MEDISTEM INC.
Form DEFM14A
February 11, 2014
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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

SCHEDULE 14A

PROXY STATEMENT PURSUANT TO SECTION 14(a) OF THE

SECURITIES EXCHANGE ACT OF 1934

(AMENDMENT NO.)

Filed by the Registrant þ Filed by a Party other than the Registrant ¨

Check the appropriate box:

¨ Preliminary Proxy Statement

¨ **Confidential, For Use of the Commission Only (as permitted by Rule 14a-6(e)(2))**

þ Definitive Proxy Statement

¨ Definitive Additional Materials

¨ Soliciting Material Pursuant to § 240.14a-12

MEDISTEM INC.

(Name of Registrant as Specified in its Charter)

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

Payment of Filing Fee (Check the appropriate box):

þ No fee required.

¨ Fee computed on table below per Exchange Act Rules 14a-6(i)(l) and 0-11.

(1) Title of each class of securities to which transaction applies:

(2) Aggregate number of securities to which transaction applies:

(3) Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (set forth the amount on which the filing fee is calculated and state how it was determined):

(4) Proposed maximum aggregate value of transaction:

(5) Total fee paid:

¨ Fee paid previously with preliminary materials.

¨ Check box if any part of the fee is offset as provided by Exchange Act Rule 0-11(a)(2) and identify the filing for which the offsetting fee was paid previously. Identify the previous filing by registration statement number, or the Form or Schedule and the date of its filing.

(1) Amount Previously Paid:

(2) Form, Schedule or Registration Statement No.:

(3) Filing Party:

(4) Date Filed:

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Proxy statement/prospectus

MERGER PROPOSED YOUR VOTE IS VERY IMPORTANT

Dear Shareholder:

As previously announced, on December 19, 2013, Medistem Inc. entered into a merger agreement with Intrexon Corporation, under which a wholly owned subsidiary of Intrexon will merge with Medistem, with Medistem continuing as the surviving corporation. Medistem will continue as a wholly owned subsidiary of Intrexon. We refer to this transaction as the merger. If the merger is consummated, Medistem will no longer be a publicly held corporation.

The merger requires the approval of holders of a majority of the outstanding shares of Medistem common stock, and we are asking you to vote to adopt and approve the merger agreement and, thereby, to approve the transactions contemplated by the merger agreement, including the merger. If the merger agreement is approved by Medistem shareholders and the merger is completed, you will be entitled to receive for each share of Medistem common stock that you hold (other than shares with respect to which dissenter s rights are properly exercised or shares owned by Intrexon, any of its subsidiaries or Medistem) consideration equal to $1.35, payable as (i) $0.27 in cash, without interest and subject to applicable withholding tax, and (ii) $1.08 worth of shares of Intrexon common stock, based on the volume-weighted average price of Intrexon common stock, as reported on the New York Stock Exchange, for the 20 trading days immediately preceding the last trading day prior to the date of the closing of the merger, in each case subject to calculation and adjustment as described in this proxy statement/prospectus. In no event, however, will the total consideration paid to Medistem shareholders exceed $26.0 million in the aggregate.

The following table sets forth the closing sale prices per share of Intrexon common stock and Medistem common stock as of December 19, 2013, the last trading day prior to the public announcement of the proposed merger, and as of February 10, 2014, the most recent practicable trading day prior to the date of this proxy statement/prospectus.

	Intrexon Common Stock	Medistem Common Stock
December 19, 2013	$ 20.12	$ 0.86
February 10, 2014	$ 29.33	$ 1.10

Medistem common stock is listed on the OTC Markets Group s OTCQB marketplace under the symbol MEDS. Intrexon common stock is listed on the New York Stock Exchange under the symbol XON. The market prices of shares of Medistem common stock and Intrexon common stock are subject to fluctuation. As a result, you are urged to obtain current market quotations.

Your vote is very important. The record date for determining the shareholders entitled to receive notice of, and to vote at, the special meeting is January 31, 2014. We cannot complete the merger unless Medistem shareholders holding a majority of the outstanding shares of Medistem common stock as of the close of business on the record date vote in favor of the adoption and approval of the merger agreement at the special meeting. Whether or not you expect to attend the Medistem special meeting in person, if you are the record holder of shares, please vote your shares as promptly as possible by (a) accessing the Internet website specified on your proxy card, (b) calling the toll-free number specified on your proxy card or (c) signing and returning all proxy cards that you receive in the postage-paid envelope provided, so that your shares may be represented and voted at the Medistem special meeting. If your shares are registered in the name of a broker, bank or other holder of record, please follow the voting instructions you receive from the holder of record to vote your shares. If your shares are registered in the name of a broker, bank or other holder of record and you plan to attend the special meeting in person, please bring to the special meeting a letter, account statement or other evidence of your beneficial ownership as of the record date. **A failure to vote your shares, or to provide instructions to your broker, bank or nominee as to how to vote your shares, is the equivalent of a vote against the merger.**

In addition, at the special meeting you also will be asked to approve the adjournment of the special meeting under certain circumstances and to approve, on a non-binding, advisory basis, the compensation payable to Medistem s named executive officers that is based on or otherwise relates to the merger.

The Medistem board of directors has unanimously determined that the merger agreement and the transactions contemplated thereby, including the merger, are advisable, fair to, and in the best interests of, Medistem and its shareholders; adopted the merger agreement and approved the transactions contemplated thereby, including the merger; and unanimously recommends that you vote FOR the adoption and approval of the merger agreement,

FOR the approval, on a non-binding, advisory basis, of the compensation payable to Medistem s named executive officers that is based on or otherwise relates to the merger and FOR the adjournment of the special meeting, if necessary to solicit additional proxies.

The obligations of Intrexon and Medistem to complete the merger are subject to the satisfaction or waiver of several conditions set forth in the merger agreement. More information about Intrexon, Medistem, the merger agreement and the transactions contemplated thereby, including the merger, is contained in this proxy statement/prospectus.

For a discussion of risk factors that you should consider in evaluating the transaction, see the section entitled Risk Factors beginning on page 24 of this proxy statement/prospectus.

We urge you to read the attached proxy statement/prospectus carefully and in its entirety.

Sincerely,

Alan J. Lewis, Ph.D.

Chief Executive Officer

Medistem Inc.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of the securities to be issued under this proxy statement/prospectus or determined that this proxy statement/prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

This proxy statement/prospectus is dated February 11, 2014, and is first being mailed to Medistem shareholders on or about February 12, 2014.

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Notice of special meeting of shareholders

to be held on March 4, 2014

Dear Shareholder:

You are cordially invited to attend a special meeting of shareholders of Medistem Inc. (Medistem), which will be held on March 4, 2014, at 9:00 a.m., local time, at the offices of Jones Day, 12265 El Camino Real, Suite 300, San Diego, California 92130. Shareholders of record who owned Medistem common stock at the close of business on January 31, 2014, are entitled to vote at the special meeting. At the special meeting we will ask you to consider and vote upon:

- a proposal to adopt and approve the Agreement and Plan of Merger, dated as of December 19, 2013, as amended by the First Amendment to the Agreement and Plan of Merger, by and among Medistem, Intrexon Corporation, and XON Cells, Inc., which is referred to herein as the merger agreement, pursuant to which Medistem will merge with and into XON Cells, Inc., a wholly owned subsidiary of Intrexon, as more fully described in the accompanying proxy statement/prospectus. A copy of the merger agreement is attached as Annex A to the accompanying proxy statement/prospectus;

- a proposal to approve, on a non-binding, advisory basis, the compensation payable to Medistem s named executive officers that is based on or otherwise relates to the merger; and

- a proposal to adjourn the Medistem special meeting, if necessary or appropriate, to solicit additional proxies in favor of the proposal to adopt and approve the merger agreement, if there are not sufficient votes at the time of such adjournment to adopt and approve the merger agreement proposal.

At the special meeting, Medistem may also conduct any other business properly brought before the special meeting and any adjournment or postponement thereof.

The Medistem board of directors has unanimously determined that the merger agreement and the transactions contemplated thereby, including the merger, are advisable, fair to, and in the best interests of, Medistem and its shareholders; adopted the merger agreement and approved the transactions contemplated thereby, including the merger; and unanimously recommends that you vote FOR the adoption and approval of the merger agreement, FOR the approval, on a non-binding, advisory basis, of the compensation payable to Medistem s named executive officers that is based on or otherwise relates to the merger and FOR the adjournment of the special meeting, if necessary or appropriate, to solicit additional proxies.

To assure your representation at the special meeting, you are urged to submit your proxy as promptly as possible. Registered shareholders may vote by Internet, by telephone or by completing, signing, dating and returning the enclosed proxy card as promptly as possible in the enclosed postage prepaid envelope. Your shares will be voted in accordance with your instructions. You may attend the special meeting and vote in person even if you have previously returned your proxy card or voted by Internet or telephone.

A list of Medistem shareholders of record entitled to vote at the Medistem special meeting will be available during regular business hours at Medistem s executive offices and principal place of business at 9255 Towne Centre Drive, #450, San Diego, CA 92121 for inspection by shareholders of record of Medistem for any purpose germane to the special meeting. The list will also be available at the special meeting.

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If your shares are registered in the name of a broker, bank or other holder of record, please follow the voting instructions you receive from the holder of record to vote your shares. If your shares are registered in the name of a broker, bank or other holder of record and you plan to attend the special meeting in person, please bring a letter, account statement or other evidence of your beneficial ownership as of the record date to the special meeting.

Medistem shareholders who do not vote in favor of the merger proposal and follow certain procedural steps will be entitled to dissenters rights under Chapter 92A.300-500, inclusive, of the Nevada Revised Statutes (NRS), provided they take the steps required to perfect their rights under Chapter 92A.300-500, inclusive, of the NRS. For more information regarding dissenters rights, see the section entitled Dissenters Rights.

Your vote is very important. Adoption and approval of the merger agreement requires the affirmative vote of holders of a majority of the shares of Medistem common stock issued and outstanding as of the close of business on the record date. A failure to vote your shares, or to provide instructions to your broker, bank or nominee as to how to vote your shares, is the equivalent of a vote against the merger. Please vote using one of the methods above to ensure that your vote will be counted. Your proxy may be revoked at any time before the vote at the special meeting by following the procedures outlined in this proxy statement/prospectus.

By Order of the Board of Directors,

Alan J. Lewis, Ph.D.

Chief Executive Officer

Medistem Inc.

San Diego, California

February 11, 2014

Additional information

This proxy statement/prospectus incorporates important business and financial information about Medistem from other documents filed with the U.S. Securities and Exchange Commission, referred to as the SEC, that are not included in or delivered with this proxy statement/prospectus. For a listing of documents incorporated by reference into this proxy statement/prospectus, please see the section entitled Where You Can Find More Information. This information is available to you without charge upon your request. This information is available for you to review at the SEC s public reference room located at 100 F Street, N.E., Room 1580, Washington, DC 20549, and through the SEC s website at www.sec.gov. You can also obtain the documents incorporated by reference into this proxy statement/prospectus by requesting them in writing or by telephone from Medistem at the following address and telephone number:

Medistem Inc.

9255 Towne Centre Drive, #450, San Diego, CA 92121 (858) 352-7071 Attn: Investor Relations

Investors may also consult Medistem s and Intrexon s websites for more information concerning Medistem, Intrexon and the merger described in this proxy statement/prospectus. Medistem s website is *www.medisteminc.com* and Intrexon s website is *www.dna.com*. Information included on these websites is not incorporated by reference into this proxy statement/prospectus.

If you would like to request documents, please do so by February 25, 2014, in order to receive them before the special meeting.

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About this document

This document, which forms part of a Registration Statement on Form S-4 filed by Intrexon with the SEC, constitutes a prospectus of Intrexon under Section 5 of the Securities Act of 1933, as amended, which is referred to herein as the Securities Act, with respect to the shares of Intrexon common stock to be issued to Medistem shareholders pursuant to the merger agreement. This document also constitutes a proxy statement of Medistem under Section 14(a) of the Securities Exchange Act of 1934, as amended, which is referred to herein as the Exchange Act, with respect to the Medistem special meeting at which Medistem shareholders will be asked to vote upon, among other things, the proposal to adopt and approve the merger agreement.

You should rely only on the information contained or incorporated by reference into this proxy statement/prospectus. No one has been authorized to provide you with information that is different from that contained in, or incorporated by reference into, this proxy statement/prospectus. You should not assume that the information contained in, or incorporated by reference into, this proxy statement/prospectus is accurate as of any date other than the date of this proxy statement/prospectus or the date of the SEC filing incorporated by reference herein, as applicable. Neither the mailing of this proxy statement/prospectus to Medistem shareholders nor the issuance by Intrexon of common stock in connection with the merger will create any implication to the contrary.

This proxy statement/prospectus does not constitute an offer to sell, or a solicitation of an offer to buy, any securities, or the solicitation of a proxy, in any jurisdiction in which or from any person to whom it is unlawful to make any such offer or solicitation in such jurisdiction. Information contained in this proxy statement/prospectus regarding Intrexon has been provided by Intrexon and information contained in this proxy statement/prospectus regarding Medistem has been provided by Medistem.

All references in this proxy statement/prospectus to: Medistem refer to Medistem Inc., a Nevada corporation, and its subsidiaries; Intrexon refer to Intrexon Corporation, a Virginia corporation, and its subsidiaries; Merger Sub refer to XON Cells, Inc., a Nevada corporation and a wholly owned subsidiary of Intrexon formed solely for the purpose of effecting the merger as described in this proxy statement/prospectus; and the combined company refer to Intrexon and each of its subsidiaries, including Medistem, immediately following completion of the transactions contemplated by the merger agreement.

All references in this proxy statement/prospectus to the merger agreement refer to the Agreement and Plan of Merger, dated as of December 19, 2013, by and among Intrexon, Merger Sub and Medistem, a copy of which is included as Annex A to this proxy statement/prospectus, as it may be amended from time to time, and all references to the merger refer to the merger of Merger Sub with and into Medistem, with Medistem continuing as the surviving corporation.

Although Nevada law generally refers to the term stockholders and Virginia law generally refers to the term shareholders to specify holders of the capital stock of a corporation, for convenience such holders are referred to in this proxy statement/prospectus as shareholders in accordance with the Virginia law terminology.

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Questions and answers about the special meeting

Q: Why am I receiving this proxy statement/prospectus?

A: Intrexon and Medistem have agreed to the acquisition of Medistem by Intrexon under the terms of the merger agreement that is described in this proxy statement/prospectus. A copy of the merger agreement is attached to this proxy statement/prospectus as Annex A. You are receiving this proxy statement/prospectus because you have been identified as a shareholder of Medistem as of the close of business on the record date for the special meeting, which is January 31, 2014. This document serves as both a proxy statement of Medistem, used to solicit proxies for the special meeting of Medistem shareholders, and as a prospectus of Intrexon, used to offer shares of Intrexon common stock to Medistem shareholders in exchange for shares of Medistem common stock pursuant to the terms of the merger agreement. This document contains important information about the merger, the shares of Intrexon common stock to be issued pursuant to the merger and the special meeting of Medistem shareholders, and you should read it carefully.

Q: What am I being asked to vote on?

A: In order to complete the merger, Medistem shareholders must vote in favor of a proposal to adopt and approve the merger agreement, which is referred to herein as the merger proposal, and all other conditions to the merger must be satisfied or waived. Medistem will hold a special meeting to obtain this approval, which is referred to herein as the special meeting. The enclosed proxy materials allow you to vote your shares without attending the special meeting.

In addition, you are being asked to vote on a proposal to approve, on a non-binding, advisory basis, the compensation payable to Medistem s named executive officers that is based on or otherwise relates to the merger, which is referred to herein as the merger-related compensation payments proposal.

You are also being asked to vote on a proposal to adjourn the Medistem special meeting, if necessary or appropriate, to solicit additional proxies in favor of the merger proposal if there are not sufficient votes at the time of such adjournment to adopt and approve the merger proposal.

Your vote is important. We encourage you to vote as soon as possible.

Q: What consideration will I receive in connection with the merger?

A: At the effective time of the merger, each share of Medistem common stock issued and outstanding immediately prior to the effective time of the merger (other than shares with respect to which dissenter s rights are properly exercised or shares owned by Intrexon, any of its subsidiaries or Medistem) will be converted into the right to receive $1.35, payable as (i) $0.27 in cash without interest and subject to applicable withholding tax, which is referred to herein as the cash consideration and (ii) $1.08 worth of shares of Intrexon common stock, determined as the number of shares represented by $1.08 divided by the volume-weighted average price of Intrexon common stock, as reported on the New York Stock Exchange, which is referred to herein as the NYSE, for the 20 trading days immediately preceding the last trading day prior to the date of the closing of the merger, which price is referred to

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herein as the Intrexon stock value, and which consideration paid in shares of Intrexon common stock is referred to herein as the stock consideration, in each case subject to adjustment as described below under the question Why is the merger consideration subject to adjustment? The cash consideration together with the stock consideration is referred to herein as the merger consideration. In no event, however, will the total merger consideration paid to Medistem shareholders exceed $26.0 million in the aggregate.

Medistem shareholders will not receive any fractional shares of Intrexon common stock in the merger. Instead, any shareholder who would otherwise be entitled to a fractional share of Intrexon common stock will be entitled to receive an amount in cash (rounded down to the nearest whole cent), without interest, equal to the product of such fraction multiplied by the volume-weighted average price of Intrexon common stock, as reported on NYSE, for the 20 trading days immediately preceding the last trading day prior to the date of the closing of the merger, which is referred to herein as the Intrexon stock value.

Q: Will the merger consideration I receive in the merger increase if the results of operations of Intrexon improve or if the market price of Intrexon common stock increases?

A: No. The merger consideration payable for each share of Medistem common stock at closing is fixed at (i) $0.27 in cash without interest and subject to applicable withholding tax, which is referred to herein as the cash consideration and (ii) $1.08 worth of shares of Intrexon common stock, determined as the number of shares represented by $1.08 divided by the volume-weighted average price of Intrexon common stock, as reported on the NYSE, for the 20 trading days immediately preceding the last trading day prior to the date of the closing of the merger. The payment received at closing will not change regardless of the results of operations of Intrexon or the price of publicly traded common stock of Intrexon.

Q: How will the merger affect Medistem options to purchase common stock, restricted stock units, warrants and convertible promissory notes?

A: In connection with the merger, each outstanding Medistem stock option, restricted stock unit and warrant will vest fully and may be exercised for a period of at least 15 days prior to the consummation of the merger. Any stock option or warrant that is not exercised and remains outstanding at the consummation of the merger will be converted into the right to receive cash and Intrexon common stock. As of the effective time of the merger, each outstanding Medistem stock option shall be canceled in exchange for the right to receive a combination of cash and shares of Intrexon common stock as described below, (i) $1.35 minus the exercise price of such stock option divided by (ii) $1.35 (the Net Option Share Amount), which shall be paid in (A) a cash amount equal to the product of the Net Option Share Amount multiplied by $0.27 and (B) the number of whole and fractional shares of Intrexon common stock equal to the quotient of (1) the product of the Net Option Share Amount multiplied by $1.08, divided by (2) the Intrexon stock value. If the exercise price per share of any such stock option is equal to or greater than $1.35, such stock option shall be canceled without any payment or other consideration being made in respect thereof.

As of the effective time of the merger, each outstanding warrant to purchase Medistem common stock shall be canceled in exchange for the right to receive a combination of cash and shares of Intrexon common stock as described below, (i) $1.35 minus the exercise price of

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such warrant divided by (ii) $1.35 (the Net Warrant Share Amount), which shall be paid in (A) a cash amount equal to the product of the Net Warrant Share Amount multiplied by $0.27 and (B) the number of whole and fractional shares of Intrexon common stock equal to the quotient of (1) the product of the Net Warrant Share Amount multiplied by $1.08, divided by (2) the Intrexon stock value. If the exercise price per share of any such warrant is equal to or greater than $1.35, such warrant shall be canceled without any payment or other consideration being made in respect thereof.

As of the effective time of the merger, each outstanding promissory note convertible into Medistem common stock shall be canceled in exchange for the right to receive a combination of cash and shares of Intrexon common stock as described below, the total number of shares of Medistem common stock to which such promissory note was convertible immediately prior to the effective time of the merger (the Net Note Share Amount), which shall be paid in (i) a cash amount equal to the product of the Net Note Share Amount multiplied by $0.27 and (ii) the number of whole and fractional shares of Intrexon common stock equal to the quotient of (A) the product of the Net Note Share Amount multiplied by $1.08, divided by (B) the Intrexon stock value. If the conversion price per share of any such promissory note is equal to or greater than $1.35, the outstanding principal balance of such promissory note, together with all accrued but unpaid interest thereon, shall instead be paid in full.

Notwithstanding the foregoing, the aggregate number of shares of Intrexon common stock issued or issuable in the merger may not exceed 19.9% of the number of shares of Intrexon common stock outstanding immediately prior to the effective time of the merger.

Q: What happens if the merger is not completed?

A: If the merger proposal is not approved by Medistem s shareholders or if the merger is not completed for any other reason, you will not receive any payment for your shares of Medistem common stock in connection with the merger. Instead, Medistem will remain an independent public company and its common stock will continue to be listed and traded on the OTC Markets Group s OTCQB marketplace as long as it continues to meet the requirements for such listing and trading. If the merger agreement is terminated in certain circumstances, Medistem would be required to pay Intrexon a termination fee of either $750,000 or $1.0 million and would be required to repay the outstanding principal balance on the loans made to Medistem by Intrexon pursuant to two promissory notes in the aggregate amount of $700,000 in connection with the proposed merger. In other circumstances, if the merger agreement is terminated, Intrexon would be required to pay Medistem a termination fee of $150,000. See the section entitled The Merger Agreement Termination Fees.

Q: When and where will the meeting be held?

A: The Medistem special meeting will be held at 9:00 a.m., local time, on March 4, 2014, at the offices of Jones Day, 12265 El Camino Real, Suite 300, San Diego, California 92130.

Q: What do I need to do now?

A: Carefully read and consider the information contained in and incorporated by reference into this proxy statement/prospectus, including its annexes. After you carefully read this proxy

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statement/prospectus, follow the voting instructions below. In order to assure that your shares are voted, please submit your proxy as instructed on your proxy or voting instruction card even if you currently plan to attend the special meeting in person.

Q: How do I vote?

A: You may vote For, Against or Abstain on any proposal. Votes will be counted by the inspector of elections appointed for the special meeting. The procedures for voting are as follows:

Voting by Proxy

Registered shareholders may vote by mail, by telephone or by Internet:

To vote by mail, please complete, sign, date and mail your proxy card in the postage prepaid envelope provided. Proxies should be mailed sufficiently in advance to ensure receipt prior to the special meeting.

To vote by telephone, call toll-free 1-800-690-6903 from any touch-tone telephone and follow the instructions. Have your proxy card available when you call. If you vote by phone, you do not need to mail your proxy card. Telephone voting is available until 11:59 p.m., Eastern Time, on March 3, 2014.

You can vote on the Internet at www.proxyvote.com. Have your proxy card in hand when going online and follow the online instructions. If you vote by the Internet, you do not need to mail your proxy card. Internet voting is available up until 11:59 p.m., Eastern Time, on March 3, 2014.

If your shares are held of record in the name of a bank, broker or other nominee you should follow the separate instructions that the nominee provides to you. Although most banks and brokers now offer telephone and Internet voting, availability and specific processes will depend on their voting arrangements.

If the special meeting is postponed or adjourned for any reason, at any subsequent reconvening of the special meeting all proxies will be voted in the same manner as the proxies would have been voted at the original convening of the special meeting, except for any proxies that have at that time effectively been revoked or withdrawn, even if the proxies had been effectively voted on the same or any other matter at a previous meeting.

Voting in Person at the Special Meeting

If you are a registered holder and attend the special meeting and wish to vote in person, you may request a ballot when you arrive. If your shares are held of record in the name of your bank, broker or other nominee and you would like to vote in person at the special meeting, you must bring to the special meeting a letter, account statement or other evidence from the nominee indicating that you were the beneficial owner of the shares on the record date for the special meeting and a legal proxy from the nominee.

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Q: How does the Medistem board of directors recommend that I vote?

A: The Medistem board of directors reviewed and considered the terms and conditions of the merger agreement and the transactions contemplated thereby, including the merger, and, after careful consideration, has unanimously:

determined that the merger agreement and the transactions contemplated thereby, including the merger, are advisable, fair to, and in the best interests of, Medistem and its shareholders;

adopted the merger agreement and approved the transactions contemplated thereby, including the merger; and

resolved to recommend the adoption and approval of the merger agreement to Medistem s shareholders.

The Medistem board of directors unanimously recommends that Medistem s shareholders vote **FOR** the merger proposal, **FOR** the approval, on a non-binding, advisory basis, of the merger-related compensation payments proposal and **FOR** the adjournment of the special meeting, if necessary to solicit additional proxies.

Q: What vote is required to approve each proposal?

A: The voting requirements to approve the proposals are as follows:

The approval of the merger proposal requires the affirmative vote of the shareholders of record as of the record date holding a majority of all outstanding shares of Medistem s common stock on that date.

The approval, on a non-binding, advisory basis, of compensation payable to Medistem s named executive officers that is based on or otherwise relates to the merger requires that the votes cast in favor of this proposal exceed the votes cast against this proposal, provided a quorum is present.

The approval of the adjournment of the special meeting, to solicit additional proxies in favor of the merger proposal if there are not sufficient votes at the time of such adjournment to approve the merger proposal, requires the affirmative vote of the holders of a majority of the shares of Medistem common stock present, in person or by proxy, at the special meeting and entitled to vote thereon, if a quorum is not present. If a quorum is present, the approval of the adjournment of the special meeting, to solicit proxies in favor of the merger proposal if there are not sufficient votes at the time of such adjournment to approve the merger proposal, requires that the votes cast in favor of the adjournment proposal exceed the votes cast against the adjournment proposal.

Q: How are the officers and directors of Medistem going to vote in the merger?

A: In connection with entering into the merger agreement, each of the directors and executive officers of Medistem and their respective permitted transferees, as applicable, in their individual capacities, each of whom are referred to herein as a supporting shareholder, entered into a voting agreement pursuant to which the supporting shareholder agreed to, among other things, vote his shares of Medistem common stock (i) in favor of the merger

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proposal and (ii) against an acquisition proposal other than the merger, subject to any termination of the voting agreement in accordance with its terms. In addition, the supporting shareholders agreed not to directly or indirectly transfer their respective shares of Medistem common stock during the term of the voting agreement, subject to certain limited exceptions. The voting agreements may be terminated by the supporting shareholders if the Medistem board of directors has withdrawn or changed its recommendation in favor of a competing transaction. As of the record date, the supporting shareholders as a group owned and were entitled to vote 9,243,218 shares of Medistem common stock, or approximately 64% of the outstanding shares of Medistem common stock on that date.

Q: What constitutes a quorum?

A: Shareholders who hold at least a majority of the issued and outstanding Medistem common stock as of the close of business on the record date and who are entitled to vote must be present or represented by proxy in order to constitute a quorum to conduct the special meeting.

Q: What will happen if I return my proxy card without indicating how to vote?

A: If you sign and return your proxy card without indicating how to vote on any particular proposal, the Medistem common stock represented by your proxy will be voted in favor of that proposal.

Q: What will happen if I fail to vote or I abstain from voting?

A: If you are a shareholder of record and do not vote by completing your proxy card, by telephone, through the Internet, or in person at the special meeting, your shares will not be voted. This will have the same effect as voting against the merger proposal but will have no effect on the outcome of the other two proposals. If your shares are held in street name by a bank, brokerage firm or other nominee, and you do not provide your bank, brokerage firm or other nominee with instructions as to how to vote your shares, your shares will not be voted at the special meeting. This will have the same effect as voting against the merger proposal but will have no effect on the outcome of the other two proposals.

Q: How many votes do I and others have?

A: Each Medistem shareholder is entitled to one vote for each share of Medistem common stock owned as of the record date. As of the close of business on the record date, there were 14,454,288 issued and outstanding shares of Medistem common stock. As of the record date, the directors and executive officers and their affiliates as a group owned and were entitled to vote 9,243,218 shares of Medistem common stock, or approximately 64% of the outstanding shares of Medistem common stock on that date.

Q: If my shares are held in street name by my broker, bank or other nominee, will my broker, bank or nominee vote my shares for me?

A: If you hold your shares through a broker, bank or other nominee, you must provide your broker, bank or nominee with instructions on how to vote your shares. Please follow the voting instructions provided by your broker, bank or nominee. Please note that you may not

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vote shares held in street name by returning a proxy card directly to Medistem or by voting in person at the special meeting unless you provide a legal proxy, which you must obtain from your broker, bank or other nominee. Brokers, banks and other nominees who hold shares of Medistem common stock on behalf of their customers may not vote such shares or give a proxy to Medistem to vote those shares without specific instructions from their customers.

Q: Am I entitled to dissenters rights?

A: Yes. Medistem shareholders who do not vote in favor of the merger proposal and follow certain procedural steps will be entitled to dissenters rights under Chapter 92A.300-500 of the Nevada Revised Statutes, which is referred to herein as the NRS, provided they take the steps required to perfect their rights under chapter 92A.300-500 of the NRS. For more information regarding dissenters rights, see the section entitled Dissenters Rights. In addition, a copy of Chapter 92A.300-500 of the NRS is attached as Annex B to this proxy statement.

Q: Can I change my vote after I have returned a proxy or voting instruction card?

A: Yes. If you are a registered holder and give your proxy card to Medistem or vote by telephone or the Internet, you have the power to revoke your proxy or change your vote by taking any of the following actions before your proxy is voted at the special meeting:

voting again by telephone or Internet any time prior to 11:59 p.m., Eastern Time, on March 3, 2014;

notifying the Secretary of Medistem in writing no later than the beginning of the special meeting of your revocation;

delivering to the Secretary of Medistem no later than the beginning of the special meeting a revised signed proxy card bearing a later date; or

attending the special meeting and voting in person, which will automatically cancel any proxy previously given, or revoking your proxy in person, but your attendance alone will not revoke any proxy that you have previously given.

If your shares are held in street name by your broker, bank or other nominee, you should contact them to change your vote.

Q: When do you expect the merger to be completed?

A: Intrexon and Medistem expect to complete the merger during the first quarter of 2014 if the approval of the merger proposal is obtained, assuming the other conditions that are set forth in the merger agreement to the consummation of the merger are satisfied or waived. However, it is possible that the merger will not be consummated within that timeframe.

Q: Do I need to do anything with my Medistem common stock certificates now?

A: No. After the merger is completed, if you held certificates representing shares of Medistem common stock prior to the merger, Intrexon s exchange agent will send you a letter of

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transmittal and instructions for exchanging your shares of Medistem common stock for the merger consideration. Upon surrender of the certificates for cancellation along with the executed letter of transmittal and other required documents described in the instructions, you will receive the merger consideration. The shares of Intrexon common stock you receive in the merger will be issued in book-entry form. **DO NOT SEND ANY STOCK CERTIFICATES WITH YOUR PROXY**.

Q: Do I need identification to attend the Medistem special meeting in person?

A: Yes. Please bring proper identification, together with proof that you are a record owner of Medistem common stock. If your shares are held of record in the name of your bank, broker or other nominee and you would like to vote in person at the special meeting, you must bring to the special meeting a letter, account statement or other evidence from the nominee indicating that you were the beneficial owner of the shares on the record date for the special meeting.

Q: Who can help answer my questions?

A: If you have questions about the merger agreement, the merger or the merger proposal or the other matters to be voted on at the special meeting or desire additional copies of this proxy statement/prospectus or additional proxy cards, you should contact Medistem, 9255 Towne Centre Drive, #450, San Diego, CA 92121 (858) 352-7071 Attn: Investor Relations.

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Summary

This summary highlights selected information contained or incorporated by reference in this proxy statement/prospectus and may not contain all of the information that is important to you. This summary is not intended to be complete and reference is made to, and this summary is qualified in its entirety by, the more detailed information contained or incorporated by reference in this proxy statement/prospectus and the annexes attached to this proxy statement/prospectus. You may obtain the information incorporated by reference into this proxy statement/prospectus without charge by following the instructions in the section entitled Where You Can Find More Information. Page references have been included parenthetically to direct you to a more complete description of the topics presented in this summary.

The companies (see page 79)

Intrexon Corporation

Intrexon believes it is a leader in the field of synthetic biology, an emerging and rapidly evolving discipline that applies engineering principles to biological systems. Using its suite of proprietary and complementary technologies, Intrexon designs, builds and regulates gene programs, or sequences of DNA that control cellular function, and cellular systems, or activities that take place within a cell and the interaction of those systems in the greater cellular environment, to enable the development of new and improved products and manufacturing processes across a variety of end markets, including healthcare, food, energy and environmental sciences. 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.

Working with its collaborators, Intrexon seeks to create more effective, less costly and more sustainable solutions than can be provided through current industry practices. Intrexon believes its 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. Intrexon s business model is to commercialize its 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.

Intrexon s common stock is traded on the NYSE under the symbol XON. The principal executive offices of Intrexon are located at 222 Lakeview Avenue, Suite 1400, West Palm Beach, Florida 33401, and its telephone number is (561) 410-7000.

For more information regarding Intrexon s business, see the section entitled Description of Intrexon s Business.

Medistem Inc.

Medistem is focused on the development of the Endometrial Regenerative Cell (ERC), a universal donor adult stem cell product. ERCs possess specialized abilities to stimulate new blood vessel growth and can differentiate into lung, liver, heart, brain, bone, cartilage, fat and pancreatic tissue. These unique properties have applications for treatment of critical limb ischemia (CLI), congestive heart failure (CHF), neurodegenerative diseases, liver failure, kidney failure, and diabetes.

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Since September 7, 2013, shares of Medistem common stock have traded on the OTC Markets Group s OTCQB marketplace under the stock symbol MEDS. Prior to that time, shares of Medistem common stock traded on the OTCPink marketplace. The principal executive offices of Medistem are located at 9255 Towne Centre Drive, #450, San Diego, CA 92121, and its telephone number is (858) 352-7071.

For more information regarding Medistem s business, see the section entitled Description of Medistem s Business.

XON Cells, Inc.

XON Cells, Inc., a wholly owned subsidiary of Intrexon, is a Nevada corporation formed solely for the purpose of effecting the merger and is referred to herein as Merger Sub.

Merger Sub has not conducted any activities other than those incidental to its formation and the matters contemplated by the merger agreement, including the preparation of applicable regulatory filings in connection with the merger. The principal executive offices of Merger Sub are located at 20374 Seneca Meadows Parkway, Germantown, Maryland 20876, and its telephone number is (301) 556-9900.

The merger (see page 81)

Pursuant to the terms and subject to the conditions of the merger agreement, at the closing of the proposed transactions contemplated by the merger agreement, Merger Sub will be merged with and into Medistem, and Medistem will continue as the surviving corporation of the merger and as a wholly owned subsidiary of Intrexon. Following the merger, Medistem will no longer be a publicly traded corporation. In the event that any shareholder of Medistem exercises dissenters rights and does not withdraw or settle such exercise prior to the closing of the merger, then immediately following the closing, Medistem will be merged with and into a newly formed limited liability company that is a wholly owned subsidiary of Intrexon.

Merger consideration (see page 109)

At the effective time of the merger, each share of Medistem common stock (other than shares with respect to which dissenter s rights are properly exercised or shares owned by Intrexon, any of its subsidiaries or Medistem), will be converted into the right to receive consideration equal to $1.35, payable in (i) $0.27 in cash, without interest and subject to applicable withholding tax, referred to as the cash consideration, and (ii) $1.08 worth of shares of Intrexon common stock, referred to as the stock consideration, determined as the number of shares represented by $1.08 divided by the volume-weighted average price of Intrexon common stock, as reported on the New York Stock Exchange, for the 20 trading days immediately preceding the last trading day prior to the date of the closing of the merger, in each case subject to calculation and adjustment as described in this proxy statement/prospectus. In no event will the total consideration paid to Medistem shareholders exceed $26.0 million in the aggregate.

Medistem shareholders will not receive any fractional shares of Intrexon common stock in the merger. Instead, any shareholder who would otherwise be entitled to a fractional share of Intrexon common stock will be entitled to receive an amount in cash (rounded down to the nearest whole cent), without interest, equal to the product of such fraction multiplied by the Intrexon stock value.

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Treatment of Medistem equity awards, warrants and convertible promissory notes (see page 110)

In connection with the merger, as of the effective time of the merger, each outstanding Medistem stock option shall be canceled in exchange for the right to receive a combination of cash and shares of Intrexon common stock as described below, (i) $1.35 minus the exercise price of such stock option divided by (ii) $1.35 (the Net Option Share Amount), which shall be paid in (A) a cash amount equal to the product of the Net Option Share Amount multiplied by $0.27 and (B) the number of whole and fractional shares of Intrexon common stock equal to the quotient of (1) the product of the Net Option Share Amount multiplied by $1.08, divided by (2) the Intrexon stock value. If the exercise price per share of any such stock option is equal to or greater than $1.35, such stock option shall be canceled without any payment or other consideration being made in respect thereof.

As of the effective time of the merger, each outstanding warrant to purchase Medistem common stock shall be canceled in exchange for the right to receive a combination of cash and shares of Intrexon common stock as described below, (i) $1.35 minus the exercise price of such warrant divided by (ii) $1.35 (the Net Warrant Share Amount), which shall be paid in (A) a cash amount equal to the product of the Net Warrant Share Amount multiplied by $0.27 and (B) the number of whole and fractional shares of Intrexon common stock equal to the quotient of (1) the product of the Net Warrant Share Amount multiplied by $1.08, divided by (2) the Intrexon stock value. If the exercise price per share of any such warrant is equal to or greater than $1.35, such warrant shall be canceled without any payment or other consideration being made in respect thereof.

As of the effective time of the merger, each outstanding promissory note convertible into Medistem common stock shall be canceled exchange for the right to receive a combination of cash and shares of Intrexon common stock as described below, the total number of shares of Medistem common stock to which such promissory note was convertible immediately prior to the effective time of the merger (the Net Note Share Amount), which shall be paid in (i) a cash amount equal to the product of the Net Note Share Amount multiplied by $0.27 and (ii) the number of whole and fractional shares of Intrexon common stock equal to the quotient of (A) the product of the Net Note Share Amount multiplied by $1.08, divided by (B) the Intrexon stock value. If the conversion price per share of any such promissory note is equal to or greater than $1.35, the outstanding principal balance of such promissory note, together with all accrued but unpaid interest thereon, shall instead be paid in full.

Notwithstanding the foregoing, the aggregate number of shares of Intrexon common stock issued or issuable in the merger may not exceed 19.9% of the number of shares of Intrexon common stock outstanding immediately prior to the effective time of the merger.

Recommendations of the Medistem board of directors (see page 73)

The Medistem board of directors unanimously recommends that Medistem s shareholders vote **FOR** the merger proposal, **FOR** the approval, on a non-binding, advisory basis, of the merger-related compensation payments proposal and **FOR** the adjournment of the special meeting, if necessary to solicit additional proxies.

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Medistem s reasons for the merger (see page 89)

In the course of reaching its decision to adopt the merger agreement and to recommend that Medistem shareholders vote to approve the merger proposal, Medistem s board of directors consulted with its senior management, financial advisor and legal counsel, reviewed a significant amount of information and considered a number of factors, including, among others, those contained in the section entitled The Merger Medistem s Reasons for the Merger and Recommendation of the Medistem Board of Directors.

Opinion of Griffin Securities, Inc. (see page 93)

The Board received an opinion, dated December 18, 2013, from Griffin Securities, Inc., referred to herein as Griffin , that, as of that date and based on and subject to assumptions made, matters considered and limitations on the scope of review undertaken by Griffin as set forth therein, the merger consideration was fair, from a financial point of view, to the holders of the shares of Medistem common stock entitled to receive such consideration. The full text of Griffin s written opinion, which sets forth, among other things, the procedures followed, assumptions made, matters considered and limitations on the scope of review undertaken by Griffin in rendering its opinion is attached as Annex C to this proxy statement/prospectus. The opinion was delivered to the Medistem board of directors and addresses only the fairness, from a financial point of view, of the merger consideration to the holders of shares of Medistem common stock entitled to receive such consideration. The opinion does not address any other aspect of the proposed merger and does not constitute a recommendation to the Medistem board of directors or to any other persons in respect of the proposed merger, including as to how any holder of shares of Medistem common stock should vote or act in respect of the proposed merger.

Interests of Medistem s directors and executive officers in the merger (see page 98)

In considering the recommendation of the Medistem board of directors to approve the merger proposal, Medistem shareholders should be aware that Medistem s directors and executive officers may have interests in the merger that are different from, or in addition to, the interests of shareholders generally. The Medistem board of directors was aware of and considered these interests, among other matters, in adopting the merger agreement and approving the merger, and in recommending that the merger agreement be approved by shareholders. These interests include accelerated vesting of certain outstanding Medistem equity awards held by directors and executive officers of Medistem in connection with the merger, potential continued employment of executive officers following the merger, the continuation, for a period of six years following the closing of the merger, of indemnification and insurance coverage of directors and executive officers, and the advancement of expenses in the form of a loan or loans to Medistem by Intrexon for advancement to Medistem s directors and officers for claims in excess of existing Medistem insurance coverage, up to an aggregate of $2.0 million of loans outstanding at any time, related to directors and officers actions in fulfilling their fiduciary duties in connection with Medistem s entry into the merger agreement for the period from the date the merger agreement was signed until consummation of the merger.

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Voting agreements (see page 126)

In connection with entering into the merger agreement, each of the directors and executive officers of Medistem and their respective permitted transferees, as applicable, in their individual capacities, each of whom are referred to herein as a supporting shareholder, entered into a voting agreement pursuant to which the supporting shareholder agreed to, among other things, vote his shares of Medistem common stock (i) in favor of the merger proposal and (ii) against an acquisition proposal other than the merger, subject to any termination of the voting agreement in accordance with its terms. In addition, the supporting shareholders agreed not to directly or indirectly transfer their respective shares of Medistem common stock during the term of the voting agreement, subject to certain limited exceptions. The voting agreements may be terminated by the supporting shareholders if the Medistem board of directors has withdrawn or changed its recommendation in favor of a competing transaction. As of the record date, the supporting shareholders as a group owned and were entitled to vote 9,243,218 shares of Medistem common stock, or approximately 64% of the outstanding shares of Medistem common stock on that date.

Litigation relating to the merger (see page 107)

In connection with the merger, four purported class action lawsuits brought on behalf of all Medistem shareholders were filed; one in the Eighth Judicial District Court in Clark County, Nevada: *Iden v. Medistem, et al.*, No. A-13-693813-C, filed December 31, 2013; and three in the Superior Court of California in San Diego County, California: *Bachand v. Medistem, et al.*, No. 37-2013-00081729-CU-SL-CTL, filed December 31, 2013; *Parent v. Medistem, et al.*, No. 37-2014-00083393-CU-SL-CTL, filed January 14, 2014; and *Raymond v. Medistem, et al.*, No. 37-2014-00083495-CU-SL-CTL, filed January 15, 2014. The complaints in the pending lawsuits are similar. Each complaint names Medistem, members of Medistem s board of directors, Intrexon, and Merger Sub as defendants. The complaints allege, among other things, that Medistem s board of directors breached its fiduciary duties to its shareholders by failing to maximize shareholder value or to engage in a fair sale process before approving the proposed acquisition of Medistem by Intrexon. The complaints further allege that Medistem, Intrexon and Merger Sub aided and abetted the Medistem board of directors in its breaches of fiduciary duty. The plaintiffs seek relief that includes an injunction prohibiting the consummation of the merger, rescission to the extent the merger terms have already been implemented, damages for the breaches of fiduciary duty, payment of plaintiffs attorneys fees and costs and, in the Nevada action, a contingent monetary award in an unspecified amount. Medistem and its board of directors believe that these allegations are without merit and intend to defend the lawsuits vigorously. There can be no assurance, however, with regard to the outcome of these lawsuits.

Dissenters rights (see page 152)

Medistem shareholders who do not vote in favor of the adoption and approval of the merger agreement and follow certain procedural steps will be entitled to dissenters rights under Chapter 92A.300-500 of the NRS, provided they take the steps required to perfect their rights under Chapter 92A.300-500 of the NRS.

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The merger agreement (see page 109)

A copy of the merger agreement, as amended, is attached as Annex A to this proxy statement/prospectus. You are encouraged to read the entire merger agreement carefully because it is the principal legal document governing the merger.

Conditions to completion of the merger (see page 121)

Mutual conditions

Each party s obligation to complete the merger is subject to the satisfaction or waiver of certain conditions, including:

- the registration statement shall have been declared effective by the SEC and a stop order suspending the effectiveness of the registration shall not have been issued or a proceeding initiated or threatened for such purpose and not have been withdrawn;
- the merger agreement shall have been adopted by the affirmative vote of the holders of a majority of the outstanding shares of Medistem s common stock;
- no federal or state court of competent jurisdiction or other governmental entity shall have enacted, adopted, issued, promulgated, enforced or entered any law, order, decree, judgment, injunction or other ruling, which prevents or prohibits consummation of the merger; and
- the shares of Intrexon s common stock issuable to Medistem s shareholders in the merger shall have been approved for listing on NYSE.

Conditions to the obligations of Medistem

The obligations of Medistem to complete the merger are subject to the satisfaction or waiver of certain additional conditions, including:

- the representations and warranties of Intrexon shall be, with certain exceptions, true and correct in all respects, as of the closing date of the merger as though made on such date. The truth and accuracy of the representation and warranties shall be deemed to be satisfied so long as any failure of such representations and warranties to be true and correct would not be reasonably expected to have or result in, individually or in the aggregate, a material adverse effect with respect to Intrexon. Medistem shall have received a certificate of the chief executive officer or chief financial officer of Intrexon to that effect;
- Intrexon shall have performed in all material respects the covenants and agreements (except for certain of the conduct of business covenants, which shall be subject to a material adverse effect standard) required to be performed by it under the merger agreement, and Medistem shall have received a certificate signed on behalf of Intrexon by its chief executive officer or chief financial officer to such effect; and
- Medistem shall have received an opinion of counsel, dated as of the closing date, that the merger will qualify for United States federal income tax purposes as a reorganization within the meaning of Section 368(a) of the Code.

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Conditions to the obligations of Intrexon and merger sub

The obligations of Intrexon and Merger Sub to complete the merger are subject to the satisfaction or waiver of certain additional conditions, including

the representations and warranties of Medistem shall be, with certain exceptions, true and correct in all respects, as of the closing date of the merger as though made on such date. The truth and accuracy of the representation and warranties shall be deemed to be satisfied so long as any failure of such representations and warranties to be true and correct would not be reasonably expected to have or result in, individually or in the aggregate, a material adverse effect with respect to Medistem. Intrexon shall have received a certificate of the chief executive officer or chief financial officer of Medistem to that effect;

Medistem shall have performed in all material respects the covenants and agreements (except for certain of the conduct of business covenants, which shall be subject to a material adverse effect standard) required to be performed by it under the merger agreement, and Intrexon shall have received a certificate signed on behalf of Medistem by its chief executive officer or chief financial officer to such effect;

Medistem shall have obtained all of the consents required pursuant to the merger agreement;

Intrexon shall have received an opinion of counsel, dated as of the closing date, that the merger will qualify for United States federal income tax purposes as a reorganization within the meaning of Section 368(a) of the Code;

holders of no more than 7.5% of the outstanding shares of Medistem s common stock shall have validly exercised, or remained entitled to exercise, their dissenters rights under Section 92A.440 of the NRS;

Intrexon shall have received the promissory note set forth in the merger agreement duly executed by Medistem;

Intrexon shall have completed, to its satisfaction in its sole discretion, its business, financial and legal due diligence investigation of Medistem; provided that this condition was no longer applicable on and after January 16, 2014;

the aggregate number of shares of Intrexon common stock issuable in the merger shall not be equal to or greater than 19.9% of the shares of Intrexon s common stock outstanding as of immediately prior to the effective time of the merger;

Thomas E. Ichim, Ph.D. shall have executed and delivered an employment agreement with Intrexon or Medistem, dated as of the closing date of the merger, and in a form to be mutually agreed by Intrexon and Medistem; and

each current employee, officer and consultant of Medistem and each its subsidiaries shall have executed a proprietary information and inventions assignment agreement in the form presented by Intrexon.

Medistem s ability to solicit other offers (see page 118)

Under the terms of the merger agreement, until 11:59 p.m., California time, on January 9, 2014 (referred to herein as the go shop period), Medistem was permitted to (i) solicit inquiries or

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proposals or offers to acquire Medistem or (ii) participate in discussions or negotiations regarding proposals or offers to acquire Medistem. On December 23, 2013, Medistem initiated a go shop outreach to 16 candidate biopharmaceutical companies based in Australia, Europe, Japan, Korea, and the U.S. Of these candidates, 12 indicated they had no interest and two candidates did not respond. One candidate responded that they had an interest in a regional collaboration. One candidate requested access to Medistem s manufacturing trade secrets. Given that the candidate is a direct competitor, management deemed that it was in the best interest of Medistem and its shareholders to decline the request and proceed with the merger.

Termination of the merger agreement (see page 123)

The merger agreement may be terminated under certain circumstances, including:

by mutual written consent of Intrexon and Medistem;

by either party if the merger is not consummated on or before March 12, 2014 (unless the SEC elects to review the registration statement, in which case such date shall be extended to the earlier of May 31, 2014 or 45 days after the date that Intrexon files its annual report on Form 10-K that includes Intrexon s audited financial statements for the year ended December 31, 2013);

by either party if a federal or state court of competent jurisdiction or other governmental entity shall made a ruling which prevents or prohibits consummation of the merger;

by either party if Medistem shall have failed to obtain the requisite affirmative vote of its shareholders;

by Intrexon, if the board of directors of Medistem shall have effected a change in recommendation, or if Medistem shall have entered into an acquisition proposal other than the merger;

by Medistem, if prior to the approval of the merger by the shareholders of Medistem, in order to accept a superior proposal, *provided* that Medistem complied with the go shop provisions of the merger agreement and shall have paid Intrexon the termination fee discussed below;

by either party if there shall have been a breach of any of the covenants or agreements or any of the representations or warranties by the other party that is not cured as set forth in the merger agreement, which breach or misrepresentation would constitute the failure of any of the conditions to closing, *provided* that neither party shall have the right to terminate pursuant to this provision if it is in breach of this agreement such that any of the conditions to closing would not be satisfied;

by Medistem, if Intrexon has not loaned the amount to Medistem payable by the promissory note set forth in the merger agreement; or

by Intrexon, if the results of its diligence investigation are unsatisfactory, as determined by Intrexon in its sole and absolute discretion; provided that this termination right was no longer applicable and/or exercisable by Intrexon on and after January 16, 2014.

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Termination fees

Medistem shall pay Intrexon a termination fee of $1.0 million, if the merger agreement is terminated:

- by Medistem, prior to the approval of the merger by the shareholders of Medistem, in order to accept a superior proposal;
- by Intrexon, because the board of directors of Medistem shall have effected a change in recommendation, or because Medistem shall have entered into an acquisition proposal other than the merger;
- by Medistem because the merger is not consummated on or before March 12, 2014 under the conditions described above; or
- by Intrexon or Medistem because Medistem shall have failed to obtain the requisite affirmative vote of its shareholders, and (i) an acquisition proposal has been publicly announced prior to the occurrence of the events giving rise to the right to terminate and not withdrawn prior to the date of such termination and (ii) within six months of such termination Medistem enters into a definitive agreement or consummates such acquisition proposal.

