ 12	\$ 18
<b>Significant noncash financing and investing activities</b>		
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	—
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	21,994	13,868
Stock received as consideration for collaboration agreements	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

### December 31, 2012 and 2011

(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). 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.

##### *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 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.

# Intrexon Corporation and Subsidiaries

## Notes to Consolidated Financial Statements

### December 31, 2012 and 2011

(Amounts in thousands, except share and per share data)

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
- (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

# Intrexon Corporation and Subsidiaries

## Notes to Consolidated Financial Statements

### December 31, 2012 and 2011

(Amounts in thousands, except share and per share data)

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.

#### **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 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.

#### **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.

# Intrexon Corporation and Subsidiaries

## Notes to Consolidated Financial Statements

### December 31, 2012 and 2011

(Amounts in thousands, except share and per share data)

#### ***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 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.

# Intrexon Corporation and Subsidiaries

## Notes to Consolidated Financial Statements

### December 31, 2012 and 2011

(Amounts in thousands, except share and per share data)

#### ***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***

The Company accounts for its investment in AquaBounty Technologies, Inc. ("AquaBounty"), a biotechnology company focused on improving productivity in commercial aquaculture, using the equity method of accounting as the Company has the ability to exercise significant influence over, but not control, the operating activities of AquaBounty. Under the equity method of accounting, the Company includes 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, the Company presents 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 is identifiable intangible assets and equity-method goodwill. This equity-method goodwill is not amortized; however, the investment in AquaBounty is analyzed for impairment on a periodic basis or if an event occurs or circumstances change that indicate the carrying amount may be impaired.

#### ***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 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. The Company's maximum exposure to loss related to this VIE is limited to the carrying value of the investment in affiliate.

# Intrexon Corporation and Subsidiaries

## Notes to Consolidated Financial Statements

### December 31, 2012 and 2011

(Amounts in thousands, except share and per share data)

#### **Property and Equipment**

Property 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
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.

#### **Intangible Assets**

Intangible assets 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 were recorded at fair value at the date of acquisition and are stated net of accumulated amortization.

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 and equipment and intangible assets, 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.

#### **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

# Intrexon Corporation and Subsidiaries

## Notes to Consolidated Financial Statements

### December 31, 2012 and 2011

(Amounts in thousands, except share and per share data)

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 December 31, 2012 gives effect to the conversion of all outstanding shares of the convertible preferred stock, plus accrued but unpaid preferred stock dividends.

#### ***Comprehensive Loss***

For all periods presented, the comprehensive loss was equal to the net loss; therefore, a separate statement of comprehensive loss is not included in the accompanying consolidated financial statements.

#### ***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 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

# Intrexon Corporation and Subsidiaries

## Notes to Consolidated Financial Statements

### December 31, 2012 and 2011

(Amounts in thousands, except share and per share data)

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. 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.

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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 Company believes that the recent pronouncement will not have a material impact on its results of operations and financial condition.

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 Company believes that the recent pronouncement will not have a material impact on its results of operations and financial condition.

#### **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

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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 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
	<u>\$3,773</u>

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	<u>3,989</u>
Accounts payable	60
Accrued compensation and benefits	65
Other accrued liabilities	91
Total liabilities assumed	<u>216</u>
Net assets acquired	<u>\$3,773</u>

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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.

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
<b>Total assets acquired</b>	<b>14,342</b>
Accounts payable	55
Accrued compensation and benefits	29
Other accrued liabilities	8
<b>Total liabilities assumed</b>	<b>92</b>
<b>Net assets acquired</b>	<b>\$14,250</b>

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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.

#### ***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	<u>1,092</u>
	<u>\$13,850</u>

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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

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*, 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.

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#### **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:

<b>(Unaudited)</b>	<b>2011 Pro forma</b>
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 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

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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 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.

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

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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.

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. 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 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.

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

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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 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 BSP 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 BSP 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.

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

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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. The Company is entitled to additional consideration up to an aggregate of \$5,000 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 from the ECC. 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 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

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party evidence of selling price was not available or practical, the BEBP 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 BEBP 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.

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.