Medistem shall pay Intrexon a termination fee of $750,000, if the merger agreement is terminated by Medistem prior to the approval of the merger by the shareholders of Medistem in order to accept a superior proposal, if such termination occurs prior to (i) January 10, 2014, the start of the no-shop period as further described in this proxy statement/prospectus, during which Medistem may no longer solicit acquisition proposals (the no-shop period), or (ii) after the start of the no-shop period to enter into an alternative acquisition agreement with an excluded party, as further described in the merger agreement.

Intrexon shall pay Medistem a termination fee of $150,000, if the merger agreement is terminated by Intrexon or Medistem (i) pursuant to any mutual termination right, any termination right exclusive to Medistem or pursuant to Intrexon s due diligence termination right and (ii) no termination fee is payable to Intrexon as a result of such termination.

In addition, if the merger agreement is terminated in certain circumstances, Medistem would be required to repay the outstanding principal balance on the loans made to Medistem by Intrexon pursuant to two promissory notes in the aggregate amount of $700,000 in connection with the proposed merger.

Ownership of Intrexon after the merger

Based on the number of Medistem shares of common stock outstanding as of January 31, 2014, Intrexon expects to issue approximately 599,542 shares of its common stock to Medistem shareholders in the merger. The actual number of shares of Intrexon common stock to be issued in the merger will be determined at the completion of the merger based on the number of Medistem shares outstanding at the time of the consummation of the merger, subject to adjustment as described herein. Immediately after the consummation of the merger, and based on the number of shares of Intrexon common stock outstanding as of December 31, 2013, it is expected that former Medistem shareholders will own approximately 0.6% of the 97,653,254 shares of Intrexon common stock then outstanding.

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Directors and management after the merger (see page 103)

Upon completion of the merger, the board of directors and executive officers of Intrexon are expected to remain unchanged.

Material U.S. federal income tax consequences of the merger (see page 103)

It is intended, and each of Intrexon and Medistem expect, the merger will qualify as a reorganization within the meaning of Section 368(a) of the Internal Revenue Code of 1986, as amended. If the merger so qualifies as a reorganization, a U.S. holder of Medistem common stock receiving Intrexon common stock and cash in exchange for Medistem common stock in the merger generally will recognize gain equal to the lesser of (i) the amount of cash received by the U.S. holder (excluding any cash received in lieu of fractional shares) and (ii) the excess of the amount realized by the U.S. holder over the U.S. holder s tax basis in the Medistem common stock. The amount realized by the U.S. holder will equal the sum of the fair market value of the Intrexon common stock and the amount of cash received by the U.S. holder. Losses will not be permitted to be recognized.

Tax matters are very complicated, and the tax consequences of the merger to a particular Medistem shareholder will depend in part on such shareholder s circumstances. Accordingly, you should consult your own tax advisor for a full understanding of the tax consequences of the merger to you, including the applicability and effect of federal, state, local and foreign income

and other tax laws.

Accounting treatment (see page 106)

In accordance with accounting principles generally accepted in the United States, Intrexon will account for the merger using the acquisition method of accounting for business combinations.

Procedure for receiving the merger consideration

Intrexon has appointed American Stock Transfer & Trust Company, LLC as its exchange agent, to coordinate the payment of the cash and stock merger consideration following the merger. If you own shares of Medistem common stock that are held in street name by your broker, bank or other nominee, you will receive instructions from your broker, bank or other nominee as to how to surrender your street name shares and receive cash and stock for those shares. If you hold certificated shares, the exchange agent will send you written instructions for surrendering your certificates and obtaining the cash and stock merger consideration at or about the date on which Medistem completes the merger. **Do not send in your share certificates now.**

Comparison of Intrexon and Medistem shareholder rights (see page 136)

The rights of Intrexon shareholders are currently governed by the Virginia Stock Corporation Act, which is referred to herein as the VSCA, and the articles of incorporation and bylaws of Intrexon. The rights of Medistem shareholders are currently governed by the Nevada Revised Statutes, which is referred to herein as the NRS, and the articles of incorporation and bylaws of Medistem. Upon completion of the merger, Medistem shareholders will become Intrexon shareholders. Accordingly, Medistem shareholders will have different rights as shareholders of Intrexon than as shareholders of Medistem, because the VSCA and the articles of incorporation and bylaws of Intrexon contain provisions that are different from the provisions contained in the NRS and the articles of incorporation and bylaws of Medistem.

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Proposal to approve the merger-related compensation for named executive officers (see page 73)

As required by Section 14A of the Exchange Act and the applicable SEC rules issued thereunder, which were enacted pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, or the Dodd-Frank Act, Medistem is required to submit a proposal to Medistem shareholders for a non-binding, advisory vote to approve the payment of certain compensation to the named executive officers of Medistem that is based on or otherwise relates to the merger. This proposal, commonly known as say-on-golden parachute vote and which is referred to herein as the merger-related compensation payments proposal, gives Medistem shareholders the opportunity to express their views on the compensation that Medistem s named executive officers may be entitled to receive that is based on or otherwise relates to the merger.

Risk factors (see page 27)

The merger (including the possibility that the merger may not be consummated) poses a number of risks to Medistem shareholders. In addition, Medistem shareholders will be receiving shares of Intrexon common stock in the merger. Intrexon is subject to various risks associated with its business and a number of risks exist with respect to an investment in Intrexon common stock.

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Intrexon selected historical financial and other data

The following table sets forth Intrexon s 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 its audited and unaudited consolidated financial statements and the related notes thereto included elsewhere in this prospectus and the Intrexon Management s Discussion and Analysis of Financial Condition and Results of Operations section of this prospectus.

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 its audited consolidated financial statements included elsewhere in this prospectus. The consolidated statement of operations data for the nine months ended September 30, 2013 and 2012, and the consolidated balance sheet data as of September 30, 2013 are derived from its unaudited consolidated financial statements and the related notes thereto included elsewhere in this prospectus and have been prepared on the same basis as the audited consolidated financial statements. In the opinion of management, the unaudited financial information includes all adjustments, consisting of normal recurring adjustments, necessary for the fair statement of its financial position and results of operations for these periods. All previously reported share and per share amounts of its common stock, including shares of common stock underlying stock options and warrants, throughout this prospectus have been retroactively adjusted to reflect its 1-for-1.75 reverse stock split of its shares of common stock effective on July 26, 2013. Intrexon s audited and unaudited consolidated financial statements have been prepared in U.S. dollars in accordance with U.S. GAAP.

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

	Nine months ended September 30,		Years ended December 31,	
	2013	2012	2012	2011
	(in thousands, except share and per share amounts)			
Statement of Operations Data:				
Revenues:				
Collaboration revenues	$ 16,566	$ 7,163	$ 13,706	$ 5,118
Other revenues	324	106	219	3,053
Total revenues	16,890	7,269	13,925	8,171
Operating expenses:				
Research and development	35,867	50,984	64,185	70,386
General and administrative	21,320	19,139	24,897	18,300
Other operating expenses				1,912
Total operating expenses	57,187	70,123	89,082	90,598
Loss from operations	(40,297)	(62,854)	(75,157)	(82,427)
Total other income (expense), net	12,797	11,917	(6,443)	(2,853)
Equity in net loss of affiliate	(390)		(274)	
Net loss	$ (27,890)	$ (50,937)	$ (81,874)	$ (85,280)
Net loss attributable to noncontrolling interest	1,114			
Net loss attributable to Intrexon	$ (26,776)	$ (50,937)	$ (81,874)	$ (85,280)
Accretion of dividends on redeemable convertible preferred stock, not declared	(18,391)	(16,291)	(21,994)	(13,868)
Net loss attributable to Intrexon common shareholders	$ (45,167)	$ (67,228)	$ (103,868)	$ (99,148)
Net loss attributable to Intrexon common shareholders per share, basic and diluted	$ (2.05)	$ (12.21)	$ (18.77)	$ (18.92)
Weighted average shares outstanding, basic and diluted	22,056,396	5,506,043	5,533,690	5,240,647
Unaudited Pro forma information(1)(2)				
Pro forma net loss attributable to common shareholders	$ (26,776)		$ (81,874)	
Pro forma net loss per share, basic and diluted	$ (0.32)		$ (1.17)	
Pro forma shares used in computation of pro forma net loss per share, basic and diluted	83,738,320		70,055,471	

(1) Pro forma net loss attributable to common shareholders and pro forma net loss per share, basic and diluted have been calculated as of December 31, 2012 after giving effect to (i) the conversion of 112,906,464 shares of its preferred stock outstanding as of December 31, 2012 into 64,517,977 shares of common stock upon completion of its initial public offering on August 13, 2013; and (ii) upon the completion of its initial public offering the conversion of aggregate cumulative dividends on its preferred stock of $50.5 million into 3,153,723 shares of its common stock, assuming for this purpose that the closing of its initial public offering occurred on December 31, 2012 at the initial public offering price of $16.00 per share.

(2) Pro forma net loss attributable to common shareholders and pro forma net loss per share, basic and diluted have been calculated as of September 30, 2013 after giving effect to (i) the conversion of 112,906,464 shares of its preferred stock outstanding on January 1, 2013 into 64,517,977 shares of common stock upon the completion of its initial public offering; (ii) the issuance of 19,047,619 shares of Series F preferred stock issued between January 1, 2013 and April 30, 2013 and the conversion of those shares into 10,884,353 shares of its common stock upon the completion of its initial public offering; and (iii) the conversion upon the completion of its initial public offering of aggregate cumulative dividends on its preferred stock of $68.8 million into 4,302,800 shares of its common stock at the initial public offering price of $16.00 per share.

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	September 30, 2013(3)	2012(2)	December 31, 2011
		(In thousands, except share and per share amounts)	
Balance Sheet Data:			
Cash and cash equivalents	$ 61,222	$ 10,403	$ 19,628
Other current assets	145,013	3,130	3,350
Equity securities	107,567	83,116	39,097
Other long-term assets	160,396	54,997	52,753
Total assets	474,198	151,646	114,828
Accounts payable, accrued expenses and other current liabilities, excluding current portion of deferred revenue	12,319	6,754	16,197
Deferred revenue, current and non-current	67,392	58,636	16,921
Other long-term liabilities(1)	3,279	1,150	1,288
Redeemable convertible preferred stock		406,659	301,681
Total Intrexon shareholders equity (deficit)	377,133	(321,553)	(221,259)
Noncontrolling interest	14,075		
Total equity (deficit)	391,208	(321,553)	(221,259)

(1) Other long-term liabilities includes $16, $42 and $97 related to capital leases as of September 30, 2013 and December 31, 2012 and 2011, respectively, and $2,305 of long term debt as of September 30, 2013.

(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.

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

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Certain historical and per share information

The following table sets forth certain Intrexon common stock and Medistem common stock historical, pro forma combined and pro forma combined equivalent per share financial information. The pro forma combined and pro forma combined equivalent income per share data reflect the merger as if it had been effective on January 1, 2012. The pro forma combined and pro forma combined equivalent book value per share reflect the merger as if it had been effective as of September 30, 2013.

The pro forma data in the table assume that the merger is accounted for using the acquisition method of accounting and represents a current estimate based on available information of the combined company s results of operations for the periods presented. As of the date of this document, Intrexon has not completed the detailed valuation studies necessary to arrive at the required estimates of the fair value of the Medistem assets to be acquired and liabilities to be assumed and the related allocations of purchase price, nor has it identified all the adjustments necessary to conform Medistem s data to Intrexon s accounting policies. However, Intrexon has made certain adjustments to the historical book values of the assets and liabilities of Medistem as of September 30, 2013 to reflect certain preliminary estimates of the fair values necessary to prepare the unaudited pro forma combined and pro forma combined equivalent data. The fair value adjustments included in the unaudited pro forma combined and pro forma combined equivalent data represent management s estimate of these adjustments based upon currently available information. The preliminary purchase price allocation assigned value to certain identifiable intangible assets, including Medistem s developed technology and know-how. Actual results may differ from this pro forma combined data once Intrexon has determined the final purchase price for Medistem and has completed the detailed valuation studies necessary to finalize the pro forma combined amounts included in this section, although these amounts represent management s best estimates as of the date of this proxy statement/prospectus.

The pro forma combined and pro forma combined equivalent data is provided for illustrative purposes only and does not purport to represent what the actual consolidated results of operations or the consolidated financial position of Intrexon would have been had the merger occurred on the dates assumed, nor are they necessarily indicative of future consolidated results of operations or consolidated financial position.

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	Nine months ended September 30, 2013	Year ended December 31, 2012
Intrexon historical data:		
Net loss attributable to common shareholders per share, basic and diluted	$ (2.05)	$ (18.77)
Book value per common share(1)	$ 3.89	
Medistem historical data:		
Net loss per common share, basic and diluted	$ (0.06)	$ (0.09)
Book value per common share(1)	$ (0.04)	
Pro forma combined data(2):		
Net loss attributable to common shareholders per share, basic and diluted (3)(4)	$ (0.35)	$ (1.21)
Book value per common share(1)	$ 4.06	
Pro forma combined equivalent data(5):		
Net loss attributable to common shareholders per share, basic and diluted	$ (0.01)	$ (0.04)
Book value per common share(1)	$ 0.13	

(1) The historical book value per common share is computed by dividing shareholders' equity (deficit) by the number of shares of common stock outstanding as of September 30, 2013. The pro forma combined book value per share is computed by dividing the pro forma combined shareholders' equity (deficit) by the pro forma number of shares of Intrexon common stock outstanding as of September 30, 2013, assuming the merger had occurred as of that date.

(2) The pro forma combined amounts for the nine months ended September 30, 2013 have been developed from the (i) the Intrexon unaudited consolidated financial statements as of and for the nine months ended September 30, 2013 included elsewhere in this proxy statement/prospectus and (ii) the Medistem financial statements as of and for the nine months ended September 30, 2013 included elsewhere in this proxy statement/prospectus. The pro forma combined amounts for the year ended December 31, 2012 were derived from (i) the Intrexon audited consolidated financial statements as of and for the year ended December 31, 2012 included elsewhere in this proxy statement/prospectus and (ii) the Medistem audited financial statements as of and for the year ended December 31, 2012 included elsewhere in this proxy statement/prospectus.

(3) Pro forma combined net loss attributable to common shareholders per share, basic and diluted have been calculated as of December 31, 2012 after giving effect to (i) the conversion of 112,906,464 shares of Intrexon's preferred stock outstanding as of December 31, 2012 into 64,517,977 shares of common stock upon completion of its initial public offering on August 13, 2013; (ii) upon completion of Intrexon's initial public offering the conversion of aggregate cumulative dividends on its preferred stock of $50.5 million into 3,153,723 shares of its common stock, assuming for this purpose that the closing of its initial public offering occurred on December 31, 2012 at the initial public offering price of $16.00 per share; and (iii) the issuance of 599,542 shares assumed to be issued in the merger, assuming for this purpose that the total consideration paid to Medistem shareholders is $24.6 million, of which $19.7 million is the total stock consideration, and using Intrexon's closing price on January 30, 2014 as reported on the New York Stock Exchange.

(4) Pro forma combined net loss attributable to common shareholders per share, basic and diluted have been calculated as of September 30, 2013 after giving effect to (i) the conversion of 112,906,464 shares of Intrexon's preferred stock outstanding as on January 1, 2013 into 64,517,977 shares of common stock upon completion of its initial public offering on August 13, 2013; (ii) the issuance of 19,047,619 shares of Intrexon's Series F preferred stock issued between January 1, 2013 and April 30, 2013 and the conversion of those shares into 10,884,353 shares of its common stock upon the completion of its initial public offering; (iii) the conversion upon the completion of Intrexon's initial public offering of aggregate cumulative dividends on its preferred stock of $68.8 million into 4,302,800 shares of its common stock at the initial public offering price of $16.00; and (iv) the issuance of 599,542 shares assumed to be issued in the merger, assuming for this purpose that the total consideration paid to Medistem shareholders is $24.6 million, of which $19.7 million is the total stock consideration, and using Intrexon's closing price on January 30, 2014 as reported on the New York Stock Exchange.

(5) The pro forma combined equivalent data is calculated by multiplying the pro forma combined data amounts by an exchange ratio of 0.033 shares of Intrexon common stock for each share of Medistem common stock. The exchange ratio uses Intrexon's closing price on January 30, 2014 as reported on the New York Stock Exchange.

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Comparative per share market price and dividend information

Intrexon common stock is listed and traded on the NYSE under the symbol XON, and since September 7, 2013 Medistem common stock is listed and traded on the OTC Markets Group s OTCQB marketplace under the symbol MEDS. Prior to that date, shares of Medistem common stock traded on the OTCPink marketplace. The following table sets forth, for the respective periods of Intrexon and Medistem indicated, the high and low sale prices per share of Intrexon common stock and Medistem common stock. Medistem does not consider quotations during these periods to reflect an established public market. Such prices are based on inter-dealer bid and ask prices, without markup, markdown, commissions, or adjustments and may not represent actual transactions. Further, established public markets generally result in lower price volatility and more efficient execution of buy and sell orders. The absence of an established public market reduces the liquidity of Medistem s common stock. Trading in Medistem s common stock on the OTCQB has been limited and sporadic, with an average trading volume of less than 3,800 shares per day during the period from September 7, 2013, the day Medistem s common stock began trading on the OTCQB, through December 18, 2013, the last day before the merger agreement was entered. As a result of the lack of trading activity, the quoted price for Medistem s common stock on the OTCQB is not necessarily a reliable indicator of its fair market value.

	Intrexon			Medistem		
	High	Low	Dividend	High	Low	Dividend
Year Ended December 31, 2014						
First Quarter (through January 30, 2014)	$ 38.50	$ 22.75		$ 1.32	$ 1.08	
Year Ended December 31, 2013						
Fourth Quarter	$ 25.95	$ 17.52		$ 2.30	$ 0.80	
Third Quarter(1)(2)	$ 31.44	$ 20.65		$ 2.80	$ 1.00	
Second Quarter				$ 1.51	$ 0.80	
First Quarter				$ 2.00	$ 0.87	
Year Ended December 31, 2012						
Fourth Quarter				$ 1.50	$ 1.00	
Third Quarter				$ 1.90	$ 0.90	
Second Quarter				$ 2.50	$ 0.68	
First Quarter				$ 3.00	$ 0.28	
Year Ended December 31, 2011						
Fourth Quarter				$ 0.50	$ 0.25	
Third quarter				$ 0.60	$ 0.16	
Second quarter				$ 0.40	$ 0.16	
First quarter				$ 0.52	$ 0.21	

(1) Intrexon s stock commenced trading on the NYSE on August 8, 2013.

(2) Medistem s stock commenced trading on the OTCQB on September 7, 2013 and prior to that time it traded on the OTCPink marketplace.

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The following table sets forth the closing sale prices per share of Intrexon common stock and Medistem common stock as of December 19, 2013, the last trading day prior to the public announcement of the proposed merger, and as of January 30, 2014 the most recent practicable trading day prior to the date of this proxy statement/prospectus. The table also includes the market value of Medistem common stock on an equivalent price per share basis, as determined by reference to the value of merger consideration to be received in respect of each share of Medistem common stock in the merger. These equivalent prices per share reflect the fluctuating value of the Intrexon common stock that Medistem shareholders would receive in exchange for each share of Medistem if the merger was completed on either of these dates, applying an exchange ratio of 0.033 shares of Intrexon common stock for each share of Medistem common stock. The exchange ratio uses Intrexon s closing price on January 30, 2014 as reported on the New York Stock Exchange.

	Intrexon Common Stock	Medistem Common Stock	Equivalent Value of Medistem Common Stock
December 19, 2013	$ 20.12	$ 0.86	$ 0.66
January 30, 2014	$ 32.85	$ 1.17	$ 1.08

The market prices of shares of Medistem common stock and Intrexon common stock are subject to fluctuation. As a result, you are urged to obtain current market quotations.

Dividend policy

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

Medistem has never declared or paid cash dividends on its capital stock. Medistem currently intends to retain any future earnings and does not expect to declare or pay any dividends in the foreseeable future. Any further determination to pay dividends on its capital stock will be at the discretion of Medistem s board of directors and will depend on its financial condition, results of operations, capital requirements and other factors that Medistem s board of directors considers relevant.

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Risk factors

In addition to the other information included or incorporated by reference in this proxy statement/prospectus, including the matters addressed in the section entitled Cautionary Statement Regarding Forward-Looking Statements , you should carefully consider the following risks described below in evaluating whether to vote to approve the merger proposal. In addition, you should read and consider the risks associated with the businesses of each of Intrexon and Medistem because these risks will also affect the combined company. You should also read and consider the other information in this proxy statement/prospectus and the other documents incorporated by reference into this proxy statement/prospectus. See Where You Can Find More Information.

Risks related to the merger

Failure to complete the merger could negatively impact the stock price and the future business and financial results of Medistem.

The merger agreement contains a number of customary conditions to closing, including the accuracy of Medistem s representations and warranties to varying standards, the performance of Medistem s covenants, the absence of any legal prohibitions to closing, the adoption and approval of the merger agreement by Medistem shareholders and certain other conditions. Many of the conditions to closing are not within either Intrexon s or Medistem s control and neither company can predict when or if these conditions will be satisfied.

If any condition to the merger is not satisfied or waived, it is possible that the merger will not be consummated in the expected time frame or at all. In addition, Intrexon and Medistem may terminate the merger agreement under certain circumstances even if the merger is adopted and approved by Medistem shareholders, including if the merger has not been completed, subject to certain conditions, on or before March 12, 2014. If the merger is not completed for any reason, the ongoing business of Medistem may be adversely affected and Medistem will be subject to several risks, including the following:

- having to pay all of the fees and expenses incurred by Medistem in connection with the proposed merger;
- having to pay, under certain circumstances, a termination fee of up to $1.0 million; and
- focusing Medistem s management on the proposed merger instead of on pursuing other opportunities that could be beneficial to Medistem, without realizing any of the benefits of having the proposed merger completed.

In addition, failure to complete the merger could result in a decrease in the market price of Medistem common stock to the extent that the current market price of those shares reflects a market assumption that the merger will be completed. In addition, neither company would realize any of the expected benefits of having completed the merger. Further, failure to complete the merger could result in damage to Medistem s reputation and business relationships.

If the merger is not consummated, such failure to consummate the merger could materially and adversely affect Medistem s business, financial results and stock price.

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The merger could be challenged under antitrust laws or on anticompetitive grounds.

Any state or applicable foreign country could take action to enjoin the merger under the antitrust laws as it deems necessary or desirable in the public interest or any private party could seek to enjoin the merger on anti-competitive grounds. Although the parties believe that completion of the merger would not violate U.S. antitrust law, there can be no assurance that a challenge to the merger on antitrust grounds will not be made or, if a challenge is made, what the result will be.

Under the merger agreement, Intrexon and Medistem have agreed to use their reasonable best efforts to obtain all regulatory clearances necessary to complete the merger; however, Intrexon, among other things, is not required to litigate or contest any administrative or judicial action or proceeding or any decree, judgment, injunction or other order or to divest any business, assets or property of Intrexon or its subsidiaries or affiliates in connection with obtaining any such regulatory clearance. See The Merger Regulatory Approvals Required for the Merger.

If the merger is consummated, Intrexon may not realize the anticipated business opportunities and growth prospects from the merger.

The success of the Medistem acquisition, if completed, will depend, in part, on Intrexon s ability to realize the anticipated business opportunities and growth prospects from combining Intrexon s businesses with those of Medistem. Integrating operations will be complex and will require significant efforts and expenditures on the part of both Intrexon and Medistem. Intrexon s management might have its attention diverted while trying to integrate operations and corporate and administrative infrastructures. Intrexon might experience increased competition that limits its ability to expand its business, and Intrexon might fail to capitalize on expected business opportunities, including retaining current customers.

Medistem will continue to operate independently of Intrexon until the closing of the acquisition, which is expected to take place in the first quarter of 2014. The integration process could result in the loss of key employees, the disruption of each company s ongoing businesses, tax costs or inefficiencies, or inconsistencies in standards, controls, information technology systems, procedures and policies, any of which could adversely affect Intrexon s and Medistem s ability to maintain relationships with customers, employees or other third parties or Intrexon s ability to achieve the anticipated benefits of the Medistem acquisition and could harm Intrexon s financial performance.

If Intrexon is unable to successfully or timely integrate the operations of Medistem s business into Intrexon s business, Intrexon may be unable to realize the revenue growth and other anticipated benefits resulting from the proposed acquisition and its business and results of operations could be adversely affected.

The pendency of the merger could adversely affect the business and operations of each of Intrexon and Medistem.

Some customers and collaborators of each of Intrexon and Medistem may delay or defer decisions because of uncertainties or lack of understanding about the merger s potential effect on their businesses, which could negatively impact the revenues, earnings, cash flows and expenses of Intrexon and/or Medistem, regardless of whether the merger is completed. Similarly, current and prospective employees of Intrexon and Medistem may experience uncertainty about their roles with the combined company following the merger, which may materially adversely

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affect the ability of each of Intrexon and Medistem to attract, retain and motivate key personnel during the pendency of the merger and which may materially adversely divert attention from the daily activities of Intrexon and Medistem s existing employees.

Intrexon will incur significant transaction costs as a result of the merger.

Intrexon expects to incur significant one-time transaction costs related to the merger. These transaction costs include legal and accounting fees and expenses and filing fees, printing expenses and other related charges. Intrexon may also incur additional unanticipated transaction costs in connection with the merger. A portion of the transaction costs related to the merger will be incurred regardless of whether the merger is completed. Additional costs will be incurred in connection with integrating the two companies businesses. Costs in connection with the merger and integration may be higher than expected. These costs could adversely affect Intrexon s financial condition, operating results or prospects of the combined business.

The merger agreement and the voting agreements limit Medistem s ability to pursue alternatives to the merger.

Intrexon generally has an opportunity to offer to modify the terms of the proposed merger in response to any competing acquisition proposal that may be made before the Medistem board of directors may withdraw or change its recommendation to Medistem s shareholders in favor of Intrexon s merger proposal. Under the merger agreement, Medistem agreed not to, beginning on the date that is 21 days after the date of the Merger Agreement, (i) solicit proposals relating to alternative Acquisition Proposals or (ii) engage or participate in discussions or negotiations with, or provide non-public information to, any person relating to any such alternative Acquisition Proposal, subject to certain limited exceptions.

In connection with entering into the merger agreement, each of the directors and executive officers of Medistem and their respective permitted transferees, as applicable, in their individual capacities, each of whom are referred to herein as a supporting shareholder, entered into a voting agreement pursuant to which the supporting shareholder agreed to, among other things, vote his shares of Medistem common stock (i) in favor of the merger proposal and (ii) against an acquisition proposal other than the merger, subject to any termination of the voting agreement in accordance with its terms. In addition, the supporting shareholders agreed not to directly or indirectly transfer their respective shares of Medistem common stock during the term of the voting agreement, subject to certain limited exceptions. The voting agreements may be terminated by the supporting shareholders if the Medistem board of directors has withdrawn or changed its recommendation in favor of a competing transaction. As of the record date, the supporting shareholders as a group owned and were entitled to vote 9,243,218 shares of Medistem common stock, or approximately 64% of the outstanding shares of Medistem common stock on that date.

If the merger agreement is terminated in certain circumstances, Medistem would be required to pay Intrexon a termination fee of up to $1.0 million. See The Merger Agreement Limitation on the Solicitation, Negotiation and Discussion of Other Acquisition Proposals by Medistem and The Merger Agreement Termination Fees.

While Medistem believes these provisions are reasonable and not preclusive of other offers, the provisions could discourage a third party that might have an interest in acquiring all or a significant part of Medistem from considering or proposing such an acquisition, even if it were prepared to pay consideration with a higher per share cash or market value than that market

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value proposed to be received or realized in the merger, or might result in a third party proposing to pay a lower price than it might otherwise have proposed to pay because of the added expense of the termination fee that becomes payable in certain circumstances.

If the merger agreement is terminated and Medistem decides to seek another business combination, it may not be able to negotiate a transaction with another party on terms comparable to, or better than, the terms of the merger.

Under the terms of the merger agreement, Medistem is subject to certain restrictions on its business activities.

The merger agreement generally requires Medistem to operate its business in the ordinary course pending consummation of the merger, and restricts Medistem from taking certain specified actions until the merger is completed. These restrictions may prevent Medistem from making desirable expenditures, including with regard to capital expenditures, pursuing otherwise attractive business opportunities and making other changes to its business prior to completion of the merger or termination of the merger agreement. See The Merger Agreement Covenants Interim Conduct of Medistem s Business.

Certain executive officers and directors of Medistem may have interests in the merger that may differ from, or are in addition to, the interests of Medistem shareholders.

When considering the recommendation of the Medistem board of directors to approve the merger proposal, Medistem shareholders should be aware that Medistem s directors and executive officers may have interests in the merger that are different from, or in addition to, the interests of shareholders. The Medistem board of directors was aware of and considered these interests, among other matters, in adopting the merger agreement and approving the merger, and in recommending that the merger agreement be approved by shareholders. These interests include accelerated vesting of certain outstanding Medistem equity awards held by directors and one executive officer of Medistem in connection with the merger, certain cash payments payable to Medistem s chief executive officer in the event of a qualifying termination of employment, potential continued employment of an executive officer following the merger, the continued indemnification and for a period of six years following the closing of the merger, insurance coverage of directors and executive officers and the advancement of expenses in the form of a loan or loans to Medistem by Intrexon for advancement to Medistem s directors and officers for claims in excess of existing Medistem insurance coverage, up to an aggregate of $2.0 million of loans outstanding at any time, related to directors and officers actions in fulfilling their fiduciary duties in connection with Medistem s entry into the merger agreement for the period from the date the merger agreement was signed until consummation of the merger. See The Merger Interests of Medistem s Directors and Executive Officers in the Merger.

The market price of Intrexon common stock after the merger may be affected by factors different from those affecting the shares of Medistem currently.

Upon completion of the merger, holders of Medistem common stock will become holders of Intrexon common stock. Intrexon s business differs from that of Medistem, and, accordingly, the financial condition and operating results of the combined company and the market price of Intrexon common stock after the completion of the merger may be affected by factors different from those currently affecting the financial condition and operating results of Medistem.

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The issuance of Intrexon common stock in connection with the merger could decrease the market price of Intrexon common stock.

At the completion of the merger, Intrexon expects to issue up to approximately 599,542 shares of Intrexon common stock, or approximately 0.6% of the number of shares of Intrexon common stock outstanding as of December 31, 2013, to Medistem shareholders in the merger. The issuance of the Intrexon common stock may result in fluctuations in the market price of Intrexon common stock, including a stock price decline.

The shares of Intrexon common stock to be received by Medistem shareholders as a result of the merger will have different rights from the shares of Medistem common stock.

Upon completion of the merger, Medistem stockholders will become Intrexon stockholders and their rights as stockholders will be governed by Intrexon s articles of incorporation and bylaws. Certain of the rights associated with Medistem common stock are different from, and may be viewed as less favorable than, the rights associated with Intrexon common stock. See Comparison of Rights of Shareholders of Intrexon and Medistem for a discussion of the different rights associated with Intrexon common stock.

Medistem shareholders who become shareholders of Intrexon will have their rights as shareholders governed by Intrexon s articles of incorporation, bylaws and other corporate governance documents.

As a result of the completion of the merger, Medistem shareholders will become Intrexon shareholders and their rights as Intrexon shareholders will be governed by Intrexon s corporate governance documents, including Intrexon s amended and restated articles of incorporation and Intrexon s amended and restated bylaws. As a result, there will be material differences between the current rights of Medistem shareholders and the rights they can expect to have as Intrexon shareholders. Please see the section entitled Comparison of Rights of Shareholders of Intrexon and Medistem.

Legal proceedings in connection with the merger, the outcomes of which are uncertain, could delay or prevent the completion of the merger.

Since December 19, 2013, four putative class action complaints have been filed on behalf of Medistem shareholders. The complaints seek, among other things, (1) declarations that they are maintainable as class actions, (2) an order preliminarily and permanently enjoining the defendants from completing the merger until certain conditions are satisfied, (3) in the Nevada action, a contingent monetary award in an unspecified amount and (4) attorneys fees and costs. Such legal proceedings could delay or prevent the merger from becoming effective. See Litigation Relating to the Merger.

Medistem shareholders will have a reduced ownership and voting interest in Intrexon as compared with their interest in Medistem and will exercise less influence over management.

Medistem shareholders currently have the right to vote in the election of directors of Medistem and on certain other matters affecting Medistem. Based on the number of Medistem shares of common stock outstanding as of January 31, 2014, Intrexon expects to issue approximately 599,542 shares of its common stock to Medistem shareholders in the merger. The actual number of shares of Intrexon common stock to be issued in the merger will be determined at the completion of the merger based on the number of Medistem shares outstanding at the time of the consummation of the merger, subject to adjustment as described herein. Immediately after the consummation of the merger, and based on the number of shares of Intrexon common stock outstanding as of December 31, 2013, it is expected that former Medistem shareholders will own

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approximately 0.6% of the 97,653,254 shares of Intrexon common stock then outstanding. Because of this, Medistem s shareholders will have substantially less influence on the management and policies of Intrexon than they now have with respect to the management and policies of Medistem.

If the proposed merger is not completed, Medistem will have incurred substantial costs that could adversely affect Medistem s financial results and operations and the market price of Medistem common stock.

Medistem has incurred and will incur substantial costs in connection with the proposed merger. These costs are primarily associated with the fees of financial advisors, attorneys, accountants and consultants. In addition, Medistem has diverted significant management resources in an effort to complete the merger and is subject to restrictions contained in the merger agreement on the conduct of its business. If the merger is not completed, Medistem will receive little or no benefit for these costs and will be obligated to repay Intrexon the accrued principal and interest under its $700,000 promissory note to Intrexon. If the merger agreement is terminated, Medistem, in certain specified circumstances, may also be required to pay a termination fee of up to $1,000,000 to Intrexon. In addition, if the merger is not consummated, Medistem may experience negative reactions from the financial markets and Medistem s collaborative partners, customers and employees. Each of these factors may adversely affect the trading price of Medistem common stock and Medistem s financial results and operations.

The integration of Medistem and other acquired businesses may present significant challenges to Intrexon.

Achieving the anticipated benefits of the merger will depend in part upon whether Medistem and Intrexon can integrate their businesses in an efficient and effective manner. The integration of Medistem and any future businesses that Intrexon may acquire involves a number of risks, including, but not limited to:

- the diversion of management s attention from the management of daily operations to the integration of operations;
- higher integration costs than anticipated;
- failure to achieve synergies and costs savings;
- difficulties in the assimilation and retention of employees;
- difficulties in the assimilation of different cultures and practices, as well as in the assimilation of broad and geographically dispersed personnel and operations; and
- difficulties in the integration of departments, systems, including accounting systems, technologies, books and records, and procedures, as well as in maintaining uniform standards, controls, including internal control over financial reporting required by the Sarbanes-Oxley Act of 2002 and related procedures and policies.

If Intrexon cannot successfully integrate Medistem, Intrexon may experience material negative consequences to its business, financial condition or results of operations. Successful integration of Medistem will depend on Intrexon s ability to manage these operations, to realize opportunities for revenue growth presented by offerings and, to some degree, to eliminate redundant and excess costs. Because of difficulties in combining geographically distant operations, Intrexon may not be able to achieve the benefits that it hopes to achieve as a result of the merger.

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Risks related to Intrexon and its business

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

Intrexon has a history of net losses, and it may not achieve or maintain profitability.

Intrexon has incurred net losses since its inception, including losses of $81.9 million and $85.3 million in 2012 and 2011, respectively, and it incurred a net loss of $26.8 million for the nine months ended September 30, 2013. As of September 30, 2013, it had an accumulated deficit of $364.2 million. It may incur losses and negative cash flow from operating activities for the foreseeable future. To date, Intrexon has derived a substantial portion of its revenues from exclusive channel collaborations, or ECCs, and expect to derive a substantial portion of its revenues from these and additional ECCs for the foreseeable future. If Intrexon s existing collaborators terminate their ECCs with Intrexon or Intrexon is unable to enter into new ECCs, its revenues could be adversely affected. In addition, certain of its ECCs provide for milestone payments, future royalties and other forms of contingent consideration, the payment of which are uncertain as they are dependent on its collaborators abilities and willingness to successfully develop and commercialize products. Intrexon expects a significant period of time will pass before the achievement of contractual milestones and the realization of royalties on products commercialized under its ECCs. As a result, Intrexon expects that its expenses will exceed revenues for the foreseeable future, and Intrexon may not achieve profitability. If Intrexon fails to achieve profitability, or if the time required to achieve profitability is longer than it anticipates, Intrexon may not be able to continue its business. Even if Intrexon does achieve profitability, it may not be able to sustain or increase profitability on a quarterly or annual basis.

Intrexon may need substantial additional capital in the future in order to fund its business.

Intrexon expects its future capital requirements will be substantial, particularly as it continues to develop its business and expand its synthetic biology technology platform. Although Intrexon believes that its existing cash and cash equivalents and short-term and long-term investments, the proceeds received from its initial public offering in August 2013 and cash expected to be received from its current collaborators will enable Intrexon to fund its operating expenses and capital expenditure requirements for at least the next 12 months, Intrexon may need additional capital if its current plans and assumptions change. Its need for additional capital will depend on many factors, including:

- the commercial success of its ECCs;
- whether Intrexon is successful in obtaining payments from its collaborators;
- whether Intrexon can enter into additional ECCs;
- the progress and scope of the collaborative and independent research and development projects performed by Intrexon and its collaborators;
- whether an existing obligation under its ECC with ZIOPHARM Oncology, Inc. is triggered that could require Intrexon to make a further investment in their securities of up to $19 million, the timing of which is not within its control;
- the effect of any acquisitions of other businesses or technologies that Intrexon may make in the future;

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whether Intrexon decides to develop internal development or manufacturing capabilities;

the costs associated with being a public company; and

the filing, prosecution and enforcement of its intellectual property.

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

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

Intrexon s 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 its control. Factors relating to its business that may contribute to these fluctuations include the following factors, as well as other factors described elsewhere in this prospectus:

Intrexon s ability to achieve or maintain profitability;

Intrexon s relationships, and the associated exclusivity terms, with collaborators in its target end markets;

Intrexon s ability to develop and maintain technologies that its collaborators continue to use and that new collaborators are seeking;

Intrexon s ability to enter into ECCs;

the feasibility of producing and commercializing products enabled by Intrexon s technologies;

obligations to provide resources to Intrexon s collaborators or to the collaborations themselves pursuant to the terms of the relevant ECC;

Intrexon s ability to manage its growth;

the outcomes of research programs, clinical trials, or other product development and approval processes conducted by Intrexon s collaborators;

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- the ability of Intrexon s collaborators to develop and successfully commercialize products enabled by its technologies;
- risks associated with the international aspects of Intrexon s business;
- Intrexon s ability to integrate any businesses or technologies it may acquire with Intrexon s business;
- potential issues related to Intrexon s ability to accurately report its financial results in a timely manner;
- Intrexon s dependence on, and the need to attract and retain, key management and other personnel;
- Intrexon s ability to obtain, protect and enforce its intellectual property rights;
- Intrexon s ability to prevent the theft or misappropriation of its intellectual property, know-how or technologies;
- potential advantages that Intrexon s competitors and potential competitors may have in securing funding or developing competing technologies or products;
- Intrexon s ability to obtain additional capital that may be necessary to expand its business;
- Intrexon s collaborators ability to obtain additional capital that may be necessary to develop and commercialize products under its ECCs;
- Intrexon s exposure to the volatility associated with recording the fair value of securities of its collaborators held by Intrexon;
- 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;
- Intrexon s ability to use its net operating loss carryforwards to offset future taxable income; and
- the results of Intrexon s consolidated subsidiaries.

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

Intrexon has a limited operating history, which may make it difficult to evaluate its current business and predict its future performance.

Intrexon has been in existence since 1998. From 1998 until 2010, its operations focused primarily on organizing and staffing its company and developing its technologies. Intrexon s current business model has not been tested. In January 2011, Intrexon recognized its first revenues from its first ECC. Because its revenue growth has occurred in recent periods, Intrexon s limited operating history may make it difficult to evaluate its

current business and predict its future

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performance. Any assessments of its current business and predictions made about its future success or viability may not be as accurate as they could be if Intrexon had a longer operating history. Intrexon has encountered and will continue to encounter risks and difficulties frequently experienced by growing companies in rapidly changing industries. If Intrexon does not address these risks successfully, its business will be harmed. If Intrexon engages in any acquisitions, it will incur a variety of costs and may potentially face numerous risks that could adversely affect its business and operations.

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

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

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

Although Intrexon conducts due diligence reviews of its 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 its 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 Intrexon has no or limited prior experience; and
- potential loss of key employees.

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

Intrexon owns equity interests in several of its collaborators and has exposure to the volatility and liquidity risks inherent in holding their common stock.

In connection with its ECCs, Intrexon generally receives technology access fees. Because several of its collaborators are private companies or public corporations with limited capital, Intrexon allows them to pay its access fee in stock. As a result, Intrexon owns equity interests in several

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its collaborators. Intrexon may continue to provide this alternative to its collaborators. Owning equity in its collaborators further increases its exposure to the risks of its collaborators businesses beyond its dependence on these collaborators to provide market and product development expertise, as well as sales, marketing and regulatory capabilities. Intrexon s equity ownership in its collaborators exposes Intrexon to volatility and the potential for negative returns. In many cases, its equity position is a minority position which exposes Intrexon to further risk as Intrexon is not able to exert control over the companies in which it holds securities.

Intrexon selects collaborators based on a variety of factors such as their capabilities, capacity and expertise in a defined field. As described above, Intrexon may allow the collaborator to pay its access fee in cash or equity securities. As a result, the process by which Intrexon obtains equity interests in its collaborators and the factors it considers 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 Intrexon s own expectation as to the success of its efforts to assist the collaborator in developing products enabled by its technologies.

Intrexon owns common stock of several publicly traded companies and the values of those equity interests are subject to market price volatility. For each collaborator where Intrexon owns equity securities, it makes 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 Intrexon s level of influence. Intrexon has 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 September 30, 2013 and December 31, 2012, the aggregate original cost basis of these securities was $110.8 million and $92.1 million, respectively, and the market value was $107.6 million and $83.1 million, respectively. The fair value of these securities is subject to fluctuation in the future due to the volatility of the stock market, changes in general economic conditions and changes in the financial conditions of one or more collaborators.

The common stock of its 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, Intrexon could hold unregistered shares and may not have demand registration rights with respect to those shares. Intrexon 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 ECC. In the event Intrexon concludes 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, Intrexon has substantial liquidity risk related to these holdings, and Intrexon may not be able to sell, or sell quickly, all or part of these equity interests.

In connection with future ECCs, Intrexon 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 Intrexon receives warrants or options in connection with future ECCs, it would be exposed to risks involving pricing differences between the market value of underlying securities and its 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.

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

Intrexon needs to receive timely, accurate and complete information from a number of third parties in order to accurately report its financial results on a timely basis. Intrexon relies on its collaborators to provide it with complete and accurate information regarding revenues, expenses and payments owed to or by it on a timely basis. In addition, Intrexon intends to rely on current and future collaborators under its ECCs to provide Intrexon with product sales and cost saving information in connection with royalties, if any, owed to Intrexon. If the information that Intrexon receives is not accurate, its consolidated financial statements may be materially incorrect and may require restatement, and Intrexon may not receive the full amount of consideration to which it is entitled under its ECCs. Although Intrexon has 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 its reporting requirements. Intrexon owns a significant equity position in several of its ECC collaborators, including a majority position in two of its ECC collaborators, AquaBounty Technologies, Inc., or AquaBounty, and Biological & Popular Culture, Inc., or BioPop. In March 2013, Intrexon began to consolidate the financial statements of AquaBounty into its consolidated financial statements. In the future, Intrexon may need to consolidate the financial statements of one or more other collaborators into its consolidated financial statements. Although Intrexon has contractual rights to receive information and certifications allowing it to do this, such provisions may not ensure that Intrexon receives information that is accurate or timely. As a result, Intrexon may have difficulty completing accurate and timely financial disclosures, which could have an adverse effect on its business.

Intrexon s ability to use its net operating loss carryforwards and certain other tax attributes may be limited.

As of September 30, 2013 and December 31, 2012, Intrexon had net operating loss carryforwards of approximately $235.1 million and $207.0 million, respectively, 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 $6.6 million and $5.8 million, respectively, 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. Intrexon s 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 its net operating losses may be subject to annual limitations. As of each of September 30, 2013 and December 31, 2012, approximately $16.4 million of its net operating losses generated prior to 2008 are limited by Section 382 to annual usage limits of approximately $1.5 million. As of each of September 30, 2013 and December 31, 2012, approximately $14.8 million of net operating losses were inherited via acquisition and are limited based on the value of the target at the time of the transaction. Future changes in stock ownership may also trigger an ownership change and, consequently, a Section 382 limitation.

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Risks related to Intrexon s 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 Intrexon s technologies and limit its revenues.

Intrexon s 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 its technologies, products and processes. If Intrexon and its collaborators are not able to overcome the ethical, legal and social concerns relating to synthetic biological engineering, products and processes using its technologies may not be accepted. These concerns could result in increased expenses, regulatory scrutiny, delays or other impediments to its programs or the public acceptance and commercialization of products and processes dependent on its technologies or inventions. The ability of its collaborators to develop and commercialize products, or processes using its 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 its technologies could cause adverse health effects or other adverse events, which could also lead to negative publicity.

The synthetic biological technologies that Intrexon develops may have significantly enhanced characteristics compared to those found in naturally occurring organisms, enzymes or microbes. While Intrexon produces its 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 its business and financial condition, and Intrexon may have exposure to liability for any resulting harm.

Intrexon may become subject to increasing regulation in the future.

Intrexon s ongoing research and development relies on evaluations in animals, which may become subject to bans or additional regulations, and, as described above, its 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 Intrexon 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 Intrexon s technologies and even if its technologies prove to be effective, they still may not lead to commercially viable products.

To date, none of Intrexon s collaborators has received marketing approval or has commercialized any products enabled by its technologies. There is no guarantee that Intrexon or its collaborators

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will be successful in creating products enabled by its technologies. Even if its collaborators are successful in using its technologies, they may not be able to commercialize the resulting products or may decide to use other methods competitive with its 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 its development efforts or those of its collaborators will be successful, that Intrexon or they will receive the regulatory approvals necessary to initiate clinical trials, where applicable, or that Intrexon will ever be able to successfully commercialize a product enabled by its technologies. To the extent that Intrexon or its 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 Intrexon or others, Intrexon may be forced to, or elect to, discontinue development of such products.

If Intrexon loses key personnel, including key management personnel, or is unable to attract and retain additional personnel, it could delay its product development programs, harm its research and development efforts, and Intrexon may be unable to pursue collaborations or develop its own products.

Intrexon s 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 Intrexon operates. The loss of any key members of its management, including its Chief Executive Officer, Randal J. Kirk, its Chief Operating Officer, Krish S. Krishnan, or its 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 its business, could prevent Intrexon from developing and commercializing its products for its target markets and entering into collaborations or licensing arrangements to execute on its business strategy. Intrexon currently maintains key man insurance on Dr. Reed in the amount of $25.0 million; however, that coverage would likely be inadequate to compensate for the loss of his services. In addition, the loss of any key scientific staff, or the failure to attract or retain other key scientific employees, could prevent Intrexon from developing its technologies for its target markets and entering into collaborations or licensing arrangements to execute on its business strategy. Intrexon 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 its business. If Intrexon is not able to attract and retain the necessary personnel to accomplish its business objectives, Intrexon may experience staffing constraints that will adversely affect its ability to meet the demands of its collaborators and customers in a timely fashion or to support its internal research and development programs. In particular, its product and process development programs are dependent on its 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 its ability to attract and retain such personnel on

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acceptable terms. All of its employees are at-will employees, which means that either the employee or Intrexon may terminate their employment at any time.

Intrexon s planned activities will require additional expertise in specific industries and areas applicable to the products and processes developed through its technologies or acquired through strategic or other transactions, especially in the end markets that Intrexon seeks 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 its ability to grow its business.

Intrexon may encounter difficulties managing its growth, which could adversely affect its business.

Currently, Intrexon is 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 its limited resources and require Intrexon to substantially expand the capabilities of its administrative and operational resources and to attract, train, manage and retain qualified management, technicians, scientists and other personnel. As its operations expand domestically and internationally, Intrexon will need to continue to manage multiple locations and additional relationships with various customers, collaborators, suppliers and other third parties. Intrexon s ability to manage its operations, growth and various projects effectively will require it to make additional investments in its infrastructure to continue to improve its operational, financial and management controls and its reporting systems and procedures and to attract and retain sufficient numbers of talented employees, which Intrexon may be unable to do effectively. As a result, Intrexon may be unable to manage its expenses in the future, which may negatively impact its gross margins or operating margins in any particular quarter. In addition, Intrexon may not be able to successfully improve its management information and control systems, including its internal control over financial reporting, to a level necessary to manage its growth.

Competitors and potential competitors may develop products and technologies that make Intrexon s obsolete or garner greater market share than those of Intrexon.

Intrexon does not believe that it has any direct competitors who provide comparable technologies of similar depth and breadth which to the same extent enable the commercialization of products developed using synthetic biology across a broad spectrum of biologically based industries. However, there are companies that have competing technologies for individual pieces of its proprietary suite of complementary technologies. One portion of its proprietary technology related to DNA synthesis and assembly includes the ability to synthesize new DNA. Intrexon believes the following companies engage in the manufacture of DNA components: DNA 2.0, Inc., Blue Heron Biotech, LLC and Life Technologies Corporation. Another portion of its proprietary technology includes development of fully human monoclonal antibodies. Intrexon s technology utilizes advanced methods of stimulating antibody production in naïve human B-cells *in vitro*, or in a test tube, and specifically selecting those cells which produce antibodies that can bind a desired target, such as human toxins, tumor cells and microbial pathogens. Intrexon believes the following companies engage in the manufacture of human or human-like monoclonal antibodies: AbD SeroTec (a Bio-Rad Laboratories, Inc. company), Alexion Pharmaceuticals, Inc., XOMA Corporation, Genmab US, Inc., MorphoSys AG, NovImmune SA, Société Des Systèmes Biologiques, or BIOTEM, Adimab, LLC, ProMab Biotechnologies, Inc., Abpro, Inc., AIIM Therapeutics, Inc. and Open Monoclonal Technology, Inc.

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The synthetic biologics industry and each of the commercial sectors Intrexon has targeted are characterized by rapid technological change and extensive competition. Intrexon s future success will depend on its 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 its technologies, as well as products developed by its collaborators using its technologies, becoming obsolete.

Intrexon s ability to compete successfully will depend on its ability to develop proprietary technologies that can be used by its 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 its competitors may benefit from local government subsidies and other incentives that are not available to Intrexon or its collaborators. As a result, its 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 Intrexon or its collaborators can. As more companies develop new intellectual property in its markets, a competitor could acquire patent or other rights that may limit products using its technologies, which could lead to litigation.

Intrexon may be sued for product liability.

Each of Intrexon s ECCs requires the collaborator to indemnify Intrexon for liability related to products produced pursuant to the ECC and to obtain insurance coverage related to product liability in amounts considered standard for the industry. Intrexon believes that these industry-standard coverage amounts range from $15.0 million to $40.0 million in the aggregate. Even so, Intrexon may be named in product liability suits relating to products that are produced by its collaborators using its technologies. These claims could be brought by various parties, including other companies who purchase products from its collaborators or by the end users of the products. Intrexon cannot guarantee that its 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 Intrexon or to its collaborators in the future on acceptable terms, or at all. Intrexon cannot assure you that its collaborators will have adequate insurance coverage against potential claims. In addition, although Intrexon currently maintains product liability insurance for its technologies in amounts Intrexon believes 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 its 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 its liability insurance coverage, Intrexon may go out of business. If Intrexon cannot successfully defend itself against product liability claims, Intrexon may incur substantial liabilities or be required to limit commercialization of its product candidates. Regardless of the merits or eventual outcome, liability claims may result in:

reduced resources of its management to pursue its business strategy;

decreased demand for products enabled by its technologies;

injury to Intrexon or its collaborators reputation and significant negative media attention;

withdrawal of clinical trial participants;

initiation of investigations by regulators;

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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 its technologies.

Intrexon depends on sophisticated information technology and infrastructure.

Intrexon relies on various information systems to manage its 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 its business, which in turn may materially adversely affect its operating results and financial condition.

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

Intrexon uses hazardous chemicals and radioactive and biological materials in its business and is 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. Intrexon has incurred, and will continue to incur, capital and operating expenditures and other costs in the ordinary course of its business in complying with these laws and regulations.

Risks associated with Intrexon s ECC business model

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

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

Intrexon has entered into ECCs with strategic collaborators to develop products enabled by its technologies. There can be no guarantee that Intrexon can successfully manage these ECCs. Under the ECCs, Intrexon must use diligent efforts to carry out development activities under the ECC. The exclusivity provisions of the ECCs restrict its ability to commercialize its technologies in the designated field covered by the ECC. In most cases, the collaborator may terminate the ECC

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

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

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

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Many of Intrexon s collaborators, including some businesses over which Intrexon has significant influence, will need additional capital.

In order for many of its collaborators to execute on their business plans, these collaborators will have future capital requirements, and Intrexon may be asked to invest additional funds in these collaborators. If Intrexon fails to invest additional funds in a collaborator, the collaborator may not have sufficient capital to continue operations. The independent registered public accounting firm of one of its collaborators, ZIOPHARM Oncology, Inc., or ZIOPHARM, has expressed a substantial doubt about ZIOPHARM s ability to continue as a going concern in its report on ZIOPHARM s financial statements. This report was issued prior to ZIOPHARM s recent public offering of shares of its common stock. ZIOPHARM has disclosed that its business is highly cash-intensive and its ability to continue operations after its current cash resources are exhausted depends on its ability to obtain additional financing and/or achieve profitable operations, as to which no assurances can be given. Intrexon agreed under its ECC with ZIOPHARM to purchase up to $50.0 million of ZIOPHARM s common stock in conjunction with securities offerings that may be conducted by ZIOPHARM in the future, subject to certain conditions and limitations. To date, Intrexon has purchased approximately $31.0 million of ZIOPHARM common stock in such securities offerings, and its remaining potential obligation on this purchase commitment is approximately $19.0 million.

Intrexon relies on its collaborators to develop, commercialize and market products, and they may not be successful.

Intrexon depends on its collaborators to commercialize the products enabled by its technologies. If its collaborators are not able to successfully develop the products enabled by its technologies, none of its enabled products will become commercially available and Intrexon will receive no back-end payments under its ECCs. Because Intrexon does not currently and may never possess the resources necessary to independently develop and commercialize all of the potential products that may result from its technologies, its ability to succeed in markets it has currently targeted depends on its ability to enter into ECCs to develop and commercialize potential products. Some of its 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 its current ECCs and similar ECCs that Intrexon may enter into in the future, Intrexon has 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 its collaborators may fail to perform its obligations under the ECC. Intrexon s collaborators may breach or terminate their ECCs with Intrexon or otherwise fail to conduct their collaborative activities successfully and in a timely manner. If any of these events were to occur, its revenues, financial condition and results of operations could be adversely affected.

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

The sales process for its ECCs may be lengthy and unpredictable. Intrexon s sales and licensing efforts may require the effective demonstration of the benefits, value, differentiation, validation of its technologies and services and significant education and training of multiple personnel and departments within the potential collaborator s organization. Though Intrexon has made efforts to standardize its ECCs, Intrexon may be required to negotiate ECCs containing terms unique to each collaborator, which would lengthen the sales cycle. Intrexon may expend substantial funds

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and management effort with no assurance that Intrexon will execute an ECC or otherwise sell its technologies or services. In addition, this lengthy sales cycle makes it more difficult for Intrexon to accurately forecast revenue in future periods and may cause revenues and operating results to vary significantly in such periods.

Intrexon has entered into a limited number of ECCs to date, and Intrexon requires collaborators to successfully commercialize the products enabled by its technologies.

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

Many of its 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 its technologies, its collaborators must demonstrate the ability to utilize its 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 its technologies may not perform as expected when applied at commercial scale, or its collaborators may encounter operational challenges for which Intrexon and they are unable to devise a workable solution. For example, contamination in the production process could decrease process efficiency, create delays and increase its collaborators costs. Moreover, under the terms of its ECCs, Intrexon limits the ability of its collaborators to partner their programs with third parties. Intrexon and its collaborators may not be able to scale up its production in a timely manner, if at all, even if its collaborators successfully complete product development in their laboratories and pilot and demonstration facilities. If this occurs, the ability of its collaborators to commercialize products and processes using its technologies will be adversely affected, and, with respect to any products that are brought to market, its collaborators may not be able to lower the cost of production, which would adversely affect its ability to increase the future profitability of its business.

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

Intrexon s technologies are used in products that are subject to extensive regulation by governmental authorities. Intrexon depends on its collaborators to comply with these laws and regulations with respect to products they produce using its technologies and Intrexon does not independently monitor whether its collaborators comply with applicable laws and regulations. If its collaborators fail to comply with applicable laws and regulations, Intrexon is subject to

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substantial financial and operating risks because Intrexon depends on its collaborators to produce the end products enabled by its technologies for sale, and because in many cases Intrexon has a substantial equity interest in its 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 its collaborators and materially impact its operating results;
- Intrexon s business could be adversely affected if the processes used by its 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 its collaborators are ultimately unable to obtain regulatory approval for products using its technologies, its business will be substantially harmed;
- even if its collaborators are able to commercialize products using its 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 its business;
- Intrexon and its 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 its technologies; and
- to the extent products produced using its 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 Intrexon s collaborators are developing products using its technologies are highly competitive.

The markets in which Intrexon s collaborators are developing products are, and will continue to be, highly competitive, and there can be no assurance that Intrexon or its collaborators will be able to compete effectively. There are numerous companies presently in these markets that are developing products that may compete with, and could adversely affect the prices for, any products developed by its collaborators using its 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 its collaborators using its technologies. Intrexon does not believe that it has any direct competitors who provide similar technologies which fully enable the commercialization of products developed using synthetic biology across a broad spectrum of biologically based industries. However, there are companies that have competing technologies for individual pieces of its proprietary suite of complementary technologies. One portion of its proprietary technology related to DNA synthesis and assembly includes the ability to de novo synthesize DNA. The following companies are examples of

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companies which Intrexon believes engage in the manufacture of DNA componentry: DNA 2.0, Inc., Blue Heron Biotech, LLC and Life Technologies Corporation. Another portion of its proprietary technology includes development of fully human monoclonal antibodies. Intrexon s technology utilizes advanced methods of stimulating antibody production in naïve human B-cells *in vitro* (*i.e.,* in a test tube) and specifically selecting those cells which produce antibodies that can bind a desired target (*e.g.,* human toxins, tumor cells, microbial pathogens). The following companies are examples of companies which Intrexon believes engage in the manufacture of human or human-like monoclonal antibodies: AbD SeroTec (a Bio-Rad Laboratories, Inc. company), Alexion Pharmaceuticals, Inc., XOMA Corporation, Genmab US, Inc., MorphoSys AG, NovImmune SA, Société Des Systèmes Biologiques, or BIOTEM, Adimab, LLC, ProMab Biotechnologies, Inc., Abpro Labs, AIIM Therapeutics and OmniAb.

To the extent that any of its collaborators competitors are more successful with respect to any key competitive factor or its collaborators are forced to reduce, or are unable to raise, the price of any products enabled by its technologies in order to remain competitive, Intrexon s 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 its collaborators at lower costs and the ability of competitors to access more or newer technology than its collaborators can access (including its own).

Intrexon s right to terminate its ECCs is limited.

Generally, Intrexon does 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 its technologies, or its breach of a term of the ECC that remains uncured for a specified period of time. Moreover, each of Intrexon s collaborators receives an exclusive license to use all of its technologies in a designated field, potentially in perpetuity. The collaborators Intrexon chooses in particular fields may not be in the best position to maximize the value of its 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 Intrexon s technologies in that field.

Risks related to Intrexon s intellectual property

Intrexon s ability to compete may decline if Intrexon does not adequately protect its proprietary technologies or if it loses some of its intellectual property rights through costly litigation or administrative proceedings.

Intrexon s success depends in part on its ability to obtain patents and maintain adequate protection of its intellectual property in the United States and abroad for its suite of technologies and resultant products and potential products. Intrexon has 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 its products and processes. Intrexon has 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 its own patents will expire as early as 2017. Intrexon intends to continue to apply for patents relating to its technologies, methods and products as it deems appropriate.

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

The enforceability of patents involves complex legal and factual questions and, therefore, the extent of enforceability cannot be guaranteed. Issued patents and patents issuing from pending applications may be challenged, invalidated or circumvented. Moreover, the United States Leahy-Smith America Invents Act, enacted in September 2011, brought significant changes to the U.S. patent system, which include a change to a first to file system from a first to invent system and changes to the procedures for challenging issued patents and disputing patent applications during the examination process, among other things. The effects of these changes on Intrexon s 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 Intrexon s patent applications and the enforcement or defense of its 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, Intrexon cannot ensure that any of its pending patent applications will result in issued patents, or even if issued, predict the breadth of the claims upheld in its and other companies patents. Given that the degree of future protection for its proprietary rights is uncertain, Intrexon cannot ensure that it was the first to invent the inventions covered by its pending patent applications, it was the first to file patent applications for these inventions, the patents Intrexon has obtained, particularly certain patents claiming nucleic acids, proteins, or methods, are valid and enforceable, and the proprietary technologies it develops will be patentable.

In addition, unauthorized parties may attempt to copy or otherwise obtain and use Intrexon s products or technology. Monitoring unauthorized use of its intellectual property is difficult, and Intrexon cannot be certain that the steps it has taken will prevent unauthorized use of its technologies, particularly in certain foreign countries where the local laws may not protect its proprietary rights as fully as in the United States. Moreover, third parties could practice Intrexon s inventions in territories where it 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 its inventions in countries where it do not have patent protection for those inventions. If competitors are able to use its technologies, Intrexon s ability to compete effectively could be harmed. Moreover, others may independently develop

and obtain patents for technologies that are similar to or superior to its technologies. If that

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happens, Intrexon may need to license these technologies, and it may not be able to obtain licenses on reasonable terms, if at all, which could harm its business.

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

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

Intrexon s 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 Intrexon has entered into with regard to its technologies, products and business. Intrexon cannot ensure that patents have not been issued to third parties that could block its or its collaborators ability to obtain patents or to operate as it would like. There may be patents in some countries that, if valid, may block its ability to make, use or sell its products in those countries, or import its products into those countries, if Intrexon is 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 its ability to commercialize products or processes in these countries if Intrexon is 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. Intrexon s involvement in litigation, interferences, opposition proceedings or other intellectual property proceedings inside and outside of the United States, to defend its 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 Intrexon to spend significant amounts of money. Some of its 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 Intrexon could. The uncertainties associated with litigation could have a material adverse effect on Intrexon s ability to raise the funds necessary to continue its business or to enter into additional collaborations with others. Furthermore, any potential intellectual property litigation also could force Intrexon or its 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

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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 Intrexon, or which could be technically infeasible.

The patent landscape in the field of synthetic biology is particularly complex. Intrexon is aware of U.S. and foreign patents and pending patent applications of third parties that cover various aspects of synthetic biology including patents that some may view as covering aspects of its technologies. In addition, there may be patents and patent applications in the field of which Intrexon is not aware. In many cases, the technologies Intrexon develops are early-stage technologies and Intrexon is and its collaborators are just beginning the process of designing and developing products using these technologies. Although it will seek to avoid pursuing the development of products that may infringe any patent claims that it believes to be valid and enforceable, Intrexon and its 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 Intrexon or its collaborators are infringing upon patent claims even if Intrexon does not believe such claims to be valid and enforceable.

Although no third party has asserted a claim of infringement against Intrexon, others may hold proprietary rights that could prevent products using its technologies from being marketed. Any patent-related legal action against persons who license its technologies, its collaborators or Intrexon claiming damages and seeking to enjoin commercial activities relating to products using its technologies or its processes could subject Intrexon to potential liability for damages and require its licensor or Intrexon to obtain a license to continue to manufacture or market such products or any future product candidates that use its technologies. Intrexon cannot predict whether it or its 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, Intrexon 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 its collaborators from developing and commercializing products using its technologies, which could harm its business, financial condition and operating results.

If any of its competitors have filed patent applications or obtained patents that claim inventions also claimed by us, Intrexon 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 Intrexon even if the outcome is favorable. Even if successful, interference may result in loss of certain of its important claims.

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

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Obtaining and maintaining Intrexon s patent protection depends on compliance with various procedural, document submission, fee payment and other requirements imposed by governmental patent agencies, and its 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 its 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 Intrexon does not obtain additional protection under the Hatch-Waxman Amendments and similar foreign legislation by extending the patent terms and obtaining data exclusivity for its technologies, its business may be materially harmed.

Depending upon the timing, duration and specifics of FDA marketing approval of products using its technologies, one or more of the U.S. patents Intrexon owns or licenses 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, Intrexon may not be granted an extension because of, for example, failing to apply within applicable deadlines, failing to apply prior to expiration of relevant patents or otherwise failing to satisfy applicable requirements. Moreover, the applicable time period or the scope of patent protection afforded could be less than Intrexon requests. If Intrexon is unable to obtain patent term extension or restoration or the term of any such extension is less than it requests, its competitors may obtain approval of competing products following its patent expiration, and its ability to generate revenues could be materially adversely affected.

Enforcing its intellectual property rights may be difficult and unpredictable.

If Intrexon was to initiate legal proceedings against a third party to enforce a patent claiming one of its technologies, the defendant could counterclaim that its 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 Intrexon believes that it has conducted its 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 its patent rights, Intrexon cannot be certain, for example, that there is no invalidating prior art, of which it and the patent examiner were unaware during prosecution. If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, Intrexon 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 its business. Even if its 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

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similar to its own, or using manufacturing processes or manufacturing components similar to those used to produce the products using its technologies.

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

Intrexon may not be able to enforce its 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 Intrexon to stop the infringement of its patents or misappropriation of its other intellectual property rights. Proceedings to enforce its patent rights in foreign jurisdictions could result in substantial costs and divert its efforts and attention from other aspects of its business. Accordingly, its efforts to protect its intellectual property rights in such countries may be inadequate.

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

Third parties, including its collaborators, contract manufacturers, contractors and others involved in Intrexon s business often have access to its technologies. If Intrexon s technologies, or products using its technologies, were stolen, misappropriated or reverse engineered, they could be used by other parties that may be able to reproduce its technologies or products using its technologies for their own commercial gain. If this were to occur, it would be difficult for Intrexon 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.

Intrexon has taken measures to protect its trade secrets and proprietary information, but these measures may not be effective. Intrexon requires its new employees and consultants to execute confidentiality agreements upon the commencement of an employment or consulting arrangement with Intrexon. These agreements generally require that all confidential information developed by the individual or made known to the individual by Intrexon during the course of the individual s relationship with Intrexon 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 Intrexon shall be its exclusive property. Nevertheless, its proprietary information may be disclosed, third parties could reverse engineer its technologies or products using its technologies and others may independently develop substantially equivalent proprietary information and techniques or otherwise gain access to its trade secrets. Costly and time-consuming litigation could be necessary to enforce and determine the scope of its proprietary rights, and failure to obtain or maintain trade secret protection could adversely affect its competitive business position.

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Risks related to AquaBounty

Because Intrexon owns a majority of the issued and outstanding shares of AquaBounty, the following risk factors that are applicable to AquaBounty s business also apply to Intrexon.

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 Intrexon may be asked to invest additional funds in AquaBounty. If Intrexon fails to invest these additional funds, Intrexon may not retain control over AquaBounty. Intrexon has been advised by the management of AquaBounty that as of September 30, 2013, AquaBounty held $3.1 million of cash and cash equivalents and had a working capital balance of $2.8 million and that these amounts will provide adequate funds for AquaBounty s ongoing operations into the late first quarter of 2014. Intrexon has no contractual obligation to provide funds to AquaBounty and therefore it does not know whether, or to what extent, Intrexon will be required to invest additional funds in AquaBounty.

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

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

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

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

In September 2010, the FDA held a public meeting of its Veterinary Medicine Advisory Committee to review its findings regarding AAS. The conclusion of the committee was that AAS is indistinguishable from other farmed Atlantic salmon, is safe to eat and does not pose a threat to the environment under its conditions of use. Subsequently, the FDA initiated an environmental assessment in compliance with its obligations under the U.S. National Environmental Policy Act, which requires that all federal agencies consider the possible environmental impacts of any action which they authorize.

On December 26, 2012, the FDA published its environmental assessment for AAS, along with a Finding of No Significant Impact, in the Federal Register, confirming that an approval of the

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pending NADA would not have an adverse effect on the environment and opened up a 60 day period for public comment. On February 13, 2013, the FDA extended the period for public comment by an additional 60 days and the period expired on April 26, 2013.

As of December 31, 2013, AquaBounty is awaiting a report of final action by the FDA on the pending NADA. Intrexon does not know when the FDA will issue this report.

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

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

AquaBounty is exposed to exchange rate fluctuation.

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

Risks related to Intrexon s common stock

An active trading market may not be sustained following the merger.

The initial public offering of Intrexon s common stock was completed in August 2013 at a price of $16.00 per share. There has been a public market for Intrexon s common stock for only a short period of time. Although Intrexon s common stock is listed on the New York Stock Exchange, an active public market for Intrexon s common stock may not be sustained. If an active market for Intrexon s common stock is not maintained, it may be difficult for you to sell shares you receive pursuant to the merger without depressing the market price for the shares or at all. An inactive trading market also may impair Intrexon s ability to raise capital to continue to fund operations by selling shares and may impair its ability to acquire other companies or technologies by using its shares as consideration. The lack of an active market also may reduce the fair market value of your shares.

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

The trading price of Intrexon s common stock has been, and is likely to continue to be, volatile. Since shares of its common stock were sold in its initial public offering in August 2013 at a price of $16.00 per share, Intrexon s stock price has ranged from $17.52 to $38.50, through January 30, 2014. In addition to the factors discussed in this prospectus, the trading price of Intrexon s common stock may fluctuate significantly in response to numerous factors, many of which are beyond its control, including:

- developments concerning its collaborators;
- competition from existing technologies and products or new technologies and products that may emerge;

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announcements of new ECCs, significant acquisitions, strategic partnerships, joint ventures, new products, capital commitments or other events by Intrexon or its competitors, including the announcement and closing of the merger with Medistem;

the inability to establish ECCs or terminate ECCs;

actual or anticipated variations in its quarterly operating results;

failure to meet the estimates and projections of the investment community or that Intrexon may otherwise provide to the public;

Intrexon s cash position;

announcement or expectation of additional financing efforts;

issuances of debt or equity securities;

Intrexon s inability to successfully enter new markets or develop additional products, whether with its collaborators or independently;

actual or anticipated fluctuations in its competitors or its collaborators operating results or changes in their respective growth rates;

fluctuations in the market value of collaborators for which Intrexon owns equity interests, particularly in light of its use of equity accounting for certain of these investments;

sales of its shares of common stock by Intrexon, or its shareholders in the future;

trading volume of its shares of common stock on the New York Stock Exchange;

market conditions in its industry;

overall performance of the equity markets and general political and economic conditions;

introduction of new products or services by Intrexon or its competitors;

additions or departures of key management, scientific or other personnel;

publication of research reports about Intrexon or its 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 its ability to obtain patent protection for its technologies;

changes in accounting practices;

significant lawsuits, including patent or shareholder litigation; and

other events or factors, many of which are beyond Intrexon s 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

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general economic, political and market conditions such as recessions, interest rate changes or international currency fluctuations, may negatively impact the market price of its shares of common stock.

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

Intrexon has never declared or paid cash dividends on its capital stock. Intrexon does not anticipate paying cash dividends in the future and intend to retain all of its future earnings, if any, to finance the operations, development and growth of its business. As a result, only appreciation of the price of its common stock, which may never occur, will provide a return to shareholders. Investors seeking cash dividends should not invest in Intrexon s common stock.

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

The trading market for Intrexon s shares of common stock depends, in part, on the research and reports that securities or industry analysts publish about Intrexon or its business. Intrexon does not have any control over these analysts. If securities or industry analysts do not continue to cover Intrexon, the trading price for its shares of common stock may be negatively impacted. If one or more of the analysts who covers Intrexon downgrades its shares of common stock, changes their opinion of its shares or publishes inaccurate or unfavorable research about its business, Intrexon s share price would likely decline. If one or more of these analysts ceases coverage of Intrexon or fails to publish reports on it regularly, demand for its shares of common stock could decrease and Intrexon could lose visibility in the financial markets, which could cause its share price and trading volume to decline.

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

As of December 31, 2013, Intrexon s executive officers, directors and beneficial holders of five percent or more of its outstanding stock owned approximately 66 percent of its voting stock, including shares subject to outstanding options and warrants, and Intrexon expects that upon completion of the merger, the same group will continue to hold at least 66 percent of its outstanding voting stock. As a result, these shareholders, acting together, would be able to significantly influence all matters requiring approval by its shareholders, including the election of directors and the approval of mergers or other business combination transactions, as well as its 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 Intrexon s management and/or the board of directors; or
- impede a merger, consolidation, takeover or other business combination involving Intrexon that other shareholders may desire.

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

Intrexon has engaged in a variety of transactions with companies in which Mr. Kirk and affiliates of Mr. Kirk have an interest. Among these transactions are its ECCs with Genopaver, LLC and Fibrocell Science, Inc. and its licensing arrangement with Halozyme Therapeutics, Inc. Intrexon believes that each of these transactions was on terms no less favorable to it than terms it could have obtained from unaffiliated third parties, and each of these transactions was approved by at least a majority of the disinterested members of its board of directors. In addition, subsequent to Intrexon s consummation of the ECCs with Oragenics, Inc., Synthetic Biologics, Inc., AmpliPhi Biosciences Corp., and Soligenix, Inc., Mr. Kirk and his affiliates invested in these companies. Furthermore, as it executes on these ECCs going forward, a conflict may arise between Intrexon s interests and those of Mr. Kirk and his affiliates. It is Intrexon s intention to ensure that all future transactions, if any, between it and its 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 Intrexon s written related person transaction policy, and are on terms no less favorable to Intrexon than those that it could obtain from unaffiliated third parties.

Randal J. Kirk will control approximately 64 percent of its common stock after completion of the merger and will be able to control or significantly influence corporate actions, which may result in Mr. Kirk taking actions contrary to the desires of its other shareholders.

Intrexon has historically been controlled, managed and principally funded by Randal J. Kirk, its Chief Executive Officer, and affiliates of Mr. Kirk. As of December 31, 2013, Mr. Kirk and shareholders affiliated with him beneficially owned approximately 64 percent of Intrexon s voting stock. Following the merger, Intrexon expects that Mr. Kirk and his affiliates will control approximately 64 percent of Intrexon s common stock. Mr. Kirk will be able to control or significantly influence all matters requiring approval by Intrexon s 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 Intrexon s other shareholders.

A significant portion of Intrexon s 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 its common stock to drop significantly, even if its business is doing well.

Sales of a substantial number of shares of Intrexon s 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 Intrexon s common stock. If Mr. Kirk or any of his affiliates were to sell a substantial portion of the shares they hold, it could cause its stock price to decline. In addition, as of December 31, 2013, there were 2,840,648 shares subject to outstanding options that will become eligible for sale in the public market to the extent permitted by any applicable vesting requirements and Rules 144 and 701 under the Securities Act of 1933, as amended. Moreover, holders of an aggregate of approximately 72,429,701 shares of Intrexon s common stock have rights, subject to some conditions, to require Intrexon to file registration statements covering their shares or to include their shares in registration statements that it may file for itself or other shareholders.

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Intrexon also has registered 7,000,000 shares of common stock that it may issue under its Intrexon Corporation 2013 Omnibus Incentive Plan, or the 2013 Plan, and it has registered 2,832,443 shares of common stock reserved for issuance upon exercise of outstanding stock options under its Intrexon Corporation 2008 Equity Incentive Plan. These shares can be freely sold in the public market upon issuance and once vested, subject to the lock-up periods under any lock-up agreements applicable to such shares.

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

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

- a provision allowing Intrexon s 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 its common stock. The issuance of preferred stock could adversely affect the rights and powers, including voting rights, of the holders of common stock;
- establish advance notice requirements for nominations for election to the board of directors or for proposing matters that can be acted on at shareholder meetings;
- the inability of shareholders to convene a shareholders meeting without the support of shareholders owning together 25 percent of its common stock;
- the application of Virginia law prohibiting Intrexon from entering into a business combination with the beneficial owner of 10 percent or more of its outstanding voting stock for a period of three years after the 10 percent or greater owner first reached that level of stock ownership, unless it meets certain criteria;
- allow the authorized number of its directors to be changed only by resolution of its 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 its 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 its common stock. In addition, these provisions make it more difficult for Intrexon s shareholders, should they choose to do so, to remove its board of directors or management. See Description of Intrexon Capital Stock.

Intrexon is an emerging growth company, and it cannot be certain if the reduced reporting requirements applicable to emerging growth companies will make Intrexon s shares of common stock less attractive to investors.

Intrexon is an emerging growth company, as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. For as long as it continues to be an emerging growth company, Intrexon may take advantage of exemptions from various reporting requirements that are

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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, its 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. Intrexon could be an emerging growth company for up to five years, although circumstances could cause it to lose that status earlier, including if the market value of its shares of common stock held by non-affiliates exceeds $700.0 million as of any June 30 before that time or if Intrexon has total annual gross revenue of $1.0 billion or more during any fiscal year before that time, in which cases Intrexon would no longer be an emerging growth company as of the following December 31, or if Intrexon issues more than $1.0 billion in non-convertible debt during any three-year period before that time, in which case it would no longer be an emerging growth company immediately. Intrexon cannot predict if investors will find its shares of common stock less attractive because it may rely on these exemptions. If some investors find its shares of common stock less attractive as a result, there may be a less active trading market for its shares of common stock and its 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. Intrexon has irrevocably elected not to avail itself of this exemption from new or revised accounting standards and, therefore, will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

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

Effective internal controls over financial reporting are necessary for Intrexon 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 Intrexon to fail to meet its reporting obligations. In addition, any testing by Intrexon conducted in connection with Section 404 of the Sarbanes-Oxley Act, or any subsequent testing by its independent registered public accounting firm, may reveal deficiencies in its internal controls over financial reporting that are deemed to be material weaknesses or that may require prospective or retroactive changes to its financial statements or identify other areas for further attention or improvement. Inferior internal controls could also cause investors to lose confidence in its reported financial information, which could have a negative effect on the trading price of its 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 its management.

Prior to the consummation of its initial public offering in August 2013, Intrexon was not 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 its management, including costs resulting from public company reporting obligations under the Securities Exchange Act of 1934, as amended, and the rules and regulations regarding corporate governance practices, including those under the Sarbanes-Oxley Act, the

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Dodd-Frank Wall Street Reform and Consumer Protection Act, and the listing requirements of the New York Stock Exchange. Intrexon s management and other personnel devote a substantial amount of time to ensure that Intrexon complies with all of these requirements. Moreover, despite recent reforms made possible by the JOBS Act, the reporting requirements, rules and regulations increase its legal and financial compliance costs and will make some activities more time-consuming and costly, particularly after Intrexon is no longer an emerging growth company. Any changes that it makes to comply with these obligations may not be sufficient to allow Intrexon to satisfy its obligations as a public company on a timely basis, or at all.

Intrexon also expects these rules and regulations to make it more difficult and more expensive for it to obtain director and officer liability insurance, and Intrexon 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 Intrexon to attract and retain qualified persons to serve on its board of directors, particularly to serve on its audit and compensation committees, or as executive officers.

Risks related to Medistem and its business

There are material risks related to the potential delay or failure to consummate the proposed merger with Intrexon.

The proposed merger with Intrexon may not be completed on the anticipated timetable, and it is possible that the merger will not be completed at all. The delay or failure to consummate the proposed merger with Intrexon could negatively impact Medistem s stock price and future business and operations. If the merger with Intrexon is delayed or not consummated for any reason, Medistem may be subject to a number of material risks, including the following:

If the merger agreement is terminated under certain circumstances, and Medistem enters into a change of control transaction subsequent to such termination, Medistem may be required to pay to Intrexon a termination fee of up to $1 million, as well as repaying the outstanding principal and accrued but unpaid interest under its $700,000 promissory notes with Intrexon. These amounts may deter other parties from offering to acquire Medistem, which could interfere with the ability of its stockholders to receive a premium over the value of the merger consideration for their shares of Medistem stock;

The price of Medistem s common stock may decline, as the current market price of its common stock may reflect an assumption that the proposed merger will be consummated and that its shareholders will become stockholders of Intrexon upon closing of the merger;

Medistem must pay certain expenses related to the proposed merger, including substantial financial advisory, legal, accounting and other merger-related fees even if the merger is not consummated, which could affect Medistem s results of operations and cash liquidity, and potentially its stock price;

Significant management and other resources have been diverted to efforts to consummate the proposed merger and, if the merger is not consummated, such efforts will result in little or no benefit to Medistem;

The announcement of the proposed merger may have an adverse effect on Medistem s financial condition in the near-term and its market position if Medistem s customers, suppliers,

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marketing and collaboration partners and other third parties delay, defer or cancel purchases or transactions pending resolution of the proposed merger; and

If the merger agreement with Intrexon is terminated and Medistem s board of directors decides to seek another merger or business combination, it may not be able to find a partner willing to pay an equivalent price to that which would have been obtained in the proposed merger with Intrexon.

Additional risks and uncertainties not presently known to Medistem also may adversely affect the merger and the combined company following the merger.

Class action litigation filed against Medistem and its directors may result in a substantial diversion of the company s time and resources.

In connection with the merger, four purported class action lawsuits brought on behalf of all Medistem shareholders were filed; one in the Eighth Judicial District Court in Clark County, Nevada: *Iden v. Medistem, et al.*, No. A-13-693813-C, filed December 31, 2013; and three in the Superior Court of California in San Diego County, California: *Bachand v. Medistem, et al.*, No. 37-2013-00081729-CU-SL-CTL, filed December 31, 2013; *Parent v. Medistem, et al.*, No. 37-2014-00083393-CU-SL-CTL, filed January 14, 2014; and *Raymond v. Medistem, et al.*, No. 37-2014-00083495-CU-SL-CTL, filed January 15, 2014. The complaints in the pending lawsuits are similar. Each complaint names Medistem, members of Medistem s board of directors, Intrexon, and Merger Sub as defendants. The complaints allege, among other things, that Medistem s board of directors breached its fiduciary duties to its shareholders by failing to maximize shareholder value or to engage in a fair sale process before approving the proposed acquisition of Medistem by Intrexon. The complaints further allege that Medistem, Intrexon and Merger Sub aided and abetted the Medistem board of directors in its breaches of fiduciary duty. The plaintiffs seek relief that includes an injunction prohibiting the consummation of the merger, rescission to the extent the merger terms have already been implemented, damages for the breaches of fiduciary duty, payment of plaintiffs attorneys fees and costs and, in the Nevada action, a contingent monetary award in an unspecified amount. Medistem and its board of directors believe that these allegations are without merit and intend to defend the lawsuits vigorously. There can be no assurance, however, with regard to the outcome of these lawsuits. Furthermore, the litigation may result in a substantial diversion of the company s time and resources.

Medistem has a history of losses and will likely incur future losses during the next few years as it attempts to expand its research and development endeavors.

As of December 31, 2012, Medistem had an accumulated deficit of $13,309,214. As of September 30, 2013 the accumulated deficit increased to $14,165,435. Medistem expects to incur additional losses in the future. Medistem does not have any marketing approval for any of its products, which makes it difficult for you to evaluate its future business prospects.

Medistem s auditor s report includes an explanatory paragraph regarding its ability to continue as a going concern.

Medistem s independent registered public accounting firm noted in their report accompanying Medistem s financial statements for the year ended December 31, 2012 that Medistem had a significant accumulated deficit, that it had a working capital deficit and that a significant amount of additional capital will be necessary to advance the development of its products to the point at which Medistem may become commercially viable. The firm s report stated that those conditions raised substantial doubt about Medistem s ability to continue as a going concern.

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Note 1 to its financial statements for the year ended December 31, 2012 describes management's plans to address these matters. Medistem cannot assure you that its business plans will be successful in addressing these issues. This explanatory paragraph about its ability to continue as a going concern could affect Medistem s ability to obtain additional financing at favorable terms, if at all, as it may cause investors to lose faith in its long-term prospects. Furthermore, in connection with the merger, Medistem incurred an additional $700,000 in debt financing from Intrexon and is subject to certain restrictive covenants and termination fees under the merger agreement, which could prevent it from obtaining additional equity or debt financing on favorable terms, if at all, during the pendency of the merger or if the merger is not consummated. If Medistem cannot successfully continue as a going concern, its shareholders may lose their entire investment in Medistem s common shares.

Inadequate internal controls and accounting practices could lead to errors, which could negatively impact Medistem s business, financial condition, results of operations and cash flows.

Section 404 of the Sarbanes-Oxley Act of 2002 requires Medistem to document the effectiveness of its internal control over financial reporting in accordance with an established internal control framework and to report on its management s conclusion as to the effectiveness of this internal control over financial reporting. Medistem expects to incur significant costs to comply with this requirement. In connection with Medistem s audits of its financial statements for the periods ended December 31, 2012 and 2011, Medistem identified certain material weaknesses in its internal control over financial reporting and segregation of duties. Such weaknesses include: designing and implementing effective internal control policies and procedures to ensure that information relative to financial reporting is identified, reviewed, reconciled and reported in a manner that supports reliable and timely financial reporting; designing and implementing effective internal control policies and procedures to ensure adequate segregations of duties, or to establish adequate mitigating controls; and designing and implementing effective internal control policies and procedures to ensure the proper application of U.S. generally accepted accounting principles to complex accounting transactions. Because of Medistem s inherent limitations, internal control over financial reporting may not allow it to prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Medistem prepared, and on March 21, 2013 it adopted, the Medistem Accounting Policies & Procedures, which cover, among other things, policies and procedures for the review and approval of all financial reports, as a remedial measure to address these weaknesses. To its knowledge, the material weaknesses had no effect on Medistem s financial statements to date.

Even if Medistem is successful in remedying these material weaknesses, Medistem may in the future discover other areas of its internal control over financial reporting that need improvement. There can be no assurance that the recent remedial measures Medistem implemented to address prior and current material weaknesses will result in adequate internal control over financial reporting in the future. Any failure to implement Medistem s improved controls, or difficulties encountered in the future, could cause it to fail to meet its reporting obligations. If Medistem is unable to conclude that it has effective internal control over financial reporting, or if its auditors are unable to provide an unqualified report regarding the effectiveness of internal control over financial reporting when required by applicable rules and regulations of the SEC, investors may lose confidence in the reliability of Medistem s financial statements, which could result in a decrease in the value of its

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securities and negatively affect its efforts to obtain necessary financing. In addition, failure to comply with Section 404 could potentially subject Medistem to sanctions or investigation by the SEC or other regulatory authorities. This could have a material adverse effect on its financial condition and results of operations.

Medistem s product development efforts may not yield any marketable products.

Medistem s success depends on its ability to successfully develop and obtain regulatory approval to market new adult stem cell products. Medistem expects that a significant portion of the research that it will conduct will involve new and unproven technologies. It has no products on the market.

Medistem may never achieve profitability. Medistem s failure to achieve profitability could negatively impact the market price of its common stock. Even if it does become profitable, Medistem cannot assure you that it would be able to sustain or increase profitability on a quarterly or annual basis.

Medistem needs additional capital to conduct its operations and its ability to obtain the necessary funding is uncertain.

Medistem will require substantial capital resources in order to conduct its operations and develop its products, and its existing capital resources will not be sufficient to fund its planned operations. The timing and degree of any future capital requirements will depend on many factors, including:

the accuracy of the assumptions underlying Medistem s estimates for its resource requirements in 2013 and beyond:

the magnitude and scope of Medistem s research and development programs;

the progress Medistem makes in its research and development programs;

Medistem s ability to establish, enforce and maintain strategic arrangements for research, development, clinical testing, manufacturing and marketing;

the time and costs involved in obtaining regulatory approvals; and

the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing patent claims.

Medistem does not have any committed sources of capital. Additional financing through strategic collaborations, public or private equity financings or other financing sources may not be available on acceptable terms, or at all. The receptivity of the public and private equity or debt markets to proposed financings is substantially affected by the general economic, market and political climate and by other factors which are unpredictable and over which Medistem has no control. Additional equity and/or convertible debt financings, if Medistem obtains them, could result in significant dilution to shareholders. Further, in the event that additional funds are obtained through arrangements with collaborative partners, these arrangements may require Medistem to relinquish rights to some of its technologies, stem cell therapies or proposed products that it would otherwise seek to develop and commercialize itself. If sufficient capital is not available, Medistem may be required to delay, reduce the scope of or eliminate one or more of its programs, any of which could have a material adverse effect on Medistem s business. Furthermore, in connection with the

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merger, Medistem incurred an additional $700,000 in debt financing from Intrexon and is subject to certain restrictive covenants and termination fees under the merger agreement, which could prevent it from obtaining additional equity or debt financing on favorable terms, if at all, during the pendency of the merger or if the merger is not consummated.

As of December 31, 2013, Medistem had $856,607 in cash. Medistem believes its existing available cash will enable it to meet its working capital requirements for at least the next three months. The estimated working capital requirement for the next 12 months is approximately $2.1 million with an estimated burn rate of approximately $175,000 per month.

Any changes in the governmental regulatory classifications of Medistem s products could prevent, limit or delay its ability to market or develop its products.

The FDA establishes regulatory requirements based on the classification of a product. Because Medistem s product development programs are designed to satisfy the standards applicable to biological licensure for its cellular products, any change in the regulatory classification or designation would affect its ability to obtain FDA approval of its products. Each of Medistem s cell products is, under current regulations, regulated as a biologic, and requires a BLA.

Medistem must successfully complete its clinical trials to be able to market its products.

To be able to market therapeutic cell products in the United States, Medistem must demonstrate, through extensive preclinical studies and clinical trials, the safety and efficacy of its processes and product candidates. If its clinical trials are not successful, its products will not be marketable. The results of early stage clinical trials do not ensure success in later clinical trials, and interim results are not necessarily predictive of final results.

Medistem s ability to complete its clinical trials in a timely manner depends on many factors, including the rate of patient enrollment. Patient enrollment can vary with the size of the patient population, the proximity of suitable patients to clinical sites, perceptions of the utility of cell therapy for the treatment of certain diseases, and the patient eligibility criteria for the study.

Furthermore, the FDA monitors the progress of clinical trials and it may suspend or terminate clinical trials at any time due to patient safety or other considerations.

Medistem relies and will continue to rely on third parties to conduct its clinical trials, and their failure to perform their obligations in a timely or competent manner may delay development and commercialization of Medistem s product candidates.

Medistem has engaged and it expects to continue to use contract research organizations (CRO) to assist in conduct of its clinical trials. There are numerous alternative sources to provide these services. However, Medistem may face delays outside of its control if these parties do not perform their obligations in a timely or competent fashion or if Medistem is forced to change service providers. Any third party that Medistem hires to conduct clinical trials may also provide services to its competitors, which could compromise the performance of their obligations to Medistem. If Medistem experiences significant delays in the progress of its clinical trials, the commercial prospects for product candidates could be harmed and Medistem s ability to generate product revenue would be delayed or prevented. In addition, Medistem and any provider that it retains will be subject to Good Clinical Practice, or GCP requirements. If GCP and other regulatory requirements are not adhered to by Medistem or its third-party providers, the development and commercialization of Medistem s product candidates could be delayed.

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Any failure of such CRO to successfully accomplish clinical trial monitoring, data collection, safety monitoring and data management and the other services it provides for Medistem in a timely manner and in compliance with regulatory requirements could have a material adverse effect on Medistem s ability to complete clinical development of its products and obtain regulatory approval. Problems with the timeliness or quality of the work of a CRO may lead Medistem to seek to terminate the relationship and use an alternate service provider. However, making such changes may be costly and may delay Medistem s trials, and contractual restrictions may make such a change difficult or impossible. Additionally, it may be difficult to find a replacement organization that can conduct Medistem s trials in an acceptable manner and at an acceptable cost.

The CRO for Medistem s ongoing clinical trial in CHF at the Bakulev Scientific Center for Cardiovascular Surgery in Moscow, Russia, is Cromos Pharma, LLC, which is controlled by Vladimir Bogin, Medistem s Chairman of the board of directors, however, Dr. Bogin has recused himself from the conduct of the study.

Medistem is conducting ongoing clinical trials overseas.

Medistem s CHF trial is being conducted at the Bakulev Scientific Center for Cardiovascular Surgery, Moscow, Russia. Additionally, Medistem cooperated with Shanghai Jia Fu Medical Apparatus Inc., a Chinese conglomerate, for a pilot CLI clinical study in China. Neither of these trials was FDA-approved. Investors and authorities in the United States often consider that clinical trial results from trials not conducted in the United States or Western Europe are less reliable than those from trials conducted in the United States or Western Europe. Therefore, it is possible the FDA may not honor some or all the data derived from overseas clinical trials.

Even if Medistem obtains regulatory approvals to sell its products, lack of commercial acceptance could impair its business.

Medistem will be seeking to obtain regulatory approvals to market its cell products for various therapeutic indications. Even if Medistem obtains all required regulatory approvals, Medistem cannot be certain that its products and processes will be accepted in the marketplace at a level that would allow Medistem to operate profitably. Medistem s products may be unable to achieve commercial acceptance for a number of reasons, such as the availability of alternatives that are less expensive, more effective, or easier to use; the perception of a low cost-benefit ratio for the product amongst physicians and hospitals; or an inadequate level of product support from itself or a commercial partner. Medistem s technologies or product candidates may not be employed in all potential applications being investigated, and any reduction in applications would limit the market acceptance of its technologies and product candidates, and its potential revenues.

The market for Medistem s products will be heavily dependent on third party reimbursement policies.

Medistem s ability to successfully commercialize its product candidates will depend on the extent to which government healthcare programs, such as Medicare and Medicaid, as well as private health insurers, health maintenance organizations and other third party payers will pay for Medistem s products and related treatments.

Reimbursement by third party payers depends on a number of factors, including the payer s determination that use of the product is safe and effective, not experimental or investigational, medically necessary, appropriate for the specific patient and cost-effective. Reimbursement in the

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United States or foreign countries may not be available or maintained for any of Medistem s product candidates. If Medistem does not obtain approvals for adequate third party reimbursements, it may not be able to establish or maintain price levels sufficient to realize an appropriate return on its investment in product development. Any limits on reimbursement from third party payers may reduce the demand for, or negatively affect the price of, Medistem s products.

Managing and reducing health care costs has been a general concern of federal and state governments in the United States and of foreign governments. In addition, third party payers are increasingly challenging the price and cost-effectiveness of medical products and services, and many limit reimbursement for newly approved health care products. In particular, third party payers may limit the indications for which they will reimburse patients who use any products that Medistem may develop. Cost control initiatives could decrease the price for products that Medistem may develop, which would result in lower product revenues to Medistem.

If the potential of Medistem s stem cell therapies to treat diseases is not realized, the value of its technology and its development programs could be significantly reduced.

Medistem has not proven in clinical trials that its stem cell therapy will be a safe and effective treatment for any disease. Medistem s stem cell therapies are susceptible to various risks, including undesirable and unintended side effects, unintended immune system responses, inadequate therapeutic efficacy or other characteristics that may prevent or limit their marketing approval or commercial use. Medistem has not treated a sufficient number of patients to allow it to demonstrate efficacy or make a determination that serious unintended consequences will not occur. If the potential of Medistem s stem cell therapies to treat disease is not realized, the value of its technology and its development programs could be significantly reduced.

Medistem s product development programs are based on novel technologies and are inherently risky.

Medistem is subject to the risks of failure inherent in the development of products based on new technologies. The novel nature of its therapeutics creates significant challenges in regards to scientific issues, product development and optimization, manufacturing, government regulation, third-party reimbursement and market acceptance. For example, the FDA has relatively limited experience with stem cell therapies. The pathway to regulatory approval for its biologic drug candidates may accordingly be more complex and lengthy. As a result, the development and commercialization pathway for Medistem s therapies may be subject to increased uncertainty, as compared to the pathway for new conventional drugs.

Restrictions on the use of stem cells arising from ethical, legal and social implications involving stem cells could prevent Medistem from developing or gaining acceptance for commercially viable products based upon such stem cells and adversely affect the market price of Medistem s common stock.

The use of human embryonic stem cells has given rise to ethical, legal and social issues regarding the appropriate use of these cells. While Medistem s business does not relate to this controversial area, the use of adult stem cells may become the subject of adverse commentary or publicity, or may be confused with the use of embryonic stem cells, either of which could significantly harm the market price for Medistem s common stock.

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Medistem s patent applications might not result in the issuance of patents.

A patent application gives no intellectual property protection; only an issued patent does. Many patent applications fail to result in issued patents or else patents may be granted for only a limited number of claims (or claims whose scope has been limited). Patent examiners have discretion in their review and there are various possible grounds for denying patent applications. Medistem has one issued patent but it may not be successful in obtaining any future patents. Medistem believes that obtaining broad patent protection in the US and other key countries is vital for its ultimate success.

Some of the information and know-how that is critical to Medistem s business is not patentable and Medistem may not be able to prevent others from obtaining this information and establishing competitive enterprises.

Medistem sometimes relies on trade secrets to protect its proprietary manufacturing technology, especially in circumstances in which it believes patent protection is not appropriate or available. Medistem attempts to protect its proprietary manufacturing technology and other proprietary information in part by confidentiality agreements with its employees, consultants, collaborators and contractors. Medistem cannot assure you that these agreements will not be breached, that it would have adequate remedies for any breach, or that its trade secrets will not otherwise become known or be independently discovered by competitors, any of which would harm Medistem s business significantly.

Some of Medistem s competitors may develop technologies that are superior to or more cost-effective than Medistem s, which may impact the commercial viability of Medistem s technologies and which may significantly damage its ability to sustain operations.

The pharmaceutical and biotechnology industries are intensely competitive. Other pharmaceutical and biotechnology companies and research organizations currently engage in or have in the past engaged in efforts related to the biological mechanisms and disease conditions that are the focus of Medistem s programs. In addition, other products and therapies that could compete directly with the stem cell therapies that Medistem is seeking to develop and market are being developed by pharmaceutical and biopharmaceutical companies and by academic and other research organizations.

Medistem may not be able to compete successfully because of the number and strength of its competitors and expected numerous market entrants and product introductions.

Medistem competes with numerous companies in the biotechnology industry. The biotechnology industry is characterized by rapidly evolving technology and intense competition. Medistem s competitors include startup, development-stage, and major commercial companies offering services, techniques, treatments and services for producing, processing and marketing stem cell derived therapies from all classes of adult stem cells, as well as competing therapies that do not involve stem cells. Some of these companies are well established and possess technical, research and development, financial, manufacturing, reputational, regulatory affairs, and sales and marketing resources significantly greater than those of Medistem. In addition, many smaller biotech companies have formed strategic collaborations, partnerships and other types of alliances with larger, well-established industry competitors that afford these companies potential research and development and commercialization advantages in product areas currently being pursued by Medistem. Academic institutions and other public and private research organizations are also conducting and financing research activities which may produce products and processes

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directly competitive to those being commercialized by Medistem. Moreover, many of these competitors may be able to obtain patent protection, obtain FDA and other regulatory approvals and begin commercial sales of their products before Medistem does. Competitors focusing primarily on stem cells include Aastrom Biosciences, Inc., Advanced Stem Cell Technology, Inc., Athersys, Inc., Biomet, Inc., Cytomedix, Inc., Harvest Technologies Corporation, International Stem Cell Corporation, Mesoblast Limited, Opexa Therapeutics, Osiris Therapeutics, Inc., Pluristem Therapeutics, Inc., and Stem Cells, Inc.

There is significant competition in Medistem s industry for highly skilled employees and Medistem s failure to attract and retain technical and managerial personnel would adversely affect Medistem s business.

Medistem may not be able to successfully attract or retain highly skilled employees. Medistem s inability to hire or retain highly qualified individuals may impede its ability to develop and commercially introduce Medistem s products that may adversely affect its business. Even if Medistem is able to hire these individuals, it may be unable to retain them. Furthermore, there is market pressure to provide technical and managerial employees with stock options and other equity interests, which may dilute earnings per share.

Medistem may be unable to retain the services of its key people.

Medistem s future success depends, in significant part, upon the continuing service and performance of its senior management and other key personnel. In particular, Medistem s future depends on the continued services of Alan J. Lewis, Ph.D., its Chief Executive Officer, and Thomas E. Ichim, Ph.D. its President and Chief Scientific Officer. There is a risk that these individuals will not remain in Medistem s employ. If Medistem loses the services of any of these individuals, its ability to effectively develop and manage its business effectively could be impaired. Medistem does not have key-person life insurance on any of its key personnel. Dr. Ichim, who is a Canadian citizen, is currently permitted to work in the United States by virtue of his H1-B visa. He is seeking permanent residency status, but there is no assurance he will be able to obtain it. If Dr. Ichim is required to relocate outside the United States in order to continue working, and Medistem was to continue his services, the resulting inefficiencies might adversely affect its business.

Medistem s sole-source vendor s failure to manufacture or supply the ERCs could impair its cell product development.

Cook General BioTechnology, LLC, is Medistem s sole manufacturing supplier of ERCs. If Cook were to become unable or unwilling to continue to supply Medistem, it would be difficult to obtain alternate sources of manufacturing supply on a short-term basis. If Cook fails to perform its obligations, it could impair or delay Medistem s ability to conduct its clinical trials or market its product candidates on a timely and cost-competitive basis.

Defending lawsuits for alleged intellectual property infringements would, even if meritorious, be expensive and distract Medistem s management s focus. Medistem may be unable to afford such litigation. Moreover, the outcome of litigation is always uncertain, and an unfavorable outcome in such litigation might seriously harm Medistem.

Medistem cannot be certain that the services and products it delivers would not infringe valid patents, copyrights, trademarks or other intellectual property rights held by third parties. Medistem may incur substantial expenses in defending against infringement claims, regardless of their merit. If Medistem lacks the resources for such litigation, its ability to defend itself would be

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compromised. In addition, litigation can be a serious distraction for key personnel who must assist with or participate in the litigation. If any claims are successfully asserted against Medistem, it may be required to modify its technology or seek a license to use the infringing technology. Medistem may not be able to do so on commercially reasonable terms, or at all. Successful infringement claims against Medistem may also result in substantial monetary liability. Any of the foregoing could seriously harm its business.

Failure to manage growth (if any) may adversely affect Medistem s business.

Medistem cannot be sure that it will be able to grow or manage growth. Any counterproductive scenarios, cash flow problems and expansion of operations will result in new and increased responsibilities for management, and will place a significant strain on Medistem s operating and financial systems. To accommodate any increased number of employees, locations and the increased size of operations, Medistem will need to recruit and retain the appropriate personnel to manage operations. Medistem will also need to significantly improve its operations, financial and management processes and systems. If it fails to successfully implement and integrate these systems, or if it is unable to expand these systems to accommodate its growth, Medistem may have serious financial or operating difficulties and/or inadequate, inaccurate or non-timely financial and operational information, which could seriously harm its business.