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

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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 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.

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.

# Intrexon Corporation and Subsidiaries

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#### ***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 antibiotics 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 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 antibiotics 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:

# Intrexon Corporation and Subsidiaries

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(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 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.

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.

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

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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 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 up-front 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.

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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.

Royalties related to product net sales will be recognized when earned as the the payments relate directly to products that have been fully developed and for which the Company has satisfied all of its obligations.

#### 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 December 31, 2012:

	Quoted prices in active markets (level 1)	Significant other observable inputs (level 2)	Significant unobservable inputs (level 3)	December 31, 2012
<b>Assets</b>				
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
<b>Assets</b>				
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.

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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 table 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 years ended December 31, 2012 and 2011.

#### 6. Equity Method Investment

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:

	<b>2012</b>
Current assets	\$ 514
Non-current assets	<u>1,962</u>
Total assets	2,476
Current liabilities	706
Non-current liabilities	<u>2,741</u>
Total liabilities	<u>3,447</u>
Net liabilities	\$ (971)

  

	<b>2012</b>
Revenues	\$ —
Operating expenses	<u>578</u>
Loss from operations	(578)
Other expense	<u>(1)</u>
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.

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See Note 16 for discussion of additional matters related to the Company's relationship with AquaBounty.

### 7. Property and Equipment, net

Property and equipment consist of the following at December 31:

	2012	2011
Furniture and fixtures	\$ 857	\$ 844
Lab equipment	22,195	18,010
Leasehold improvements	4,972	3,016
Computer hardware	3,136	2,897
Construction in progress	14	2,024
Software	888	665
	32,062	27,456
Less: Accumulated depreciation and amortization	(13,375)	(8,972)
Property and equipment, net	\$ 18,687	\$18,484

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. Intangible Assets, net

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

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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 \$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.

## 9. Income Taxes

There is no income tax benefit recognized 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	\$ —	\$ —

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The tax effects of temporary differences that comprise the deferred tax assets and liabilities at December 31 are as follows:

	2012	2011
<b>Deferred tax assets</b>		
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
<b>Deferred tax liabilities</b>		
Property and equipment	478	406
Intangible assets	1,781	2,441
Total deferred tax liabilities	2,259	2,847
Net deferred tax assets (liabilities)	\$ —	\$ —

Activity within the valuation allowance for deferred tax assets during the years ended December 31, 2012 and 2011 was as follows:

	2012	2011
<b>Valuation allowance at beginning of year</b>	\$ 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
<b>Valuation allowance at end of year</b>	\$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

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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. These annual limitations may result in a significant portion of the Company's net operating losses and research and development tax credits expiring prior to utilization.

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.

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#### 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
	<b>Balances at December 31, 2010</b>	705,400	\$ 802	694,000	\$ 609	1,212,360
Issuance of shares	—	—	—	—	—	—
Accretion of dividends	—	—	—	30	—	60
Stock issuance costs	—	—	—	—	—	—
<b>Balances at December 31, 2011</b>	705,400	802	694,000	639	1,212,360	1,300
Issuance of shares	—	—	—	—	—	—
Accretion of dividends	—	556	—	30	—	60
Stock issuance costs	—	—	—	—	—	—
<b>Balances at December 31, 2012</b>	705,400	\$ 1,358	694,000	\$ 669	1,212,360	\$ 1,360

	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
	<b>Balances at December 31, 2010</b>	4,546,360	\$ 6,346	15,934,528	\$ 30,436	18,617,020
Issuance of shares	—	—	—	—	—	—
Accretion of dividends	—	383	—	1,828	—	2,382
Stock issuance costs	—	—	—	—	—	—
<b>Balances at December 31, 2011</b>	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	—	—	—	—	—	—
<b>Balances at December 31, 2012</b>	4,546,360	\$ 7,134	15,934,528	\$ 34,201	18,617,020	\$ 44,512

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	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
<b>Balances at December 31, 2010</b>	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)
<b>Balances at December 31, 2011</b>	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)
<b>Balances at December 31, 2012</b>	13,297,872	\$ 29,770	19,803,685	\$ 76,252	38,095,239	\$ 211,403

The 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".