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Cautionary statement regarding forward-looking statements

This proxy statement/prospectus contains forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act. Forward-looking statements generally relate to future events or future financial or operating performance. In some cases, you can identify forward-looking statements because they contain words such as may, will, should, expects, plans, anticipates, could, target, projects, contemplates, believes, estimates, predicts, potential or continue or the negative of these words or other similar terms expressions that concern Intrexon s and Medistem s expectations, strategy, plans or intentions. Intrexon s and Medistem s expectations and beliefs regarding these matters may not materialize, and actual results in future periods are subject to risks and uncertainties that could cause actual results to differ materially from those projected, including but not limited to:

- the risk that Medistem shareholders may fail to approve the merger proposal;
- the risk that Intrexon and Medistem will be unable to consummate the merger on the terms set forth in the merger agreement for any reason;
- the possibility that costs, difficulties or disruptions related to the integration of Medistem s operations into Intrexon will be greater than expected;
- the risk that growth opportunities will not be realized or realized to the extent anticipated;
- the risk that Intrexon following the merger will not realize on its financing or operating strategies;
- the price of, market for, and the potential market price volatility of Intrexon s common stock;
- the risk that litigation in respect of either company or the merger could adversely impact either company;
- the risk that disruption caused by the merger that make it difficult to maintain certain strategic relationships;
- the ability of the combined company to innovate and provide a superior user experience;
- the sufficiency of Intrexon s cash and cash equivalents to meet its liquidity needs following the merger, whether caused by unanticipated increases in capital expenditures or otherwise;
- Intrexon s current and future exclusive channel collaborations (ECCs);
- developments concerning Intrexon s collaborators;
- Intrexon s ability to successfully enter new markets or develop additional products, whether with its collaborators or independently;

changes in laws and regulations applicable to Medistem and/or Intrexon;

competition from existing technologies and products or new technologies and products that may emerge;

actual or anticipated variations in Intrexon s operating results;

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actual or anticipated fluctuations in Intrexon s competitors or its collaborators operating results or changes in their respective growth rates;

market conditions in the industry;

Intrexon s ability, and the ability of its collaborators, to protect their intellectual property and other proprietary rights and technologies;

Intrexon s ability, and the ability of its collaborators, to adapt to changes in laws or regulations and policies;

the ability of Intrexon s 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;

Intrexon s ability to retain and recruit key personnel;

Intrexon s estimates regarding expenses, future revenue, capital requirements and needs for additional financing; and

the other factors discussed in the section entitled Risk Factors and in Intrexon s and Medistem s filings with the SEC.

Due to these risks and uncertainties, there can be no assurances that the results anticipated by the forward-looking statements of Intrexon or Medistem will occur, that their respective judgments or assumptions will prove correct or that unforeseen developments will not occur. Accordingly, you are cautioned not to place undue reliance upon any forward-looking statements of Intrexon or Medistem, which speak only as of the date made. Intrexon and Medistem undertake no obligation to publicly update any forward-looking statement, whether as a result of new information, future events, changed circumstances or otherwise, except as required by law.

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The Medistem special meeting

This proxy statement/prospectus is being furnished to Medistem shareholders in connection with the solicitation of proxies by the Medistem board of directors in connection with the special meeting.

This proxy statement/prospectus and the enclosed proxy card(s) are first being sent to Medistem shareholders on or about February 12, 2014.

Date, time and place of the special meeting

The Medistem special meeting will take place on March 4, 2014, at 9:00 a.m., local time, at the offices of Jones Day, 12265 El Camino Real, Suite 300, San Diego, California 92130.

Purpose of the Medistem special meeting

At the special meeting you will be asked to consider and vote upon:

Proposal 1. a proposal to adopt and approve the Agreement and Plan of Merger, dated as of December 19, 2013, by and among Medistem, Intrexon Corporation, and XON Cells, Inc., which is referred to herein as the merger agreement, pursuant to which Medistem will merger with and into XON Cells, Inc., a wholly owned subsidiary of Intrexon, as more fully described in the accompanying proxy statement/prospectus. A copy of the merger agreement is attached as Annex A to the accompanying proxy statement/prospectus;

Proposal 2. a proposal to approve, on a non-binding, advisory basis, the compensation payable to Medistem s named executive officers that is based on or otherwise relates to the merger, which is referred to herein as the merger-related compensation payments proposal, as discussed under the section entitled The Merger Interests of Medistem s Directors and Executive Officers in the Merger Quantification of Potential Payments to Medistem Named Executive Officers in Connection with the Merger ; and

Proposal 3. a proposal to adjourn the Medistem special meeting, if necessary or appropriate, to solicit additional proxies in favor of the proposal to adopt and approve the merger agreement, if there are not sufficient votes at the time of such adjournment to adopt and approve the merger agreement proposal.

At the special meeting, Medistem may also conduct any other business properly brought before the special meeting and any adjournment or postponement thereof.

Recommendations of the Medistem board of directors

The Medistem board of directors reviewed and considered the terms and conditions of the merger agreement and the transactions contemplated thereby, including the merger and, after careful consideration, has unanimously:

determined that the merger agreement and the transactions contemplated thereby, including the merger, are advisable, fair to, and in the best interests of, Medistem and its shareholders;

adopted the merger agreement and approved the transactions contemplated thereby, including the merger; and

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resolved to recommend the adoption and approval of the merger agreement to Medistem s shareholders.

The Medistem board of directors unanimously recommends that Medistem s shareholders vote **FOR** the merger proposal, **FOR** the approval, on a non-binding, advisory basis, of the merger-related compensation payments proposal and **FOR** the adjournment of the special meeting, if necessary to solicit additional proxies.

Record date; stock entitled to vote

Only holders of record of shares of Medistem common stock at the close of business on January 31, 2014 are entitled to notice of, and to vote at, the Medistem special meeting and at any adjournment of the meeting. This date is referred to as the record date for the Medistem special meeting. Beginning ten days before the special meeting, a list of Medistem shareholders of record entitled to vote at the Medistem special meeting will be available during regular business hours at Medistem s executive offices and principal place of business at 9255 Towne Centre Drive, #450, San Diego, CA 92121 for inspection by shareholders of record of Medistem for any purpose germane to the special meeting. The list will also be available at the special meeting.

In connection with entering into the merger agreement, each of the directors and executive officers of Medistem and their respective permitted transferees, as applicable, in their individual capacities, each of whom are referred to herein as a supporting shareholder, entered into a voting agreement pursuant to which the supporting shareholder agreed to, among other things, vote his shares of Medistem common stock (i) in favor of the merger proposal and (ii) against an acquisition proposal other than the merger, subject to any termination of the voting agreement in accordance with its terms. In addition, the supporting shareholders agreed not to directly or indirectly transfer their respective shares of Medistem common stock during the term of the voting agreement, subject to certain limited exceptions. The voting agreements may be terminated by the supporting shareholders if the Medistem board of directors has withdrawn or changed its recommendation in favor of a competing transaction. As of the record date, the supporting shareholders as a group owned and were entitled to vote 9,243,218 shares of Medistem common stock, or approximately 64% of the outstanding shares of Medistem common stock on that date.

Quorum

A quorum is necessary to hold a valid special meeting of Medistem shareholders. A quorum will be present at the Medistem special meeting if the holders of a majority of the outstanding shares of the common stock of Medistem entitled to vote on the record date are present, in person or by proxy. If a quorum is not present at the Medistem special meeting, Medistem expects the presiding officer to adjourn the special meeting in order to solicit additional proxies. Abstentions and broker non-votes (as described below), if any, will be counted as present for purposes of determining whether a quorum is present.

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Required vote

Proposal 1.	The adoption and approval of the merger proposal requires the affirmative vote of the shareholders of record as of the record date holding a majority of all outstanding shares of Medistem s common stock. **Your failure to vote, in the case you are the record holder of shares, or instruct your broker, bank or other nominee to vote, in the case you hold shares in street name, will have the same effect as a vote against the merger proposal.**
Proposal 2.	The approval, on a non-binding, advisory basis, of the merger-related compensation payable to Medistem s named executive officers that is based on or otherwise relates to the merger requires that the votes cast in favor of this proposal exceed the votes cast against this proposal.
Proposal 3.	The approval of the adjournment of the special meeting, to solicit additional proxies in favor of the merger proposal if there are not sufficient votes at the time of such adjournment to approve the merger proposal and the merger, requires the affirmative vote of the holders of a majority of the shares of Medistem common stock present, in person or by proxy, at the special meeting and entitled to vote thereon, if a quorum is not present. If a quorum is present, the approval of the adjournment of the special meeting to solicit proxies in favor of the merger proposal if there are not sufficient votes at the time of such adjournment to approve the merger proposal, requires that the votes cast in favor of the adjournment proposal exceed the votes cast against the merger proposal.

Voting rights

Each Medistem shareholder is entitled to one vote for each share of Medistem common stock owned as of the record date. As of the close of business on the record date, there were 14,454,288 issued and outstanding shares of Medistem common stock. As of the record date, the directors and executive officers and their affiliates as a group owned and were entitled to vote 9,243,218 shares of Medistem common stock, or approximately 64% of the shares of Medistem common stock on that date.

In connection with entering into the merger agreement, each of the directors and executive officers of Medistem and their respective permitted transferees, as applicable, in their individual capacities, each of whom are referred to herein as a supporting shareholder, entered into a voting agreement pursuant to which the supporting shareholder agreed to, among other things, vote his shares of Medistem common stock (i) in favor of the merger proposal and (ii) against an acquisition proposal other than the merger, subject to any termination of the voting agreement in accordance with its terms. In addition, the supporting shareholders agreed not to directly or indirectly transfer their respective shares of Medistem common stock during the term of the voting agreement, subject to certain limited exceptions. The voting agreements may be terminated by the supporting shareholders if the Medistem board of directors has withdrawn or changed its recommendation in favor of a competing transaction. As of the record date, the supporting shareholders as a group owned and were entitled to vote 9,243,218 shares of Medistem common stock, or approximately 64% of the outstanding shares of Medistem common stock on that date.

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Abstentions and broker non-votes

In accordance with the rules of the OTC Markets Group s OTCQB marketplace, brokers who hold shares of Medistem common stock in street name for their customers have authority to vote on routine proposals when they have not received instructions from beneficial owners. However, brokers are precluded from exercising their voting discretion with respect to non-routine matters, such as the merger proposal, the proposal to approve the merger-related compensation for named executive officers and the adjournment proposal. As a result, absent specific instructions from the beneficial owner of such shares, brokers are not empowered to vote such shares, which we refer to generally as broker non-votes in this proxy statement/prospectus.

Your abstention from voting and broker non-votes, if any, will have the same effect as a vote against the merger proposal and, if a quorum is not present, the adjournment proposal. Abstentions and broker non-votes are not counted as votes for or against the merger-related compensation payments proposal or, if a quorum is present, the adjournment proposal and therefore do not affect the outcome.

Voting at the special meeting

Whether or not you plan to attend the Medistem special meeting, please promptly vote your shares of Medistem common stock by proxy or, if you hold your shares in street name, instruct your broker, bank or other nominee how to vote, to ensure your shares are represented at the meeting. You may also vote in person at the Medistem special meeting.

Voting in person

If you plan to attend the Medistem special meeting and wish to vote in person, you will be given a ballot at the special meeting. Please note, however, that if your shares of Medistem common stock are held in street name, which means your shares of Medistem common stock are held of record by a broker, bank or other nominee, and you wish to vote at the Medistem special meeting, you must bring to the Medistem special meeting a legal proxy from the record holder (your broker, bank or nominee) of the shares of Medistem common stock authorizing you to vote at the Medistem special meeting.

Voting by proxy; voting instructions

Shareholders of Record: You should vote your proxy even if you plan to attend the Medistem special meeting. You can always change your vote at the Medistem special meeting. Registered shareholders may vote by mail, by telephone or by Internet.

To vote by mail, please complete, sign, date and mail your proxy card in the postage prepaid envelope provided. Proxies should be mailed sufficiently in advance to ensure receipt prior to the special meeting.

To vote by telephone, call toll-free 1-800-690-6903 from any touch-tone telephone and follow the instructions. Have your proxy card available when you call. If you vote by phone, you do not need to mail your proxy card. Telephone voting is available until 11:59 p.m., Eastern Time, on March 3, 2014.

You can vote on the Internet at www.proxyvote.com. Have your proxy card in hand when going online and follow the online instructions. If you vote by the Internet, you do not need to mail your proxy card. Internet voting is available up until 11:59 p.m., Eastern Time, on March 3, 2014.

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Your enclosed proxy card includes specific instructions for voting your shares of Medistem common stock. Medistem s electronic voting procedures are designed to authenticate your identity and to ensure that your votes are accurately recorded. When the accompanying proxy is returned properly executed, the shares of Medistem common stock represented by it will be voted at the Medistem special meeting or any adjournment thereof in accordance with the instructions contained in the proxy.

If you return your signed proxy card without indicating how you want your shares of Medistem common stock to be voted with regard to a particular proposal, your shares of Medistem common stock will be voted in favor of each such proposal. Proxy cards that are returned without a signature will not be counted as present at the Medistem special meeting and cannot be voted.

If the special meeting is postponed or adjourned for any reason, at any subsequent reconvening of the special meeting all proxies will be voted in the same manner as the proxies would have been voted at the original convening of the special meeting, except for any proxies that have at that time effectively been revoked or withdrawn, even if the proxies had been effectively voted on the same or any other matter at a previous meeting.

Shares Held in Street Name: If your shares are held of record in the name of a bank, broker or other nominee you should follow the separate instructions that the nominee provides to you. Although most banks and brokers now offer telephone and Internet voting, availability and specific processes will depend on their voting arrangements.

Revocation of proxies or voting instructions

If you are a registered holder and give your proxy card to Medistem or vote by telephone or the Internet, you have the power to revoke your proxy or change your vote by taking any of the following actions before your proxy is voted at the special meeting:

- voting again by telephone or Internet any time prior to 11:59 p.m., Eastern Time, on March 3, 2014;
- notifying the Secretary of Medistem in writing no later than the beginning of the special meeting of your revocation;
- delivering to the Secretary of Medistem no later than the beginning of the special meeting a revised signed proxy card bearing a later date; or
- attending the special meeting and voting in person, which will automatically cancel any proxy previously given, or revoking your proxy in person, but your attendance alone will not revoke any proxy that you have previously given.

If your shares are held in street name by your broker, bank or other nominee, you should contact them to change your vote.

Notice of revocation or your new proxy must be delivered to Medistem s Corporate Secretary at 9255 Towne Centre Drive, #450, San Diego, CA 92121.

Other matters

As of the date of this proxy statement/prospectus, the Medistem board of directors is not aware of any other business to be presented for consideration at the special meeting.

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Solicitation of proxies

In addition to the use of the mail, proxies may be solicited by officers and directors and regular employees of Medistem and Intrexon, without additional remuneration, by personal interview, telephone, facsimile or otherwise. Medistem will also request brokers, banks and nominees to forward proxy materials to the beneficial owners of shares of Medistem common stock held of record on the record date, the cost of which will be borne by Medistem.

Additional questions

If you have questions about the merger agreement, the merger or the merger proposal or the other matters to be voted on at the special meeting or desire additional copies of this proxy statement/prospectus or additional proxy cards, you should contact Medistem, 9255 Towne Centre Drive, #450, San Diego, CA 92121 (858) 352-7071 Attn: Investor Relations.

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The companies

Intrexon Corporation

Intrexon believes it is a leader in the field of synthetic biology, an emerging and rapidly evolving discipline that applies engineering principles to biological systems. Using its suite of proprietary and complementary technologies, Intrexon designs, builds and regulates gene programs, or sequences of DNA that control cellular function, and cellular systems, or activities that take place within a cell and the interaction of those systems in the greater cellular environment, to enable the development of new and improved products and manufacturing processes across a variety of end markets, including healthcare, food, energy and environmental sciences. 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.

Working with its collaborators, Intrexon seeks to create more effective, less costly and more sustainable solutions than can be provided through current industry practices. Intrexon believes its 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. Intrexon s business model is to commercialize its 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.

Intrexon s common stock is traded on the NYSE under the symbol XON. The principal executive offices of Intrexon are located at 222 Lakeview Avenue, Suite 1400, West Palm Beach, Florida 33401, and its telephone number is (561) 410-7000.

For more information regarding Intrexon s business, see the section entitled Description of Intrexon s Business.

Medistem Inc.

Medistem Inc., is focused on the development of the Endometrial Regenerative Cell (ERC), a universal donor adult stem cell product. ERCs possess specialized abilities to stimulate new blood vessel growth and can differentiate into lung, liver, heart, brain, bone, cartilage, fat and pancreatic tissue. These unique properties have applications for treatment of critical limb ischemia (CLI), congestive heart failure (CHF), neurodegenerative diseases, liver failure, kidney failure, and diabetes. ERCs have been cleared by the FDA to begin studies in the United States.

Since September 7, 2013, shares of Medistem common stock have traded on the OTC Markets Group s OTCQB marketplace under the stock symbol MEDS. Prior to that time, shares of Medistem s common stock traded on the OTCPink marketplace. The principal executive offices of Medistem are located at 9255 Towne Centre Drive, #450, San Diego, CA 92121, and its telephone number is (858) 352-7071.

For more information regarding Medistem s business, see the section entitled Description of Medistem s Business.

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XON Cells, Inc.

XON Cells, Inc., a wholly owned subsidiary of Intrexon, is a Nevada corporation formed solely for the purpose of effecting the merger and is referred to herein as Merger Sub.

Merger Sub has not conducted any activities other than those incidental to its formation and the matters contemplated by the merger agreement. The principal executive offices of Merger Sub are located at 20374 Seneca Meadows Parkway, Germantown, Maryland 20876, and its telephone number is (301) 556-9900.

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The merger

Effects of the merger

The shareholders of Medistem are being asked to adopt and approve the Agreement and Plan of Merger, dated as of December 19, 2013, by and among Medistem, Intrexon Corporation, and Merger Sub, as amended by the First Amendment to the Agreement and Plan of Merger and as may be further amended from time to time, which is referred to herein as the merger proposal.

Pursuant to the terms and subject to the conditions of the merger agreement, at the closing of the proposed transactions contemplated by the merger agreement, Merger Sub will be merged with and into Medistem, and Medistem will continue as the surviving corporation of the merger and as a wholly owned subsidiary of Intrexon. Following the merger, Medistem will no longer be a publicly traded corporation.

Background of the merger

As part of its ongoing oversight of Medistem s business, Medistem s board of directors, with input from senior management, has from time to time discussed and evaluated its business, strategic direction, longer-term goals, performance and prospects. In the course of these discussions, Medistem s board of directors and certain members of senior management also discussed and reviewed various potential strategic alternatives involving private capital financing and possible acquisitions or business combinations that could complement and enhance Medistem s competitive strengths and strategic positions, and also regularly considered Medistem s prospects as an independent company. In connection with the periodic consideration of strategic alternatives by Medistem s board of directors, from time to time, Medistem s senior management has communicated informally and formally with potential investors, financing sources, and representatives of other companies in the biotechnology sector that were considered potentially complementary and with other companies that represented potential licensing or merger and acquisition opportunities.

On November 17, 2011, as a follow-up to a meeting by Medistem board of directors members Vladimir Zaharchook-Williams and Thomas E. Ichim, Ph.D., Medistem s then Chief Executive Officer, met with representatives of Suitor A to discuss a potential business combination. Medistem submitted a merger proposal to Suitor A s chief operating officer, and its then interim chief executive officer. A subsequent telephonic conversation between Suitor A s chief operating officer and Dr. Ichim revealed no interest by Suitor A in continuing merger discussions. Suitor A s chief operating officer cited lack of clinical data as the primary reason for their lack of interest.

On March 18, 2012, Vladimir Bogin, M.D., Medistem s Chairman of the board of directors, was approached by representatives of Suitor B, a biologics company that expressed an interest in collaborating with Medistem, obtaining license rights to Medistem s intellectual property, or acquiring Medistem. Medistem and Suitor B signed a confidential disclosure agreement and engaged in multiple communications, including telephonic conferences, a meeting on June 22, 2012, at Medistem offices attended by representatives of Suitor B, and a virtual tour of Medistem s ERC manufacturing site at Cook GBT. The two companies engaged in follow-up email correspondences and telephonic communications until September 20, 2012, when Suitor B informed Medistem that Suitor B s management team deemed Medistem s technology to be at too early a stage in clinical development.

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On June 12, 2012, Amit Patel, M.D., a member of Medistem s Scientific Advisory Board, introduced Suitor C to Medistem as a potential collaborator, licensee, or acquirer. A representative of Suitor C told Dr. Patel that Suitor C had an interest in the area of regenerative medicine. On that date, Medistem and Suitor C signed a confidential disclosure agreement. On June 20, 2012, Medistem s then Chief Executive Officer, Dr. Ichim, together with Medistem s Chairman of the Board, Dr. Bogin, and then Scientific Advisory Board member Alan J. Lewis, Ph.D., met with Suitor C. On August 12, 2012, Suitor C s executive vice president advised Medistem in writing of Suitor C s lack of interest in continued discussions.

On April 30, 2012, Medistem engaged SR Ventures, LLC, referred to as SR Ventures, to identify an investment bank to help Medistem raise capital. SR Ventures was selected based on a recommendation from Medistem board members Sergey Sablin, Ph.D., and Dr. Ichim, who were aware of SR Ventures success in helping raise capital for several public companies. Subsequently, SR Ventures provided introductions and meetings for Medistem with several investment banks.

Of these investment banks, only Noble Financial Group, referred to as Noble, expressed an interest in assisting Medistem. A common concern expressed by the potential investment banks was the lack of liquidity of Medistem s stock, its trading on the OTC Markets Group s OTCPink marketplace, or OTCPink, and Medistem s lack of clinical data. Noble invited Medistem to present at the Noble Financial Bio-X Life Sciences Conference, on September 24, 2012. At the conference, Dr. Ichim and Dr. Bogin were introduced to several institutional investors. Discussions with these potential investors, as well as with Biotech Analyst Henry McKusker of Scimitar Equity, resulted in feedback that Medistem had an optics problem due to OTCPink listing, the lack of liquidity of Medistem s common stock, the fact that clinical trials were being conducted overseas, and the absence of clinical trials in the United States.

On September 30, 2012, Medistem engaged Noble to act as its placement agent in an effort to raise private financing for Medistem through the sale of securities to investors. Between September 2012 and January 2013, representatives of Noble contacted more than 80 potential investors to solicit interest in Medistem. On January 7, 2013 at the JP Morgan Healthcare conference, Dr. Lewis, who was then Medistem s Chief Executive Officer, Dr. Ichim, Dr. Bogin and Dr. Sablin met with Noble representative Jonathan Blum to discuss progress. Mr. Blum advised Medistem that a value-based investment was highly unlikely based on negative feedback from the institutional investors that had been approached. Mr. Blum indicated that there was no interest from any institutional investors to meet with Medistem at the JP Morgan Healthcare conference.

Given the lack of interest of institutional investors, Medistem s senior management and board of directors elected to focus on seeking investors interested in structured investments such as convertible bonds to raise a seed round of financing necessary to initiate a United States-based clinical trial, which had been approved by the FDA in 2011, but had not been initiated due to lack of finances. The decision to seek such investors was shared with the full Medistem board of directors in January 2013.

As part of Medistem s outreach to potential investors in a structured product, Noble invited Dr. Ichim to present at the Ninth Annual Equity Conference on January 22-23, 2013, and to meet potentially interested investors. Six investors agreed to preliminary meetings. Following the preliminary meetings, these potential investors advised that they would not be interested in investing in Medistem, citing that the company, at that time, was not a fully reporting company under the federal securities laws as Medistem s common stock was trading on the OTCPink, and

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that, as a result, its common shares were illiquid. Furthermore, the potential investors expressed fundamental concerns surrounding the lack of U.S. clinical data, poor performance of non-genetically modified stem cell stocks in general, and the absence of significant differentiating factors between Medistem s technology and that of other companies developing non-genetically modified stem cells.

On February 27, 2013, by unanimous vote of its board of directors, Medistem terminated its engagement with Noble. With the realization of the difficulty of attracting institutional investors, simultaneously the Board approved engaging independent auditors and retaining outside counsel to assist in returning Medistem to status as a fully reporting company under the federal securities laws through a Registration Statement on Form 10, pursuant to Section 12(b) of the Securities Exchange Act of 1934.

On May 3, 2013, Dr. Bogin, was introduced by Yan Stillman, a financial consultant to Medistem, to Party A, an entrepreneur from the Russian Federation, to determine Party A s interest in providing capital through a fund controlled by himself and his associates. After five meetings and detailed due diligence, Party A informed Dr. Bogin that his fund would not make a direct investment in Medistem, citing the illiquidity of Medistem s common stock. Discussions with Party A were formally terminated on November 7, 2013.

In mid-May 2013, senior management of Medistem contacted Aegis Capital Corp., which is referred to as Aegis, Maxim Group, which is referred to as Maxim, and Roth Capital Partners, LLC, which is referred to as Roth, to discuss Medistem s capital needs. Aegis, Maxim, and Roth were selected on the basis of their prolific activity in the area of biotech microcap companies, particularly companies focused on regenerative medicine.

On May 15, 2013, Dr. Lewis initiated a telephonic conversation with Joe Pantgenis at Aegis to discuss Medistem s capital needs. The feedback Dr. Lewis received was a recommendation to file a Form S-1 registration statement immediately after submission of the Form 10. Given the costs associated with a Form S-1 filing, Medistem s board deemed this strategy financially unfeasible.

During the week of May 20, 2013, Dr. Lewis met in New York with investment banking representatives Tom Higgins and Jim Alfaro of Maxim and John Chambers of Roth to seek their support in obtaining financing for Medistem. Maxim s representatives indicated they would not be able to assist Medistem in a capital raise, citing illiquidity of the Company s common stock.

In May and June 2013, Medistem reached out to several other investment banks and funds specialized in biotech microcap companies. None of these firms expressed an interest in supporting Medistem s capital raising efforts.

On July 8, 2013, Dr. Lewis received an email from the President of Intrexon s Protein Production Division, introducing Randal J. Kirk, Intrexon s Chief Executive Officer, and Dr. Lewis to each other.

On July 9, 2013, Mr. Kirk and Dr. Lewis spoke on the phone and discussed Intrexon and Medistem s technology. That same day, Mr. Kirk followed up with an email to Dr. Lewis introducing Medistem to Donald P. Lehr, Intrexon s Chief Legal Officer, and forwarding a mutual confidential disclosure agreement for Medistem s review. Mr. Kirk s email also introduced additional members of Intrexon s team.

Also on July 9, 2013, Medistem filed its registration statement on Form 10.

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Following the filing of the Registration Statement, Dr. Lewis and John P. Salvador, Medistem s Chief Operating Officer, began an outreach campaign to investment banks to explore their interest in assisting Medistem in a PIPEs transaction. Dr. Lewis and Mr. Salvador also began an outreach campaign to institutional investors and sell-side analysts to gauge their interest in participating in either a PIPEs transaction, purchasing company shares in the open market, or providing research coverage.

On July 18, 2013, Medistem and Intrexon executed a mutual confidential disclosure agreement.

Between August 9, 2013 and September 8, 2013, representatives of Roth agreed to arrange a non-deal road show to gauge investor interest in Medistem. The non-deal road show covered qualified investors in New York and Boston. Roth approached approximately 45 institutional investors that invest in micro-cap healthcare companies. Roth s representatives managed to arrange seven meetings in New York and Boston for the week of September 8, 2013.

On August 30, 2013, Dr. Lewis sent an email to Mr. Kirk and Mr. Lehr, informing them of progress to uplist to the OTC Market s OTCQB marketplace, or OTCQB, and requesting that Intrexon and Medistem engage in discussions related to Medistem using Intrexon technology as a means of augmenting the Medistem ERC stem cell product. Mr. Kirk responded, suggesting the companies initiate a discussion of those ideas.

On September 7, 2013, Medistem s registration statement on Form 10 became effective thus bringing Medistem to full reporting status.

During the week of September 9, 2013, in addition to meeting with the institutional investors introduced by Roth, Dr. Lewis and Mr. Salvador met with investment banking representatives from Laidlaw and Company, which is referred to as Laidlaw, RBC Capital Markets, which is referred to as RBC, Ladenburg Thalman Financial Services Inc., which is referred to as Ladenburg, Midtown Partners, & Company, LLC, which is referred to as Midtown, Dawson James Securities, which is referred to as Dawson, Janey Montgomery Scott, LLC, which is referred to as Janey, and Roberts Mitani Advisors, LLC, which is referred to as Roberts Mitani. During the meeting with Laidlaw, their representative indicated that Laidlaw might be able to assist in a capital raise at $0.50 per share with 100% warrant coverage at $0.75. Between September 9, 2013 and September 13, 2013, Medistem s shares were trading between $2.00 and $2.35 on the OTCQB. In addition, between September 9, 2013 and September 13, 2013, the average volume for those five days was 1,960 shares per day. Dr. Lewis and Mr. Salvador concluded that Laidlaw was the only viable banker willing to raise capital on Medistem s behalf. Despite the extreme dilution, there was an imperative need to raise capital to ensure Medistem s survival. As a result, Dr. Lewis and Mr. Salvador recommended that the Board enter into an agreement with Laidlaw. Shortly thereafter, a Board conference call with representatives of Laidlaw occurred to discuss a potential funding.

On September 17, 2013, Dr. Lewis submitted a list of collaborative concepts to an employee of Intrexon outlining possible areas of potential opportunities for Medistem and Intrexon to collaborate.

On September 18, 2013, Roth informed Dr. Lewis and Mr. Salvador that they would not be able to assist in a capital raise and cited investor feedback that Medistem lacked U.S. clinical data, that Medistem s stock was illiquid, and investor lack of interest in the non-genetically modified stem cell sector.

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Following the road show, between September 16, 2013, and October 31, 2013, representatives of Midtown, Dawson, Janey, and Roberts Mitani, each informed Medistem that they would not be able to assist Medistem in a capital raise, and also cited Medistem s lack of U.S. clinical data, illiquid stock and investor lack of interest in the non-genetically modified stem cell sector. Medistem continued discussions with Laidlaw.

On September 30, 2013, Dr. Ichim had a telephonic discussion with Intrexon representatives, to discuss market opportunities and opportunities for working together. The avenues of potential collaboration presented included: licensing of ERC to Intrexon for genetic manipulation for a single application; licensing for broad application for genetic manipulation; and acquisition of Medistem by Intrexon.

On October 5, 2013, Intrexon s Chief Science Officer, Thomas D. Reed, PhD., called Dr. Lewis and confirmed Intrexon s continued interest in Medistem s technology. Dr. Reed also indicated that Intrexon had an interest in acquiring Medistem.

On October 14, 2013, Dr. Lewis, Dr. Ichim, Mr. Dickerson, and Mr. Salvador, each of Medistem, met with Dr. Reed and several other Intrexon employees. The purpose of the meeting was to further discuss potential synergies between each of the companies technology.

On October 22, 2013, following a call with Dr. Bogin and Medistem s board of directors, Laidlaw delivered to Dr. Lewis and Mr. Salvador an engagement letter.

With the knowledge of the Medistem board of directors, on November 5, 2013, Dr. Lewis met with Mr. Kirk to discuss a potential offer letter for an acquisition of Medistem by Intrexon.

On November 7, 2013, Medistem received a letter of intent, referred to as the LOI, from Mr. Kirk on behalf of Intrexon. The LOI detailed certain material terms and conditions pursuant to which Intrexon proposed to acquire Medistem. The LOI provided that Intrexon would acquire all of the outstanding common stock of Medistem for a price of $1.00 per share in exchange for Intrexon stock.

Also on November 7, 2013, Medistem scheduled a special meeting of the board of directors to discuss the LOI received from Mr. Kirk. At the special meeting, Medistem s board of directors approved and formed a Transaction Committee consisting of Dr. Bogin, Dr. Lewis, Herm Rosenman and John Chiplin to evaluate sale and financing alternatives for Medistem.

The members of the Transaction Committee were selected based on the mergers and acquisitions experience of the two independent directors (Mr. Rosenman and Mr. Chiplin), and the addition of the Chairman and CEO.

The Transaction Committee prepared and shared with the full Medistem board an internal analysis of a potential transaction with Intrexon, detailing among other things: certain technology risks facing Medistem; the potential resources, experience, and other benefits that a transaction with Intrexon might provide; how an acquisition by Intrexon might mitigate competitive risks facing Medistem; Medistem s lack of success in interesting institutional investors; options available to Medistem; and a recommendation to pursue a potential merger to maximize value for shareholders and accelerate clinical development of Medistem s technology.

On November 11, 2013, a special meeting of Medistem s board of directors was held to further review the LOI from Intrexon. Detailed discussions and possible alternatives to the merger were

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considered. Specifically, the Medistem board determined not to pursue the Laidlaw engagement letter that was received on October 22, 2013 as the initial Intrexon proposed acquisition valuation was superior to the proposed terms discussed with Laidlaw. Alternatives to the Intrexon merger were discussed, but Medistem s board of directors was concerned that given the timing and other considerations, if it did not focus on the merger with Intrexon, Intrexon might walk away and not enter into a binding agreement. The Medistem board determined ultimately to arrange a telephonic meeting with Mr. Kirk and his management team to address questions related to the proposed merger.

On November 12, 2013, Dr. Lewis sent Mr. Kirk an email raising some of the issues that Medistem s board had with the Intrexon LOI. The issues addressed included: increasing the consideration offered to $1.50 per share; altering the consideration to include a mix of stock and cash, instead of stock only; clarifying the duration of any lock-up period; suggesting different timing for determining the conversion ratio for Intrexon common stock; and a request for a bridge loan to finance Medistem operations during the diligence and negotiation phases of the proposed transaction.

On November 13, 2013, Mr. Lehr sent Medistem a request for due diligence information concerning Medistem s Form 10, Medistem s number of shares outstanding, and Medistem s relationship with partially and wholly owned subsidiaries.

On November 14, 2013, Mr. Kirk, Dr. Reed, Krish Krishnan, Intrexon s Chief Operating Officer, and Mr. Lehr and Medistem s board of directors discussed Intrexon s business and vision, as well as potential Medistem integration into the Intrexon infrastructure. The draft LOI and the possibility of Intrexon acquiring Medistem were discussed at length. The issues mentioned in the November 12 email were discussed in detail. The parties negotiated the price per share and agreed upon $1.35 per Medistem share. Additionally, subject to documentation and shareholder approval, it was agreed that the transaction would consist of 80% stock and 20% cash. A three-month lock-up period on the stock was agreed upon. It also was agreed that Intrexon would make a $700,000 bridge loan available to Medistem upon signing of the LOI.

On November 15, 2013, Dr. Lewis sent a revised version of the LOI to Mr. Kirk, proposing, among other things, an acquisition price of $1.35 per share and adding a provision for a bridge loan whereby Intrexon would lend $700,000 for the purpose of funding Medistem s ongoing operations.

On November 19, 2013, Mr. Lehr sent to Dr. Lewis a revised copy of the LOI, offering $1.35 per share, consisting of $0.27 cash per share and $1.08 per share in Intrexon s common stock.

On November 20, 2013, Medistem provided access to Intrexon to an electronic data site allowing access to initial due diligence items requested by Intrexon.

On November 20, 2013, Medistem and Intrexon executed the finalized LOI reflecting the negotiated key terms of a proposed business combination. On that same date, Intrexon provided an additional due diligence request list to Medistem. Due diligence materials were made available to Intrexon beginning on that date through present. The LOI contained a standard non-solicitation clause with an expiration date of December 5, 2013.

Following entry into the non-binding LOI, the parties respective outside counsel engaged in discussions about the terms of a definitive merger agreement relating to the proposed transaction, focused principally on structure for the transaction. On November 27, 2013, Troutman Sanders LLP, counsel to Intrexon, delivered to Jones Day LLP, counsel to Medistem, an initial draft of a definitive merger agreement for the proposed merger transaction.

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On November 27, 2013, Medistem received a draft promissory note for $700,000 and proposed definitive merger agreement from Intrexon.

Between November 27, 2013 and December 7, 2013, the parties outside legal counsel discussed various issues relating to the draft definitive merger agreement, including structure and related tax implications, and treatment of Medistem s outstanding equity awards under the merger agreement. A 21 day go shop provision was discussed and added to the draft definitive merger agreement. In addition, Dr. Ichim s employment agreement was discussed and included in the draft of the definitive merger agreement as a closing condition for the merger.

On November 29, 2013, Medistem began discussions with investment banks to provide Medistem s Board with a fairness opinion to analyze the potential Intrexon transaction. Ladenburg, Dawson James, Roth, and Griffin Securities, Inc. referred to as Griffin, were approached. The three potential companies were selected as potential advisors on the basis of their expertise in biotechnology transactions and experience in providing fairness opinions. Proposals were solicited from each of the investment banking firms, and telephonic interviews were conducted.

On November 29, 2013, Medistem s Transaction Committee held a telephonic meeting to, among other things, review the initial draft of the merger agreement and related key issues.

On December 1, 2013, Medistem s board of directors held a telephonic meeting to, among other things, discuss the draft merger agreement and the proposed bridge loan financing terms.

On December 1, 2013, Dr. Lewis requested from Intrexon a $50,000 loan to cover certain transaction expenses.

On December 3, 2013, Medistem s board selected Griffin as the bank to provide a fairness opinion. The selection of Griffin was based on experience, proposed speed of completing its analysis, Griffin s awareness of Intrexon, and the price proposed by Griffin. Medistem s board approved the selection of Griffin, knowing also that Griffin had material relationships with Intrexon during the two prior years, but recognizing that Griffin was not advising Intrexon on the contemplated merger transaction.

On December 3, 2013, Medistem executed a promissory note for $50,000 from Intrexon to fund ongoing working capital needs, including certain transaction expenses.

On December 4, 2013, Medistem s board of directors held a telephonic meeting to, among other things, discuss the transaction status, the engagement of an investment banking firm to render a fairness opinion, and the pending expiration of Medistem s LOI with Intrexon.

On December 5, 2013, Medistem formally engaged Griffin, and provided Griffin with access to the due diligence files. Ultimately, Griffin interviewed Medistem s senior management, as well as Medistem s International Principle Investigator, Dr. Patel.

On December 5, 2013, the LOI expired by its terms.

On December 8, 2013, Medistem s board of directors held a telephonic meeting to discuss, among other things, the draft merger agreement and proposed documents relating to a bridge loan of $650,000. Additionally, the board discussed inclusion of a go shop period in the documents, a proposal to lower the proposed termination fees owed Intrexon should the contemplated transaction not be completed, indemnification of directors and officers, a due diligence out for Intrexon, and representations and warranties from Intrexon to Medistem.

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On December 8, 2013, Jones Day delivered to Troutman Sanders a revised draft of the merger agreement. Discussions between the parties respective outside counsel regarding certain issues relating to the merger agreement continued that week.

On December 10, 2013, Medistem received Griffin s Market Valuation Study, bearing the same date.

On December 12, 2013, Troutman Sanders delivered to Jones Day a revised draft of the merger agreement. Over the course of the following week, the parties continued to negotiate the provisions of the merger agreement, as well as the form of voting agreement to be entered into by Medistem s directors and executive officers. These negotiations focused primarily on the scope of representations and warranties, covenants, and provisions related to deal protections, termination and the circumstances under which the parties would be obligated to pay termination fees.

On December 15, 2013, Medistem s board of directors held telephonic meetings to, among other things, discuss the status of the contemplated transaction and remaining open issues.

On December 16, 2013, Medistem s board of directors held a telephonic meeting to, among other things, discuss outstanding items on the definitive merger agreement. As part of that telephonic board meeting, Adrian Stecyk, Chairman & CEO, Chrystyna M. Bedrij, Principal, and Mark Merrill, Managing Director, each from Griffin discussed their Market Valuation Study of December 10, 2013 and answered questions from members of the board relating to Griffin s analysis and then stated oral opinion that the contemplated transaction is fair, from a financial point of view, to Medistem s shareholders. This oral opinion subsequently was confirmed in writing on December 18, 2013. Following all these discussions, and after careful consideration, Medistem s board of directors determined that the merger agreement is fair, advisable and in the best interests of Medistem and its shareholders, adopted the merger agreement, and authorized Medistem s officers to execute and deliver the merger agreement to Intrexon.

On December 17, 2013, Intrexon s board of directors convened a meeting in which Intrexon s senior management participated. During the meeting, Intrexon s management presented to the Intrexon board of directors the terms and conditions of the proposed merger. Intrexon s management indicated to the Intrexon board of directors that the merger agreement and related documents were substantially finalized. Following that, members of Intrexon s senior management team presented a summary of due diligence performed on Medistem, including a review of the process and key findings. Then the members of Intrexon s senior management team reviewed the potential benefits and risks related to the transaction, and responded to questions from members of the board of directors. Following these discussions and after careful consideration, the Intrexon board of directors unanimously approved the merger agreement and the transactions contemplated thereby.

Following the approval of the merger agreement by the Intrexon board of directors, the parties executed and exchanged copies of the finalized merger agreement after the close of business on December 19, 2013.

On December 20, 2013, Medistem executed a promissory note for $650,000 to Intrexon for interim financing and Intrexon wired $650,000 to Medistem.

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The parties announced the merger agreement in a joint press release issued by Intrexon and Medistem prior to the opening of trading on the morning of December 20, 2013. Intrexon and Medistem filed a Form 8-K related to entry into the merger agreement on December 20 and 23, 2013, respectively.

On December 23, 2013, Dr. Lewis initiated a go shop outreach to 16 candidate biopharmaceutical companies based in Australia, Europe, Japan, Korea, and the U.S. These candidates were chosen by Dr. Lewis and Dr. Ichim and discussed with the Medistem board. Selection criteria included: (a) previous dialogue with some of these companies; (b) interest in the fields of cell therapy and regenerative medicine; and (c) financial resources to realistically offer superior terms to those proposed by Intrexon. Of these candidates, 12 indicated they had no interest and two candidates did not respond. One candidate responded that they had an interest in a regional collaboration, in a field of use outside of Medistem s area of expertise. Furthermore, this candidate was not interested in acquiring Medistem. One candidate requested access to Medistem s manufacturing trade secrets. Given that the candidate is a direct competitor, management and the Medistem board deemed that it was in the best interest of the Company and its shareholders to decline the request and proceed with the merger.

On January 29, 2014 the parties amended the merger agreement to provide, in the event that any Medistem shareholder exercises dissenters rights with respect to the merger, that after the consummation of the merger, Medistem will then be merged into a wholly owned limited liability company subsidiary of Intrexon in order for the merger to qualify as a tax-free reorganization within the meaning of Section 368(a) of the Internal Revenue Code, as further described in Material U.S. Federal Income Tax Consequences of the Merger.

Medistem s reasons for the merger and recommendation of the Medistem board of directors

In the course of reaching its decision to adopt the merger agreement and to recommend that Medistem shareholders vote to adopt and approve the merger agreement, Medistem s board of directors consulted with the company s senior management, financial advisors and legal counsel, reviewed a significant amount of information and considered a number of factors, including, among others, the following:

- the fact that the consideration payable in a combination of cash and shares of Intrexon common stock represents a premium of (1) 57% over the closing price per share of the Medistem common stock on December 19, 2013; (2) 22% over the volume weighted average price per share, or VWAP, over the 30 calendar days ended December 19, 2013;

- the fact that approximately 20% of the upfront merger consideration is in the form of cash, which provides immediate liquidity and a high degree of certainty of value to Medistem shareholders;

- the fact that approximately 80% of the upfront merger consideration is in the form of SEC-registered and transferable Intrexon common stock, tradeable on the New York Stock Exchange, while Medistem shares are less liquid and tradeable on the OTCQB, with an average trading volume of less than 3,800 shares per day during the period from September 7, 2013, the day Medistem s common stock began trading on the OTCQB, through December 18, 2013, the last day before the merger agreement was entered, making it difficult for shareholders to sell shares without significant depreciation of stock price;

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the Medistem board of directors belief that the combination with Intrexon will allow existing Medistem shareholders to participate in the benefits of a more diversified company with greater resources and to benefit from any future growth and synergies of the combined company;

the fact that Medistem has no ERC-related issued patents and limited international intellectual property rights.

the Medistem board of directors belief that the combination of Medistem s cellular technologies with Intrexon s gene regulation technologies will allow for expansion of patent filings, as well as international patent prosecution;

the fact that Medistem has not been successful in obtaining institutional financing and its limited financial resources greatly reduce Medistem s ability to continue operations and to enter into clinical trials for other diseases in which the Medistem technology may demonstrate efficacy based on previous animal studies;

the fact that Medistem s business, competitive position, strategy and prospects as a stand-alone company are decreasing as other competitors enter the market, and other technologies are developed;

the fact that the financial analyses presented by representatives of Griffin, as well as the opinion of Griffin, to the effect that, as of December 18, 2013, based upon and subject to the factors, assumptions and limitations set forth in Griffin s opinion, the consideration to be received by the holders of Medistem s common stock pursuant to the merger agreement is fair, from a financial point of view, to such holders;

the Medistem board of directors belief that the terms of the merger agreement, including the parties representations, warranties and covenants, and the conditions to the parties respective obligations, are reasonable;

the fact that the timing of the merger and the risk that if Medistem does not accept Intrexon s current offer, Medistem may not find a similarly compelling offer or valuation in the future;

the fact that the merger is not subject to any financing condition and that Intrexon has sufficient cash assets on its balance sheet to consummate the transaction;

the fact that Medistem shareholders who do not vote to adopt the merger agreement and who follow certain prescribed procedures will still be entitled to appraisal rights under Nevada law;

the fact that subject to the terms and conditions of the merger agreement, Medistem reserved the ability to solicit acquisition proposals and superior offers during the go shop period; and

the fact that the deal protections set forth in the merger agreement do not preclude a third party from making an acquisition proposal that is superior to the terms of the merger with Intrexon, because the Medistem board of directors may, subject to the terms and conditions of the merger agreement, change its recommendation in favor of the proposal to adopt and approve the merger agreement with Intrexon, and that the amount of the break-up fee is reasonable under the circumstances.

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In the course of its deliberations, Medistem s board of directors also considered a variety of risks and other potentially negative factors, including the following:

- the fact that, if the merger is consummated, Medistem will no longer exist as an independent public company and its shareholders will not participate in the future growth of the Medistem business except to the extent of their ownership interest in Intrexon;
- the risks and contingencies related to the announcement and pendency of the merger, including the impact of the merger on Medistem s employees, customers and Medistem s relationships with third parties;
- the possibility that Medistem shareholders may not be interested in owning Intrexon shares that will be received by them as consideration in the merger;
- the fact that the price of Intrexon common stock at the closing of the merger may vary significantly from the price of Intrexon common stock at the date of the announcement of the merger agreement and the date of this proxy statement/prospectus;
- the fact that Medistem s customers and suppliers may choose not to continue doing business with Medistem when it is part of Intrexon;
- the fact that Intrexon has the right to terminate the merger agreement in certain circumstances;
- the fact that Medistem has incurred and will continue to incur significant transaction costs and expenses in connection with the proposed transaction, regardless of whether or not the merger is consummated;
- the fact that under the terms of the merger agreement, Medistem must pay to Intrexon a termination fee of $1.0 million if the merger agreement is terminated under certain circumstances, or a termination fee of $750,000 if the merger agreement is terminated during the go shop period;
- the fact that certain of Medistem s directors and executive officers may receive certain benefits that are different from, and in addition to, those of Medistem s other stockholders (See Interests of Medistem s Directors and Executive Officers in the Merger); and
- the fact that, pursuant to the merger agreement, unless Intrexon otherwise consents, Medistem must generally conduct its business in the ordinary course and is subject to a variety of other restrictions on the conduct of its business prior to the closing of the merger, which may delay or prevent Medistem from pursuing business opportunities that may arise or preclude actions that would be advisable if Medistem were to remain an independent company.
- the fact that for a majority of the trading days during the period from the date Medistem filed its registration statement on Form 10 through the date of the merger agreement, the closing price of Medistem s common stock exceeded the per-share merger consideration.

The foregoing discussion of the factors considered by Medistem s board of directors is not intended to be exhaustive, but rather includes material factors that Medistem s board of directors considered in approving and recommending the merger agreement. Medistem s board of directors carefully considered all of these factors as a whole in reaching its determination and recommendation and did not assign any particular weight or rank to any of the positive or potentially negative factors or risks discussed in this section. Individual members of Medistem s board of directors may have given different weight to different factors.

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The Medistem board of directors has unanimously determined that the merger agreement and the transactions contemplated thereby, including the merger, are advisable, fair to, and in the best interests of Medistem and its shareholders, adopted the merger agreement and approved the transactions contemplated thereby, including the merger; and unanimously recommends that you vote FOR the merger proposal, FOR the approval, on a non-binding, advisory basis, of the merger-related compensation payments proposal and FOR the adjournment of the special meeting, if necessary to solicit additional proxies.

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Opinion of Griffin Securities, Inc.

The transaction

Medistem, Inc. (OTCQB: MEDS) (Medistem or the Company) announced on December 20, 2013, that it had entered into a definitive agreement (the Agreement) for the Company to be acquired (the Transaction) by Intrexon Corporation (NYSE: XON) (Intrexon or the Purchaser) for total consideration (the Consideration) for each outstanding share of common stock of the Company consisting of (i) $0.27 in cash and (ii) a number of shares of Intrexon common stock determined by dividing $1.08 by the volume-weighted average price for a share of Intrexon common stock, no par value, on the New York Stock Exchange for 20 consecutive trading days immediately preceding the last trading day prior to the effective date of the Transaction. Consummation of the Agreement is subject to Intrexon's satisfactory completion of its due diligence of Medistem and its technology, customary closing conditions and Medistem shareholder approval.

Opinion of Griffin securities

Griffin Securities, Inc. (Griffin) rendered its oral opinion to the Company s board of directors on December 16, 2013, which was subsequently confirmed in writing, that as of the date of the written opinion and based upon and subject to the factors and assumptions set forth therein, the Consideration pursuant to the Agreement was fair from a financial point of view to the Company s holders of common stock.

The full text of the written opinion of Griffin, dated December 18, 2013, which sets forth assumptions made, procedures followed, matters considered and limitations on the review undertaken in connection with the opinion, is attached as Annex C. Griffin provided its opinion for the information and assistance of the Company Board in connection with its consideration of the transactions contemplated by the Agreement. The Griffin opinion is not a recommendation as to whether or not any holder of common shares should tender such shares in connection with the Transaction or any other matter.

In connection with the valuation and financial analysis below, Griffin reviewed, among other things:

certain publicly-available business and financial information relating to the Company and its common stock that Griffin deemed to be relevant;

certain information, including financial forecasts, relating to the business, earnings, cash flow, assets, liabilities, and prospects of the Company furnished to Griffin by or on behalf of the Company;

certain publicly-available business and financial information relating to Intrexon and its common stock that Griffin deemed to be relevant;

information referred to above compared with that of certain companies and transactions that Griffin deemed to be relevant and also reviewed the market prices and valuation multiples of publicly-traded companies and publicly-announced transactions;

a draft, dated December 18, 2013, of the Agreement; and

such other financial studies and analyses and taking into account such other matters as Griffin deemed necessary, including our assessment of general economic, market, and monetary conditions.

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Griffin also held discussions with members of the management of the Company regarding their assessment of the past and current business operations, financial condition and future prospects of the Company; compared certain financial and stock market information for the Company with similar information for certain other companies the securities of which are publicly traded; reviewed the financial terms of certain recent business combinations in the stem cell-based technology platform and therapeutics industries and in other industries; and performed such other studies and analyses, and considered such other factors, as Griffin considered appropriate.

For purposes of rendering the opinion described above, Griffin relied upon and assumed, without assuming any responsibility for independent verification, the accuracy and completeness of all of the financial, legal, regulatory, tax, accounting and other information provided to, discussed with or reviewed by it, and Griffin does not assume any liability for any such information. In addition, Griffin did not make an independent evaluation or appraisal of the assets and liabilities (including any contingent, derivative or other off-balance-sheet assets and liabilities) of the Company or any of its subsidiaries, nor was any such evaluation or appraisal of the assets or liabilities of the Company or any of its subsidiaries furnished to Griffin. Griffin assumed that all governmental, regulatory or other consents and approvals necessary for the consummation of the transactions contemplated by the Agreement will be obtained without any adverse effect on the expected benefits of such transactions in any way meaningful to its analysis. Griffin also assumed that the transactions contemplated by the Agreement will be consummated on the terms set forth therein, without the waiver or modification of any term or condition the effect of which would be in any way meaningful to its analysis. Griffin s opinion does not address any legal, regulatory, tax or accounting matters.

Griffin s opinion does not address the underlying business decision of the Company to engage in the transactions contemplated by the Agreement or the relative merits of such transactions Griffin s opinion addresses only the fairness from a financial point of view, as of the date of its opinion, of the Consideration to be paid to the holders of such shares of common stock pursuant to the Agreement. Griffin s opinion does not express any view on, and does not address, any other term or aspect of the Agreement or the transactions contemplated thereby or any term or aspect of any other agreement or instrument contemplated by the Agreement or entered into or amended in connection with the transactions contemplated thereby, including, without limitation, the fairness of such transactions to, or any consideration received in connection therewith by, the holders of any other class of securities, creditors, or other constituencies of the Company; nor as to the fairness of the amount or nature of any compensation to be paid or payable to any of the officers, directors or employees of the Company, or class of such persons, in connection with the transactions contemplated by the Agreement, whether relative to the Consideration to be paid to the holders of such shares pursuant to the Agreement or otherwise. Griffin s opinion was necessarily based on economic, monetary, market and other conditions as in effect on, and the information made available to it as of, the date of its opinion and Griffin assumed no responsibility for updating, revising or reaffirming its opinion based on circumstances, developments or events occurring after the date of the opinion.

The opinion expressed in Griffin s fairness opinion was provided for the information and assistance of the Company s board of directors in connection with its consideration of the transactions contemplated by the Agreement, and Griffin s opinion does not constitute a recommendation as to how any holder of such shares should vote with respect to the Transaction or any other matter.

The following is a summary of the material financial analyses delivered by Griffin to the Company s board of directors in connection with rendering the opinion described above. The

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following summary, however, does not purport to be a complete description of the financial analyses performed by Griffin, nor does the order of analyses described represent relative importance or weight given to those analyses by Griffin. Some of the summaries of the financial analyses include information presented in tabular format. The tables must be read together with the full text of each summary. Except as otherwise noted, the following quantitative information, to the extent that it is based on market data, is based on market data as it existed on or before December 18, 2013, and is not necessarily indicative of current market conditions.

Selected public companies analysis

Griffin reviewed and compared certain financial information from the Company to corresponding financial information, ratios, and public market multiples for the following publicly-traded companies in the stem cell-based technology platform and therapeutics industries:

- BioRestorative Therapies, Inc.;
- Brainstorm Cell Therapeutics Inc.;
- Capricor Therapeutics, Inc.;
- Cellular Biomedicine Group Inc.;
- IntelliCell BioSciences, Inc.;
- International Stem Cell Corporation;
- StemCells Inc.; and
- VistaGen Therapeutics, Inc.

While none of the selected companies is directly comparable to the Company, the companies included were chosen because they are publicly traded companies with operations that for purposes of analysis may be considered similar to certain operations of the Company.

Griffin calculated and compared various financial valuations based on the closing price of each company s shares on December 10, 2013, and the most recent publicly-available financial data obtained from SEC filings. With respect to the Company and the selected companies, Griffin calculated (1) market capitalization and (2) enterprise value, which is the market value of common equity plus the book value of debt, less cash. The following table presents the results of the analysis:

	Selected Public Companies			Proposed Purchase
$ in millions	**Range**	**Mean**	**Median**	**Price**
Market Capitalization	0.6 to 69.8	25.8	26.3	N/A
Enterprise Value	4.2 to 62.6	25.0	21.3	25.6

The analysis was undertaken to indicate how the common stock of the Company and the selected companies were then currently trading with respect to certain commonly used financial metrics and whether the shares of the Company were trading at a relative premium or discount to the selected companies.

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Selected transactions analysis

Griffin analyzed certain information relating to the following selected transactions in the stem cell-based technology platform industry since 2009. These transactions (listed by acquirer/target and date of closing) were:

Mesoblast LTD./certain assets of Osiris Therapeutics, Inc. (October 2013);

BioTime, Inc. and Asterias Biotherapeutics, Inc./certain assets of Geron Corporation (October 2013);

NeoStem, Inc./Amorcyte, LLC (July 2011); and

Novartis AG/certain assets of Opexa Therapeutics, Inc. (August 2009).

For the selected transactions, Griffin calculated and compared, using publicly available data, total probability-adjusted consideration for the target companies/assets adjusted for the likelihood of receiving future milestone payments, if applicable. While none of the companies that participated in the selected transactions are directly comparable to the Company, the companies that participated in the selected transactions are companies with technologies that, for the purposes of analysis, may be considered similar to certain of the Company s technologies and programs.

The following table presents the results:

		Selected Comparable Transactions		Proposed Purchase
$ in millions	**Range**	**Mean**	**Median**	**Price**
Total Probability-adjusted Transaction Value	7.3 to 51.3	22.7	16.1	25.6

The analysis was undertaken to indicate how the aggregate consideration for the selected target companies compared with the same metrics for the proposed transaction between the Company and Intrexon.

Takeover premium analysis

Griffin also analyzed certain information relating to the following selected transactions in the biotechnology industry that closed in the last 12 months and calculated the mean and median takeover premia paid per share relative to the market closing price of target companies prior to the announcement. These transactions (listed by acquirer/target and date of closing) were:

Cubist Pharmaceuticals, Inc./Optimer Pharmaceuticals, Inc. (October 2013);

Otsuka America, Inc./Astex Pharmaceuticals, Inc. (October 2013);

Amgen Inc./Onyx Pharmaceuticals, Inc. (October 2013);

Mitsubishi Tanabe Pharma Corporation and Philip Morris International, Inc./Medicago Inc. (September 2013);

Cubist Pharmaceuticals Inc./Trius Therapeutics, Inc. (September 2013);

BELLUS Health Inc./Thallion Pharmaceuticals, Inc. (August 2013);

Spectrum Pharmaceuticals, Inc./Talon Therapeutics, Inc. (July 2013);

AstraZeneca LP/Omthera Pharmaceuticals, Inc. (July 2013);

BGI/Complete Genomics, Inc. (March 2013);

JLL Partners/BioClinica, Inc. (March 2013);

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Allergan Inc./MAP Pharmaceuticals, Inc. (February 2013); and

Gilead Sciences Inc./YM BioSciences Inc. (February 2013).

While none of the companies that participated in the selected transactions are directly comparable to the Company, the companies that participated in the selected transactions are companies in the biotechnology industry that, for the purposes of analysis, may be considered similar to the Company.

The following table presents the results:

	Selected Biotechnology Transactions			Proposed Purchase
	Range	Mean	Median	Premium
Takeover Premium	-6.0% to 88.0%	40.0%	40.0%	33.6%

Financing premium/discount analysis

Due to Medistem s current liquidity position and the substantial doubt to continue as a going concern noted in Medistem s Form 10-Q dated November 12, 2013, the Company would likely be obligated to pursue alternative financing initiatives to secure sufficient capital to meet near-term cash requirements in lieu of this Transaction.

Griffin analyzed certain information relating to selected private placement (PIPE) transactions in the biotechnology industry for companies with market capitalizations below $250 million that closed in the last 12 months. Griffin analyzed a total of 42 transactions.

For the selected transactions, Griffin calculated and compared, using publicly available data, the premium or discount based on the ratio of the stock price of the transaction to the target s stock price prior to the transaction announcement. While none of the companies that participated in the selected transactions are directly comparable to the Company, the companies that participated in the selected transactions are companies in the biotechnology industry that, for the purposes of analysis, may be considered similar to the Company.

The following table presents the results:

	Selected Biotechnology Financing Transactions		
	Range	Mean	Median
Financing Premium/Discount	-86.0% to 31.0%	-16.0%	-9.0%

General

The preparation of a fairness opinion is a complex process and is not necessarily susceptible to partial analysis or summary description. Selecting portions of the analyses or of the summary set forth above, without considering the analyses as a whole, could create an incomplete view of the processes underlying Griffin s opinion. In arriving at its fairness determination, Griffin considered the results of all of its analyses and did not attribute any particular weight to any factor or analysis considered by it. Rather, Griffin made its determination as to fairness on the basis of its experience and professional judgment after considering the results of all of its analyses. No company or transaction used in the above analyses as a comparison is directly comparable to the Company or the contemplated transactions.

Griffin prepared these analyses for purposes of Griffin providing its opinion to the Company s board of directors as to the fairness from a financial point of view of the Consideration to be paid to the holders of common shares pursuant to the Agreement. These analyses do not purport

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to be appraisals nor do they necessarily reflect the prices at which businesses or securities actually may be sold. Analyses based upon forecasts of future results are not necessarily indicative of actual future results, which may be significantly more or less favorable than suggested by these analyses. Because these analyses are inherently subject to uncertainty, being based upon numerous factors or events beyond the control of the parties or their respective advisors, none of the Company, Intrexon, Griffin or any other person assumes responsibility if future results are materially different from those forecast.

As described above, Griffin s opinion to the Company Board was one of many factors taken into consideration by the Company s board of directors in making its determination to approve the Agreement. The foregoing summary does not purport to be a complete description of the analyses performed by Griffin in connection with the fairness opinion and is qualified in its entirety by reference to the written opinion of Griffin attached.

During the two years preceding the date of Griffin's opinion, Griffin did not have any investment banking or financial services relationships with the Company. During the two years preceding the date of its opinion, Griffin performed financial advisory and investment banking services for Intrexon for which it received compensation in the aggregate amount of $1,714,624. Such services consisted of acting as financial advisor relating to exclusive channel collaborations with unaffiliated entities; soliciting agent for mandatory cash tender offer to shareholders of an unaffiliated entity; financial advisor and placement agent in connection with private placement of Intrexon securities; co-manager of underwritten registered offering of Intrexon common stock. Griffin may provide investment banking and/or financial services to the Company or Intrexon in the future and may receive fees for the rendering of such services.

Griffin will receive a fee from the Company for services in connection with rendering the opinion. The Company has also agreed to reimburse Griffin s expenses in connection with Griffin s engagement and to indemnify Griffin for certain liabilities that may arise out of the engagement.

Interests of Medistem s directors and executive officers in the merger

In considering the recommendation of the Medistem board of directors in favor of the approval of the merger proposal, Medistem shareholders should be aware that Medistem s board of directors and executive officers may have interests in the merger that are different from, or in addition to, the interests of Medistem s shareholders generally. The Medistem board of directors was aware of these interests and considered them, among other matters, in approving the merger agreement and recommending that the Medistem shareholders adopt and approve the merger agreement. Medistem shareholders should take these benefits into account in deciding whether to vote for the adoption of the merger agreement.

These interests relate to or arise from:

- potential payments for stock options, warrants and convertible promissory notes held by Medistem employees and directors;
- certain cash payments and other benefits payable to Medistem executive officers in the event of a qualifying termination of employment following consummation of the merger;
- Payment of specified salary and certain other employee benefits for Medistem executive officers, who continue employment with the surviving corporation, Intrexon or their subsidiaries; and
- continuation of certain indemnification and insurance arrangements for Medistem directors and executive officers, and advancement of expenses for claims arising from Medistem

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directors and officers fulfillment of their fiduciary duties in connection with Medistem s entry into the merger agreement.

Treatment of outstanding equity awards held by Medistem directors and executive officers

As of the date of this proxy statement/prospectus, Medistem s non-employee directors hold stock options and Medistem s executive officers hold stock options and restricted stock units to purchase or acquire Medistem common stock. Information about the treatment of outstanding Medistem stock options and restricted stock units in the merger is provided in the section entitled The Merger Agreement Treatment of Medistem Stock Options and Other Equity-Based Awards. Medistem s directors and executive officers will be entitled to receive, for each share of Medistem common stock they hold, the per share merger consideration in the same manner as other shareholders of Medistem.

Pursuant to the terms of the merger agreement, all Medistem employee employment agreements will be terminated prior to consummation of the merger. All outstanding stock options and restricted stock units will be converted into the right to receive cash and Intrexon common stock pursuant to the terms of the merger agreement and as described in the section entitled The Merger Agreement Treatment of Medistem Stock Options and Other Equity-Based Awards.

The following table identifies, as of December 31, 2013, for each of Medistem s non-employee directors and executive officers, (i) the aggregate number of shares of Medistem common stock subject to outstanding options; (ii) the per share weighted average exercise price of such options; (iii) the aggregate number of shares subject to vested options; (iv) the aggregate number of shares subject to unvested options; and (v) the aggregate number of shares subject to outstanding options that will be converted into the right to receive cash and Intrexon common stock pursuant to the terms of the merger agreement and as described in the section entitled The Merger Agreement Treatment of Medistem Stock Options and Other Equity-Based Awards.

Name	Shares Subject to Outstanding Options (#)	Per Share Weighted Average Exercise Price ($)	Shares Vested Under Outstanding Options (#)	Shares Unvested Under Outstanding Options (#)	Shares Subject to Conversion into Right to Payment Upon Merger (#)
Non-Employee Directors					
Vladimir Bogin, M.D.	100,000	$ 0.35	50,000	50,000	100,000
Vladimir Zaharchook-Williams	50,000	0.35	25,000	25,000	50,000
Sergey Sablin	50,000	0.35	25,000	25,000	50,000
John Chiplin, Ph.D.	120,000	0.35	120,000		120,000
Herm Rosenman	120,000	0.35	60,000	60,000	120,000
Executive Officers					
Alan J. Lewis, Ph.D.	1,233,000	0.35	684,607	548,393	1,233,000
Thomas E. Ichim, Ph.D.	600,000	0.35	249,562	350,438	600,000
John P. Salvador, J.D.	500,000	0.35	268,219	231,781	500,000
Donald F. Dickerson	100,000	0.35	53,644	46,356	100,000

Employment agreements with Medistem executive officers

Medistem has entered into employment agreements with each of its executive officers, as amended from time to time. The employment agreements will be terminated as a condition to

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completion of the merger. Thus, no amounts or benefits will be paid under any of the executive officers employment agreements with Medistem solely by reason of the merger. However, in the case of Dr. Lewis, if his employment is terminated without cause, he will be entitled to receive six months salary. The definition of cause includes the following: (i) gross and willful misconduct with regard to the Company which is materially injurious to Medistem; (ii) engagement in fraudulent conduct with respect to Medistem s business or in conduct of a criminal nature that will have an material adverse impact on Medistem s standing and reputation; (iii) the continued and unjustified willful failure or willful refusal to attempt to perform the duties required of Dr. Lewis by his employment agreement (other than any such failure or refusal resulting from incapacity due to physical or mental illness) which willful failure or willful refusal is not cured within 15 days following (A) receipt by Dr. Lewis of written notice from Medistem s board of directors specifying the factors or events constituting such willful failure or willful refusal, and (B) a reasonable opportunity for Dr. Lewis to correct such deficiencies; or (iv) use of drugs and/or alcohol in material violation of Medistem s policy in effect on the date of the employment agreement. No event or condition described above constitutes cause under the employment agreement unless (x) Medistem first gives Dr. Lewis a notice of termination no fewer than 30 days prior to the date of termination; and (y) Dr. Lewis is provided the opportunity to appear before the Medistem board of directors, with or without legal representation at his election to present arguments on his own behalf. While his agreement will be terminated, there is no intention to terminate Dr. Lewis employment with the Company.

It is a condition to the merger that Dr. Ichim enter into an employment agreement with Intrexon and that offers of employment are extended to the other officers of Medistem. However, as of this date, the parties have not agreed on the terms and conditions of such employment arrangements including the amount of compensation or other benefits.

Quantification of potential payments to Medistem named executive officers in connection with the merger

In accordance with Item 402(t) of Regulation S-K, the table below sets forth the estimated amounts of compensation that is based on or otherwise relates to the merger that may become payable to each of Medistem s named executive officers, assuming the merger is completed as of the date of this proxy statement/prospectus and with respect to severance amounts, assuming the executive officer s employment is terminated without cause as of the date of this proxy statement/prospectus.

The estimated amounts below are based on multiple assumptions that may not actually occur, including assumptions described in this proxy statement/prospectus. In addition, certain amounts payable will vary depending on the actual date the merger is completed and the actual date, if any, of a qualifying termination of employment. As a result, the actual amounts, if any, to be received by an executive officer may differ in material respects from the amounts set forth below. The disclosures in the table below and the accompanying footnotes should be read in conjunction with the narrative description of the compensation arrangements set forth above.

		Golden Parachute Compensation	
Name	**Cash ($)**	**Equity ($)(2)**	**Total ($)**
Alan J. Lewis, Ph.D.	$ 175,000(1)	$ 548,393	$ 723,393
Thomas E. Ichim, Ph.D.		1,044,724	1,044,724
John P. Salvador, J.D.		231,781	231,781
Donald F. Dickerson		297,745	297,745

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(1) Cash amount is payable upon termination of employment without cause and represents six months salary. Under the terms of the merger agreement, Dr. Lewis s employment agreement will be canceled prior to closing of the merger. *As a result, closing of the merger is not expected to result in any cash severance change of control benefits to Dr. Lewis.*

(2) Represents the net exercise value of each executive s outstanding unvested options as of December 31, 2013, and total value of restricted stock that will become vested and exercisable and unrestricted, respectively, upon consummation of the merger pursuant to the merger agreement.

Director and officer indemnification

The merger agreement provides that Intrexon will honor and fulfill in all respects the obligations of Medistem and its subsidiaries with respect to the indemnification of Medistem and its subsidiaries directors and officers under their articles of incorporation, bylaws and indemnification agreements for six years after the effective date of the merger agreement.

The merger agreement provides that Intrexon will and will cause the surviving corporation to provide Medistem s current and former directors and officers liability insurance for a period of six years, which such policies may be no less favorable in the aggregate to the directors and officers of Medistem than Medistem s current policy. Prior to the effective time, Medistem or Intrexon may also obtain a prepaid tail directors and officers liability insurance policy with a claims period of six years following the effective time of the merger. Intrexon and Medistem directors and officers have also entered into a letter agreement, pursuant to which Intrexon has agreed to advance in the form of a loan or loans to Medistem by Intrexon for advancement to Medistem s directors and officers for claims in excess of existing Medistem insurance coverage, up to an aggregate of $2.0 million of loans outstanding at any time, related to the directors and officers actions in fulfilling their fiduciary duties in connection with Medistem s entry into the merger agreement, for the period from the date the merger agreement was signed until consummation of the merger.

Transactions with Randber, LLC and affiliates

On August 19, 2013, the company borrowed $500,000 from Randber, LLC, an entity controlled by its Vice Chairman Vladimir Zaharchook-Williams, against a $500,000 Promissory Note (the Note) with a conversion price of $0.50 per share. The note had a maturity date of August 19, 2015. However, the company could not use the funds except upon the approval of Mr. Zaharchook-Williams given from time to time. On January 23, 2014, the Company s board of directors authorized the termination of the Note. All unused principal was returned to Randber LLC and the company will pay Randber $10,685, which is the accrued interest owed on the Note from the Date of Note to the date of the termination at a semiannual compounded rate of 5%. The accrued interest will be paid as 21,370 shares of Medistem common stock that represents a conversion rate of $0.50 per share as stated in the Note. The company did not incur any early termination penalties.

On October 15, 2012, the company issued, in a private placement, at par, a $50,000 two-year, unsecured, convertible note bearing interest at 5% per annum to Randber, LLC. The note was convertible into 142,858 shares of common stock at any time. On November 19, 2013, Randber, LLC converted the note and the company issued 142,858 shares of common stock.

On April 1, 2011, the company issued, in a private placement, at par, a $100,000 two-year, unsecured, convertible note bearing interest at 5% per annum to Randber, LLC, with the option to convert into 500,000 shares of common stock at any time. On November 30, 2011, Randber, LLC converted the note and the company issued 500,000 shares of common stock to Randber, LLC.

Voting agreements

In connection with entering into the merger agreement, each of the directors and executive officers of Medistem and their respective permitted transferees, as applicable, in their individual

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capacities, each of whom are referred to herein as a supporting shareholder, entered into a voting agreement pursuant to which the supporting shareholder agreed to, among other things, vote his shares of Medistem common stock (i) in favor of the merger proposal and (ii) against an acquisition proposal other than the merger, subject to any termination of the voting agreement in accordance with its terms. In addition, the supporting shareholders agreed not to directly or indirectly transfer their respective shares of Medistem common stock during the term of the voting agreement, subject to certain limited exceptions. The voting agreements may be terminated by the supporting shareholders if the Medistem board of directors has withdrawn or changed its recommendation in favor of a competing transaction. As of the record date, the supporting shareholders as a group owned and were entitled to vote 9,243,218 shares of Medistem common stock, or approximately 64% of the outstanding shares of Medistem common stock on that date. For more information, see the section entitled Voting Agreements.

Intrexon s reasons for the merger

Intrexon s board of directors approved the merger agreement at a meeting held on December 17, 2013, and determined that the merger agreement and the merger are in the best interests of Intrexon and its shareholders. In reaching this decision, Intrexon s board of directors considered the financial performance and condition, business operations and prospects of each of Intrexon, Medistem and the combined company, the terms and conditions of the merger agreement and the ancillary documents, the results of the due diligence investigation conducted by Intrexon s management, accountants and legal counsel, and the analysis of Intrexon s legal and financial advisors.

Intrexon s board of directors also considered numerous factors, including those listed below:

- the acquisition of Medistem is expected to complement Intrexon s integrated suite of technology platforms;
- as a pioneer in the development of Endometrial Regenerative Cells (ERC or ERCs), Medistem has expertise in universal donor adult stem cells with diverse therapeutic utility;
- that Intrexon believes it can employ its integrated synthetic biology platforms, including its proprietary Cell Systems Informatics, RheoSwitch Therapeutic System®, AttSite System, and LEAP platform to engineer a diverse array of cell-based therapeutic candidates using Medistem s multipotent ERCs;
- the expectation that, based on review of available literature, that ERCs are derived through non-invasive methods, are economical and scalable to manufacture, are superior therapeutically to other stem cell types for select indications, display intrinsic anti-cancer activity, and have been demonstrated to be safe in animal and pilot human studies;
- the expectation that, through further refining of ERCs, Intrexon can produce proteins and bioactive RNAs for use as therapeutics to treat various medical conditions;
- the expected operational and financial strength of the combined company should enable continued investment in new products and technologies;
- expected increases to Intrexon s shareholder value through enhanced revenue opportunities;
- the resulting percentage ownership interests and voting power that current Medistem shareholders would have in Intrexon following the merger; and

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current industry, economic and market conditions and trends, including Medistem s market position.

Intrexon s board of directors also considered a number of potentially negative factors, including those listed below:

the risk that the value of the Medistem business could decline after the execution of the merger agreement;

the risk that the potential benefits of the merger would not be realized fully as a result of challenges the companies might face in integrating their technology, personnel and operations, as well as general industry-wide or economic conditions or other factors;

the risk that, if the merger is not completed, Intrexon s management would have devoted substantial time and resources to the combination at the expense of attending to and growing Intrexon s business or other business opportunities;

the risk associated with the additional demands that the acquisition of Medistem would place on Intrexon and its management, including the potential disruption of Intrexon s ongoing business as Intrexon s management and employees are required to dedicate significant time and effort in order to integrate the two companies systems, cultures, processes, controls and two separate client experiences; and

the risk that the potential business opportunities and growth prospects considered by Intrexon s board of directors will not be achieved through the completion of the merger.

The foregoing list comprises the material factors considered by Intrexon s board of directors in its consideration of the merger and intended to be a summary rather than an exhaustive list. In view of the variety and complexity of factors and information considered, Intrexon s board of directors did not find it practicable to, and did not, make specific assessments of, quantify or otherwise assign relative weights to the specific factors considered in reaching its decision. Rather, the decision was made after consideration of all of the factors as a whole. In addition, individual members of Intrexon s board of directors may have given different weight to different factors.

Directors and management after the merger

Upon completion of the merger, the board of directors and executive officers of Intrexon are expected to remain unchanged.

Material U.S. federal income tax consequences of the merger

General

The following summary sets forth the anticipated material U.S. federal income tax consequences of the merger to U.S. holders of Medistem common stock who exchange such stock for shares of Intrexon common stock and cash pursuant to the merger. This summary is based upon the opinions of tax counsel for each of Intrexon and Medistem, which are filed as Exhibit 8.1 and Exhibit 8.2, respectively, to the registration statement on Form S-4 of which this prospectus and joint proxy statement is a part. This discussion is based upon the Internal Revenue Code of 1986, as amended, or the Code, existing and proposed Treasury Regulations, administrative pronouncements and judicial decisions, all as currently in effect as of the date hereof, and all of which are subject to change, possibly with retroactive effect. Such a change could affect the

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continuing validity of this summary. No assurance can be given that the Internal Revenue Service, or the IRS, would not assert, or that a court would not sustain, a position contrary to any of the tax consequences set forth below.

For purposes of this summary, a U.S. holder is a beneficial owner of Medistem common stock that for U.S. federal income tax purposes is: (1) a citizen or resident of the United States; (2) a corporation, or an entity treated as a corporation, created or organized in or under the laws of the United States or any state or political subdivision thereof; (3) a trust (A) if (i) the administration thereof is subject to the primary supervision of a court within the United States, and (ii) one or more United States persons have the authority to control all substantial decisions of such trust or (B) that has a valid election in effect under applicable Treasury Regulations to be treated as a United States person; or (4) an estate that is subject to U.S. federal income tax on its income regardless of the source.

If a partnership (including for this purpose any entity treated as a partnership for U.S. federal income tax purposes) holds Medistem common stock, the tax treatment of a partner generally will depend on the status of the partner and the activities of the partnership. If you are a partner of a partnership holding Medistem common stock, you should consult your tax advisor.

The following summary addresses only those U.S. holders that hold their Medistem common stock as a capital asset within the meaning of Section 1221 of the Code. It does not address all the tax consequences that may be relevant to particular shareholders in light of their individual circumstances or to shareholders that are subject to special rules, including, without limitation: financial institutions; tax-exempt organizations; S corporations, partnerships or other pass-through entities (or an investor in an S corporation, partnership or other pass-through entities); insurance companies; mutual funds; dealers in stocks or securities, or foreign currencies; non-U.S. holders; a trader in securities who elects the mark-to-market method of accounting for the securities; persons that hold shares as a hedge against currency risk, a straddle or a constructive sale or conversion transaction; holders who acquired their shares pursuant to the exercise of employee stock options or otherwise as compensation or through a tax-qualified retirement plan; and holders of Medistem stock options, stock warrants or debt instruments. In addition, the discussion does not address any alternative minimum tax or any state, local or foreign tax consequences of the merger, nor does it address any tax consequences arising under the unearned income Medicare contribution tax pursuant to the Health Care and Education Reconciliation Act of 2010.

The Merger

Intrexon and Medistem have structured the merger to qualify as a reorganization within the meaning of Section 368(a) of the Code. Consummation of the merger is conditioned upon Intrexon receiving an opinion from Troutman Sanders LLP and upon Medistem receiving an opinion from Eisner Amper LLP, both to the effect that, based upon facts, representations and assumptions set forth in such opinions, the merger constitutes a reorganization within the meaning of Section 368(a) of the Code. The issuance of the opinions is conditioned on, among other things, such tax counsel s receipt of representation letters from each of Intrexon or Medistem, in each case in form and substance reasonably satisfactory to such counsel, and on customary factual assumptions. Neither of these opinions of counsel is binding on the IRS or the courts and no ruling has been, or will be, sought from the IRS as to the U.S. federal income tax consequences of the merger. Accordingly, each Medistem shareholder should consult its tax advisor with respect to the particular tax consequences of the merger to such holder.

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The discussion set forth below under Consequences to Intrexon and Medistem and Consequences to Shareholders assumes that, for U.S. federal income tax purposes, the merger will constitute a reorganization within the meaning of Section 368(a) of the Code.

Consequences to Intrexon and Medistem

Each of Intrexon and Medistem will be a party to the merger within the meaning of Section 368(b) of the Code, and neither Intrexon nor Medistem will recognize any gain or loss as a result of the merger.

Consequences to Shareholders

Exchange of Medistem Common Stock for Intrexon Common Stock and Cash. A U.S. holder of Medistem common stock that exchange its Medistem common stock for Intrexon common stock and cash generally will recognize gain equal to the lesser of (i) the amount of cash received by the U.S. holder (excluding any cash received in lieu of fractional shares) and (ii) the excess of the amount realized by the U.S. holder over the U.S. holder s tax basis in its Medistem common stock (generally the purchase price paid by the U.S. holder to acquire such stock). The amount realized by the U.S. holder will equal the sum of the fair market value of the Intrexon common stock and the amount of cash (excluding any cash received in lieu of fractional shares) received by the U.S. holder. Losses will not be permitted to be recognized by U.S. holders of Medistem common stock in the merger, except in connection with the receipt of cash in lieu of fractional shares, as discussed below. Any gain recognized by a U.S. holder of Medistem common stock generally will be long-term capital gain if, as of the effective date of the merger, the U.S. holder has held such stock for more than one year. Long-term capital gains of individuals are currently eligible for reduced rates of taxation.

For a U.S. holder who acquired different blocks of Medistem common stock at different times or at different prices, realized gain or loss generally must be calculated separately for each identifiable block of shares exchanged in the merger, and a loss realized on the exchange of one block of shares cannot be used to offset a gain recognized on the exchange of another block of shares.

Cash in Lieu of Fractional Shares. U.S. holders of Medistem common stock that receive cash in lieu of fractional shares of Intrexon common stock in the merger generally will be treated as if the fractional shares of Intrexon common stock had been distributed to them as part of the merger, and then redeemed by Intrexon in exchange for the cash actually distributed in lieu of the fractional shares, with the redemption generally qualifying as an exchange under Section 302 of the Code. Consequently, those holders generally will recognize capital gain or loss with respect to the cash payments they receive in lieu of fractional shares measured by the difference between the amount of cash received and the tax basis allocated to the fractional shares, and will be long-term capital gain or loss if, as of the effective date of the merger, the holding period of such shares is greater than one year. The deductibility of capital losses is subject to limitations.

Basis in Intrexon Common Stock. A U.S. holder s aggregate tax basis of the Intrexon common stock received (excluding fractional shares deemed received and redeemed as described below) will be equal to the aggregate tax basis of its Medistem common stock surrendered, reduced by the amount of cash the U.S. holder of Medistem common stock received (excluding any cash received in lieu of fractional shares), and increased by the amount of gain that the U.S. holder of Medistem common stock recognizes, but excluding any gain or loss from the deemed receipt and

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redemption of fractional shares described above. The holding period of Intrexon common stock received by a U.S. holder of Medistem common stock in the merger will include the holding period of the U.S. holder s Medistem common stock. If a U.S. holder acquired different blocks of Medistem common stock at different times or at different prices, the Intrexon common stock such holder receives will be allocated pro rata to each block of Medistem common stock, and the basis and holding period of each block of Intrexon common stock such holder receives will be determined on a block-for-block basis depending on the basis and holding period of the blocks of Medistem common stock exchanged for such block of Intrexon common stock. If a U.S. holder has differing bases or holding periods in respect of shares of Medistem common stock, the U.S. holder should consult its tax advisor prior to the exchange with regard to identifying the bases or holding periods of the particular shares of Intrexon common stock received in the merger.

Dissenting Shareholders. A U.S. holder of Medistem common stock who exercises appraisal rights and receives a cash payment in exchange for its Medistem common stock generally should recognize capital gain or loss equal to the difference between the amount of cash received by such U.S. holder and its tax basis in its Medistem common stock exchanged.

Backup Withholding and Reporting Requirements

U.S. holders of Medistem common stock, other than certain exempt recipients, may be subject to backup withholding at a rate of 28% with respect to any cash payment received in the merger in lieu of fractional shares. However, backup withholding will not apply to any U.S. holder that either (a) furnishes a correct taxpayer identification number and certifies that it is not subject to backup withholding or (b) otherwise proves to Intrexon and its exchange agent that the U.S. holder is exempt from backup withholding.

In addition, U.S. holders of Medistem common stock are required to retain permanent records and make such records available to any authorized IRS officers and employees. The records should include the number of shares of Medistem stock exchanged, the number of shares of Intrexon stock received, the fair market value and tax basis of Medistem shares exchanged and the U.S. holder s tax basis in the Intrexon common stock received. If a U.S. holder of Medistem common stock that exchanges such stock for Intrexon common stock is a significant holder with respect to Medistem, the U.S. holder is required to include a statement with respect to the exchange on or with the federal income tax return of the U.S. holder for the year of the exchange. A U.S. holder of Medistem common stock will be treated as a significant holder in Medistem if the U.S. holder s ownership interest in Medistem is five percent (5%) or more of Medistem s issued and outstanding common stock or if the U.S. holder s basis in the shares of Medistem stock exchanged is one million dollars ($1,000,000) or more. The statement must be prepared in accordance with Treasury Regulation Section 1.368−3 and must be entitled STATEMENT PURSUANT TO §1.368−3 BY [INSERT NAME AND TAXPAYER IDENTIFICATION NUMBER (IF ANY) OF TAXPAYER], A SIGNIFICANT HOLDER . The statement must include the names and employer identification numbers of Medistem and Intrexon, the date of the merger, and the fair market value and tax basis of Medistem shares exchanged (determined immediately before the merger).

The discussion of material U.S. federal income tax consequences set forth above does not purport to be a complete analysis or listing of all potential tax effects that may apply to a holder of Medistem common stock. We strongly encourage shareholders of Medistem to consult their tax advisors to determine the particular tax consequences to them of the merger, including the application and effect of federal, state, local, foreign and other tax laws.

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Accounting treatment

The merger will be accounted for using the acquisition method of accounting for business combinations. Intrexon will record net tangible and identifiable intangible assets acquired and liabilities assumed from Medistem at their respective fair values at the date of the completion of the merger. Any excess of the purchase price over the net fair value of such assets and liabilities will be recorded as goodwill.

The financial condition and results of operations of Intrexon after completion of the merger will reflect Medistem s balances and results after completion of the transaction but will not be restated retroactively to reflect the historical financial condition or results of operations of Medistem. The earnings of Intrexon following the completion of the merger will reflect acquisition accounting adjustments, including the effect of changes in the carrying value for assets and liabilities on depreciation and amortization expense. Intangible assets with indefinite useful lives and goodwill will not be amortized but will be tested for impairment at least annually, and all long-lived assets including goodwill will be tested for impairment when certain indicators are present. If in the future, Intrexon determines that tangible or intangible assets (including goodwill) are impaired, Intrexon would record an impairment charge at that time.

Regulatory approvals required for the merger

At any time before or after the completion of the merger, any state, foreign country, or private individual could take action to enjoin the merger under the antitrust laws as it deems necessary or desirable in the public interest or any private party could seek to enjoin the merger on anti-competitive grounds. Although the parties believe that completion of the merger would not violate any antitrust law, there can be no assurance that a challenge to the merger on antitrust grounds will not be made or, if a challenge is made, what the result will be. Intrexon and Medistem have determined that no filing under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 is required in connection with the proposed merger.

Litigation Relating to the Merger

In connection with the merger, four purported class action lawsuits brought on behalf of all Medistem shareholders were filed; one in the Eighth Judicial District Court in Clark County, Nevada: *Iden v. Medistem, et al.*, No. A-13-693813-C, filed December 31, 2013; and three in the Superior Court of California in San Diego County, California: *Bachand v. Medistem, et al.*, No. 37-2013-00081729-CU-SL-CTL, filed December 31, 2013; *Parent v. Medistem, et al.*, No. 37-2014-00083393-CU-SL-CTL, filed January 14, 2014; and *Raymond v. Medistem, et al.*, No. 37-2014-00083495-CU-SL-CTL, filed January 15, 2014. The complaints in the pending lawsuits are similar. Each complaint names Medistem, members of Medistem s board of directors, Intrexon, and Merger Sub as defendants. The complaints allege, among other things, that Medistem s board of directors breached its fiduciary duties to its shareholders by failing to maximize shareholder value or to engage in a fair sale process before approving the proposed acquisition of Medistem by Intrexon. The complaints further allege that Medistem, Intrexon and Merger Sub aided and abetted the Medistem board of directors in its breaches of fiduciary duty.

The plaintiffs seek relief that includes an injunction prohibiting the consummation of the merger, rescission to the extent the merger terms have already been implemented, damages for the breaches of fiduciary duty, payment of plaintiffs attorneys fees and costs and, in the Nevada action, a contingent monetary award in an unspecified amount.

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Medistem and its board of directors believe that these allegations are without merit and intend to defend the lawsuits vigorously. There can be no assurance, however, with regard to the outcome of these lawsuits.

Exchange of shares in the merger

Intrexon has appointed American Stock Transfer & Trust Company, LLC as its exchange agent, referred to herein as the exchange agent, to handle the exchange of shares of Medistem common stock for the merger consideration the holder is entitled to receive under the merger agreement. Promptly following the completion of the merger, the exchange agent will mail to each record holder of Medistem common stock immediately prior to the completion of the merger a letter of transmittal and instructions for effecting the exchange of Medistem common stock certificates for the merger consideration. Upon surrender of stock certificates for cancellation along with the executed letter of transmittal and other documents described in the instructions, a Medistem shareholder will receive (1) the per share cash consideration, (2) the per share stock consideration and (3) if applicable, cash in lieu of fractional shares of Intrexon common stock. After the effective time of the merger, Medistem will not register any transfers of the shares of Medistem common stock. The shares of Intrexon common stock you receive in the merger will be issued in book-entry form. The exchange agent and Intrexon are entitled to deduct and withhold any applicable taxes from any merger consideration that would otherwise be payable.

Medistem shareholders should not return their stock certificates with the enclosed proxy card and should not forward stock certificates to the exchange agent without a letter of transmittal.

Dissenters rights

Medistem shareholders who do not vote in favor of the merger proposal and follow certain procedural steps will be entitled to dissenters rights under Chapter 92A.300-500 of the NRS, provided they take the steps required to perfect their rights under Chapter 92A.300-500 of the NRS. For more information regarding dissenters rights, see the section entitled Dissenters Rights. In addition, a copy of Chapter 92A.300-500 of the NRS is attached as Annex B to this proxy statement.

State takeover statute

Under the NRS, except under certain circumstances, a corporation is not permitted to engage in a business combination with any interested shareholder for a period of three years following the date such shareholder became an interested shareholder. An interested shareholder is a person who owns 10% or more of the outstanding shares of voting stock. Nevada permits a corporation to opt out of the application of these business combinations provisions by so providing in the articles of incorporation; Medistem has not opted out of these provisions in its governing documents.

Listing of Intrexon common stock

Intrexon s common stock currently trades on the NYSE under the stock symbol XON. It is a condition to the completion of the merger that the Intrexon common stock issuable in the merger be approved for listing on the NYSE, subject to official notice of issuance. Intrexon has agreed to use its reasonable best efforts to cause the shares of Intrexon common stock issuable in connection with the merger to be approved for listing on the NYSE and expects to obtain NYSE s approval to list such shares prior to completion of the merger, subject to official notice of issuance.

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Delisting and deregistration of Medistem common stock

Shares of Medistem common stock currently trade on the OTC Markets Group s OTCQB marketplace under the stock symbol MEDS. Following the completion of the merger, the Medistem common stock currently listed on the OTC Markets Group s OTCQB marketplace will cease to be quoted on the OTC Markets Group s OTCQB marketplace and will be deregistered under the Exchange Act.

Restrictions on the shares of Intrexon common stock received in the merger

The shares of Intrexon common stock to be issued in connection with the merger will be freely transferable under the Securities Act and the Exchange Act, except for shares issued to any shareholder who may be deemed to be an affiliate of Intrexon for purposes of Rule 144 under the Securities Act. Persons who may be deemed to be affiliates include individuals or entities that control, are controlled by, or under the common control with Intrexon and may include the executive officers, directors and significant shareholders of Intrexon.

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The merger agreement

The following description describes the material terms of the merger agreement. This description of the merger agreement is qualified in its entirety by reference to the full text of the merger agreement, which is attached as Annex A to this proxy statement/prospectus and is incorporated herein by reference. The merger agreement has been included to provide you with information regarding its terms. Medistem encourages you to read the entire merger agreement, as well as this proxy statement/prospectus, before making any decisions regarding the merger.

The merger

Each of the Medistem board of directors and Intrexon board of directors has approved the merger agreement, which provides that, at the closing of the proposed transactions contemplated by the merger agreement, Merger Sub will be merged with and into Medistem, and Medistem will continue as the surviving corporation of the merger and as a wholly owned subsidiary of Intrexon. Following the merger, Medistem will no longer be a publicly traded corporation. In the event that any Medistem shareholder exercises dissenters rights with respect to the merger, the merger agreement as amended provides for a second-step merger, whereby Medistem shall be merged with and into a limited liability company wholly owned by Intrexon.

Merger consideration

At the effective time of the merger, each share of Medistem common stock (other than shares with respect to which dissenter s rights are properly exercised or shares owned by Intrexon, any of its subsidiaries or Medistem), will be converted into the right to receive consideration equal to $1.35, payable in (i) $0.27 in cash, without interest and subject to applicable withholding tax, referred to as the cash consideration, and (ii) $1.08 worth of shares of Intrexon common stock, referred to as the stock consideration, determined as the number of shares represented by $1.08 divided by the volume-weighted average price of Intrexon common stock, as reported on the New York Stock Exchange, or NYSE, for the 20 trading days immediately preceding the last trading day prior to the date of the closing of the merger, which is referred to herein as the Intrexon stock value, in each case subject to adjustment as described below under the section entitled Adjustment to the Merger Consideration. In no event, however, will the total consideration paid to Medistem shareholders exceed $26.0 million in the aggregate.

Medistem shareholders will not receive any fractional shares of Intrexon common stock in the merger. Instead, each Medistem shareholder otherwise entitled to a fraction of a share of Intrexon common stock will be entitled to receive in cash the dollar amount (rounded to the nearest whole cent), without interest, determined by multiplying such fraction by the Intrexon stock value.

The stock consideration will be adjusted appropriately to reflect the effect of any stock split, reverse stock split, stock dividend (including any dividend or distribution of securities convertible into shares of Intrexon s common stock), reorganization, recapitalization, reclassification or other similar change with respect to Intrexon s common stock having a record date on or after the date of the merger agreement but before the effective time of the merger. The cash consideration and the stock consideration will be adjusted appropriately to reflect the effect of any stock split, reverse stock split, stock dividend (including any dividend or distribution of securities convertible into shares of Medistem s common stock), reorganization, recapitalization, reclassification or other similar change with respect to Medistem s common stock having a record date on or after the date of the merger agreement but before the effective time of the merger.

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Treatment of Medistem stock options and other equity-based awards and convertible instruments

In connection with the merger, each outstanding Medistem stock option, restricted stock unit and convertible promissory will vest fully, if applicable, and may be exercised for a period of at least 15 days prior to the consummation of the merger.

Treatment of stock options, warrants and convertible instruments

As of the effective time of the merger, each outstanding Medistem stock option shall be canceled in exchange for the right to receive a combination of cash and shares of Intrexon common stock as described below, (i) $1.35 minus the exercise price of such stock option divided by (ii) $1.35 (the Net Option Share Amount), which shall be paid in (A) a cash amount equal to the product of the Net Option Share Amount multiplied by $0.27 and (B) the number of whole and fractional shares of Intrexon common stock equal to the quotient of (1) the product of the Net Option Share Amount multiplied by $1.08, divided by (2) the Intrexon stock value. If the exercise price per share of any such stock option is equal to or greater than $1.35, such stock option shall be canceled without any payment or other consideration being made in respect thereof.

As of the effective time of the merger, each outstanding warrant to purchase Medistem common stock shall be canceled in exchange for the right to receive a combination of cash and shares of Intrexon common stock as described below, (i) $1.35 minus the exercise price of such Medistem warrant divided by (ii) $1.35 (the Net Warrant Share Amount), which shall be paid in (A) a cash amount equal to the product of the Net Warrant Share Amount multiplied by $0.27 and (B) the number of whole and fractional shares of Intrexon common stock equal to the quotient of (1) the product of the Net Warrant Share Amount multiplied by $1.08, divided by (2) the Intrexon stock value. If the exercise price per share of any such warrant is equal to or greater than $1.35, such warrant shall be canceled without any payment or other consideration being made in respect thereof.

In connection with the merger, as of the effective time of the merger, each outstanding promissory note convertible into Medistem common stock shall be canceled exchange for the right to receive a combination of cash and shares of Intrexon common stock as described below, the total number of shares of Medistem common stock to which such promissory note was convertible immediately prior to the effective time of the Merger (the Net Note Share Amount), which shall be paid in (i) a cash amount equal to the product of the Net Note Share Amount multiplied by $0.27 and (ii) the number of whole and fractional shares of Intrexon common stock equal to the quotient of (A) the product of the Net Note Share Amount multiplied by $1.08, divided by (B) the Intrexon stock value. If the conversion price per share of any such promissory note is equal to or greater than $1.35, the outstanding principal balance of such promissory note, together with all accrued but unpaid interest thereon, shall instead be paid in full.

Dissenters rights

Medistem shareholders who do not vote in favor of the merger proposal and follow certain procedural steps will be entitled to dissenters rights under Chapter 92A.300-500 of the Nevada Revised Statutes, or NRS, provided they take the steps required to perfect their rights under Chapter 92A.300-500 of the NRS. For more information regarding dissenters rights, see the

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section entitled Dissenters Rights. In addition, a copy of Chapter 92A.300-500 of the NRS is attached as Annex B to this proxy statement.

A condition to Intrexon s and Merger Sub s obligation to complete the merger is that holders of no more than 7.5% of Medistem s outstanding shares of common stock (on an as-converted basis) have exercised statutory rights of dissent under Nevada law, or notified Medistem or Intrexon of an intent to exercise statutory rights of dissent under the Nevada law, in either case and not withdrawn such claims.

Completion of the merger

The merger agreement requires the parties to complete the merger after all of the conditions to the completion of the merger contained in the merger agreement are satisfied or waived, including the approval of the merger proposal by the shareholders of Medistem. The merger will become effective upon the filing of the articles of merger with the Secretary of State of the State of Nevada, or at such later time as is agreed to by Intrexon, Merger Sub and Medistem and specified in the articles of merger.

Intrexon and Medistem expect to complete the merger during the first quarter of 2014 if the approval of the merger proposal is obtained, assuming the other conditions that are set forth in the merger agreement to the consummation of the merger are satisfied or waived. However, it is possible that the merger will not be consummated within that timeframe.

Conversion of shares; exchange of certificates

The merger agreement provides that Intrexon will select a bank or trust company, reasonably acceptable to Medistem, to act as the exchange agent. Intrexon has appointed American Stock Transfer & Trust Company, LLC as its exchange agent. The merger agreement provides that on or prior to the date of completion of the merger, Intrexon will deposit with the exchange agent a sufficient amount of cash to make the payment of the cash consideration, a sufficient number of shares of Intrexon common stock to provide for the issuance of the stock consideration, and a sufficient amount of cash to make payments in lieu of fractional shares and any dividends or distributions to which holders of Medistem common stock are entitled pursuant to the terms of the merger agreement. The exchange agent will be entitled to deduct and withhold from the cash amounts payable to any Medistem shareholder the amounts it is required to deduct and withhold under any federal, state, local or foreign tax law. If the exchange agent withholds any amounts, these amounts will be treated for all purposes of the merger as having been paid to the shareholders from whom they were withheld.

Promptly following the completion of the merger, the exchange agent will mail to each record holder of Medistem common stock immediately prior to the completion of the merger a letter of transmittal and instructions for surrendering and exchanging the record holder s Medistem stock certificates or book-entry shares. Upon surrender of a Medistem common stock certificate for exchange to the exchange agent (or upon receipt of an appropriate agent s message in the case of book-entry shares), together with a duly signed and completed letter of transmittal, and such other documents as the exchange agent or Intrexon may reasonably require, the holder of the Medistem stock certificate and book-entry shares will be entitled to receive merger consideration and any other amounts to which such holder is entitled for fractional shares of Intrexon common stock or in respect of any dividends or other distributions as set forth in the merger agreement.

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After the completion of the merger, all holders of certificates representing shares of Medistem common stock that were outstanding immediately prior to the completion of the merger will cease to have any rights as shareholders of Medistem, other than the right to receive the merger consideration (or, in the alternative, the dissenters rights described under the heading Dissenters Rights, if so elected) and any rights to dividends or other distributions. In addition, no transfer of Medistem common stock after the completion of the merger will be registered on the stock transfer books of Medistem.

If any Medistem stock certificate has been lost, stolen or destroyed, the exchange agent will issue in exchange for such lost, stolen or destroyed stock certificate the merger consideration upon the delivery of an affidavit by the owner of such stock certificate claiming that such stock certificate has been lost, stolen or destroyed. However, Intrexon and/or the exchange agent may, in its discretion and as a condition to the payment of cash or the issuance of any shares of Intrexon common stock in exchange therefor, also require the owner of such lost, stolen or destroyed stock certificate to deliver a bond as indemnity against any claim that may be made with respect to that stock certificate against Intrexon, the surviving corporation or the exchange agent.

Stock certificates should be sent only pursuant to instructions set forth in the letters of transmittal, which the merger agreement provides will be mailed to Medistem shareholders promptly following the completion of the merger. In all cases, the cash payments, shares of Intrexon common stock and cash in lieu of fractional shares and in respect of any dividends or other distributions will be delivered only in accordance with the procedures set forth in the letter of transmittal.

Representations and warranties

The merger agreement contains representations and warranties made by Medistem to Intrexon and Merger Sub and made by Intrexon and Merger Sub to Medistem. The assertions embodied in the representations and warranties were made solely for purposes of the merger agreement and may be subject to important qualifications and limitations agreed to by the parties to the merger agreement in connection with negotiating its terms. In particular, in your review of the representations and warranties contained in the merger agreement, it is important to bear in mind that the representations and warranties were made solely for the benefit of the parties to the merger agreement and were negotiated for the purpose of allocating contractual risk among the parties to the merger agreement rather than to establish matters as facts. The representations and warranties may also be subject to a standard of materiality or material adverse effect different from those generally applicable to investors and reports and documents filed with the SEC and in some cases may be qualified by disclosures made by one party to the other, which are not necessarily reflected in the merger agreement. Moreover, information concerning the subject matter of the representations and warranties, which do not purport to be accurate as of the date of this proxy statement, may have changed since the date of the merger agreement, and subsequent developments or new information qualifying a representation or warranty may have been included in or incorporated by reference into this proxy statement. For the foregoing reasons, the representations, warranties and covenants or any descriptions of those provisions should not be read alone or relied upon as characterizations of the actual state of facts or condition of Medistem and Intrexon or any of their respective subsidiaries or affiliates. Instead, such provisions or descriptions should be read only in conjunction with the other information provided elsewhere in this document or incorporated by reference into this proxy statement.