#### 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 the Series E, second to the holders of the Series D, third to the holders of the Series C-3, fourth to the holders of the Series C-2, fifth to the holders of the Series C-1, sixth to the holders of the Series C, seventh to the holders of Series B and B-1 together as a class, and eighth to the holders of the Series A, and thereafter to the holders of 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.

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#### **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 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 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 at December 31:

	2012	2011
Series E	\$5.62	\$5.41
Series D	3.86	3.64
Series C-3	2.24	2.12
Series C-2	2.40	2.26
Series C-1	2.15	2.03
Series C	1.58	1.49
Series B-1	1.14	1.09
Series B	1.02	0.98
Series A	1.99	1.88

The redemption will occur in the following order of preference: 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

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could be converted. Any matter which requires approval of the Series Preferred shall require the approval of at least three-fourths of the outstanding Series Preferred. See Note 16 for further discussion of voting rights.

#### *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.

##### *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 at least three-fourths of the outstanding Series Preferred. See Note 16 for further discussion of voting rights.

##### *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.

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#### *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 at least three-fourths of the outstanding Series Preferred. See Note 16 for further discussion of voting rights.

##### *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.

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#### **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 at least three-fourths of the outstanding Series Preferred. See Note 16 for further discussion of voting rights.

##### *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.

#### **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

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could be converted. Any matter which requires approval of the Series Preferred shall require the approval of at least three-fourths of the outstanding Series Preferred. See Note 16 for further discussion of voting rights.

#### *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 at least three-fourths of the outstanding Series Preferred. See Note 16 for further discussion of voting rights.

#### *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.

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#### *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 at least three-fourths of the outstanding Series Preferred. See Note 16 for further discussion of voting rights.

##### *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 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.

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***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 at least three-fourths of the outstanding Series Preferred. See Note 16 for further discussion of voting rights.

*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.

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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.

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.

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.

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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
<b>Valuation assumptions</b>		
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%

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Stock option activity during the years indicated is as follows:

	Number of shares	Weighted average exercise price	Weighted average remaining contractual term
<b>Balances at December 31, 2010</b>	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)	
<b>Balances at December 31, 2011</b>	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)	
<b>Balances at December 31, 2012</b>	4,048,672	3.37	7.87
<b>Exercisable at December 31, 2012</b>	1,415,109	2.32	6.43
<b>Vested and Expected to Vest at December 31, 2012(1)</b>	3,840,884	3.34	7.83

(1) The number of stock options expected to vest takes into account an estimate of expected forfeitures.

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 deemed fair value of the Company's common stock for those shares that had exercise prices lower than the deemed fair value of the Company's common stock.

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The following table summarizes additional information about stock options outstanding as of December 31, 2012:

Exercise price	Options outstanding			Options exercisable		
	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:

Exercise price	Options outstanding			Options exercisable		
	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

The Company currently uses authorized and unissued shares to satisfy share award exercises.

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## 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
	<u>\$11,097</u>

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.

### *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
	<u>99</u>
Less: Amounts representing interest	(8)
	<u>\$91</u>

# Intrexon Corporation and Subsidiaries

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#### ***Research and Development***

The Company has commitments with third parties in connection with research and development collaborations. See Note 2 for further discussion.

#### ***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 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.

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Effective August 31, 2011, the Company entered into an asset purchase agreement with Cytellect, Inc. ("Cytellect") to purchase the assets required to operate Cytellect'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. Cytellect 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
<b>Total assets acquired</b>	<b>2,097</b>
Accounts payable	41
Other accrued liabilities	107
Long-term debt	116
<b>Total liabilities assumed</b>	<b>264</b>
<b>Net assets acquired</b>	<b>\$1,833</b>

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 Cytellect. 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-

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time basis. Although the CEO has not received compensation for his services as CEO, the 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.

#### ***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 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.

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.

#### ***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 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.

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**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:

	2012	2011
Historical net loss per share:		
Numerator:		
Net loss	\$ (81,874)	\$ (85,280)
Add: Accretion of dividends on redeemable convertible preferred stock, not declared	(21,994)	(13,868)
Net loss attributable to common shareholders	<u>(103,868)</u>	<u>(99,148)</u>
Denominator:		
Weighted average shares outstanding, basic and diluted	9,683,984	9,171,140
Net loss attributable to common shareholders per share, basic and diluted	<u>\$ (10.73)</u>	<u>\$ (10.81)</u>
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	<u>                    </u>	
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		

The following potentially dilutive securities have been excluded from the computations of diluted weighted average shares outstanding as of December 31, 2012 and 2011, as they would have been anti-dilutive:

	2012	2011
Shares issuable upon conversion of all Series Preferred	112,906,464	97,096,941
Options	4,048,672	6,325,427
Warrants	894,423	894,423
Total	<u>117,849,559</u>	<u>104,316,791</u>

# Intrexon Corporation and Subsidiaries

## Notes to Consolidated Financial Statements

### December 31, 2012 and 2011

(Amounts in thousands, except share and per share data)

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 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.

In January and February 2013, AquaBounty borrowed \$200 and \$100, respectively, on the promissory note with the Company.

On February 14, 2013, the Company entered into an ECC with AquaBounty with the intent to enhance productivity and develop products in aquaculture. The Company will be reimbursed for research and development services performed 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. Also, on February 14, 2013, three individuals designated by the Company, including an employee of the Company, were appointed to AquaBounty's board of directors.

On March 1, 2013 and April 30, 2013, the Company issued Series F Redeemable Convertible Preferred Stock ("Series F") for total gross proceeds of \$150,000, net of \$3,100 issuance costs, including \$1,800 paid to a shareholder. The Series F has a stated value of \$7.88 per share. In the event of liquidation, dissolution, or winding up of the Company, the Series F shareholders are entitled to be paid before any distributions are made to the shareholders of the Series Preferred. 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 Series F shares could be converted. 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 per annum of the Series F

# Intrexon Corporation and Subsidiaries

## Notes to Consolidated Financial Statements

### December 31, 2012 and 2011

(Amounts in thousands, except share and per share data)

stated value. 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. Any matter which requires approval of the Series Preferred, together with the Series F, shall require the approval of a majority of the outstanding Series Preferred together with the Series F. In conjunction with the issuance of Series F, the Company increased the number of authorized common shares to 185,000,000.

On March 15, 2013, the Company acquired 18,714,814 shares of AquaBounty for \$4,907 in a private subscription offering increasing the Company's ownership in AquaBounty to 53.82%, which requires consolidation by the Company as of March 15, 2013. In conjunction with this share purchase, AquaBounty repaid the \$500 promissory note plus accrued interest in its entirety.

On March 29, 2013, the Company entered into an ECC with Ampliphi Biosciences Corporation ("Ampliphi"). The Company is entitled to receive 24,000,000 common shares of Ampliphi as a technology access fee. The Company will be reimbursed for research and development services performed as provided for in the ECC agreement. The Company is entitled to various milestone payments upon achievement of certain events and royalties in the event of product sales from products developed from the ECC.

On March 29, 2013, the Company entered into an ECC with Genopaver, LLC ("Genopaver"), an entity controlled by Third Security. The Company is entitled to receive \$3,000 as a technology access fee. The Company will be reimbursed for research and development services as provided for in the ECC agreement. The Company is entitled to a royalty on the gross profits of product sales from a product developed from the ECC.

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.

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 for in the ECC agreement. The Company is entitled to various milestone payments upon achievement of certain events and royalties in the event of product sales from products developed from 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.