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In the merger agreement, Medistem, Intrexon and Merger Sub each made representations and warranties relating to, among other things:

- due organization, good standing, corporate power and authority to own, lease and operate properties and carry on its business;
- accuracy of the governing documents;
- capitalization;
- corporate power and authority to execute and deliver the merger agreement, to perform the obligations under the merger agreement, to consummate the merger and the transactions contemplated by the merger agreement and the enforceability of the merger agreement and other related transaction documents;
- absence of any conflict with or violation of corporate charter documents, applicable law or contracts as a result of the execution, delivery and consummation of the transactions contemplated by the merger agreement;
- compliance with law and permits;
- compliance with securities laws, including filing all registration statements, prospectuses, forms, reports, definitive proxy statements, schedules and documents required to be filed under the Securities Act or Exchange Act, since August 7, 2013 with respect to Intrexon and September 7, 2013 with respect to Medistem;
- accuracy and GAAP compliance (subject to customary exceptions) of the financial statements contained in the SEC filings;
- absence of liabilities or obligations that would require reservation against on the balance sheet, except as disclosed in SEC filings, incurred in the ordinary course, incurred in connection with the merger or that would not have a material adverse effect;
- absence of untrue statements of material fact or omissions of material facts in all documents filed with the SEC in connection with the merger;
- absence of any event or events that would have a material adverse effect since January 1, 2013 with respect to Intrexon and September 30, 2013 with respect to Medistem;
- material contracts;
- absence of litigation, except as disclosed in the SEC filings or disclosure schedules to the merger agreement;
- intellectual property matters;

accuracy of tax returns, proper preparation and timely filing of tax returns and timely payment of taxes;

compliance with the U.S. Foreign Corrupt Practices Act of 1977, as amended;

compliance with the sanction programs of the Office of Foreign Assets Control of the U.S. Department of the Treasury and the U.S. Patriot Act of 201, as amended; and

limitation of warranties to those made in the merger agreement.

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In the merger agreement, Intrexon and Merger Sub also each made representations and warranties relating to:

- formation, ownership and organization and operation of Merger Sub;
- no shareholder vote required to adopt the merger agreement and consummate the transactions; and
- the availability of sufficient funds to pay the amounts contemplated by the merger agreement.

In the merger agreement, Medistem also made representations and warranties relating to:

- compliance with regulatory matters;
- operation of business in the ordinary course and the absence of breaches of certain provisions of the merger agreement;
- employees, employee relations and employee benefit plans;
- labor and other employment matters;
- valid ownership and possession of properties;
- environmental liabilities and compliance with environmental laws;
- absence of an event or events since January 1, 2011, that would be required to be reported as a business relationship with certain affiliates;
- insurance owned or held by Medistem;
- opinion of Medistem s financial advisor;
- vote required to adopt the merger agreement and consummate the transactions;
- broker s or finder s fees; and
- foreign law equivalent versions of the representations and warranties.

Material adverse effect

Several of the representations, warranties, covenants, closing conditions and termination provisions in the merger agreement are qualified by a material adverse effect standard. For the purposes of the merger agreement, material adverse effect, with respect to both parties, is defined to mean any change, event or effect that has or would reasonably be expected to have a materially adverse effect on the business, financial condition or results of operations of the party and its subsidiaries, taken as a whole.

However, none of the following shall be deemed in themselves, either alone or in combination, to constitute, and none of the following shall be taken into account in determining whether there has or there will be a material adverse effect with respect to either Intrexon and Merger Sub or Medistem:

the execution or announcement of the merger agreement or the pendency of the transactions contemplated thereby, including the loss of employees, or loss or any disruption in supplier,

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licensor, licensee, partner or similar relationship (and, with respect to Medistem any litigation arising from allegations of any breach of fiduciary duty or violation of law relating to the merger agreement or the transactions);

any adverse change, event or effect attributable to conditions in the pharmaceuticals industry, general economic conditions in the United States economy or financial markets in the United States or in any other country where either party or its subsidiaries has material operations or sales;

any adverse change, event or effect arising from or relating to compliance with the terms of the merger agreement or any actions taken or failure to take action which the party has approved, consented to or requested in writing;

changes in laws, including the rules, regulations and administrative policies of any health authority;

any change in GAAP or any change in laws applicable to the operation of the business of either party or its subsidiaries;

earthquakes, fires, floods, hurricanes, tornadoes or other force majeure, including acts or war, sabotage, terrorism, military action or any escalation or worsening thereof whether commenced before or after the date of the merger agreement, and whether or not pursuant to the declaration of national emergency of war;

any failure to meet any internal or third party estimates of revenue;

with respect to Intrexon, any change in the trading price or volume of Intrexon stock;

the identity of either party as a party to the merger; or

with respect to Medistem, Medistem undertaking a financing, subject to certain limitations set forth in merger agreement, if the merger has not closed by March 12, 2014.

Any event, change, development or state of facts described in the second, fourth, fifth and seventh bullet points above may be taken into account when determining whether a material adverse effect has occurred or would reasonably be expected to occur if the event, change, development or state of facts has or would reasonably be expected to have a disproportionate impact on either party, taken as a whole, as compared to other companies that conduct business in the countries and in the industries in which either party conducts business.

Covenants

Interim conduct of Medistem s business

Under the merger agreement, both Intrexon and Medistem each agreed, subject to certain exceptions, to, and to cause their respective subsidiaries to:

conduct its business in the ordinary course; and

use reasonable best efforts to preserve intact its business organization and goodwill (subject to Medistem s right to undertake a financing, subject to certain limitations set forth in merger agreement, if the merger has not closed by March 12, 2014).

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Additionally, during the pendency of the merger, Intrexon and Medistem agreed, with certain exceptions, not to, and not to allow their respective subsidiaries to:

- amend its articles of incorporation, its bylaws or equivalent organizational documents;
- take or agree to take, any action that would prevent the merger from qualifying as a reorganization within the meaning of Section 368(a) of the Code;
- take, or agree to take, any action that would be reasonably likely to delay the effectiveness of the Registration Statement; or
- authorize or enter into any agreement or otherwise make any commitment to do any of the items prohibited by the various conduct of business covenants.

Additionally, during the pendency of the merger, Medistem further agreed, with certain exceptions, not to:

- issue or authorize the issuance of shares of capital stock, or securities convertible, exchangeable or exercisable for shares of capital stock, except pursuant to the issuance of common stock upon the exercise of warrants or options outstanding on the date of the merger agreement, or the issuance of shares of capital stock pursuant to a financing permitted by the merger agreement;
- sell, pledge, dispose of, transfer, lease, license, guarantee or encumber, or authorize the sale, pledge, disposition, transfer, lease, license, guarantee or encumbrance of, any material property or assets of Medistem, except pursuant to existing contracts or written commitments or the sale or purchase of goods or other property or assets in the ordinary course of business or a financing permitted by the merger agreement;
- declare, set aside, make or pay any dividend or other distribution with respect to any of its capital stock or enter into any agreement with respect to the voting of its capital stock, except pursuant to a financing permitted by the merger agreement;
- reclassify, combine, split, subdivide or redeem, purchase or otherwise acquire, directly or indirectly, any capital stock, other than the exercise of Medistem options or warrants to purchase Medistem common stock;
- acquire any interest in any person or substantially all of the assets of any other person, other than acquisitions of assets in the ordinary course of business;
- incur any indebtedness, issue any debt securities or assume, guarantee, endorse or otherwise become responsible for the obligations of any person, in each case, other than the promissory note from Medistem to Intrexon, the indebtedness and promissory notes disclosed in Medistem s SEC filings prior to the date of the merger agreement, and any financing permitted by the merger agreement;
- materially increase the compensation or benefits of any director, officer, employee or consultant, or grant any rights to severance or termination pay to, or enter into any employment or severance agreement, with any director, officer, employee or consultant, or establish, adopt, enter into or amend any collective bargaining, bonus, profit sharing, thrift, compensation, stock option, restricted stock, pension, retirement, deferred compensation, employment, termination, severance or other plan, agreement, trust, fund, policy or

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arrangement for the benefit of any director, officer, employee, consultant or other service provider;

terminate, cancel or request any material change in, or agree to any material change in, any material contract, except in the ordinary course of business or pursuant to a financing permitted by the merger agreement;

waive, release, assign, settle or compromise any material claims or any material litigation or arbitration, except in the ordinary course of business or for amounts, individually or in the aggregate, not to exceed $50,000 (in excess of third party insurance);

make any material tax election or settle or compromise any material liability for taxes;

make any material change in accounting policies or procedures, other than in the ordinary course of business consistent with past practice or except as required by GAAP or by a governmental entity; or

take any action or conduct its business in a manner such that as of the closing date of the merger the amount derived by subtracting the total current liabilities of Medistem and its subsidiaries on a consolidated basis from the total current assets of Medistem and its subsidiaries on a consolidated basis will be less than $500,000, determined in accordance with GAAP and consistent with the historical audited financial statements of Medistem included in its SEC filings.

Other covenants

The merger agreement also contains covenants relating to:

cooperation between Intrexon and Medistem;

filing of this Registration Statement, a proxy statement/prospectus and other SEC filings;

the holding of a meeting of Medistem shareholders;

access to information and confidentiality;

taking appropriate action to consummate the merger, obtain any necessary consents, make applicable filings, complying with information requests and notifying the other party of certain actions by governmental authorities;

providing notice of certain events;

the coordination of public announcements with respect to the transactions contemplated by the merger agreement;

the listing of the Intrexon shares issued in the merger on the NYSE;

certain tax matters;

cooperating with respect to shareholder litigation;

obligations of Merger Sub; and

other matters as described further below.

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Covenants regarding alternative acquisition proposals

The merger agreement contains detailed provisions regarding Medistem seeking or entertaining alternative acquisition proposals.

Go shop

Until January 9, 2014, Medistem may, directly or indirectly:

- solicit, initiate, facilitate or encourage, whether publicly or otherwise, the submission of any acquisition proposal (or inquiries, proposals or offers or other efforts or attempts that may reasonably be expected to lead to an acquisition proposal); and
- enter into, engage in, and maintain discussions or negotiations with respect to acquisition proposals (or inquiries, proposals or offers or other efforts that may reasonably be expected to lead to an acquisition proposal) or otherwise cooperate with or assist or participate in, or facilitate any such inquiries, proposals, offers, efforts, discussions or negotiations.

No shop

Except for discussions with any person or group of persons that provided Medistem an acquisition proposal between December 19, 2013 and January 9, 2014 that the board of directors of Medistem in good faith determines to either constitute a proposal superior to the merger or could reasonably be expected to lead to a proposal superior to the merger (for purposes hereof any such person shall be referred to as an excluded party), on January 10, 2014, Medistem shall immediately cease and terminate any solicitation, encouragement, discussions or negotiations with any persons that may be ongoing with respect to any acquisition proposal, and as promptly as practicable thereafter deliver a written notice to each such person indicating that Medistem is ending all discussions and negotiations with such person with respect to any acquisition proposal, effective immediately. Medistem must disclose the number and identity of each excluded party to Intrexon by January 13, 2014 and keep Intrexon reasonably informed of any material developments, discussions or negotiations with respect to any acquisition proposal. From January 10, 2014 until the earlier of the closing date or termination of the merger agreement, Medistem shall not, directly or indirectly:

- initiate, solicit or knowingly facilitate or encourage (publicly or otherwise) any inquiries regarding, or the making, submission or announcement of any proposal or offer that constitutes, or would reasonably be expected to lead to, an acquisition proposal;
- engage in, continue or otherwise participate in any discussions or negotiations with respect to, or provide any non-public information or data concerning, Medistem or its subsidiaries to any person relating to, or for the purpose of encouraging or facilitating, any acquisition proposal or otherwise cooperate with or assist or participate in, or facilitate such discussions or negotiations; or
- otherwise knowingly facilitate any such inquiries, proposals, discussion or negotiations or any effort or attempt by any person to make an acquisition proposal.

Medistem may continue to do the foregoing with any excluded party until the earlier of:

- the time Medistem obtains shareholder approval of the merger and
- the time such person or group ceases to be an excluded party, including with respect to any amended or revised acquisition proposal submitted by such excluded party on or after January 10, 2014.

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Additionally, from January 10, 2014 until the time Medistem obtains shareholder approval of the merger, if Medistem receives an acquisition proposal from any person or group that was made by an excluded party or that was made or renewed after January 10, 2014 without materially breaching the terms of the merger agreement, Medistem may:

- contact such person or group to clarify the terms and conditions of such acquisition proposal; and

- if Medistem determines in good faith that such acquisition proposal either constitutes a superior proposal to the merger or could reasonably be expected to result in a proposal superior to the merger, then Medistem may (i) provide, pursuant to a confidentiality agreement, non-public information and data concerning the company to such person or group; *provided* that Medistem shall promptly make the same information available to Intrexon, if such information was not previously made available to Intrexon, and (ii) engage in or otherwise participate in any discussions or negotiations with the person or group.

No change in recommendation or alternative acquisition agreement

Medistem shall not:

- (i) change, withhold, withdraw, qualify or modify (or publicly propose to change, withhold, withdraw, qualify or modify) the recommendation of Medistem s board of directors in favor of the merger, (ii) fail to include the recommendation of Medistem s board of directors in favor of the merger in Medistem s proxy statement, (iii) adopt, approve, authorize, declare advisable or recommend to Medistem s shareholders any other acquisition proposal or (iv) take formal action, or make any recommendation or public statement in connection with (other than a recommendation against such offer or a customary stop, look and listen communication) any other acquisition proposal subject to Regulation 14D under the Exchange Act in any solicitation or recommendation statement made on Schedule 14D-9 relating thereto within ten business days after the commencement of such acquisition proposal; or

- approve or recommend, or publicly propose to approve or recommend, or cause or permit Medistem or any of its subsidiaries to enter into, any letter of intent, memorandum of understanding, acquisition agreement, merger agreement or similar definitive agreement relating to any acquisition proposal.

Permitted changes in recommendation and opportunity to modify the merger agreement

Notwithstanding the above, prior to shareholder approval and provided that Medistem has not breached the covenants regarding alternative acquisition proposals contained in the merger agreement, the board of directors of Medistem may change its recommendation of the merger to its shareholders in favor of an alternative acquisition proposal, or terminate the merger agreement as described below to enter into such alternative acquisition proposal, if Medistem s board of directors first determines in good faith (after consultation with its financial advisor and based on the advice of its outside legal counsel) that (i) the failure to take such action would be inconsistent with such board s fiduciary duties under applicable law, and (ii) such acquisition proposal constitutes a superior proposal to the merger agreement (after giving effect to all of the binding written adjustments, if any, offered by Intrexon). Prior to any such change in recommendation, Medistem must first provide three days notice to Intrexon, as well as copies of such superior proposal and related documents. Intrexon shall then have the opportunity, during

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this three-day period, to negotiate with Medistem and make amendments to the merger agreement. Following this three-day period, if the board of directors determines in good faith and giving effect to any adjustments offered by Intrexon that the alternative acquisition proposal is still a superior proposal, Medistem may change its recommendation of the merger to its shareholders in favor of an alternative acquisition proposal. In the event that the alternative proposal is materially amended, this notice and adjustment process shall be restated.

For purposes of this summary of the merger agreement, an acquisition proposal shall mean any offer or proposal concerning any (i) merger, consolidation, business combination, or similar transaction involving 20% or more of the voting power of Medistem, (ii) sale, lease or other disposition directly or indirectly by merger, consolidation, business combination, share exchange, joint venture or otherwise of assets or businesses of Medistem representing 20% or more of the consolidated assets, revenues or net income of Medistem, (iii) issuance, sale or other disposition of (including by way of merger, consolidation, business combination, share exchange, joint venture or any similar transaction) equity interests representing 20% or more of the voting power of Medistem, (iv) transaction in which any person or group shall acquire beneficial ownership, or the right to acquire beneficial ownership, of 20% or more of the outstanding voting capital stock of Medistem or (v) any combination of the foregoing (in each case, other than this merger). For purposes of clarification, a financing permitted by the terms of the merger agreement shall not be considered an acquisition proposal if such financing does not fall within the foregoing definition of an acquisition proposal.

For purposes of this summary of the merger agreement, a superior proposal means an acquisition proposal (except that the phrase 20% or more in the definition of acquisition proposal shall be replaced with the phrase 50% or more for purposes of this definition) made by a third party which, in the good faith judgment of the Medistem board of directors (after consultation with its financial advisors and outside legal counsel), (a) would if consummated result in a transaction that is more favorable to Medistem s shareholders from a financial point of view than the merger proposal, and (b) is reasonably likely of being consummated on the terms proposed, taking into account all financial, legal, regulatory and other aspects of such proposal, including all conditions contained therein.

Employee matters

The merger agreement provides that certain of Medistem s employees will be offered employment with Intrexon effective as of the closing of the merger. At closing, the employment agreements with these certain employees (but not their employment) and Medistem s officer and director equity ownership plan, will each be terminated by Medistem.

Indemnification and insurance

The merger agreement provides that Intrexon will honor and fulfill in all respects the obligations of Medistem and its subsidiaries with respect to the indemnification of Medistem and its subsidiaries directors and officers under their articles of incorporation, bylaws and indemnification agreements for six years after the effective date of the merger agreement.

The merger agreement provides that Intrexon will and will cause the surviving corporation to provide Medistem s current and former directors and officers liability insurance for a period of six years, which such policies may be no less favorable in the aggregate to the directors and officers of Medistem than Medistem s current policy. Prior to the effective time, Medistem or Intrexon may also obtain a

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prepaid tail directors and officers liability insurance policy with a claims period of six years following the effective time of the merger. Intrexon and Medistem directors and officers have also entered into a letter agreement, pursuant to which Intrexon has agreed to advance expenses in the form of a loan or loans to Medistem by Intrexon for advancement to Medistem s directors and officers for claims in excess of existing Medistem insurance coverage, up to an aggregate of $2.0 million of loans outstanding at any time, related to the directors and officers actions in fulfilling their fiduciary duties in connection with Medistem s entry into the merger agreement, for the period from the date the merger agreement was signed until consummation of the merger.

Conditions to complete the merger

Mutual conditions

The respective obligations of the parties to complete the merger are subject to satisfaction or waiver of the following conditions:

- this Registration Statement shall have been declared effective by the SEC and a stop order suspending the effectiveness of the registration shall not have been issued or a proceeding initiated or threatened for such purpose and not have been withdrawn;

- the merger agreement shall have been adopted by the affirmative vote of the holders of a majority of the outstanding shares of Medistem s common stock;

- no federal or state court of competent jurisdiction or other governmental entity shall have enacted, adopted, issued, promulgated, enforced or entered any law, order, decree, judgment, injunction or other ruling, which prevents or prohibits consummation of the merger; and

- the shares of Intrexon s common stock issuable to Medistem s shareholders in the merger shall have been approved for listing on NYSE.

Conditions of Medistem

In addition, the obligations of Intrexon and Merger Sub to effect the merger are subject to satisfaction or waiver of the following conditions:

- the representations and warranties of Medistem shall be true and correct in all respects (without giving effect to any materiality or material adverse effect qualifications contained therein, and except for (i) *de minimis* inaccuracies with respect to the capitalization representations and warranties and (ii) inaccuracies with respect to any provision of the representations and warranties regarding regulatory compliance, Foreign Corrupt Practices Act and compliance with Office of Foreign Assets Control that are not qualified by materiality , which shall be subject to a material adverse effect standard), as of the closing date of the merger as though made on such date (except to the extent any representations and warranties address matters only as of a particular date or only with respect to a specific period of time, in which case they shall be true and correct as of such date or with respect to such period). The truth and accuracy of the representation and warranties shall be deemed to be satisfied so long as any failure of such representations and warranties to be true and correct would not be reasonably expected to have or result in, individually or in the aggregate, a material adverse effect with respect to Medistem. Intrexon shall have received a certificate of the chief executive officer or chief financial officer of Medistem to that effect;

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Medistem shall have performed in all material respects the covenants and agreements (except for certain of the conduct of business covenants, which shall be subject to a material adverse effect standard) required to be performed by it under the merger agreement, and Intrexon shall have received a certificate signed on behalf of Medistem by its chief executive officer or chief financial officer to such effect;

Medistem shall have obtained all of the consents required pursuant to the merger agreement;

Intrexon shall have received an opinion of counsel, date as of the closing date, that the merger will qualify for United States federal income tax purposes as a reorganization within the meaning of Section 368(a) of the Code;

holders of no more than 7.5% of the outstanding shares of Medistem s common stock shall have validly exercised, or remained entitled to exercise, their dissenters rights under Section 92A.440 of the NRS;

Intrexon shall have received the promissory note set forth in the merger agreement duly executed by Medistem;

Intrexon shall have completed, to its satisfaction in its sole discretion, its business, financial and legal due diligence investigation of Medistem, provided that this condition will no longer be applicable on and after January 16, 2014;

the aggregate number of shares of Intrexon common stock issuable in the merger shall not be equal to or greater than 19.9% of the shares of Intrexon s common stock outstanding as of immediately prior to the effective time of the merger;

Thomas E. Ichim, Ph.D. shall have executed and delivered an employment agreement with Parent or the Company dated as of the Closing Date and in the form to be mutually agreed by Parent and the Company after the date hereof acting reasonably (the Ichim Agreement); and

each current employee, officer and consultant of Medistem and each its subsidiaries shall have executed a proprietary information and inventions assignment agreement in the form presented by Intrexon.

Conditions of Intrexon

In addition, the obligations of Medistem to effect the merger are subject to the satisfaction or waiver of the following conditions:

the representations and warranties of Intrexon shall be true and correct in all respects (without giving effect to any materiality or material adverse effect qualification contained therein) as of the closing date of the merger as though made on such date (except to the extent any representations and warranties address matters only as of a particular date or only with respect to a specific period of time, in which case they shall be true and correct as of such date or with respect to such period). The truth and accuracy of the representation and warranties shall be deemed to be satisfied so long as any failure of such representations and warranties to be true and correct would not be reasonably expected to have or result in, individually or in the aggregate, a material adverse effect with respect to Medistem. Medistem shall have received a certificate of the chief executive officer or chief financial officer of Intrexon to that effect.

Intrexon shall have performed in all material respects the covenants and agreements (except for certain of the conduct of business covenants, which shall be subject to a material adverse

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effect standard) required to be performed by it under the merger agreement, and Medistem shall have received a certificate signed on behalf of Intrexon by its chief executive officer or chief financial officer to such effect; and

Medistem shall have received an opinion of counsel, date as of the closing date, that the merger will qualify for United States federal income tax purposes as a reorganization within the meaning of Section 368(a) of the Code.

Termination of the merger agreement

The merger may be terminated upon the following occurrences:

by mutual written consent of Intrexon and Medistem;

by either party, if the merger is not consummated on or before March 12, 2014 (unless the SEC elects to review the registration statement, in which case such date shall be extended to the earlier of May 31, 2014 or 45 days after the date that Intrexon files its annual report on Form 10-K that includes Intrexon s audited financial statements for the year ended December 31, 2013) unless the failure of the closing to occur by such date shall be due to failure to fulfill any obligation under this agreement by the party seeking to terminate the merger agreement;

by either party, if a federal or state court of competent jurisdiction or other governmental entity shall have enacted, issued, promulgated, enforced or entered any order, decree, judgment, injunction or other ruling, which prevents or prohibits consummation of the merger, unless the primary cause resulting in such judgment, injunction, order, decree or ruling was due to failure to fulfill any obligation under this agreement by the party seeking to terminate the merger agreement;

by either party, if Medistem shall have failed to obtain the requisite affirmative vote of its shareholders;

by Intrexon, if the board of directors of Medistem shall have effected a change in recommendation, or if Medistem shall have entered into an acquisition proposal other than the merger;

by Medistem, if prior to the approval of the merger by the shareholders of Medistem, in order to accept a superior proposal, *provided* that Medistem complied with the go shop provisions of the merger agreement and shall have paid Intrexon the termination fee discussed below;

by either party, if there shall have been a breach of any of the covenants or agreements or any of the representations or warranties by the other party that is not cured as set forth in the merger agreement, which breach or misrepresentation would constitute the failure of any of the conditions to closing, *provided* that neither party shall have the right to terminate pursuant to this provision if it is in breach of this agreement such that any of the conditions to closing would not be satisfied;

by Medistem, if Intrexon has not loaned the amount to Medistem payable by the promissory note set forth in the merger agreement; or

by Intrexon, if the results of its diligence investigation are unsatisfactory, as determined by Intrexon in its sole and absolute discretion, provided that this termination right shall no longer be applicable and/or exercisable by Intrexon on and after January 16, 2014.

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Medistem shall pay Intrexon a termination fee of $1.0 million, if the merger agreement is terminated:

- by Medistem, prior to the approval of the merger by the shareholders of Medistem, in order to accept a superior proposal;
- by Intrexon, because the board of directors of Medistem shall have effected a change in recommendation, or because Medistem shall have entered into an acquisition proposal other than the merger;
- by Intrexon or Medistem because the merger is not consummated on or before March 12, 2014 (unless the SEC elects to review the registration statement, in which case such date shall be extended to the earlier of May 31, 2014 or 45 days after the date that Intrexon files its annual report on Form 10-K that includes Intrexon s audited financial statements for the year ended December 31, 2013) unless the failure of the closing to occur by such date shall be due to failure to fulfill any obligation under this agreement by the party seeking to terminate the merger agreement, and (i) an acquisition proposal has been publicly announced prior to the occurrence of the events giving rise to the right to terminate and not withdrawn prior to the date of such termination and (ii) within six months of such termination Medistem enters into a definitive agreement or consummates such acquisition proposal; or
- by Intrexon or Medistem because Medistem shall have failed to obtain the requisite affirmative vote of its shareholders, and (i) an acquisition proposal has been publicly announced prior to the occurrence of the events giving rise to the right to terminate and not withdrawn prior to the date of such termination and (ii) within six months of such termination Medistem enters into a definitive agreement or consummates such acquisition proposal.

Medistem shall pay Intrexon a termination fee of $750,000, if the merger agreement is terminated by Medistem, prior to the approval of the merger by the shareholders of Medistem, in order to accept a superior proposal if such termination occurs prior to (i) then start of the no-shop period or (ii) after the start of the no-shop period to enter into an alternative acquisition agreement with an excluded party.

Intrexon shall pay Medistem a termination fee of $150,000, if the merger agreement is terminated by Intrexon or Medistem (i) pursuant to any mutual termination right, any termination right exclusive to Medistem or pursuant to Intrexon s due diligence termination right and (ii) no termination fee is payable to Intrexon as a result of such termination.

In addition, if the merger agreement is terminated in certain circumstances, Medistem would be required to repay the outstanding principal balance on the loans made to Medistem by Intrexon pursuant to two promissory notes in the aggregate amount of $700,000 in connection with the proposed merger.

Costs and expenses

All fees, costs and expenses incurred in connection with the merger agreement and the transactions contemplated therein are to be paid by the party incurring such expense; except as otherwise agreed by the parties or as provided above in connection with termination of the merger agreement and except that the parties shall each pay one-half of the expenses related to printing, filing and mailing the registration statement and the proxy statement and all SEC and other regulatory filing fees incurred in connection with the proxy statement and registration statement.

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Specific performance

In addition to any other remedy to which the parties to the merger agreement are entitled at law or in equity, the parties thereto will be entitled to an injunction or injunctions to prevent breaches of the merger agreement and to enforce specifically the terms and provisions hereof in any court of the United States or any state having jurisdiction.

Amendment, waiver and extension of the merger agreement

The merger agreement may be amended by the parties at any time prior to the effective time of the merger. After approval of the merger by the shareholders of Medistem, no amendment may be made that, by law or in accordance with the rules of any relevant stock exchange, requires further approval by such shareholders. The merger agreement may not be amended except by an instrument in writing signed by the parties.

At any time prior to the effective time of the merger, the parties may (i) extend the time for the performance of any of the obligations or other acts of the other party, (ii) waive any inaccuracies in the representations and warranties and (iii) waive compliance with any of the agreements or satisfaction of any conditions; *provided, however*, that after any approval of the merger by the shareholders of Medistem, there may not be any extension or waiver of the merger agreement that, by law or in accordance with the rules of any relevant stock exchange, requires further approval by such shareholders. Any such extension or waiver will be valid only if set forth in an instrument in writing signed by the parties, but such extension or waiver or failure to insist on strict compliance with an obligation, covenant, agreement or condition shall not operate as a waiver of, or estoppel with respect to, any subsequent or other failure.

Governing law

The merger agreement is governed by and will be construed in accordance with the laws of the State of New York (including sections 5-1401 and 5-1402 of the New York General Obligations Law but excluding all other choice of law and conflicts of law rules), except to the extent that mandatory provisions of federal law apply or mandatory principles of law require the application of the NRS.

Amendment to the merger agreement

On January 29, 2014 the parties amended the merger agreement to provide, in the event that any Medistem shareholder exercises dissenters rights with respect to the merger, that after the consummation of the merger, Medistem will then be merged into a wholly owned limited liability company subsidiary of Intrexon in order for the merger to qualify as a tax-free reorganization within the meaning of Section 368(a) of the Internal Revenue Code, as further described in Material U.S. Federal Income Tax Consequences of the Merger.

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Voting agreements

On December 19, 2013, each of the executive officers and directors of Medistem, referred to herein as the supporting shareholders, entered into voting agreements with Intrexon. The following summary describes certain material provisions of the form of voting agreement and is qualified in its entirety by reference to the form of voting agreement, the form of which is attached to this proxy statement/prospectus as Annex D and which is incorporated by reference into this proxy statement/prospectus. This summary does not purport to be complete and may not contain all of the information about the voting agreements that may be important to you. You are encouraged to read the form of voting agreement carefully and in its entirety.

Agreement to vote and irrevocable proxy

Under the voting agreements, each supporting shareholder agreed to vote in favor of the merger agreement and in favor of approval of the merger and any other transactions contemplated by the merger agreement at every meeting of Medistem shareholders and on every action by written consent of Medistem shareholders.

Each supporting shareholder also agreed, while the voting agreements remain in effect and subject to certain exceptions, to vote or execute consents, as applicable, with respect to their shares of capital stock of Medistem:

- in favor of adoption and approval of the merger agreement and all other transactions contemplated by the merger agreement as to which shareholders of Medistem are called upon to vote in favor of or consent to any matter necessary for consummation of the merger and other transactions contemplated by the merger agreement; and against any acquisition proposal; and

- against any of the following actions (other than those actions that relate to the merger and any other transactions contemplated by the merger agreement): (a) any merger, consolidation, business combination, sale of assets, reorganization or recapitalization of or involving Medistem or any of its subsidiaries; (b) any sale, lease or transfer of all or substantially all of the assets of Medistem; (c) any reorganization, recapitalization, dissolution, liquidation or winding up of Medistem or any of its subsidiaries; (d) any material change in the capitalization of Medistem or any of its subsidiaries or in the corporate structure of Medistem or any of its subsidiaries; or (e) any other action that is intended to, or would reasonably be expected to materially impede, interfere with, delay, postpone, discourage or adversely affect the merger or any other transactions contemplated by the merger agreement.

In connection with the foregoing voting covenants and to secure their duties under the voting agreements, each supporting shareholder irrevocably appointed Intrexon as such director or executive officer s true and lawful attorney and proxies to vote, if the supporting shareholder is unable to perform his, her or its obligations under the voting agreement, with respect to the matters relating to merger described above.

The voting agreements also provide that each supporting shareholder may not, among other things (a) initiate, solicit, seek or knowingly encourage or support any inquiries, proposals or offers that constitute or may reasonably be expected to lead to, an acquisition proposal, (b) engage or participate in, or facilitate, any discussions or negotiations regarding, or furnish any nonpublic information to any person in connection with, any inquiries, proposals or offers

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that constitute, or may reasonably be expected to lead to, an acquisition proposal, (c) enter into any letter of intent, agreement in principle or other similar type of agreement relating to an acquisition proposal, or enter into any agreement or agreement in principle requiring Medistem to abandon, terminate or fail to consummate the transactions contemplated hereby, (d) initiate a shareholders vote or action by consent of Medistem s shareholders with respect to an acquisition proposal, (e) except by reason of the voting agreements, become a member of a group (within the meaning of Section 13(d) of the Exchange Act) with respect to any voting securities of Medistem that takes any action in support of an acquisition proposal, or (f) propose or agree to do any of the foregoing

The voting agreements do not limit or restrict such supporting shareholders in their respective capacities as directors or executive officers of Medistem, including such supporting shareholder s ability to vote in his or her sole discretion on any matter in his or her capacity as a director of Medistem.

Transfer restrictions

While the voting agreements remain in effect, each supporting shareholder agreed not to (1) transfer any shares of Medistem that are subject to the voting agreement (or cause or permit the transfer of such shares); or (2) grant any proxies or powers of attorney or deposit any shares of Medistem common stock into a voting trust or enter into a voting agreement with respect to any shares of Medistem common stock.

Termination

The voting agreements will terminate upon the earlier to occur of:

- the valid termination of the merger agreement in certain circumstances in accordance with its terms; and
- the completion of the merger.

The voting agreements may be terminated by the supporting shareholders if the Medistem board of directors has withdrawn or changed its recommendation in favor of a competing transaction.

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Description of Intrexon capital stock

As a result of the merger, holders of Medistem common stock who receive shares of Intrexon (with respect to this section, the Company, Intrexon, us , our , its or we) common stock in the merger will become Intrexon shareholders. Your rights as Intrexon shareholders will be governed by Virginia law and the amended and restated articles of incorporation and amended and restated bylaws of Intrexon. The following description of the material terms of Intrexon s capital stock, including the common stock to be issued in the merger, reflects the anticipated state of affairs upon completion of the merger. The following summary is qualified by reference to the provisions of applicable law and Intrexon s amended and restated articles of incorporation and amended and restated bylaws, which are included as annexes to this proxy statement/prospectus. You are urged to read the applicable provisions of Virginia law, Intrexon s amended and restated articles of incorporation and Intrexon s bylaws carefully and in their entirety.

General

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 December 31, 2013, our authorized capital stock consisted of 200,000,000 shares of common stock, no par value per share, and 25,000,000 shares of preferred stock, no par value per share.

As of December 31, 2013, there were 97,053,712 shares of common stock outstanding and held of record by 426 shareholders. The actual number of shareholders is greater than this number of record holders and includes shareholders who are beneficial owners but whose shares are held in street name by brokers and other nominees. This number of holders of record also does not include shareholders whose shares may be held in trust by other entities. Upon the issuance of approximately 599,542 shares of common stock at the completion of the merger, there will be approximately 97,653,254 shares of common stock outstanding. All outstanding shares of common stock are, and the shares of common stock to be issued pursuant to the merger will be, fully paid and nonassessable.

It is a condition to the closing of the merger that the shares of Intrexon common stock issuable in the merger be approved for listing on the NYSE, subject to official notice of issuance, prior to the effective time. Intrexon will use its reasonable best efforts to cause the shares of its common stock to be authorized for listing on the NYSE upon official notice of issuance, prior to the closing date of the merger.

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.

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Dividends

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

Liquidation

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

Rights and preferences

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

Fully paid and nonassessable

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

Stock options

As of December 31, 2013, options to purchase 2,840,648 shares of our common stock were outstanding, of which options to purchase 1,227,563 shares of our common stock were exercisable.

Warrants

As of December 31, 2013, we had outstanding warrants to purchase an aggregate of 414,404 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. Holders of a total of 72,429,701 shares of our common stock as of December 31, 2013 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 August 7, 2013, the effective date of the registration statement for our initial public offering, subject to specified limitations set forth in the investor rights agreement, and the

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lock-up agreements entered into between the Demand Holders and the underwriters for our initial public offering, at any time the Demand Holders who are holders of at least 75 percent of the then-outstanding registrable securities, as defined in the investor rights agreement, of all Demand Holders as a class, acting together, may demand in writing that we register their registrable securities under the Securities Act. We are not obligated to file a registration statement pursuant to this demand provision on more than two occasions, subject to specified exceptions.

In addition, at any time after we become eligible to file a registration statement on Form S-3 under the Securities Act, subject to specified limitations, the holders of registrable securities may demand in writing that we register on Form S-3 the registrable securities held by them so long as the total amount of registrable securities being registered has an aggregate offering price of at least $500,000. We are not obligated to file a Form S-3 pursuant to this provision within 12 months of the effective date of any other Form S-3 registration statement that we may file.

Incidental registration rights

If we propose to file a registration statement to register any of our securities under the Securities Act for our own account, other than pursuant to a Form S-4 or Form S-8, the holders of our registrable securities are entitled to notice of registration and, subject to specified exceptions, and the lock-up agreements entered into between these holders and the underwriters for our initial public offering, 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

As of December 31, 2013, there were no shares of preferred stock issued or outstanding. Our amended and restated articles of incorporation authorize our board of directors to designate and issue from time to time one or more series of preferred stock without shareholder approval. Our board of directors may fix and determine the preferences, limitations and relative rights of each series of preferred stock issued. Because our board of directors 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 of directors

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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 of directors 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 of directors 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

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consideration in accordance with the procedures set forth in our Corporate Governance Guidelines. The Nominating and Corporate Governance Committee will then evaluate the best interests of us and our shareholders and will recommend to the board of directors the action to be taken with respect to the tendered resignation. Following the board of directors determination, we will promptly publicly disclose the board of directors decision of whether or not to accept the resignation and an explanation of how the decision was reached, including, if applicable, the reasons for rejecting the resignation.

Board vacancies; removal

Our amended and restated articles of incorporation provide that any vacancy occurring on our board of directors may be filled by a majority of directors then in office, even if less than a quorum.

Special meetings of shareholders

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 of directors.

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.

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Virginia law permits a corporation to exempt itself from this statutory provision by placing a statement to that effect in its articles of incorporation. Our amended and restated articles of incorporation do not specifically address the Virginia statute regarding affiliated transactions; therefore, we are subject to this provision.

Control share acquisitions statute

Virginia law also contains provisions relating to control share acquisitions, which are transactions causing the voting strength of any person acquiring beneficial ownership of shares of a Virginia public corporation to meet or exceed certain threshold percentages (20 percent, $33\ ^{1}/_{3}$ percent or 50 percent) of the total votes entitled to be cast for the election of directors. Shares acquired in a control share acquisition have no voting rights unless:

- the voting rights are granted by a majority vote of all outstanding shares other than those held by the acquiring person or any officer or employee director of the corporation; or

- the articles of incorporation or bylaws of the corporation provide that these Virginia law provisions do not apply to acquisitions of its shares.

The acquiring person may require that a special meeting of the shareholders be held within 50 days of the acquiring person s request to consider the grant of voting rights to the shares acquired in the control share acquisition. If voting rights are not granted and the corporation s articles of incorporation or bylaws permit, the acquiring person s shares may be repurchased by the corporation, at its option, at a price per share equal to the acquiring person s cost. Virginia law grants dissenters rights to any shareholder who objects to a control share acquisition that is approved by a vote of disinterested shareholders and that gives the acquiring person control of a majority of the corporation s voting shares.

Our amended and restated articles of incorporation provide that this second statutory provision does not apply to our Company; therefore, we are not subject to this provision.

Indemnification and limitation of directors and officers liability

The Virginia Stock Corporation Act and our articles of incorporation provide for indemnification of our directors and officers in a variety of circumstances, which may include liabilities under the Securities Act. Virginia law provides that, unless limited by its articles of incorporation, a corporation must indemnify a director or officer who entirely prevails in the defense of any proceeding to which he was a party because he is or was a director or officer of the corporation against reasonable expenses incurred by him in connection with the proceeding. Virginia law permits a corporation to indemnify, after a determination has been made that indemnification of the director is permissible in the circumstances because he has met the following standard of conduct, an individual made a party to a proceeding because he is or was a director against liability incurred in the proceeding if:

- he conducted himself in good faith;

- he believed in the case of conduct in his official capacity with the corporation, that his conduct was in its best interests and in all other cases that his conduct was at least not opposed to its best interests; and

- in the case of any criminal proceeding, he had no reasonable cause to believe his conduct was unlawful.

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A Virginia corporation may not indemnify a director in connection with a proceeding by or in the right of the corporation in which the director was adjudged liable to the corporation or in connection with any other proceeding charging improper personal benefit to him, whether or not involving action in his official capacity, in which he was adjudged liable on the basis that personal benefit was improperly received by him, unless in either case a court orders indemnification and then only for expenses. In addition, the Virginia Stock Corporation Act permits a corporation to advance reasonable expenses to a director or officer upon the corporation s receipt of:

- a written affirmation by the director or officer of his good faith belief that he has met the standard of conduct necessary for indemnification by the company; and
- a written undertaking by the director or on the director s behalf to repay the amount paid or reimbursed by the corporation if it is ultimately determined that the director is not entitled to indemnification and did not meet the relevant standard of conduct.

In addition, Virginia law permits a corporation to make any further indemnity, including indemnity with respect to a proceeding by or in the right of the corporation, and to make additional provision for advances and reimbursement of expenses, to any director or officer that may be authorized by the articles of incorporation or any bylaw made by the shareholders or any resolution adopted by the shareholders, except an indemnity against his willful misconduct or a knowing violation of the criminal law.

In addition, the Virginia Stock Corporation Act permits a Virginia corporation to limit the personal liability of an officer or director in any proceeding brought by or in the name of the corporation or its shareholders, except if the director or officer engaged in willful misconduct or a knowing violation of the criminal law or any federal or state securities laws, including insider trading or market manipulation.

Our amended and restated 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. Our amended and restated articles of incorporation also limit the liability of our officers and directors to the extent not prohibited by Virginia law. We also carry insurance on behalf of directors, officers, employees or agents which may cover liabilities under the Securities Act.

Insofar as the foregoing provisions permit indemnification of directors, officers or persons controlling us for liability arising under the Securities Act, we have been informed that in the opinion of the SEC, this indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Listing on the New York Stock Exchange

Our common stock is listed on the New York Stock Exchange under the symbol XON.

Authorized but unissued shares

The authorized but unissued shares of common stock and preferred stock are available for future issuance without shareholder approval, subject to any limitations imposed by the New York Stock Exchange listing rules. These additional shares may be used for a variety of corporate finance

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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 American Stock Transfer & Trust Company, LLC.

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Comparison of rights of shareholders of Intrexon and Medistem

Medistem is incorporated under the laws of the State of Nevada and, accordingly, the rights of Medistem shareholders are currently governed by the Nevada Revised Statutes (referred to herein as the NRS). Intrexon is incorporated under the laws of the Commonwealth of Virginia and, accordingly, the rights of Intrexon shareholders are currently governed by the Virginia Stock Corporation Act (referred to herein as the VSCA). Upon completion of the merger, the Medistem shareholders who elect to receive shares of Intrexon common stock in exchange for their shares of Medistem common stock will become Intrexon shareholders. The rights of the former Medistem shareholders and the Intrexon shareholders will therefore be governed by the VSCA and by Intrexon s amended and restated articles of incorporation and Intrexon s bylaws.

The table below summarizes material differences between the rights of Medistem s shareholders and those of Intrexon s shareholders pursuant to the NRS, the VSCA and their respective constitutive documents as they are currently in effect. While Intrexon and Medistem believe that the summary table includes the material differences between the rights of their respective shareholders prior to the merger, this summary does not include a complete description of all the differences between the rights of Intrexon s shareholders and those of Medistem s shareholders, nor does it include a complete description of the specific rights of the respective shareholders discussed. The inclusion of differences in the rights of these shareholders in the table is not intended to indicate that all of such differences should necessarily be considered material by you or that other differences that you may consider equally important do not exist.

Each of Intrexon and Medistem urge you to carefully read this entire proxy statement/prospectus, the relevant provisions of the VSCA, and the other documents to which Intrexon and Medistem refer in this proxy statement/prospectus for a more complete understanding of the differences between being a shareholder of Medistem and being a shareholder of Intrexon. Copies of Intrexon s amended and restated articles of incorporation, as currently in effect, and Intrexon s bylaws, as currently in effect, are attached as Exhibits 3.1 and 3.2, respectively to the Registration Statement on Form S-4 of which this proxy statement/prospectus is a part. Medistem has filed with the SEC its amended and restated articles of incorporation and amended and restated bylaws referenced in this summary of shareholder rights and will send copies of these documents to you, free of charge, upon your request. See the section entitled Where You Can Find More Information.

	Rights of Intrexon Shareholders	Rights of Medistem Shareholders
Corporate Governance	Upon completion of the merger, the rights of Intrexon shareholders and former Medistem shareholders will be governed by the VSCA, Intrexon s amended and restated articles of incorporation, and Intrexon s bylaws.	The rights of Medistem shareholders are governed by the NRS, the Medistem amended and restated articles of incorporation and the Medistem bylaws.
Authorized Capital Stock	Intrexon s authorized capital stock consists of 200,000,000 shares of common stock, no par value per share, and 25,000,000 shares of preferred stock, no par value per share.	Medistem s authorized capital stock consists of 300,000,000 shares of common stock, $0.0001 par value per share, and 200,000,000 shares of preferred stock, $0.0001 par value per share.

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Special Meetings of Shareholders	Intrexon s bylaws provide that a special meeting may be called by the board of directors, the chairman of the board of directors or the chief executive officer. Intrexon s bylaws also provide that the vote of 25 percent of its 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.	A special meeting of the shareholders may be called by Medistem s board of directors or upon the written request of 51% of the shares then outstanding and entitled to vote thereat. In addition, under the NRS, any two directors or Medistem s president may call a special meeting of the shareholders. In accordance with the NRS, Medistem s bylaws provide that a written notice of the time, place and purpose of the meeting must be given to each shareholder entitled to vote at the meeting not less than 10 days nor more than 60 days prior to the meeting. Notice of special meetings of shareholders must also include a description of the purpose or purposes for which the meeting is being called.
Shareholder Nominations and Shareholder Proposals	Intrexon s bylaws provide that nominations for the election of directors may be made at an annual shareholder meeting only (i) pursuant to Intrexon s notice of meeting (or any supplement thereto), (ii) by or at the direction of the board or (iii) by any shareholder of Intrexon who (a) was a shareholder of record of Intrexon (and, with respect to any beneficial owner, if different, on whose behalf such nominations or proposal of other business are made, only if such beneficial owner was the beneficial owner of shares of Intrexon) at the time the notice provided for in its bylaws is delivered to the Secretary and at the time of the annual meeting, (b) is entitled to vote at the meeting, and (c) complies with the notice procedures set forth in its bylaws. To comply with the notice procedures set forth in Intrexon s bylaws, a shareholder must have given notice thereof in writing to the Secretary and any such proposed business other than the nominations of persons for election to the board must constitute a proper matter for shareholder	Medistem s articles of incorporation and bylaws do not contain specific provisions addressing shareholder nominations and proposals. Further, the NRS does not specifically address the issue.

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action. To be timely, a shareholder s notice shall be delivered to the Secretary at Intrexon s principal executive offices not later than the close of business on the 90th day nor earlier than the close of business on the 120th day prior to the first anniversary of the preceding year s annual meeting; provided, however, that in the event that the date of the annual meeting is more than 30 days before or more than 70 days after such anniversary date, notice by such shareholder must be so delivered not earlier than the close of business on the 120th day prior to such annual meeting and not later than the close of business on the later of the 90th day prior to such annual meeting or the 10th day following the day on which public announcement of the date of such meeting is first made by Intrexon.

To be in proper form, a shareholder s notice to the Secretary must:

(i) set forth, as to the shareholder giving the notice and the beneficial owner, if any, on whose behalf the nomination or proposal is made:

(a) the name and address of such shareholder, as they appear on Intrexon s books, and of such beneficial owner, if any;

(b) (1) the class or series and number of shares of Intrexon which are, directly or indirectly owned beneficially and of record by such shareholder rand such beneficial owner;

(2) any option, warrant, convertible security, stock appreciation right, or similar right with an exercise or conversion privilege or a settlement payment or mechanism at a price related to any class or series of shares of

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Intrexon or with a value derived in whole or in part from the value of any class or series of shares of Intrexon, whether or not such instrument or right shall be subject to settlement in the underlying class or series of capital stock of Intrexon or otherwise (a Derivative Instrument) directly or indirectly owned beneficially by such shareholder and such beneficial owner and any other direct or indirect opportunity to profit or share in any profit derived from any increase or decrease in the value of shares of Intrexon;

(3) any proxy, contract, arrangement, understanding, or relationship pursuant to which such shareholder and such beneficial owner has a right to vote any shares of any security of Intrexon;

(4) any short interest in any security of Intrexon;

(5) any rights to dividends on the shares of Intrexon owned beneficially by such shareholder and such beneficial owner that are separated or separable from the underlying shares of Intrexon;

(6) any proportionate interest in shares of Intrexon or Derivative Instruments held, director or indirectly, by a general or limited partnership in which such shareholder and such beneficial owner is a general partner or, directly or indirectly, beneficially owns an interest in a general partner;

(7) any performance-related fees (other than an asset-based fee)

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that such shareholder and such beneficial owner is entitled to based on any increase or decrease in the value of shares of Intrexon or Derivative Instruments, if any, as of the date of such notice, including without limitation any such interests held by members of such shareholder and such beneficial owner s immediate family sharing the same household (which information shall be supplemented by such shareholder and beneficial owner, if any, not later than 10 days after the record date for the meeting to disclose such ownership as of the record date);

(c) any other information relating to such shareholder and beneficial owner, if any, that would be required to be disclosed in a proxy statement or other filings required to be made in connection with solicitations of proxies for, as applicable, the proposal and/or for the election of directors in a contested election pursuant to Section 14 of the Exchange Act and the rules and regulations promulgated thereunder;

(d) a statement whether such shareholder or any other person known to the shareholder will deliver a proxy statement and form of proxy to holders of at least the percentage of Intrexon s voting shares required under applicable law to carry the proposal; and

(e) a representation that the shareholder is a holder of record of stock of Intrexon entitled to vote at such meeting and intends

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to appear in person or by proxy at the meeting to make the nomination or propose such business specified in the notice before the meeting;

(ii) if the notice relates to any business other than a nomination of a director or directors that the shareholder proposes to bring before the meeting, set forth:

(a) a brief description of the business desired to be brought before the meeting, the reasons for conducting such business at the meeting and any material interest of such shareholder and beneficial owner, if any, in such business;

(b) the complete text of any resolutions intended to be presented at the meeting and in the event that such business includes a proposal to amend the bylaws of Intrexon, the language of the proposed amendment; and

(c) a description of all agreements, arrangements and understandings between such shareholder and beneficial owner, if any, and any other person or persons (including their names) in connection with the proposal of such business by such shareholder;

(iii) set forth, as to each person, if any, whom the shareholder proposes to nominate for election or reelection to the board:

(a) all information relating to such person that would be required to be disclosed in a proxy statement or other filings required to be made in connection with solicitations of proxies for election of directors in a

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contested election pursuant to Section 14 of the Exchange Act and the rules and regulations promulgated thereunder (including such person s written consent to being named in the proxy statement as a nominee and to serving as a director if elected) and;

(b) a description of all direct and indirect compensation and other material monetary agreements, arrangements and understandings during the past three years, and any other material relationships, between or among such shareholder and the beneficial owner, if any, and their respective affiliates and associates, or others acting in concert therewith, on the one hand, and each proposed nominee, and his or her respective affiliates and associates, or others acting in concert therewith, on the other hand, including, without limitation all information that would be required to be disclosed pursuant to Rule 404 promulgated under Regulation S-K under the Exchange Act if the shareholder making the nomination and any beneficial owner on whose behalf the nomination is made, if any, or any affiliate or associate thereof or person acting in concert therewith, were the registrant for purposes of such rule and the nominee were a director or executive officer of such registration; and

(iv) with respect to each nominee for election or reelection to the board, include a completed and signed questionnaire, representation and agreement as required by the bylaws.

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Shareholder Action by Written Consent	The VSCA allows action by written consent to be made by the shareholders in lieu of a shareholder s meeting if the action is adopted or taken by all the shareholders entitled to vote on the action. Under the VSCA, the articles of incorporation may authorize action by shareholders by less than unanimous written consent provided that the taking of such action is consistent with any requirements that may be set forth in Intrexon's articles of incorporation, the bylaws, or the VSCA. Intrexon s bylaws do not provide for action by shareholders by less than unanimous written consent.	Under the NRS, shareholder action with respect to a public company may be taken without a meeting only if written consents setting forth such action are signed by all shareholders entitled to vote on the action. The Medistem amended and restated bylaws provide that any action that could be taken at a meeting of the shareholders may be taken without a meeting if one or more written consents setting forth the action so taken are signed by all shareholders entitled to vote on the action and are delivered to the corporation.
Number of Directors	Intrexon s bylaws provide that the number of directors constituting the board shall be designated by resolution of the board, but shall not be more than 10; provided that no decrease in the number of directors shall shorten or terminate the term of any incumbent director. Intrexon s amended and restated articles of incorporation provide that the board of directors shall consist of a number of directors as shall be specified in accordance with the bylaws. There are currently eight directors serving on the Intrexon board of directors.	The Medistem amended and restated bylaws provide that the board of directors shall be composed of not less than five nor more than nine members, the specific number to be set by resolution of the board of directors or the shareholders. There are currently seven directors serving on the Medistem board of directors.
Election of Directors	Intrexon s bylaws provide that a nominee for director shall be elected to the board if the votes cast for such nominee s election exceed the votes cast against such nominee s election; provided, however, that such directors shall be elected by a plurality of the votes cast at any meeting of the shareholders for which (i) the Secretary receives a notice that shareholder has nominated a person for election to the board in compliance with the advance notice requirements for shareholder nominees for director set forth in the bylaws, and (ii) such	Pursuant to the NRS, unless Medistem s articles of incorporation or its bylaws require more than a plurality of votes cast, Medistem s directors are elected at annual meetings of shareholders by a plurality of votes cast at the election. The Medistem amended and restated bylaws provide that directors shall be elected by a plurality of the voting power of the shares present in person or represented by proxy at the meeting and entitled to vote on the election of directors.

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	nomination has not been withdrawn by such shareholder on or prior to the 10th day preceding the date Intrexon first mails its notice of meeting for such meeting to the shareholders. If directors are to be elected by a plurality of the votes cast, the shareholders shall not be permitted to vote against a nominee.	
Removal of Directors	The VSCA provides that shareholders may remove directors with or without cause by the affirmative vote of the holders of at least a majority of the stock entitled to vote generally in the election of directors unless the articles of incorporation provide that directors may only be removed with cause. Intrexon s amended and restated articles of incorporation provide that, subject to the rights of preferred shareholders, directors may be removed only with cause and only by the affirmative vote of a majority of the votes entitled to be cast by each voting group that is entitled to vote generally in the election of directors.	The Medistem amended and restated articles of incorporation provide that directors may be removed only for cause; such removal shall be by the holders of not less than two-thirds of the shares entitled to elect the director whose removal is sought.
Limitation on Liability of Directors	The VSCA provides that in any proceeding brought by or in the right of a corporation or brought by or on behalf of shareholders of a corporation, the damages assessed against an officer or director arising out of a single transaction, occurrence or course of conduct may not exceed the lesser of (i) the monetary amount, including the elimination of liability, specified in the articles of incorporation or, if approved by the shareholders, in the bylaws as a limitation on or elimination of the liability of the officer or director or (ii) the greater of (a) $100,000 or (b) the amount of cash compensation received by the officer or director from the corporation during the 12 months immediately preceding the act or omission for which liability was imposed. The liability of an officer or director is not limited under the VSCA	Under the NRS, a director or officer is not individually liable to the corporation or its shareholders or creditors for any damages as a result of any act or failure to act in his or her capacity as a director or officer unless it is proven that (a) the director s or officer s act or failure to act constituted a breach of his or her fiduciary duties as a director or officer; and (b) the breach of those duties involved intentional misconduct, fraud or a knowing violation of law.

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	or a corporation s articles of incorporation and bylaws if the officer or director engaged in willful misconduct or a knowing violation of the criminal law or of any federal or state securities law.	
	Intrexon s amended and restated articles of incorporation provides that, to the fullest extent that the VSCA, as it exists or as it may hereafter be amended, permits the limitation or elimination of the liability of directors and officers in a proceeding brought by or in the right of Intrexon or brought by or on behalf of the Intrexon shareholders, a director or officer of Intrexon shall not be liable to Intrexon or its shareholders for monetary damages arising out of a single transaction occurrence or course of conduct in excess of $1.00. Notwithstanding the foregoing, the liability of a director or officer shall not be eliminated if the director or officer engaged in willful misconduct or a knowing violation of criminal law or of any federal or state securities law, including without limitation, any claim of unlawful insider trading or manipulation of the market for any security.	The Medistem amended and restated articles of incorporation provide that, to the full extent permitted by the NRS (as it presently exists or as it may be amended from time to time), directors shall not be liable to Medistem or its shareholders for monetary damages for conduct as a director, except for liability of the director (i) for acts or omissions that involve intentional misconduct by the director or a knowing violation of law by the director, (ii) for conduct violating the NRS, or (iii) for any transaction from which the director will personally receive a benefit in money, property or services to which the director is not legally entitled.
Indemnification of Directors and Officers	Under the VSCA, 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 the proceeding because he is or was a director against liability incurred in	The NRS requires a corporation indemnify a director or officer to the extent that the director, officer, employee or agent, who, by reason of the fact that the person is or was a director, officer, employee or agent of the corporation, has been included as a party to an action and who has been successful on the merits or otherwise in defense of any action, suit or proceeding, or in defense of any claim, issue or matter therein reasonable expenses incurred by him in connection with the proceeding. Nevada law permits a corporation to indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit (including if by

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the proceeding if (i) he conducted himself in good faith; (ii) he believed that his official conduct was in the best interest of the corporation and all other non-official conduct was not opposed to the corporation s best interest; and (iii) in the case of a criminal proceeding, he had no reasonable basis to believe his conduct was unlawful.	or in the right of the corporation to procure a judgment in its favor) or proceeding, whether civil, criminal, administrative or investigative, except an action by or in the right of the corporation, by reason of the fact that the person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses, including attorneys fees, judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with the action, suit or proceeding if the person is not liable for not having discharged his fiduciary duties under Nevada law or acted in good faith and in a manner which he or she reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe the conduct was unlawful.
A Virginia corporation may not indemnify a director or officer in connection with a proceeding by or in which the director or officer is adjudged liable on the basis that he received an improper personal benefit. A director or officer also cannot be indemnified in connection with a proceeding by or in the right of the corporation in which the director or officer was adjudged liable to the corporation. In addition, under the VSCA, any corporation may indemnify, including an indemnity with respect to a proceeding by or in the right of the corporation, and may provide for advances or reimbursement of expenses to, any director, officer, employee or agent that is authorized by the articles of incorporation or any bylaw approved by the shareholders or any resolution adopted before or after the subject event by the shareholders, except an indemnity against willful misconduct or a knowing violation of criminal law.	Medistem s articles of incorporation provide that Medistem shall indemnify any individual made a party to a proceeding because that individual is or was a director of the corporation and shall advance or reimburse the reasonable expenses incurred by the individual in advance of final disposition of the proceeding, without regard to the limitations in NRS Chapter 78.7502, or any other limitation which may hereafter be enacted, to the extent such limitation may be disregarded if authorized by the Articles of Incorporation, to the full extent and under all circumstances permitted by applicable law
Intrexon s amended and restated 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.	
Unless ordered by a court of competent jurisdiction, any indemnification pursuant to	

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Intrexon s amended and restated articles of incorporation shall be made by Intrexon only as authorized in the specific case upon a determination that indemnification of the individual is permissible in the circumstances because he or she met the standard of conduct that warrants indemnification, as discussed above. Such determination shall be made: (i) if there are two or more disinterested directors, by the board by a majority vote of all disinterested directors, a majority of whom shall constitute a quorum; or by a majority vote of a committee consisting of two or more disinterested directors appointed by such a vote; or (ii) by special legal counsel selected by the board or its committee in the manner heretofore provided or, if there are fewer than two disinterested directors, selected by a majority vote of the board (in which selection directors who do not qualify as disinterested directors may participate); or (iii) by the shareholders, but shares owned by or voted under the control of individuals who at the time do not qualify as disinterested directors may not be voted on the determination. Authorization of indemnification, evaluation as to reasonableness of expenses and determination and authorization of advancements for expenses shall be made in the same manner as the determination that indemnification is permissible, except that if there are fewer than two disinterested directors or if the determination is made by special legal counsel, authorization of indemnification and evaluation as to reasonableness of expenses shall be made by those selecting such counsel.

Notwithstanding the foregoing, in the event there has been a change in the composition of a majority of the board after the date of the alleged act or omission with respect to which

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	indemnification is claimed, any determination as to indemnification and advancement of expenses with respect to any claim for indemnification made pursuant to the amended and restated articles of incorporation shall be made by special legal counsel agreed upon by the board and the applicant. If the board and the applicant are unable to agree upon such special legal counsel the board and the applicant each shall select a nominee, and the nominees shall select such special legal counsel.	
Amendments to Certificate/Articles of Incorporation	The VSCA generally requires that any amendment to the articles of incorporation be approved by each voting group entitled to vote on the proposed amendment by at least two-thirds of all the votes entitled to be cast by that voting group, unless the VSCA otherwise requires a greater vote or the articles of incorporation provide for a greater or lesser vote, or a vote by separate voting groups, so long as the vote provided for is not less than a majority of all the votes cast on the amendment by each voting group entitled to vote. Intrexon s amended and restated articles of incorporation provide that an amendment or restatement of the articles of incorporation for which the VSCA requires shareholder approval shall be approved by a majority of the votes entitled to be cast by each voting group that is entitled to vote on the matter, unless in submitting any such matter to the shareholders the board shall require a greater vote.	Under the NRS, Medistem s board of directors must adopt a resolution setting forth a proper amendment to Medistem s articles of incorporation and must call either a special meeting of the shareholders entitled to vote on the amendment or direct that the amendment be considered at the next annual meeting of Medistem s shareholders. The Medistem amended and restated articles of incorporation provide that Medistem may amend or repeal any provision of the amended and restated articles of incorporation in any manner permitted by law.
Amendments to Bylaws	Under the VSCA, unless other provision is made in the articles of incorporation or bylaws, a majority of the directors or a majority of the shareholders present and entitled to vote may adopt, amend or repeal the bylaws.	Under Nevada law, except as otherwise provided by a bylaw adopted by Medistem s shareholders, Medistem s board of directors can amend or repeal the bylaws, or adopt new bylaws.

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	Intrexon s amended and restated articles of incorporation provides that	Medistem articles of incorporation provide that Medistem s board of directors shall have the power to
	the board of directors is expressly authorized and empowered to adopt, amend or repeal the bylaws, provided, however, that bylaws adopted by the board pursuant to this power may be altered, amended or repealed by the board or by the shareholders having voting power with respect thereto. In the case of any such action by shareholders, the affirmative vote of the holders of a majority of the voting power of the then outstanding voting stock, voting together as a single voting group, shall be required in order for the shareholders to alter, amend or repeal any provision of the bylaws or to adopt any additional bylaw	adopt, amend, or repeal the bylaws, subject to the power of the shareholders to amend or repeal such bylaws. The shareholders shall also have the power to adopt, amend or repeal the bylaws.
Vote on Certain Fundamental Issues	The VSCA provides that, unless a corporation s articles of incorporation provide for a higher or lower vote, specified significant corporate actions must be approved by the affirmative vote of the holders of at least two-thirds of the votes entitled to be cast on the matter. Corporate actions requiring at least a two-thirds vote include an amendment to a corporation s articles of incorporation, adoption of plans of merger or exchange, sales of all or substantially all of the corporation s assets other than in the ordinary course of business and adoption of plans of dissolution. The VSCA provides that a corporation s articles may either increase the vote required to approve these actions or may decrease the required vote to not less than a majority of the votes entitled to be cast.	Under the NRS, a merger or share exchange must be adopted and recommended by the board of directors and approved by a majority of all votes entitled to vote, unless another percentage is specified in the articles of incorporation. Under the NRS, a merger may also become effective without the approval of the surviving corporation s shareholders if certain requirements are met.
	Intrexon s amended and restated articles of incorporation provide that such fundamental actions for which the VSCA requires shareholder approval shall be approved by a majority of the votes entitled to be cast by each voting group that is	Medistem s bylaws provide that, except as otherwise provided by statute or by the articles of incorporation, any corporate action, other than the election of directors, to be taken by vote of the shareholders, shall be authorized by a majority of votes cast at the meeting of shareholders by the holders of shares entitled to vote thereon. Medistem s articles of incorporation do not address the issue.

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	entitled to vote on the matter, unless in submitting any such matter to the shareholders the board shall require a greater vote. Under the NRS, a merger or share exchange must be adopted and recommended by the board of directors and approved by a majority of all votes entitled to vote, unless another percentage is specified in the articles of incorporation. Under the NRS, a merger may also become effective without the approval of the surviving corporation s shareholders if certain requirements are met.	
Certain Business Combinations Restrictions	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:	Under the NRS, except under certain circumstances, a corporation is not permitted to engage in a business combination with any interested shareholder for a period of three years following the date such shareholder became an interested shareholder. An interested shareholder is a person who owns 10% or more of the outstanding shares of voting stock. Nevada permits a corporation to opt out of the application of these business combinations provisions by so providing in the articles of incorporation; Medistem has not opted out of these provisions.
	a majority of (but not fewer than two) disinterested directors of Intrexon 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 Intrexon proposed by	

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	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 share 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. Intrexon s amended and restated articles of incorporation do not specifically address the Virginia statute regarding affiliated transactions; therefore, Intrexon is subject to this provision.	
Shareholder Rights Plan	Intrexon has no shareholder rights plan.	Medistem has no shareholder rights plan.

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Dissenters rights

General

Under Chapter 92A.300-500 of the Nevada Revised Statutes, which is referred to herein as the NRS, holders of Medistem s common stock are entitled to dissent from, and obtain payment of the fair value of their shares in cash together with accrued interest in the event of, the consummation of the merger, instead of receiving the merger consideration they would otherwise be entitled to pursuant to the merger agreement. The following summarizes the material rights of holders of Medistem common stock under Chapter 92A.300-500. You should read the applicable sections of Chapter 92A.300-500, a copy of which is attached to this proxy statement/prospectus as Annex B, and which governs dissenters rights. The summary below is qualified in its entirety by reference to Chapter 92A.300-500.

Pursuant to Chapter 92A.300-500, when a proposed merger is to be submitted to a vote at a meeting of shareholders, as in the case of this special meeting, the meeting notice must state that shareholders are or may be entitled to assert dissenters rights and must be accompanied by a copy of Chapter 92A.300-500. The notice of special meeting included with this proxy statement/prospectus constitutes notice to the holders of Medistem common stock, and a copy of Chapter 92A.300-500 is attached to this proxy statement/prospectus as Annex B.

If you are contemplating the possibility of exercising your dissenters rights in connection with the merger, you should carefully review the text of Chapter 92A.300-500. If you do not fully and precisely satisfy the procedural requirements of Chapter 92A.300-500, you will lose your dissenters rights. If any holder of shares of Medistem common stock who asserts dissenters rights under the NRS withdraws or loses (through failure to perfect or otherwise) the right to obtain payment for such holder s shares under Chapter 92A.300-500, then such shareholder s shares will be converted, or will be treated as if they had been converted, into the right to receive the merger consideration, without interest and subject to any applicable withholding of taxes. Medistem will not provide you with any notice regarding your dissenters rights other than as described in this proxy statement/prospectus and the notice of special meeting included with this proxy statement/prospectus.

Requirements for exercising dissenters rights

Holders of shares of Medistem common stock who do not vote in favor of the merger, who hold their shares through the effective time of the merger and who follow the procedures set forth in Sections 92A.300 to 92A.500 inclusive, of the NRS, which we refer to as the Dissenters Rights Provisions, will be entitled to dissent from the merger and demand payment of the fair value of their shares Medistem common stock. The fair value of the shares of Medistem common stock as used in the Dissenters Rights Provisions is the value of the shares of Medistem common stock immediately before the effectuation of the proposed merger, excluding appreciation or depreciation in anticipation of the merger unless exclusion would be inequitable, using customary and current valuation concepts and techniques generally employed for similar businesses in the context of a merger, and without discounting for lack of marketability or minority status.

If you elect to dissent, you must deliver to Medistem a written notice of dissent stating that you intend to demand payment for your shares if the merger is consummated, and must refrain from

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voting on the merger proposal. This notice must be delivered Medistem before the vote on the merger proposal at the special meeting. If you fail to comply with these requirements, you will not be entitled to dissenters rights.

Within 10 days after the effective time of the merger, Merger Sub will give written notice of the effective date of the merger by certified mail to each Medistem shareholder who properly delivered a written notice of dissent. Merger Sub s notice will also state where demand for

payment must be sent and where and when share certificates must be deposited, among other

information. Within the time period set forth in the notice, which may not be less than 30 days nor more than 60 days following the date notice is delivered, the dissenting shareholder must make a written demand on Merger Sub for payment of the fair value of his or her shares and deposit his or her share certificates in accordance with the notice.

Within 30 days after the receipt of the dissenters demand for payment, Merger Sub will pay each dissenter who complied with the required procedures the amount it estimates to be the fair value of the dissenters shares of Medistem common stock, plus accrued interest. Additionally, the payment must be accompanied by a balance sheet as of the end of a fiscal year ending not more than 16 months before the date of payment, a statement of income for that year, a statement of changes in the shareholders equity for that year and the latest available interim financial statements, if any, a statement as to how fair value was calculated, a statement as to how interest was calculated, and a statement of the dissenters right to demand payment of fair value under Nevada law.

Following receipt of payment for the shares, a dissenting shareholder, within 30 days, may send Merger Sub notice containing such shareholder s own estimate of fair value and accrued interest, and demand payment for that amount less the amount received pursuant to Merger Sub s payment of fair value to such shareholder. This right is waived if the shareholder does not make written demand within 30 days of receiving Merger Sub s payment or offer of payment for the shareholders shares and the shareholder will only be entitled to the payment made or offered.

If a demand for payment remains unsettled, Merger Sub will petition the court to determine fair value and accrued interest. If Merger Sub fails to commence an action within 60 days following the receipt of the shareholder s demand, Merger Sub will pay to the shareholder the amount demanded by the shareholder in the shareholder s notice containing the shareholder s estimate of fair value and accrued interest.

All dissenting holders, whether residents of Nevada or not, must be made parties to the action and the court will render judgment for the fair value of their shares of Medistem common stock. Each party must be served with the petition. The judgment shall include payment for the amount, if any, by which the court finds the fair value of such shares, plus interest, exceeds the amount already paid. The costs and expenses of bringing the action will be determined by the court. If the court finds that the demand of any dissenting shareholder for payment was arbitrary, vexatious or otherwise not in good faith, the court may assess costs, including reasonable fees of counsel and experts, against such shareholder. In addition, reasonable fees and expenses of counsel and experts may be assessed against Merger Sub if the court finds that it did not substantially comply with the requirements of the Dissenters Rights Provisions or that it acted arbitrarily, vexatiously, or not in good faith with respect to the rights granted to dissenters under Nevada law.

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The foregoing discussion is not a complete statement of the law pertaining to dissenters rights under the Dissenters Rights Provisions and is qualified in its entirety by the full text of the Dissenters Rights Provisions, which is attached to this proxy statement/prospectus as Annex B. You are encouraged to read Annex B carefully. All references in the Dissenters Rights Provisions and in this summary to a shareholder are to the record holder of the shares of Medistem common stock as to which dissenters rights are asserted. A person having a beneficial interest in shares of Medistem common stock held of record in the name of another person, such as a

broker, fiduciary, depositary or other nominee, must act promptly to cause the record holder to follow the steps summarized above properly and in a timely manner to perfect dissenters rights.

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Description of Intrexon s 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. Intrexon (with respect to this section, the Company, Intrexon, us , our or we) believes it is not a viable option for mankind to continue on this path new solutions will be necessary to preserve and globally expand a high quality of life. We believe that synthetic biology is a solution.

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

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

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

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

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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.

In certain strategic circumstances, we may enter into a joint venture with an ECC collaborator. In that event, we will enter into an ECC with a joint venture entity and may contribute access to our technology, cash or both into the joint venture which we will jointly control with our ECC collaborator. Pursuant to a joint venture agreement, we may be required to contribute additional capital to the joint venture, and we may be able to receive a higher financial return than we would normally receive from an ECC to the extent that we and our ECC collaborator are successful in developing one or more products. We recently executed the first two such joint venture agreements: one with a subsidiary of Sun Pharmaceutical Industries Ltd., an international specialty pharmaceutical company focused on chronic diseases, and one with OvaScience, Inc., a life sciences company focused on the discovery, development and commercialization of new treatments for infertility. Alternatively, where a collaborator wishes to work with us to develop an early-stage program, we may execute a research collaboration pursuant to which we receive reimbursement for our development costs but the exclusive license rights, and related access fees, are deferred until completion of an initial research program.

In 2011, we entered into our first collaboration and have steadily increased the number over the past three years, entering into new agreements and expanding existing ECCs. To date, we have entered into 21 such agreements and expansions with 17 different counterparties, of which 19 remain active. We have 18 active ECCs, including three expansions, and one research collaboration that we anticipate could, if successful, become an ECC. Under the 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.

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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 control cellular processes by coding for the production of proteins and other molecules that have a functional purpose and by regulating the activities of these molecules. This regulation occurs via complex biochemical and cellular reactions working through intricate cell signaling pathways, and control over these molecules modifies the output of biological systems.

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

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

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

Platform neutral outcome oriented. We can work across different cell types with the objective of achieving the intended biological outcome allowing for product development across a broad spectrum of end markets.

Knowledge driven. We use statistical modeling tools and computational analysis to continually acquire more knowledge about biological systems and their design to continually improve our ability to develop new and improved products and processes for our collaborators.

Rationally designed. Our knowledge of biological systems and components allows us to design, build and select gene programs and predict the probable outcome of these programs.

Capable of complexity. Our technologies enable the design and precise control of complex biological molecules and multigenic gene programs.

Industrial scale. We use engineering principles and automation to enable products based on synthetic biology that are commercially viable.

Our competitive strengths

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

We believe that we have the following competitive strengths:

We have a suite of proprietary and complementary technologies

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

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

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

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We believe we are a leader in synthetic biology

We believe we are the first company focused exclusively on applying synthetic biology across a broad spectrum of end markets and have been working in the field since 1998. Over the last 16 years, we have accumulated extensive knowledge and experience in the design, modification and regulation of gene programs. We believe all of these factors, coupled with our suite of proprietary and complementary technologies, provide us with a first-mover advantage in synthetic biology.

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

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

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

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

We have experienced management and employees

Our management team, including our Chief Executive Officer, Randal J. Kirk, and our Chief Operating Officer, Krish Krishnan, consists of executives with a track record of success in building and managing research and development-driven companies, including New River Pharmaceuticals Inc., which was sold in 2007 to Shire plc for $2.6 billion. Our Chief Science Officer, Thomas D. Reed, was responsible for the initial conception and creation of our UltraVector technology platform. As of December 31, 2013 we had 149 employees primarily engaged in research and development, 63 of whom hold advanced degrees in engineering and biology or other sciences, including either a Ph.D., M.D. or D.V.M.

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

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

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

In addition to the growing number of gene components in our UltraVector library, we are continually designing and creating enzymatic and regulatory components that provide more precise control over genome integration and gene regulation. For example, our RheoSwitch Therapeutic System is a three-component transcriptional regulator that provides inducible gene expression. The RheoSwitch Therapeutic System provides the ability to not only express proteins/enzymes of interest, but also the ability to control the level and timing of expression to achieve a biological outcome. Both *in vivo*, which means within a whole living organism, and *ex vivo*,

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which means in a test tube or petri dish, applications have demonstrated highly controllable expression when the RheoSwitch Therapeutic System is incorporated into UltraVector-designed vectors. Other ongoing programs include our Attsite recombinases, which mediate predictable gene exchange into host cells thereby eliminating many of the difficulties seen with traditional gene insertion. Many traditional gene insertion techniques are difficult to perform because of a low and/or random insertion of the desired genetic code due to the lack of specificity for the recognition site related to the gene insertion enzyme resulting in unpredictable outcomes, such as, but not limited to, poor expression, loss of viability of the host organism or no expression of

the desired molecule. AttSite recombinases provide specific attachment sites for insertion of the desired genetic code through highly specific recognition regions and corresponding enzymes permitting many specific gene transfers in a reliable and repeatable fashion.

Cell systems informatics

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

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

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

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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 populations, 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

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human B-cell libraries generated and by the rapid, cell-based screening process. Together these capabilities allow us to quickly explore the entire human antibody repertoire and generate fully human mAbs against diverse antigens.

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

In order to create a highly functional biological system, we recognize the complexity of cellular processes and the necessity to create an optimized gene program in conditions reflective of the natural environment to allow for the creation of the optimal biological product. This requires a

rigorous understanding of cell signaling pathways as well as the interactions that influence the expression of protein. This knowledge is captured in our advanced bioinformatics systems, which uses statistical modeling and other analytic frameworks to determine the most efficient pathways for an intended biochemical result. Our bioinformatics platform also plays a critical role in our research and development as this library of information allows us to explore new targets of potential interest to our current or future collaborators.

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

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

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

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

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

Application of our proprietary and complementary technologies

The following programs illustrate several areas in which we are presently utilizing one or more of our suite of proprietary and complementary technologies in an effort to identify improved or novel biologically based products. Each of these represent an early stage research effort that we believe could be incorporated into collaborations and result in the development and commercialization of valuable products.

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Trait program

To date, biotechnology has made improvements in yield in food crops. These improvements have often been obtained with single gene events that enhance yield through herbicide and disease resistance. We believe that future improvements, and potentially even more dramatic improvements, in yield will be obtained through a more complex set of gene programs, or multigenic events. Specific product benefits that could drive yield through multigenic events, or optimized single event gene programs, are plant stress tolerances, such as drought and temperature, tolerance, and enhanced water and nitrogen utilization efficiency. Through our current research programs in Arabidopsis, a model plant commonly used for studying plant biology, we have demonstrated evidence of gene programs that enhance the growth of plants exposed to experimental drought or temperature stress.

RTS-controlled miRNA

MicroRNA, or miRNA, represents a class of bioactive RNA that can affect gene transcription and translation. Recent studies have shown that miRNA expression levels can be regulated in healthy and diseased tissues. Regulating endogenous miRNA expression levels, however, may require very tight control over the timing and amount of miRNA, or anti-miRNAs directed against mis-expressed miRNAs, produced in a cell because numerous miRNA species are highly potent and too much expression can be deleterious. Additionally, over-expression of miRNAs can lead to an anti-viral response, which can counteract the effects of a desired miRNA s expression or sometimes lead to cell death. We are using our library of DNA and RNA genetic modules, as well as our RheoSwitch Therapeutic System®, to develop optimized gene programs designed to control the expression of miRNAs.

UltraCART

Recent clinical trials performed by diverse academic institutions have demonstrated the clinical efficacy of genetically modified autologous T Cell Chimeric Antigen Receptor (CAR)-based therapies. While we believe the CAR-T Cell therapeutic paradigm presents great potential, its fulsome application may be limited due to off-target toxicities, varying efficacy against different tumor types, and costly manufacturing protocols. We are seeking to solve these challenges by developing integrated biological systems that include, but are not limited to: improved *ex vivo* expansion of autologous T Cells, controlled proliferation and/or persistence of CARTs *in vivo*, reduced off-target toxicities, expanded utility for treating solid tumors and coordinating CART function with synergistic therapeutic modalities.

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.

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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 human health and animal health, synthetic biology has the potential to enable the development of highly complex biological molecules as well as the ability to regulate complex biological processes, with advantages as compared to traditional therapeutics, both *in vivo* and *ex vivo*. It may be possible, for example, to create highly targeted precision therapeutics with few off-target or adverse effects.

Bioproduction. Synthetic biology allows new biologically based manufacturing techniques that have the potential to significantly lower the cost of goods for highly complex biological molecules, including both existing and novel biopharmaceuticals as well as small molecules.

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

Food

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

In this market, we are focused on:

Food animals. Within the United States, beef, pork and chicken sales are in excess of $125 billion per year. Dairy sales provide an additional $28 billion in annual sales of animal byproduct. The global market for meat is approximately 5 times larger than the US market, and the global dairy market is 10 times the size of the US market. Traditional methods of genetic selection in animals is an inefficient and slow process, requiring many generations in order to evolve and select for desired traits. However, selective breeding techniques have resulted in increased size of cattle and hogs, increased milk production in cows and other valuable attributes. By applying our suite of technologies, we believe we can more rapidly develop livestock with commercially valuable attributes such as enhanced nutritional content, resistance to disease and increased growth efficiency.

Agriculture. The FAO estimates that 90 percent of the production increases necessary to feed the future population will come from increases in crop yield and cropping intensity through enhanced traits. Current methods of crop yield and productivity enhancement are no longer keeping pace with demand. Genetically modified agricultural plants are already grown on

more than 170 million hectares around the world and are worth an estimated $65 billion dollars. We believe we have the potential to create improved crops by simultaneously incorporating multigenic traits into plants that are designed to enhance the efficiency of water, carbon and nitrogen utilization. We also believe that we can use our gene expression and gene regulation technologies to provide highly complex traits related to enhanced nutritional content, product quality and disease resistance.

Energy and chemicals

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

Our UltraVector platform, by enabling high through-put gene program design and construction, allows us to identify the relevant pathways within an organism for the production of complex biological molecules, design a variety of alternative solutions to their expression, and rapidly build and evaluate solution sets to select the most promising alternatives. We believe our novel biological solutions can increase yield and productivity, which are critical in the development of alternative energy and the production of chemicals.

In this market, we are focused on:

Energy. The development of engineered microbes for biological conversion of natural gas to alcohols as drop-in fuels can be accomplished with synthetic biology. We have already achieved as proof of concept the conversion by engineered bacteria of methane to isobutanol, which is an alternative alcohol-based fuel.

Chemicals. The chemical industry is highly dependent on crude petroleum as a feedstock. Increased demand for petroleum and continued declines in new reserves, as well as declines in the productivity of existing and proven reserves, has led to increased costs for consumers and reduced margins for many manufacturers. Economically viable alternatives to carbon feed stocks are critical to the future and sustainability of the chemical industry.

Environmental sciences

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

Biosensors. The biosensor global market is forecasted to exceed $12 billion by 2016 and opportunities exist to capture a portion of this market through design and construction of unique biosensors that leverage our suite of proprietary and complementary technologies.

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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 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.

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

In certain strategic circumstances, we may enter into a joint venture with an ECC collaborator. In that event, we will enter into an ECC with a joint venture entity and may contribute access to our technology, cash or both into the joint venture which we will jointly control with our ECC collaborator. Pursuant to a joint venture agreement, we may be required to contribute additional capital to the joint venture, and we may be able to receive a higher financial return than we would normally receive from an ECC to the extent that we and our ECC collaborator are successful in developing one or more products. We recently executed the first two such joint venture agreements: one with a subsidiary of Sun Pharmaceutical Industries Ltd., an international specialty pharmaceutical company focused on chronic diseases, and one with OvaScience, Inc., a life sciences company focused on the discovery, development and commercialization of new treatments for infertility. Alternatively, where a collaborator wishes to work with us to develop an early-stage program, we may execute a research collaboration pursuant to which we receive

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reimbursement for our development costs but the exclusive license rights, and related access fees, are deferred until completion of an initial research program.

In 2011, we entered into our first collaboration and have steadily increased the number over the past three years, entering into new agreements and expanding existing ECCs. To date, we have entered into 21 such agreements and expansions with 17 different counterparties, of which 19 remain active. We have 18 active ECCs, including three expansions, and one research collaboration that we anticipate could, if successful, become an ECC. Under the 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.

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 at the time 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.

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

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

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

ZIOPHARM Oncology

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

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

Both of the IL-12 programs of this ECC deliver genetic vectors coding for the IL-12 gene directly to tumors. DC-IL-12 uses a patient s own dendritic cells as the delivery vehicle, whereas Ad-IL-12 uses adenovirus. Once the vector is delivered intratumorally, it is controlled by Intrexon s proprietary on/off biologic switch called the RheoSwitch Therapeutic System, or RTS. RTS maintains the gene program in an inactive state within a cell, until such a time as the patient takes a pill containing an orally available small molecule ligand. In the presence of the ligand, which is otherwise biologically inert, RTS is activated allowing expression of IL-12 at a specified therapeutic level and for a predetermined duration. RTS thereby regulates IL-12 expression to achieve a targeted clinically active level of IL-12 at the tumor while limiting broader systemic exposure and toxicities from the cytokine.

This ECC is also investigating the use of IL-12 in combination therapy with selected immunomodulators for solid tumors. This Multi-Inducible Cancer Immunomodulator, or MICI,

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

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

Upon execution of this ECC, we purchased 2,426,235 shares of ZIOPHARM common stock with a value of $11.6 million, and we agreed to purchase up to $50.0 million of ZIOPHARM common stock in conjunction with securities offerings that may be conducted by ZIOPHARM in the future, subject to certain conditions and limitations. To date we have purchased approximately $31.0 million of ZIOPHARM common stock in such securities offerings, and our remaining obligation on this purchase commitment is approximately $19.0 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. These programs are targeting certain chronic diseases associated with aging in companion animals as well as the prevention of certain infectious diseases in pigs. Elanco has exclusive rights to access all of our suite of technologies to develop and commercialize products within the fields covered by the ECC.

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. (NYSE MKT: 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

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type VII, an important protein component of the anchoring fibers that connect the dermis to the epidermis. Our proposed treatment for this disease will provide collagen VII produced by autologous, gene-modified fibroblasts.

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

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

Effective June 28, 2013, we entered into an amendment to our ECC with Fibrocell. The amendment expands the ECC to include potential treatments based on engineered autologous fibroblast cells for the localized treatment of autoimmune and inflammatory disorders including morphea (localized scleroderma), cutaneous eosinophilias and moderate to severe psoriasis. Under the terms of the amendment, we received shares of Fibrocell s common stock valued at $7.5 million as a supplemental technology access fee.

On October 1, 2013, we acquired an aggregate amount of $10.0 million of Fibrocell common stock at a price of $4.10 per share.

Effective January 10, 2014, we entered into a second amendment to our ECC with Fibrocell. The amendment expands the ECC to include potential treatments for Ehlers-Danlos syndrome hypermobility type (EDS-HT), a rare genetic disorder resulting in weakened connective tissue. Under the terms of the amendment, we received shares of Fibrocell s common stock valued at approximately $5.0 million as a supplemental technology access fee.

Oragenics

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

Pursuant to the ECC, Oragenics received a license to our technologies within the field of lantibiotics for the treatment of infectious diseases in humans and companion animals. We received a technology access fee of 4,392,425 shares of Oragenics common stock valued at

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$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.

On September 30, 2013, we entered into a second ECC with Oragenics through which Oragenics may develop and commercialize probiotics, specifically the direct administration to humans of genetically modified probiotics for the treatment of diseases of the oral cavity, throat, sinus and esophagus, including, but not limited to, aphthous stomatitis and Behcet s disease. Pursuant to the ECC, Oragenics received an exclusive worldwide license to our suite of technologies to develop and commercialize genetically modified probiotics for the direct administration to humans for the treatment of diseases of the oral cavity, throat, sinus and esophagus. Oragenics will pay us 10% of the net sales derived from the sale of products developed from the ECC. We may receive up to $17.0 million in aggregate milestone payments upon the achievement of certain events. Contemporaneously with the entry into the ECC, we also entered into a Stock Purchase and Issuance Agreement and a First Amendment to the Stock Purchase and Issuance Agreement, together, the SPIA, with Oragenics. Pursuant to the SPIA, (i) Oragenics issued us 1,348,000 shares of Oragenics common stock valued at $3.5 million in consideration for the execution and delivery of the ECC and (ii) Oragenics sold us 1,300,000 shares of Oragenics common stock at a price per share of $3.00 for gross proceeds of $3.9 million. Oragenics also issued a Convertible Promissory Note to us in the principal amount of $1,956,000 which is payable, at Oragenics option, in cash or shares of Oragenics common stock and which matures on December 31, 2013. The Convertible Promissory Note was converted to 698,241 shares of Oragenics common stock on December 18, 2013. The 2,046,241 shares of Oragenics common stock constitute the payment of the $5.5 million technology access fee paid to us under the ECC. On November 20, 2013, we acquired an aggregate amount of $2.8 million of Oragenics common stock at a price of $2.50 per share.

Synthetic Biologics

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

Pursuant to the ECC, Synthetic Biologics received a license to our technologies to develop and commercialize a series of monoclonal antibody therapies for the treatment of certain infectious diseases defined in the ECC. Upon shareholder approval on October 5, 2012, we received 3,552,210 shares of Synthetic Biologics common stock valued at $7.8 million as an upfront technology access fee. We are entitled to additional consideration payable either in cash or common stock at the option of Synthetic Biologics upon the achievement of certain regulatory milestones for each product candidate developed under the ECC. Upon the filing by Synthetic Biologics of an investigational new drug application with the U.S. Food and Drug Administration, or FDA, we will receive cash or common stock at the option of Synthetic Biologics valued at $2.0 million. Upon the first to occur of either the first commercial sale of a product developed under the ECC or the granting of marketing approval of a product developed under the ECC, we will receive cash or common stock at the option of Synthetic Biologics valued at $3.0 million. The

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ECC initially targets three infectious diseases, and Synthetic Biologics may elect to target up to five more infectious diseases by paying us a field expansion fee of $2.0 million in either cash or common stock for each additional infectious disease selected. The lead therapeutic programs of this ECC are currently in preclinical development. They include the development of monoclonal antibody therapies for the treatment of pertussis and Acinetobacter infections. The pertussis program is focused on the development of a monoclonal antibody to treat pertussis infections, more commonly known as whooping cough, by targeting and neutralizing the pertussis toxin, in order to reduce the mortality rate in infants and potentially shorten the duration of chronic cough in afflicted adults. According to the World Health Organization, each year, B. pertussis infection causes an estimated 300,000 deaths worldwide, primarily among young, unvaccinated infants. The ECC is also working to develop a mAb therapy for the treatment of Acinetobacter infections. Many strains of Acinetobacter are multidrug-resistant and pose an increasing global threat to hospitalized patients, wounded military personnel and those affected by natural disasters. Based on its public filings, Synthetic Biologics believes that a treatment for Acinetobacter infections represents a billion dollar market opportunity.

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

On December 17, 2013, we acquired an aggregate amount of $2.0 million of Synthetic Biologics common stock at a price per share of $1.00 per share.

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

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

AmpliPhi

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

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

Genopaver

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

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

Soligenix

Effective April 27, 2013, we entered into an ECC with Soligenix, Inc. (OTCQB: SNGX), or Soligenix, a clinical stage biopharmaceutical company focused on developing products to treat inflammatory diseases and biodefense countermeasures. The objective of this ECC is to develop and commercialize human monoclonal antibody therapies for the treatment of melioidosis. Melioidosis is caused by *B. pseudomallei*, a Gram-negative bacteria that is highly resistant to antibiotic treatment regimens. Melioidosis is endemic in Southeast Asia and Northern Australia. It is also considered a high-priority biodefense threat as defined in the 2012 Public Health

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Emergency Medical Countermeasures Enterprise Strategy established by the U.S. Department of Health and Human Services with the potential for widespread dissemination through aerosol. The lead therapeutic program of this ECC involves the development and commercialization of a human monoclonal antibody therapy for the treatment of meliodosis. Presently, work on this program under the ECC is in the research phase.

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

Sun Pharmaceutical Industries

On September 30, 2013, we entered into an ECC with S & I Ophthalmic, LLC, or Sun JV, a joint venture between us and Caraco Pharmaceutical Laboratories, Ltd., or Sun Pharmaceutical Subsidiary, an indirect subsidiary of Sun Pharmaceutical Industries Ltd., an international specialty pharmaceutical company focused on chronic diseases.

Pursuant to the ECC, Sun JV received an exclusive worldwide license to our suite of technologies to research, develop and commercialize in humans the treatment of diseases specifically relating to, and manifesting locally in, the eye as well as certain systemic diseases having symptoms or complications that manifest in the eye via administration of genetically modified cells, DNA or viral vectors that, when delivered to humans, will cause *in-vivo* expression of one or more therapeutic proteins and/or bioactive RNA species. Subject to certain expense allocations, JV will pay us royalties with percentages ranging from mid-single digits and above of the net sales derived from the sale of products developed under the ECC.

Contemporaneously with the entry into the ECC, we also entered into a Limited Liability Company Agreement, or Sun LLC Agreement, with Sun Pharmaceutical Subsidiary and Sun JV which governs the affairs of Sun JV and the conduct of Sun JV s business. Pursuant to the Sun LLC Agreement, we, as well as Sun Pharmaceutical Subsidiary, made an initial capital contribution in exchange for a 50% membership interest in Sun JV. In cases in which the board of managers of Sun JV, or the Sun JV Board, determines that additional capital contributions are necessary in order for Sun JV to comply with its obligations under the ECC, we, as well as Sun Pharmaceutical Subsidiary, have committed to making additional capital contributions subject to certain

limitations. Each has the right, but not the obligation, to make additional capital contributions

above these limits when and if solicited by the Sun JV Board.

Beginning on the seventh anniversary of the effective date of the Sun LLC Agreement, and upon every second anniversary thereafter, we, as well as Sun Pharmaceutical Subsidiary, may make a cash offer to purchase all of the other s interest in Sun JV. Upon receipt of such an offer, the

other party must either agree to tender its interests at the offered price or submit a counteroffer at a price higher than the original offer. Such offer and counteroffer may continue until one party agrees to the other s price.

Sun JV shall be governed by the Sun JV Board which shall have four members. We, as well as Sun Pharmaceutical Subsidiary, have the initial right to appoint two members to the Sun JV Board. For so long as Sun Pharmaceutical Subsidiary and/or any of its affiliates is a member of Sun JV and holds a percentage interest in Sun JV that is at least equal to the percentage interest in Sun

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JV held by us and/or our affiliates, Sun Pharmaceutical Subsidiary will have the sole authority to select and appoint on behalf of Sun JV each of the representatives of Sun JV on the ECC committees, and one such appointee will be an Empowered Representative of Sun JV under the terms of the ECC with final authority to resolve certain ECC committee disputes.

BioPop

On October 1, 2013, we entered into an ECC with Biological & Popular Culture, Inc., or BioPop, pursuant to which BioPop received a worldwide, exclusive license to our technologies to develop and commercialize artwork, children s toys and novelty goods that are derived from living organisms or are enabled by synthetic biology. We are entitled to royalties in the mid-single digits as a percentage of the net product sales of a product developed under the ECC.

Contemporaneously with the entry into the ECC, we entered into a Common Stock Purchase Agreement with BioPop pursuant to which we acquired 4,163,265 shares of BioPop common stock for an aggregate purchase price of $1.3 million, which represents 51% of BioPop s outstanding common stock. Pursuant to the Common Stock Purchase Agreement, the members of Yonder LLC, or Yonder, a California limited liability company, contributed all assets and properties of Yonder to BioPop, and BioPop assumed all Yonder obligations and liabilities.

Agilis

On October 25, 2013, we entered into an ECC with Agilis Biotherapeutics, LLC, or Agilis, a synthetic biology-based company focused on rare diseases, pursuant to which Agilis received a worldwide, exclusive license to our technologies to develop and commercialize therapeutics for the treatment of Friedreich s ataxia, a degenerative neuro-muscular disorder through the administration of genetically modified cells, DNA or viral vectors. This ECC is currently in the research phase.

We received an upfront technology access fee of $2.5 million in cash. We may receive up to $13.0 million in aggregate milestone cash payments for each product, payable upon the achievement of certain events. We also are entitled to royalties in the lower-double digits as a percentage of the net product sales of a product developed under the ECC.

OvaScience

On December 18, 2013, we entered into an ECC with OvaScience, Inc., a life sciences company focused on the discovery, development and commercialization of new treatments for infertility.

The ECC was formed to use our synthetic biology technology platform to develop methodologies to accelerate the development of OvaScience s OvaTure™ technology platform, a next-generation approach to in vitro fertilization. As partial payment for access to our technology, OvaScience issued 273,224 shares of its common stock to us on December 18, 2013. OvaScience will pay $2,500,000 of the technology access fee on December 18, 2014

Additionally, OvaScience and we formed a joint venture entity named OvaXon, LLC, a Delaware limited liability company (OvaXon). OvaScience and we entered into a limited liability company agreement for OvaXon (the LLC Agreement) which establishes our rights and those of OvaScience with respect to OvaXon and provides for the management of OvaXon and its business. In connection with the execution of the LLC Agreement, OvaXon entered into a

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worldwide Exclusive Channel Collaboration Agreement with us to create new applications for improving human and animal health. OvaScience also licensed certain technology relating to egg precursor cells to OvaXon pursuant to a separate license agreement.

Johnson & Johnson

On December 22, 2013, we entered into a research and development collaboration with Johnson & Johnson Innovation and its affiliate, Johnson & Johnson Consumer & Personal Products Worldwide, a division of Johnson & Johnson Consumer Companies, Inc., to advance new skin and hair care products.

Competition

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

Synthetic biology service providers. There are companies that have competing technologies for individual pieces of our suite of complementary technologies. For example, there are companies that can synthesize DNA, and there are companies that can develop monoclonal antibodies. One portion of our proprietary technology related to DNA synthesis and assembly includes the ability to *de novo* synthesize DNA. We believe the following companies engage in the manufacture of DNA componentry: DNA 2.0, Inc., Blue Heron Biotech, LLC and Life Technologies Corporation. Another portion of our proprietary technology includes development of fully human monoclonal antibodies. Our technology utilizes advanced methods of stimulating antibody production in naïve human B-cells *in vitro* and specifically selecting those cells which produce antibodies that can bind a desired target, such as human toxins, tumor cells or microbial pathogens. We believe the following companies engage in the manufacture of human or human-like monoclonal antibodies: AbD SeroTec (a Bio-Rad Laboratories, Inc. company), Alexion Pharmaceuticals, Inc., XOMA Corporation, Genmab US, Inc., MorphoSys AG, NovImmune SA, Société Des Systèmes Biologiques, or BIOTEM, Adimab, LLC, ProMab Biotechnologies, Inc., Abpro, Inc., AIIM Therapeutics and Open Monoclonal Technology, Inc.

Industrial companies who may develop their own approach to synthetic biology. Rather than becoming a collaborator with us, potential collaborators may decide to invest time and capital to internally develop their own synthetic biology capabilities. For example, large biopharmaceutical companies, energy companies, and ag-bio companies may pursue a proprietary synthetic biology strategy.

Industrial companies who may develop competing products using other technologies. Products enabled by our synthetic biology will face competition in the market, including from products which have been developed using other industrial technologies. For example, large biopharmaceutical companies pursue other technologies for drug development, and large ag-bio companies pursue other technologies for the development of genetically modified crops.

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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 December 31, 2013, we owned at least 55 issued U.S. patents and 55 pending U.S. patent applications relating to certain aspects of our technologies, and we have pursued counterpart patents and patent applications in other jurisdictions around the world, as we have deemed appropriate. We continue to actively develop our portfolio through the filing of new patent applications, divisionals and continuations relating to our technologies, methods and products as we and our collaborators deem appropriate.

We have strategic positioning with respect to our key technologies including patent portfolios directed to: our switch technology covering aspects of our gene switches, such as our RheoSwitch Therapeutic System, and gene modulation systems, vectors, cells and organisms containing these switches, and their use; our activator ligand technology covering aspects of our activator ligands and their use; and our cell identification and selection technology covering aspects of our cell identification and selection platform, including our cell purification, isolation, characterization and manipulation technologies. In these portfolios, the issued U.S. patents and applications, if granted, are scheduled to expire from 2017 to 2034. We have also filed counterpart patents and

patent applications in other countries, when appropriate, including Australia, Argentina, Brazil, Canada, China, Europe, Hong Kong, India, Indonesia, Israel, Japan, Korea, Mexico, New Zealand, Philippines, Russia, Singapore, South Africa and Taiwan. In the future we may file in these or additional jurisdictions as deemed appropriate for the protection of our technologies. In these jurisdictions, the issued patents and patent applications, if granted, are scheduled to expire from 2018 to 2032.

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

A principal component of our strategy is maximizing the value of our ECCs through our intellectual property that covers our technologies, which is accentuated by intermediate and program-specific intellectual property protections. In addition to owned and in-licensed patents, we solidify our intellectual property protection through a combination of trade secrets, know-how, confidentiality, nondisclosure and other contractual provisions, and security measures to protect our confidential and proprietary information related to each platform and collaborator program. We regularly assess and review the risks and benefits of protecting our developments through each aspect of intellectual property available to us.

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

Regulatory environment

Regulations affecting Intrexon

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

Environmental regulations affecting both Intrexon and our collaborators

Our collaborators and we are subject to various federal, state and local environmental laws, rules and regulations, including those relating to the discharge of materials into the air, water and

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ground, the generation, storage, handling, use, transportation and disposal of hazardous materials and the health and safety of employees with respect to laboratory activities required for the development of products and technologies. These laws and regulations require us and our collaborators to obtain environmental permits and comply with numerous environmental restrictions. These laws and regulations also may require expensive pollution control equipment or operation changes to limit actual or potential impacts to the environment.

Our laboratory activities and those of our collaborators inherently involve the use of potentially hazardous materials, which are subject to health, safety and environmental regulations. We design our infrastructure, procedures and equipment to meet our obligations under these regulations. We perform recurring internal and third-party audits and provide employees ongoing training and support, as required. All of our employees must comply with safety instructions and procedures, which are codified in our employment policies. Federal and state laws and regulations impose requirements on the production, importation, use and disposal of chemicals and genetically modified microorganisms, which impact us and our collaborators. Our collaborators processes may contain genetically engineered organisms which, when used in an industrial processes, are considered new chemicals under the Toxic Substances Control Act program of the U.S. Environmental Protection Agency, or EPA. These laws and regulations would require our collaborators to obtain and comply with the EPA s Microbial Commercial Activity Notice process to operate. In the European Union, our collaborators may be subject to a chemical regulatory program known as REACH (Registration, Evaluation, Authorization and Restriction of Chemical Substances). Under REACH, our collaborators are required to register their products with the European Commission, and the registration process could result in significant costs or delay the manufacture or sale of our collaborators products in the European Union.

Regulations affecting our collaborators

Human therapeutics regulation

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

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

In addition to regulations in the United States, our collaborators will be subject to a variety of foreign regulations governing clinical trials and commercial sales and distribution of the products enabled by our technologies. Whether or not our collaborators obtain FDA approval for a

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product, they must obtain approval by the comparable regulatory authorities of foreign countries or economic areas, such as the European Union, before they may commence clinical trials or market products in those countries or areas. The approval process and requirements governing the conduct of clinical trials, product licensing, pricing and reimbursement vary greatly from place to place, and the time may be longer or shorter than that required for FDA approval.

Animal health regulation

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

Food product regulation

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

Energy and chemical regulation

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

Regulations affecting AquaBounty

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

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

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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 December 31, 2013, we had 149 employees dedicated to research and development. Of these employees, 63 hold advanced degrees in engineering and biology or other sciences, including either a Ph.D., M.D. or D.V.M. We incurred expenses of $35.9 million for the nine months ended September 30, 2013, $64.2 million in 2012 and $70.4 million in 2011 on research and development activities. We anticipate that our research and development expenditures will increase substantially as we investigate other applications for our synthetic biotechnologies. Our primary research and development operations are located in leased laboratory facilities in San Diego, California, San Carlos, California, Germantown, Maryland, Durham, North Carolina and Blacksburg, Virginia.