# **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

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<b>Assets</b>	
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
<b>Liabilities</b>	
Current liabilities	
Accounts payable	\$ 54,698
Accrued expenses	213,447
Total liabilities	268,145
Commitments and contingencies (Note 8)	
<b>Stockholders' Equity</b>	
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

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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
<b>Revenues</b>	
Research and development services	\$ 173,077
Research grant revenues	667,326
Total revenues	<u>840,403</u>
<b>Costs and expenses</b>	
Research and development	738,037
Selling, general, and administrative	<u>1,117,991</u>
Total costs and expenses	<u>1,856,028</u>
Loss from operations	(1,015,625)
<b>Other</b>	
Interest income	486
Net loss before provision for income taxes	<u>(1,015,139)</u>
Income tax benefit	<u>144,826</u>
Net loss	<u>\$ (870,313)</u>

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			
<b>Balances as of December 31, 2010</b>	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)
<b>Balances as of October 05, 2011</b>	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
<b>Cash flows from operating activities</b>	
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	<u>(659,772)</u>
<b>Cash flows from investing activities</b>	
Purchases of property and equipment	(4,496)
Net cash used in investing activities	<u>(4,496)</u>
<b>Cash flows from financing activities</b>	
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	<u>300,430</u>
Net decrease in cash	<u>(363,838)</u>
<b>Cash</b>	
Beginning of this year	385,531
End of the year	<u>\$ 21,693</u>
<b>Supplemental disclosure of cash flow information</b>	
Cash paid for income taxes	\$ 123,493
<b>Significant noncash financing and investing activities</b>	
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, consulting fees, and payments to third parties for provision of research and development services. These costs are charged to expense as incurred.

# GT Life Sciences, Inc.

## Notes to Financial Statements

Period ended October 05, 2011

### 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.

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.

# GT Life Sciences, Inc.

## Notes to Financial Statements

Period ended October 05, 2011

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

### 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.

# GT Life Sciences, Inc.

## Notes to Financial Statements

Period ended October 05, 2011

**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
<b>Balances as of December 31, 2010</b>	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
<b>Balances as of October 5, 2011</b>	3,220,000	2,880,000	\$ 0.03

The options exercised during 2011 had no intrinsic value.

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

**GT Life Sciences, Inc.**  
**Notes to Financial Statements**  
 Period ended October 05, 2011

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:

<b>Current expense</b>	
Federal	\$ (97,346)
State	800
Total current expense/(benefit)	(96,546)
<b>Deferred expense</b>	
Federal	(37,566)
State	(10,714)
Total deferred expense/(benefit)	(48,280)
Total income tax expense/(benefit)	\$(144,826)

The Company's total deferred tax assets and deferred tax liability as of October 5, 2011 are as follows:

<b>Deferred tax assets</b>	
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
<b>Deferred tax liability</b>	
Property and equipment	53,364
Total net deferred tax assets	\$ —

# GT Life Sciences, Inc.

## Notes to Financial Statements

Period ended October 05, 2011

Taxes computed at the statutory federal income tax rate of 34% are reconciled to the provision (benefit) for income taxes as follows:

	<b>Amount</b>
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.

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.

**GT Life Sciences, Inc.**  
**Notes to Financial Statements**  
Period ended October 05, 2011

**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**

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## 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

<b>Assets</b>	
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
<b>Liabilities</b>	
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
<b>Stockholders' Deficit</b>	
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
<b>Revenues</b>	
License revenue	\$ 35,000
Research grant revenue	100,000
Total revenues	<u>135,000</u>
<b>Costs and Expenses</b>	
Research and development	440,475
Selling, general, and administrative	734,919
License royalties	4,167
Total costs and expenses	<u>1,179,561</u>
Loss from operations	(1,044,561)
<b>Other</b>	
Interest income	692
Interest expense	(6,096)
Total other	<u>(5,404)</u>
Net loss	<u>\$ (1,049,965)</u>

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			
<b>Balances as of December 31, 2010</b>	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)
<b>Balances as of October 20, 2011</b>	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
<b>Cash flows from operating activities</b>	
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	<u>(534,144)</u>
<b>Cash flows from investing activities</b>	
Purchases of property and equipment	(22,120)
Net cash used in investing activities	<u>(22,120)</u>
<b>Cash flows from financing activities</b>	
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	<u>233,982</u>
Net decrease in cash and cash equivalents	<u>(322,282)</u>
<b>Cash and cash equivalents</b>	
Beginning of this year	341,733
End of the year	<u>\$ 19,451</u>
<b>Supplemental disclosure of cash flow information</b>	
Cash paid during the period for interest	\$ 6,096
<b>Significant noncash financing and investing activities</b>	
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.

# Immunologix, Inc.

## Notes to Financial Statements

Period ended October 20, 2011

### 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. 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.

# Immunologix, Inc.

## Notes to Financial Statements

Period ended October 20, 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 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

# Immunologix, Inc.

## Notes to Financial Statements

Period ended October 20, 2011

monoclonal antibodies and compositions of matter thereof. The Company incurred fees and 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 10<sup>th</sup> of each year):

	<b>Minimum royalty</b>
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
<b>Balances as of December 31, 2010</b>	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
<b>Balances as of October 20, 2011</b>	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.

###### *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

# Immunologix, Inc.

## Notes to Financial Statements

Period ended October 20, 2011

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.

#### *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.

# Immunologix, Inc.

## Notes to Financial Statements

Period ended October 20, 2011

**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
<b>Balances as of December 31, 2010</b>	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
<b>Balances as of October 20, 2011</b>	<u>51,120</u>	<u>112,980</u>	<u>\$ .15</u>

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 (in years)	Weighted-average exercise price
Outstanding	112,980	0	\$ 0.15
Exercisable	112,980	0	\$ 0.15

**Immunologix, Inc.**  
**Notes to Financial Statements**  
 Period ended October 20, 2011

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 (in years)	Number of options exercisable
\$ 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	\$ —

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.

# Immunologix, Inc.

## Notes to Financial Statements

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.

## 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
	<u>\$ 20,364</u>	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		<u>\$ 56,637</u>

# Immunologix, Inc.

## Notes to Financial Statements

Period ended October 20, 2011

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.

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.

***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		*
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.

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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.

(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.

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

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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 April 30, 2013, we granted options to purchase an aggregate of 5,985,447 shares of common stock, with exercise prices ranging from \$1.88 to \$4.07 per share, to employees, directors and consultants pursuant to our 2008 Equity Incentive Plan. Between January 1, 2010 and April 30, 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.**

The exhibits to the registration statement are listed in the Exhibit Index attached hereto and incorporated by reference herein

## **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 2008 Equity Incentive Plan and Forms of Award Agreements
10.2*†	Intrexon Corporation 2013 Equity and Cash 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*#	Exclusive Channel Collaboration Agreement, dated as of November 28, 2011, between the Company and Elanco Animal Health, a division of Eli Lilly and Company
10.5*#	Exclusive Channel Collaboration Agreement, dated as of June 5, 2012, between the Company and Oragenics, Inc.
10.6*#	Exclusive Research Collaboration Agreement, dated as of August 1, 2012, between the Company and BioLife Cell Bank, Inc.
10.7*#	Stock Purchase Agreement, dated as of January 6, 2011, between the Company and ZIOPHARM Oncology, Inc.
10.8*#	Exclusive Channel Collaboration Agreement, dated as of August 6, 2012, between the Company and Synthetic Biologics, Inc.
10.9*#	Exclusive Channel Collaboration Agreement, dated as of October 12, 2012, between the Company and Fibrocell Science, Inc.
10.10*#	Exclusive Channel Collaboration Agreement, dated as of February 14, 2013, between the Company and AquaBounty Technologies, Inc.
10.11*#	Relationship Agreement, dated as of December 5, 2012, between the Company and AquaBounty Technologies, Inc.
10.12*#	Exclusive Channel Collaboration Agreement, dated as of March 29, 2013, between the Company and Amplphi Biosciences Corporation
10.13*#	Exclusive Channel Collaboration Agreement, dated as of March 29, 2013, between the Company and Genopaver, LLC
10.14*#	Exclusive Channel Collaboration Agreement, dated as of April 27, 2013, between the Company and Soligenix, Inc.

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<b>Exhibit number</b>	<b>Description of exhibit</b>
10.15*#†	Second Amended and Restated Employment Agreement, dated as of August 31, 2006, between the Company and Thomas D. Reed
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.

† Indicates management contract or compensatory plan.

# The Registrant intends to seek confidential treatment with respect to certain portions of this exhibit.