As of December 31, 2013, AquaBounty had eight 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

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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 37,000 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. The following table shows information about our primary lab operations as of December 31, 2013:

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

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

Employees

As of December 31, 2013, we had 208 employees, 149 of whom were primarily engaged in research and development activities. Our workforce includes 73 employees with either a Ph.D., M.D. or D.V.M. and an additional 105 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 December 31, 2013, AquaBounty had 15 employees, 8 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 222 Lakeview Avenue, Suite 1400, West Palm Beach, Florida 33401, and our telephone number is (561) 410-7000. Our website is *www.dna.com*.

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Intrexon 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 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.

Overview

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

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

In certain strategic circumstances, we may enter into a joint venture with an ECC collaborator. In that event, we will enter into an ECC with a joint venture entity and may contribute access to our technology, cash or both into the joint venture which we will jointly control with our ECC collaborator. Pursuant to a joint venture agreement, we may be required to contribute additional capital to the joint venture, and we may be able to receive a higher financial return than we would normally receive from an ECC to the extent that we and our ECC collaborator are successful in developing one or more products. We recently executed the first two such joint venture agreements: one with a subsidiary of Sun Pharmaceutical Industries Ltd., an international specialty pharmaceutical company focused on chronic diseases, and one with OvaScience, Inc., a life sciences company focused on the discovery, development and commercialization of new

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treatments for infertility. Alternatively, where a collaborator wishes to work with us to develop an early-stage program, we may execute a research collaboration pursuant to which we receive reimbursement for our development costs but the exclusive license rights, and related access fees, are deferred until completion of an initial research program.

In 2011, we entered into our first collaboration and have steadily increased the number over the past three years, entering into new agreements and expanding existing ECCs. To date, we have entered into 21 such agreements and expansions with 17 different counterparties, of which 19 remain active. We have 18 active ECCs, including three expansions, and one research collaboration that we anticipate could, if successful, become an ECC. Under the 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 Description of Intrexon s Business Our ECCs for a detailed description of our material ECCs.

Mergers and acquisitions

We completed several acquisitions in 2011 in order to enhance our capabilities and service offerings. On January 26, 2011, we acquired Agarigen, Inc., or Agarigen, a North Carolina-based company that allowed us to expand our capabilities in the agricultural sector. On August 31, 2011, we acquired the LEAP platform technology from Cyntellect, Inc., or Cyntellect. On October 5, 2011, we acquired the cell systems informatics technology from GT Life Sciences, Inc., or GT Life. On October 21, 2011, we acquired the mAbLogix antibody platform from Immunologix, Inc., or Immunologix. See the footnotes to our audited consolidated financial statements found elsewhere in this prospectus for additional information with respect to these business combinations. See Description of Intrexon s Business Our suite of proprietary and complementary technologies.

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

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

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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.

In certain strategic circumstances, we may enter into a joint venture with an ECC collaborator. In that event, we will enter into an ECC with a joint venture entity and may contribute access to our technology, cash or both into the joint venture which we will jointly control with our ECC collaborator. Pursuant to a joint venture agreement, we may be required to contribute additional capital to the joint venture, and we may be able to receive a higher financial return than we would normally receive from an ECC to the extent that we and our ECC collaborator are successful in developing one or more products.

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;
- costs related to laboratory supplies used in our research and development efforts;

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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.

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

The table below summarizes our research and development expenses incurred to expand or otherwise improve our multiple platform technologies or the costs incurred to develop a specific application of our technologies in support of current or prospective collaborators for the three and nine months ended September 30, 2013 and 2012 (unaudited) and the years ended December 31, 2012 and 2011. Other research and development expenses for these periods include indirect salaries and overhead expenses that are not allocated to either expanding or improving our multiple platform technologies or specific applications of our technologies in support of current or prospective collaborators.

	Three months ended September 30,		Nine months ended September 30,		Years ended December 31,	
	2013	2012	2013	2012	2012	2011
	(unaudited)		(In thousands)			
Expansion or improvement of our platform technologies	$ 3,792	$ 7,528	$ 12,982	$ 28,155	$ 35,182	$ 32,724
Specific applications of our technologies in support of current and prospective collaborators	5,241	4,236	16,132	13,366	17,123	22,714
Other	1,730	2,600	6,753	9,463	11,880	14,948
Total research and development expenses	$ 10,763	$ 14,364	$ 35,867	$ 50,984	$ 64,185	$ 70,386

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.

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Other income (expense), net

We hold equity securities received and/or purchased from certain collaborators. Other than the investment in AquaBounty which was accounted for using the equity method discussed below, we elected the fair value option to account for our equity securities held in these collaborators, including ZIOPHARM Oncology, Inc., or ZIOPHARM, which is an equity method investment. 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.

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

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

Equity in net income (loss) of affiliate

For the nine months ended September 30, 2013 and the year ended December 31, 2012, equity in net loss of affiliate is our pro-rata share of our equity method investment s operating results, adjusted for accretion of basis difference. As of December 31, 2012 and through March 15, 2013, we accounted for our investment in AquaBounty using the equity method of accounting as we had the ability to exercise significant influence over, but not control of, the operating activities of AquaBounty. On March 15, 2013, we acquired 18,714,814 additional shares of AquaBounty increasing our ownership in AquaBounty to 53.82 percent. We have consolidated AquaBounty on our results of operations and financial position beginning on March 15, 2013.

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Results of operations

Comparison of the three months ended September 30, 2013 (unaudited) and the three months ended September 30, 2012 (unaudited)

The following table summarizes our results of operations for the three months ended September 30, 2013 and 2012, together with the changes in those items in dollars and as a percentage:

	Three months ended September 30,		Dollar	%
	2013	2012	change	Change
			(In thousands)	
Revenues:				
Collaboration revenues	$ 6,028	$ 2,904	$ 3,124	107.6%
Other revenues	105	21	84	400.0%
Total revenues	6,133	2,925	3,208	109.7%
Operating expenses:				
Research and development	10,763	14,364	(3,601)	(25.1)%
General and administrative	7,407	5,046	2,361	46.8%
Total operating expenses	18,170	19,410	(1,240)	(6.4)%
Operating loss	(12,037)	(16,485)	4,448	(27.0)%
Total other income (expense), net	27,028	(4,005)	31,033	774.9%
Net income (loss)	14,991	(20,490)	35,481	173.24%
Net loss attributable to noncontrolling interest	449		449	100.0%
Net income (loss) attributable to Intrexon	$ 15,440	$ (20,490)	$ 35,930	175.4%

Revenues

Total revenues were $6.1 million for the three months ended September 30, 2013 compared to $2.9 million for the three months ended September 30, 2012, an increase of $3.2 million, or 109.7 percent. The following table shows the collaboration revenue recognized for upfront and milestone payments received from our collaborators and reimbursements received for research and development services provided to our collaborators for the three months ended September 30, 2013 and 2012, together with the changes in those items:

	Upfront and milestone payments			Research and development services			Total		
	Three months ended September 30,		Dollar	Three months ended September 30,		Dollar	Three months ended September 30,		Dollar
	2013	2012	change	2013	2012	change	2013	2012	change
					(In thousands)				
ZIOPHARM Oncology, Inc.	$ 644	$ 314	$ 330	$ 2,122	$ 2,137	$ (15)	$ 2,766	$ 2,451	$ 315
Oragenics, Inc.	138	137	1	344	137	207	482	274	208
Fibrocell Science, Inc.	327		327	1,383		1,383	1,710		1,710
Other	318	36	282	752	143	609	1,070	179	891

Total	$ 1,427	$ 487	$ 940	$ 4,601	$ 2,417	$ 2,184	$ 6,028	$ 2,904	$ 3,124

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The $3.1 million increase in collaboration revenue resulted primarily from the following items:

- We executed our first collaboration with Fibrocell Science, Inc., or Fibrocell, in the fourth quarter of 2012 and expanded that collaboration in the second quarter of 2013 and as a result, have recognized $0.3 million in collaboration revenue from upfront payments and an additional $1.4 million for research and development services provided pursuant to this collaboration; and

- We have executed additional collaborations since the beginning of the fourth quarter of 2012 through September 30, 2013 which collectively resulted in an additional $0.2 million in collaboration revenue from upfront payments and $0.5 million in research and development services.

Research and development expenses

Research and development expenses were $10.8 million for the three months ended September 30, 2013 compared to $14.4 million for the three months ended September 30, 2012. The $3.6 million decrease in research and development expenses is primarily the result of the following:

- Salaries, benefits and other personnel expenses decreased $2.3 million to $4.5 million for the three months ended September 30, 2013 from $6.8 million for the three months ended September 30, 2012. The decrease is primarily related to a decrease in the number of employees in the three months ended September 30, 2013 compared to three months ended September 30, 2012. Throughout 2012 and the first half of 2013, we eliminated certain positions due to improvements in our production processes as well as our reliance on additional automation. We also transitioned from a primary emphasis on building our parts inventory and other platforms towards applying such platforms towards specific applications for the benefit of our current and prospective collaborators. We also consolidated and centralized certain research and development functions to eliminate redundancies which arose primarily as a result of acquisitions of various technologies in late 2011; and

- Lab supply expenses decreased $0.6 million to $1.4 million for the three months ended September 30, 2013 from $2.0 million for the three months ended September 30, 2012. Supplies used in DNA manufacturing decreased $0.5 million for the three months ended September 30, 2013 compared to the three months ended September 30, 2012. As discussed above, we transitioned from building our parts inventory towards applying our technologies for the benefit of current and prospective collaborators. The remaining decrease in lab supplies is the result of centralizing certain research and development functions as discussed above.

General and administrative expenses

General and administrative expenses increased $2.4 million to $7.4 million for the three months ended September 30, 2013 compared to $5.0 million for the three months ended September 30, 2012. The $2.4 million increase is primarily the result of salaries, benefits and other personnel expenses increasing $1.2 million to $4.0 million for the three months ended September 30, 2013 from $2.8 million for the three months ended September 30, 2012. This increase is primarily the result of our hiring of additional employees as we prepared to become a public company and also for the cost of AquaBounty employees since we began consolidating AquaBounty on

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March 15, 2013. Legal and professional expenses increased $0.6 million for the three months ended September 30, 2013 compared to the three months ended September 30, 2012 due to costs associated with our initial public offering.

Total other income (expense), net

Total other income (expense), net is primarily comprised of unrealized appreciation (depreciation) in fair value of equity securities which was $27.3 million for the three months ended September 30, 2013 compared to $(3.9) million for the three months ended September 30, 2012. The unrealized appreciation (depreciation) is the result of market change for the equity securities we hold in certain of our collaborators.

Comparison of the nine months ended September 30, 2013 (unaudited) and the nine months ended September 30, 2012 (unaudited)

The following table summarizes our results of operations for the nine months ended September 30, 2013 and 2012, together with the changes in those items in dollars and as a percentage:

	Nine months ended September 30,		Dollar	%
	2013	2012	change	Change
			(In thousands)	
Revenues:				
Collaboration revenues	$ 16,566	$ 7,163	$ 9,403	131.3%
Other revenues	324	106	218	205.7%
Total revenues	16,890	7,269	9,621	132.4%
Operating expenses:				
Research and development	35,867	50,984	(15,117)	(29.7)%
General and administrative	21,320	19,139	2,181	11.4%
Total operating expenses	57,187	70,123	(12,936)	(18.4)%
Operating loss	(40,297)	(62,854)	22,557	(35.9)%
Total other income, net	12,797	11,917	880	7.4%
Equity in net loss of affiliate	(390)		(390)	100.0%
Net loss	(27,890)	(50,937)	23,047	(45.2)%
Net loss attributable to noncontrolling interest	1,114		1,114	100.0%
Net loss attributable to Intrexon	$ (24,776)	$ (50,937)	$ 24,161	(47.4)%

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Revenues

Total revenues were $16.9 million for the nine months ended September 30, 2013 compared to $7.3 million for the nine months ended September 30, 2012, an increase of $9.6 million, or 132.4 percent. The following table shows the collaboration revenue recognized for upfront and milestone payments received from our collaborators and reimbursements received for research and development services provided to our collaborators for the nine months ended September 30, 2013 and 2012, together with the changes in those items:

	Upfront and milestone payments			Research and development services			Total		
	Nine months ended September 30,		Dollar change	Nine months ended September 30,		Dollar change	Nine months ended September 30,		Dollar change
	2013	2012		2013	2012		2013	2012	
	(In thousands)								
ZIOPHARM Oncology, Inc.	$ 1,932	$ 943	$ 989	$ 5,843	$ 5,095	$ 748	$ 7,775	$ 6,038	$ 1,737
Synthetic Biologics, Inc.	2,024	97	1,927	865	194	671	2,889	291	2,598
Oragenics, Inc.	412	182	230	1,057	137	920	1,469	319	1,150
Fibrocell Science, Inc.	643		643	2,428		2,428	3,071		3,071
Other	304	9	295	1,058	506	552	1,362	515	847
Total	$ 5,315	$ 1,231	$ 4,084	$ 11,251	$ 5,932	$ 5,319	$ 16,566	$ 7,163	$ 9,403

The $9.4 million increase in collaboration revenue resulted primarily from the following items:

Collaboration revenue recognized for upfront and milestone payments received from ZIOPHARM increased primarily due to the recognition of deferred revenue related to the achievement of a collaboration milestone of $18.3 million in October 2012. Reimbursements from research and development services provided to ZIOPHARM increased $0.7 million for the nine months ended September 30, 2013 compared to the nine months ended September 30, 2012 as a result of an increase of new programs initiated throughout the second half of 2012 and the first half of 2013;

Collaboration revenue for upfront payments received from Synthetic Biologics, Inc., or Synthetic Biologics, increased for the nine months ended September 30, 2013 compared to the nine months ended September 30, 2012 due to the immediate recognition of previously deferred revenue arising from our first Synthetic Biologics ECC. In April 2013, we and Synthetic Biologics agreed to terminate this ECC and as a result, we recognized the balance of deferred revenue of $1.5 million associated with the original upfront consideration received by us. Reimbursements for research and development services provided to Synthetic Biologics increased $0.7 million for the nine months ended September 30, 2013 compared to the nine months ended September 30, 2012 due primarily to the work performed pursuant to the second ECC which was consummated in the second half of 2012;

Our first ECC with Oragenics commenced in June 2012. Our research and development services provided during the nine months ended September 30, 2013 have primarily consisted of research on improving production in the field specified in the ECC and developing and validating these improved production methods;

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Our ECC with Fibrocell commenced in October 2012 and in June 2013, the field of use was expanded resulting in an additional $7.6 million of upfront consideration to us. The collaboration revenue recorded for this ECC consists both of amortization of the upfront consideration received in October 2012 and June 2013 and reimbursements for research and development services provided on the field of use specified in the ECC; and

The remaining increase of collaboration revenues is the result of the recognition of deferred revenue and reimbursements for research and development expenses for our other ECCs, including three additional ECCs entered into during 2013.

Research and development expenses

Research and development expenses were $35.9 million for the nine months ended September 30, 2013 compared to $51.0 million for the nine months ended September 30, 2012. The $15.1 million decrease in research and development expenses is primarily the result of the following:

Salaries, benefits and other personnel expenses decreased $7.5 million to $15.7 million for the nine months ended September 30, 2013 from $23.2 million for the nine months ended September 30, 2012. The decrease is primarily related to a decrease in the number of employees in the nine months ended September 30, 2013 compared to nine months ended September 30, 2012. Throughout 2012 and the first half of 2013, we eliminated certain positions due to improvements in our production processes as well as our reliance on additional automation. We also transitioned from a primary emphasis on building our parts inventory and other platforms towards applying such platforms towards specific applications for the benefit of our current and prospective collaborators. We also consolidated and centralized certain research and development functions to eliminate redundancies which arose primarily as a result of acquisitions of various technologies in late 2011;

Expenses related to consultants and third party contract research organizations decreased $1.5 million to $3.2 million for the nine months ended September 30, 2013 from $4.7 million for the nine months ended September 30, 2012. The decrease is the result of our continuing efforts to reduce the level of research and development performed by third parties and, where practical, performing this research and development internally; and

Lab supply expenses decreased $4.7 million to $4.0 million for the nine months ended September 30, 2013 from $8.7 million for the nine months ended September 30, 2012. Supplies used in DNA manufacturing decreased $3.5 million for the nine months ended September 30, 2013 compared to the nine months ended September 30, 2012. As discussed above, we transitioned from building our parts inventory towards applying our technologies for the benefit of current and prospective collaborators. The remaining decrease in lab supplies is the result of centralizing certain research and development functions as discussed above.

General and administrative expenses

General and administrative expenses were $21.3 million for the nine months ended September 30, 2013 compared to $19.1 million for the nine months ended September 30, 2012 resulting in an increase of $2.2 million. The $2.2 million increase in general and administrative expenses is the result of salaries, benefits and other personnel expenses increasing $1.7 million to

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$11.9 million for the nine months ended September 30, 2013 from $10.2 million for the nine months ended September 30, 2012. This increase is primarily the result of our hiring of additional employees as we prepared to become a public company and also the cost of AquaBounty employees since we began consolidating AquaBounty on March 15, 2013.

Total other income, net

Total other income, net is primarily comprised of unrealized appreciation in fair value of equity securities which was $5.7 million for the nine months ended September 30, 2013 compared to $12.0 million for the nine months ended September 30, 2012. The unrealized appreciation is the result of market change for the equity securities we hold in other entities. Total other income (expense), net for the nine months ended September 30, 2013 includes a $7.4 million gain on our previously held equity interest in AquaBounty triggered by the requirement to consolidate AquaBounty as of March 15, 2013.

Equity in net income (loss) of affiliate

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

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

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

	Years ended December 31,			
	2012	2011	Dollar change	% Change
	(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)%

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

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

Collaboration revenue recognized for upfront and milestone payments received from ZIOPHARM increased in 2012 primarily as a result of a collaboration milestone being achieved in October 2012. We received $18.3 million of milestone consideration and recognized $3.8 million as collaboration revenue in 2012. The milestone was not deemed substantive and the remaining $14.5 million of milestone consideration was recorded as deferred revenue and will be recognized over the expected life of our technology platform using a straight-line approach. Reimbursements from research and development services provided to ZIOPHARM increased $3.6 million in 2012 as a result of an increase of new programs initiated in 2012 with ZIOPHARM under our collaboration and continued progression of the research for the collaboration programs initiated in 2011;

Collaboration revenue for upfront payments received from Synthetic Biologics increased in 2012 as a result of a full year of revenue from the amortization of the upfront payment received for our first ECC with Synthetic Biologics in November 2011 as well as a partial year of revenue from the upfront payment received for our second ECC with Synthetic Biologics in August 2012. Our research and development services provided in 2012 have primarily consisted of initial research of the fields specified in the ECCs;

Our ECC with Elanco, the animal health division of Eli Lilly and Company, or Elanco, commenced in late November 2011 and we began providing research and development services in 2012; and

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

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

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

Research and development expenses

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

Expenses related to licensing agreements for in-licensed technologies were $1.8 million for the year ended December 31, 2012 compared to $9.3 million for the year ended December 31, 2011 resulting in a decrease of $7.5 million. In 2011, we entered into an exclusive licensing agreement with Halozyme Therapeutics, Inc., or Halozyme, for the use of Halozyme s proprietary enzyme. Under the terms of the agreement, we paid a license fee of $9.0 million upon execution of this agreement, which was expensed when paid in 2011. In 2012, we paid and expensed an annual exclusivity fee of $1.0 million. This decrease was offset by an increase in contractual payments for other license agreements;

Expenses related to consultants and third party contract research organizations were $5.5 million for the year ended December 31, 2012 compared to $10.8 million for the year ended December 31, 2011 resulting in a decrease of $5.3 million. The decrease in 2012 is the result of our reducing the level of research and development being performed by third parties and, where practical, performing this research and development internally;

Laboratory supply expenses were $10.4 million for the year ended December 31, 2012, compared to $11.9 million for the year ended December 31, 2011, resulting in a decrease of $1.5 million. Supplies used in DNA manufacturing in 2012 decreased $2.6 million as we improved the efficiency of our production process and reduced the potential for manufacturing errors. We also transitioned away from focusing on building our parts inventory towards manufacturing specific DNA parts for current and prospective collaborators. This decrease was partially offset by an increase of $1.1 million in additional supplies required for those technologies which we acquired in 2011;

Salaries, benefits and other personnel expenses were $29.4 million for the year ended December 31, 2012, compared to $24.8 million for the year ended December 31, 2011, resulting in an increase of $4.6 million. Of this increase, $3.4 million was the result of an increase in the average number of research and development employees of 26 employees from 2011 to 2012

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

Depreciation and amortization expense was $7.2 million for the year ended December 31, 2012, compared to $3.2 million for the year ended December 31, 2011, resulting in an increase of $4.0 million. Amortization expense for the patents and related technologies acquired in 2011 increased $1.8 million in 2012 as a result of a full year of amortization. The remaining increase is related to increased depreciation expense on property and equipment purchased in 2012 as well as a full year of depreciation for equipment acquired in 2011. We purchased $7.5 million and $13.0 million of property and equipment in 2012 and 2011, respectively, to scale up our DNA manufacturing capacity and for use in new facilities for our agricultural and industrial operations;

Rent and utilities expenses were $5.4 million for the year ended December 31, 2012, compared to $4.3 million for the year ended December 31, 2011, resulting in an increase of $1.1 million. The increase is due to a full year of rent incurred related to the addition of four new research and development facilities as a result of our acquisitions; and

Our 2011 amounts include $1.2 million of research and development expenses related to Cyntellect.

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

General and administrative expenses

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

Salaries, benefits and other personnel expenses were $13.2 million for the year ended December 31, 2012, compared to $5.3 million for the year ended December 31, 2011, resulting in an increase of $7.9 million. Of this increase, $5.2 million was the result of an increase in the average number of general and administrative employees of 16 employees from 2011 to 2012, which was primarily the result of increasing our general and administrative personnel to support our acquired operations and additional collaborators. In addition to our increase in general and administrative employees, our non-employee, non-compensated Chief Executive Officer began serving the role on a full-time basis at the beginning of 2012, resulting in a non-cash increase to our general and administrative expenses of $1.4 million. Lastly, we paid bonuses of $1.3 million for 2012 whereas we did not pay bonuses for 2011;

Legal and professional fees were $6.4 million for the year ended December 31, 2012, compared to $9.1 million for the year ended December 31, 2011, resulting in a decrease of $2.7 million. These expenses in 2012 and 2011 are primarily comprised of fees for external legal counsel, obtaining and maintaining patents and intellectual property, assistance with ECC transactions,

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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.

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Quarterly Results of Operations

The following tables set forth our unaudited operating results for each of the ten quarters in the period from January 1, 2011 to September 30, 2013. This information is derived from our unaudited financial statements, which in the opinion of management contain all adjustments, consisting of only normal recurring adjustments, that we consider necessary for a fair statement of such financial data. Operating results for these periods are not necessarily indicative of the operating results for a full year. Historical results are not necessarily indicative of results to be expected in future periods. You should read these data together with our financial statements and the related notes included elsewhere in this prospectus.

	Three Months Ended							
	March 31, 2011	June 30, 2011	Septem-ber 30, 2011	Decem-ber 31, 2011	March 31, 2012	June 30, 2012	Septem-ber 30, 2012	Decem-ber 31, 2012
	(in thousands, except share and per share data)							
Statement of Operations Data:								
Revenues:								
Collaboration revenues	$ 1,649	$ 1,996	$ 806	$ 667	$ 1,554	$ 2,705	$ 2,904	$ 6,543
Other revenues	1,818	764	202	269	64	21	21	113
Total revenues	3,467	2,760	1,008	936	1,618	2,726	2,925	6,656
Operating expenses:								
Research and development	12,011	22,061	15,789	20,525	18,979	17,641	14,364	13,201
General and administrative	3,558	3,331	5,421	5,990	7,760	6,333	5,046	5,758
Other operating expenses	1,281	516	115					
Total operating expenses	16,850	25,908	21,325	26,515	26,739	23,974	19,410	18,959
Loss from operations	(13,383)	(23,148)	(20,317)	(25,579)	(25,121)	(21,248)	(16,485)	(12,303)
Total other income (expense), net	9,746	(1,203)	(13,642)	2,246	11,209	4,713	(4,005)	(18,360)
Equity in net loss of affiliate								(274)
Net income (loss)	$ (3,637)	$ (24,351)	$ (33,959)	$ (23,333)	$ (13,912)	$ (16,535)	$ (20,490)	$ (30,937)
Net loss attributable to noncontrolling interest								
Net income (loss) attributable to Intrexon	$ (3,637)	$ (24,351)	$ (33,959)	$ (23,333)	$ (13,912)	$ (16,535)	$ (20,490)	$ (30,937)
Accretion of dividends on redeemable convertible preferred stock, not declared	(2,460)	(3,250)	(4,115)	(4,043)	(5,460)	(5,362)	(5,469)	(5,703)
Undistributed earnings allocated to preferred shareholders								
Net income (loss) attributable to Intrexon common shareholders	$ (6,097)	$ (27,601)	$ (38,074)	$ (27,376)	$ (19,372)	$ (21,897)	$ (25,959)	$ (36,640)
Net income (loss) attributable to Intrexon common shareholders per share, basic	$ (1.21)	$ (5.28)	$ (7.21)	$ (5.06)	$ (3.55)	$ (3.99)	$ (4.66)	$ (6.52)

Net income (loss) attributable to Intrexon common shareholders per share, diluted	$ (1.21)	$ (5.28)	$ (7.21)	$ (5.06)	$ (3.55)	$ (3.99)	$ (4.66)	$ (6.52)
Weighted average shares outstanding, basic	5,029,473	5,231,403	5,283,781	5,413,238	5,456,264	5,484,572	5,576,526	5,616,031
Weighted average shares outstanding, diluted	5,029,473	5,231,403	5,283,781	5,413,238	5,456,264	5,484,572	5,576,526	5,616,031

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	Three Months Ended		
	March 31, 2013	June 30, 2013	September 30, 2013
	(in thousands, except share and per share data)		
Statement of Operations Data:			
Revenues:			
Collaboration revenues	$ 3,864	$ 6,674	$ 6,028
Other revenues	112	107	105
Total revenues	3,976	6,781	6,133
Operating expenses:			
Research and development	11,502	13,602	10,763
General and administrative	6,480	7,433	7,407
Other operating expenses			
Total operating expenses	17,982	21,035	18,170
Loss from operations	(14,006)	(14,254)	(12,037)
Total other income (expense), net	(21,966)	7,735	27,028
Equity in net loss of affiliate	(390)		
Net income (loss)	$ (36,362)	$ (6,519)	$ 14,991
Net loss attributable to noncontrolling interest	51	507	449
Net income (loss) attributable to Intrexon	$ (36,311)	$ (6,012)	$ 15,440
Accretion of dividends on redeemable convertible preferred stock, not declared	(6,405)	(7,942)	(4,044)
Undistributed earnings allocated to preferred shareholders			(3,106)
Net income (loss) attributable to Intrexon common shareholders	$ (42,716)	$ (13,954)	$ 8,290
Net income (loss) attributable to Intrexon common shareholders per share, basic	$ (7.54)	$ (2.46)	$ 0.15
Net income (loss) attributable to Intrexon common shareholders per share, diluted	$ (7.54)	$ (2.46)	$ 0.15
Weighted average shares outstanding, basic	5,661,741	5,667,557	54,305,354
Weighted average shares outstanding, diluted	5,661,741	5,667,557	56,150,996

Liquidity and capital resources

Sources of liquidity

We have incurred losses from operations since our inception in 1998 and as of September 30, 2013, we had an accumulated deficit of $364.2 million. From our inception through September 30, 2013, we have funded our operations principally with the proceeds received from the sale of $509.5 million of our preferred stock, net proceeds from our initial public offering in August 2013 of $168.3 million and the receipt of $12.5 million in prepayments of services by our collaborators. As of September 30, 2013, we had cash and cash equivalents of $61.2 million and short-term and long-term investments of $217.8 million. Cash in excess of immediate requirements is invested primarily in money market funds, certificates of deposits, U.S. government debt securities and commercial paper in order to maintain liquidity and capital preservation.

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Cash flows

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

	Nine months ended, September 30,		Years ended, December 31,	
	2013	2012	2012	2011
	(unaudited)		(In thousands)	
Net cash provided by (used in):				
Operating activities	$ (43,459)	$ (49,195)	$ (61,529)	$ (81,758)
Investing activities	(221,704)	(17,097)	(23,636)	(64,097)
Financing activities	315,979	50,745	75,940	148,111
Effect of exchange rate changes on cash and cash equivalents	3			
Net increase (decrease) in cash and cash equivalents	$ 50,819	$ (15,547)	$ (9,225)	$ 2,256

Cash flows from operating activities:

Net cash used in operating activities was $43.5 million for the nine months ended September 30, 2013 compared to $49.2 million for the nine months ended September 30, 2012. Net cash used in operating activities during the nine months ended September 30, 2013 was primarily comprised of our $27.9 million net loss and noncash items which primarily included (i) our unrealized appreciation on equity securities of $5.7 million and (ii) our $7.4 million gain on our previously held equity interest in AquaBounty. Net cash used in operating activities during the nine months ended September 30, 2012 was primarily composed of (i) our $50.9 million net loss inclusive of unrealized appreciation on equity securities of $12.0 million and (ii) the receipt of $10.0 million from one of our collaborators for a prepayment of research and development services.

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 $221.7 million for the nine months ended September 30, 2013 compared to $17.1 million for the nine months ended September 30, 2012. During the nine months ended September 30, 2013, we invested cash received from our Series F financing and our IPO and in excess of our immediate requirements to purchase $233.2 million of U.S. government debt securities, commercial paper and certificates of deposit and also used $3.9 million to purchase shares of common stock of Oragenics. These cash outflows were offset by $15.5 million

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received upon the maturation of short-term investments. During the nine months ended September 30, 2012, we paid $10.0 million to purchase shares of common stock of ZIOPHARM and we paid $7.1 million for property and equipment purchases primarily to expand certain of our lab facilities.

Net cash used in investing activities was $23.6 million for the year ended December 31, 2012 compared to $64.1 million for the year ended December 31, 2011. In 2011, we used $28.7 million, net of cash received, to pay for the acquisitions of four businesses; we paid $22.6 million to purchase shares of common stock of ZIOPHARM; and we used $13.0 million for property and equipment purchases primarily to scale up our DNA manufacturing capacity. In 2012, we used $6.0 million to purchase a 47.56 percent interest in AquaBounty; we paid $10.0 million to purchase additional shares of common stock of ZIOPHARM; and we paid $7.5 million for property and equipment used in our DNA manufacturing operations and lab equipment for use in our agricultural and industrial operations.

Cash flows from financing activities:

Net cash provided by financing activities was $316.0 million for the nine months ended September 30, 2013 compared to $50.7 million for the nine months ended June, 2012. During the nine months ended September 30, 2013, we received $146.9 million of net proceeds from the sale of our Series F Preferred Stock and $168.8 million of net proceeds from our IPO. During the nine months ended September 30, 2012, we received $50.6 million of net proceeds from the sale of our Series E Redeemable Convertible Preferred Stock.

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 Preferred Stock, $99.2 million of proceeds, net of issuance costs, from the issuance of our Series E Preferred Stock, proceeds from the issuance of short-term borrowings, which, along with accrued interest, converted into $15.2 million of Series E Preferred Stock and $7.4 million of subscriptions for our Series E Preferred Stock. In 2012, we received $75.5 million of proceeds, net of issuance costs, from the issuance of our Series E Preferred Stock.

Future capital requirements

We established our current strategy and business model of commercializing our technologies through collaborators with development expertise in 2010 and we consummated our first ECC in January 2011. Through September 30, 2013 we received from our ECCs (i) upfront and milestone consideration totaling $79.4 million, of which $65.8 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 $21.8 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 short-term and long-term investments 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.

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

- progress in our research and development programs, as well as the magnitude of these programs;
- the timing, receipt and amount of upfront, milestone and other payments, if any, from present and future collaborators, if any;
- the timing, receipt and amount of sales and royalties, if any, from our potential products;
- the timing, receipt and amount of funding under future government contracts, if any;
- our ability to maintain and establish additional collaborative arrangements and/or new business initiatives;
- the timing of regulatory approval of AquaBounty products;
- the resources, time and cost required for the preparation, filing, prosecution, maintenance and enforcement of patent claims;
- the costs associated with legal activities, including litigation, arising in the course of our business activities and our ability to prevail in any such legal disputes; and
- the timing and extent of our obligation to participate in up to $19.0 million in equity financings of ZIOPHARM.

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

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Contractual obligations and commitments

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

	Total(3)(4)	Less than 1 year	1-3 years	3-5 years	More than 5 years
			(In thousands)		
Operating Leases(1)(2)	$ 11,097	$ 2,825	$ 5,410	$ 2,790	$ 72
Capital Leases	99	54	45		
License Payments	1,000	1,000			
Total	$ 12,196	$ 3,879	$ 5,455	$ 2,790	$ 72

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

(2) On July 17, 2013, we entered into a sublease for administrative offices. The lease term begins on August 1, 2013 and terminates on December 31, 2017. The aggregate rent payments for the term of the sublease are $1.9 million and are excluded from the table above. On October 1, 2013, we renewed the lease on our San Diego facility for three years at a total cost of $1.2 million, which is excluded from the table above.

(3) In conjunction with the formation of a joint venture with a subsidiary of Sun Pharmaceutical Industries Ltd., or Sun Pharmaceutical Subsidiary, in September 2013, we committed to make future capital contributions to the joint venture in order to comply with the obligation of the joint venture. We made a capital contribution in the amount of $5.0 million in October 2013. In cases in which the board of managers of the joint venture determines that additional capital contributions are necessary, we have committed to making additional capital contributions subject to certain limitations. No amounts related to this capital contribution are included in the table above.

(4) In conjunction with the formation of a joint venture with OvaScience, Inc., or OvaScience, in December 2013, we committed to make an initial capital contribution to the joint venture in the amount of $1.5 million, which was paid in January 2014. In cases in which the board of the joint venture determines that additional capital contributions are necessary, we have the option of making additional capital contributions subject to certain limitations. No amounts related to this transaction are included in the table above.

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

In conjunction with our ECC with ZIOPHARM in 2011, we agreed to purchase up to $50.0 million of ZIOPHARM common stock in conjunction with securities offerings that may be conducted by ZIOPHARM in the future, subject to certain conditions and limitations. We purchased $10.0 million and $11.0 million in 2012 and 2011, respectively, of ZIOPHARM common stock in such securities offerings. The remaining obligation on this purchase commitment is approximately $29.0 million at December 31, 2012. This amount is not included in the table above due to the fact that the timing of such securities purchases cannot be predicted. On October 29, 2013, we purchased an additional $10.0 million in ZIOPHARM securities reducing our future obligation to $19.0 million.

In June 2011, we entered into an exclusive licensing agreement with Halozyme for the use of Halozyme s proprietary enzyme in one of our targeted therapeutics. We are related parties with Halozyme through common ownership by Third Security, LLC. Under the terms of this agreement, we are required to pay a non-refundable, annual exclusivity fee of $1.0 million on each anniversary of the agreement effective date until a certain development event occurs. The agreement requires us to pay up to $54.0 million of milestone payments upon the achievement of certain regulatory events. We are obligated to pay tiered royalties on net sales of an approved product developed with Halozyme s proprietary enzyme. We may terminate this agreement in whole or on a product-by-product basis at any time upon 90 days prior written notice to Halozyme. Only the $1.0 million payment which was due and paid on June 6, 2013 is included in

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the table above. All other contingent payments related to this agreement are not included in the table above due to uncertainties surrounding the number of annual payments that will be required and the unpredictability of the timing and likelihood of achieving the milestones.

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

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

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

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

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

In January 2009, AquaBounty was awarded a grant to provide funding of a research and development project from the Atlantic Canada Opportunities Agency, a Canadian government agency. The total amount available under the award is C$2.9 million, or USD$2.8 million as of September 30, 2013, which AquaBounty can claim over a five year period. All amounts claimed by AquaBounty must be repaid in the form of a 10 percent royalty on any products commercialized out of this research and development project until fully paid. As of September 30, 2013, the total amount claimed by AquaBounty was $2.3 million and is included in long term debt in the September 30, 2013 unaudited consolidated balance sheet. This amount is not included in the table above due to the uncertainty of the timing of repayment. AquaBounty has $0.2 million of additional debt instruments that mature between December 2013 and June 2014.

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Net operating losses

As of September 30, 2013, we had net operating loss carryforwards of approximately $235.1 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 $6.6 million, prior to consideration of annual limitations that may be imposed under Section 382 of the Internal Revenue Code of 1986, as amended, or Section 382. These carryforwards begin to expire in 2022.

Our past issuances of stock and mergers and acquisitions have resulted in ownership changes within the meaning of Section 382. As a result, the utilization of portions of our net operating losses may be subject to annual limitations. As of September 30, 2013, approximately $16.4 million of our net operating losses generated prior to 2008 are limited by Section 382 to annual usage limits of approximately $1.5 million. As of September 30, 2013, approximately $14.8 million of net operating losses were inherited via acquisition and are limited based on the value of the target at the time of the transaction. Future changes in stock ownership may also trigger an ownership change and, consequently, a Section 382 limitation.

Off-balance sheet arrangements

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

Quantitative and qualitative disclosure about market risk

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

Interest rate risk

We had cash, cash equivalents and short-term and long-term investments of $279.0 million and $10.7 million at September 30, 2013 and December 31, 2012, respectively. Our cash and cash equivalents and short-term investments consist of cash, money market funds, U.S. government debt securities, commercial paper and certificates of deposit. The primary objective of our investment activities is to preserve principal, maintain liquidity and maximize income without significantly increasing risk. Our investments consist of U.S. government debt securities, commercial paper and certificates of deposit which may be subject to market risk due to changes in prevailing interest rates that may cause the fair values of our investments to fluctuate. 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 and any such losses would only be realized if we sold the investments prior to maturity.

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,

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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 income (expense), net for the period. As of September 30, 2013 and December 31, 2012 the original aggregate cost basis of these investments was $110.8 million and $92.1 million, respectively, and the market value was $107.6 million and $83.1 million, respectively. The fair value of these investments is subject to fluctuation in the future due to the volatility of the stock market, changes in general economic conditions and changes in the financial conditions of these companies. The fair value of these investments as of September 30, 2013 would be approximately $118.4 million and $86.1 million, respectively, based on a hypothetical 10 percent increase or 20 percent decrease in the value of the investments. The fair value of these investments as of December 31, 2012 would be approximately $91.0 million and $66.0 million, respectively, based on a hypothetical 10 percent increase or 20 percent decrease in the value of the investments.

In November 2012, we acquired 47.56 percent of the outstanding common stock of AquaBounty and we accounted for this investment under the equity method of accounting for the period from acquisition date through March 15, 2013. On March 15, 2013, we acquired 18,714,814 additional shares of AquaBounty common stock for $4.9 million, thereby increasing our aggregate ownership to 53.82 percent upon closing. Accordingly, effective upon closing of the acquisition of the additional shares, we consolidated the assets and operating results of AquaBounty in our consolidated financial statements. The common stock of AquaBounty is traded on the London Stock Exchange and the fair value of our investment in AquaBounty at September 30, 2013 and December 31, 2012 was $26.1 million and $14.3 million, respectively. The fair value of our investment in AquaBounty as of September 30, 2013 would be approximately $28.7 million and $20.9 million, respectively, based on a hypothetical 10 percent increase or 20 percent decrease in the share price of AquaBounty. The fair value of our investment in AquaBounty as of December 31, 2012 would be approximately $15.7 million and $11.4 million, respectively, based on a hypothetical 10 percent increase or 20 percent decrease in the share price of AquaBounty.

Foreign currency exchange risk

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

Critical accounting policies and estimates

Our management s discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which we have prepared in accordance with generally accepted accounting principles in the United States, or U.S. GAAP. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported revenues and expenses during the reporting periods. We evaluate these estimates and judgments on an ongoing basis. We base our estimates on historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments

about the carrying value of assets and liabilities that are not readily apparent from other sources. Our actual results may differ from these estimates under different assumptions or conditions.

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

Revenue recognition

Our ECCs typically contain multiple elements, or deliverables, including technology licenses, research and development services, and in certain cases manufacturing services. Our ECCs may provide for various types of payments to us including upfront payments or technology access fees, funding of research and development and/or manufacturing services, milestone payments, profit sharing and royalties on product sales. Effective January 1, 2011, we adopted the provisions of Accounting Standards Update, or ASU, No. 2009-13, *Revenue Recognition (Topic 605): Multiple Deliverable Revenue Arrangements*, or ASU 2009-13. In accordance with the provisions of ASU 2009-13, we identify the deliverables within the ECCs and evaluate which deliverables represent separate units of accounting. Analyzing the ECCs to identify deliverables requires the use of judgment. A deliverable is considered a separate unit of accounting when the deliverable has value to the collaborator on a standalone basis based on the consideration of the relevant facts and circumstances for each ECC.

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

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

Our ECCs typically provide for milestone payments upon achievement of specified development, regulatory and commercial activities. Effective January 1, 2011, we adopted ASU No. 2010-17, *Revenue Recognition Milestone Method*, or the Milestone Method. Under the Milestone

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Method, we recognize consideration that is contingent upon the achievement of a milestone in its entirety as revenue in the period in which the milestone is achieved only if the milestone is substantive in its entirety. A milestone is considered substantive when it meets all of the following criteria:

The consideration is commensurate with either the entity s performance to achieve the milestone or the enhancement of the value of the delivered item or items as a result of a specific outcome resulting from the entity s performance to achieve the milestone;

The consideration relates solely to past performance; and

The consideration is reasonable relative to all of the deliverables and payment terms with the arrangement.

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

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

We recognized $6.0 million and $2.9 million of collaboration revenues in the three months ended September 30, 2013 and 2012, respectively, $16.6 million and $7.2 million in the nine months ended September 30, 2013 and 2012, respectively, and $13.7 million and $5.1 million in the years ended December 31, 2012 and 2011, respectively. As of September 30, 2013 and December 31, 2012, we have $65.8 million and $51.4 million, respectively, of deferred revenue related to our receipt of upfront and milestone payments.

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

Valuation of investments in equity securities

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

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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 September 30, 2013 and December 31, 2012, our equity securities received from collaborators are valued at $107.6 million and $83.1 million, respectively.

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

We account for investments in which we have the ability to exercise significant influence over, but not control, the operating activities of the investee using the equity method or election of the fair value option. If the fair value option is elected, the investment is accounted for as described for equity securities above. We elected the fair value option to account for our investment in ZIOPHARM. Under the equity method, we include our pro-rata share of the investee s operating results, adjusted for accretion of basis difference, in our consolidated statement of operations with the corresponding increase or decrease applied to the carrying value of the investment. The excess cost over our pro-rata share of the investee s net assets is equity-method goodwill. This equity-method goodwill is not amortized; however, the investment is analyzed for impairment on a periodic basis or if an event occurs or circumstances change that indicates the carrying amount may be impaired. The carrying value of our equity method investment in AquaBounty is $5.7 million at December 31, 2012. On March 15, 2013, we acquired 18,714,814 additional shares of AquaBounty increasing our ownership in AquaBounty to 53.82 percent, resulting in us gaining control over AquaBounty. As such AquaBounty was consolidated on our results of operations and financial position beginning on March 15, 2013. We account for our investment in S & I Ophthalmic, LLC, or S & I Ophthalmic, our joint venture with Sun Pharmaceutical Subsidiary, using the equity method of accounting. The carrying value of our equity method investment in S & I Ophthalmic is $5.0 million at September 30, 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

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change and we determine that we will able to realize some or all of these net deferred tax assets in the future, we will record an adjustment to the valuation allowance.

Consolidation of variable interest entities

We identify entities as variable interest entities, or VIEs, either: (i) that do not have sufficient equity investment at risk to permit the entity to finance its activities without additional subordinated financial support, or (ii) in which the equity investors lack an essential characteristic of a controlling financial interest. We perform an initial and on-going evaluation of the entities with which we have variable interests to determine if any of these entities are VIEs. If an entity is identified as a VIE, we perform an assessment to determine whether we have both: (i) the power to direct activities of the VIE that most significantly impact the VIE s economic performance, and (ii) have the obligation to absorb losses from or the right to receive benefits of the VIE that could potentially be significant to the VIE. If we have both these criterion, we are identified as the primary beneficiary of the VIE. As of September 30, 2013, two of our collaborators, AmpliPhi BioSciences Corp. and Genopaver, LLC, were identified as VIEs. We are not the primary beneficiary for either of these entities as we do not have the power to direct the activities that most significantly impact the economic performance of the VIEs. As of December 31, 2012, we identified AquaBounty, our investment in an affiliate, as a VIE. We were not the primary beneficiary for this entity as we did not have the power to direct the activities that most significantly impact the economic performance of the VIE. On March 15, 2013, we began consolidating AquaBounty on our results of operations and financial position as a result of our ownership in AquaBounty increasing to 53.82 percent.

Valuation of long-lived assets

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

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

Stock-based compensation

We record the fair value of stock options issued to employees and non-employees as of the grant date as stock-based compensation expense. Stock-based compensation expense for employees and non-employees is recognized over the requisite service period, which is typically the vesting period. Stock-based compensation expense recorded as research and development expenses and general and administrative expenses amounted to $0.1 million and $0.6 million, respectively, for the three months ended September 30, 2013, $0.2 million each for the three months ended September 30, 2012, $0.4 million and $1.4 million, respectively, for the nine months ended September 30, 2013, $0.3 and $0.7 million, respectively, for the nine months ended September 30, 2012, $0.4 million and

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$1.1 million, respectively, for the year ended December 31, 2012, and $0.8 million and $0.2 million, respectively, for the year ended December 31, 2011. We utilize the Black-Scholes option-pricing model to estimate the grant-date fair value of all stock options. The Black-Scholes option-pricing model requires the use of weighted average assumptions for estimated expected volatility, estimated expected term of stock options, risk-free rate, estimated expected dividend yield, and the fair value of the underlying common stock at the date of grant. Because we do not have sufficient history to estimate the expected volatility of our common stock price, expected volatility is based on the average volatility of peer public entities that are similar in size and industry. We estimate the expected term of all stock options based on previous history of exercises. The risk-free rate is based on the U.S. Treasury yield curve in effect at the time of grant for the expected term of the stock option. The expected dividend yield is 0 percent as we have not declared any common stock dividends to date and do not expect to declare common stock dividends in the near future. The fair value of the underlying common stock at the date of grant is discussed below. We estimate forfeitures based on our historical analysis of actual stock option forfeitures. Actual forfeitures are recorded when incurred and estimated forfeitures are reviewed and adjusted at least annually. The assumptions used in the Black-Scholes option-pricing model for the years ended December 31, 2012 and 2011 are set forth below:

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

We had 2,697,617 options outstanding as of September 30, 2013 of which 992,112 were exercisable. We had 2,313,526 options outstanding as of December 31, 2012 of which 808,633 were exercisable. Total unrecognized stock-based compensation expense related to non-vested awards at September 30, 2013 and December 31, 2012 was $5.5 million and $4.9 million, respectively, and is expected to be recognized over a weighted-average period of approximately three years. The weighted average grant date fair value for options granted in 2012 was $4.60.

Common stock valuations

Due to the absence of an active market for our common stock prior to our initial public offering, 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;

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the composition of our management team and board of directors;

the material risks related to our business;

our business strategy;

our entry into ECCs as contemplated by our business strategy;

the market performance of publicly traded companies in the life sciences and biotechnology sectors;

the likelihood of achieving a liquidity event for the holders of our shares of common stock, such as a sale of the company or an initial public offering given prevailing market conditions;

external market conditions affecting the life sciences and biotechnology industry sectors; and

contemporaneous valuations of our shares of common stock.

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

The following table presents the issuance of each series of preferred stock financing and stock options granted from May 27, 2011 through August 12, 2013, as well as the estimated fair value of the options and the underlying common stock on the grant date. All common shares and per share amounts in the table below reflect our 1-for-1.75 reverse stock split effective on July 26, 2013 and all preferred shares and per share amounts are convertible into shares of our common stock on a 1-for-1.75 basis upon completion of this offering.

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	1,983,857	$ 7.12
January 10, 2012	9,523,810 shares of Series E Preferred Stock	$ 5.25	January 11, 2012-April 12, 2012	198,000	$ 7.12
April 12, 2012	4,761,905 shares of Series E Preferred Stock	$ 5.25	April 13, 2012-November 13, 2012	254,571	$ 7.12
November 13, 2012	4,761,905 shares of Series E Preferred Stock	$ 5.25	November 14, 2012-March 1, 2013	1,714	$ 7.12
March 1, 2013 and April 30, 2013	19,047,619 shares of Series F Preferred Stock	$ 7.88	May 28, 2013-August 12, 2013	702,571	$ 9.67

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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 1,983,857 options to purchase shares of our common stock at a price of $7.12 per share. In establishing the price per share of common stock of $7.12, 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 $7.12 was established using the Probability-Weighted Expected Return Method, or PWERM, pursuant to which the value of an enterprise s common stock is estimated based upon an analysis of current and future values for the enterprise assuming possible liquidity events. The PWERM approach employs various market approach and income approach calculations depending upon the likelihood of a given liquidation scenario and considers the terms of each series of preferred stock, including the rights for each share class, at the date in the future upon which those rights will either be executed or abandoned. Application of the PWERM includes:

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

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

Near-Term Initial Public Offering:

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

Long-Term Initial Public Offering:

- Assumed a 16 percent probability of closing an initial public offering by mid-2013 at an enterprise value substantially greater than the post-closing enterprise value of our most recent Series E Preferred Stock sale. Our estimate of enterprise value was based on our anticipated

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capital structure and consideration of recent initial public offering pricing data at that time. We assumed that we would sign additional ECCs across our target markets by the end of 2012 and would require us to raise additional financing to execute on our ECC business model; and

Applied a discount rate of 12 percent.

Remain as a Private Company:

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

Liquidation:

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

We then applied the probabilities of each liquidity scenario to their respective price per share of common stock to arrive at a value per share of $7.12.

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

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

the issuance of additional Series E Preferred Stock at the same price and with the same rights and preferences as the original issuance of Series E Preferred Stock on May 26, 2011. The original issuance of the Series E Preferred Stock implied a value per share of our common stock of $7.12;

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.

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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 198,000 options to purchase shares of common stock at a price of $7.12 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 254,571 options to purchase shares of common stock at a price of $7.12 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 $7.12;
- execution of an ECC with Oragenics, Inc., in June 2012;
- execution of our second ECC with Synthetic Biologics, Inc., in August 2012;
- execution of an ECC with Fibrocell Science, Inc, in October 2012; and
- initiation of a Phase 2 clinical trial using our technologies by ZIOPHARM, Inc., thereby triggering our receipt of $18.3 million of additional consideration pursuant to our ECC with them, in October 2012.

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

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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 of our 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 1,714 options to purchase shares of common stock at a price of $7.12 per share. On November 16, 2012, we purchased 47.56 percent of the then outstanding shares of common stock of AquaBounty Technologies, Inc., which we refer to as AquaBounty. We determined that the only significant event that occurred during the period from November 14, 2012 through March 1, 2013 was the December 22, 2012 notification by the FDA of the publication for comment of the Environmental Assessment of AquaBounty s most advanced product, thereby we believe significantly increasing the likelihood that such product might be sold commercially for human consumption. While we believe this notification may have resulted in an increase in the value of our common stock, we did not perform a valuation of common stock based on our plans to close our Series F Preferred Stock financing round in the first quarter of 2013.

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

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

Near Term Initial Public Offering:

Assumed a 35 percent probability of closing of an initial public offering before September 2013 at an enterprise value of approximately 25 percent greater than the post-closing enterprise value of our most recent Series F Preferred Stock sale. Our estimate of enterprise value was based on our anticipated capital structure as of September 2013 and consideration of recent initial public offering pricing data; and

Applied a discount rate of 30 percent to arrive at a per share price of $14.87.

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 $11.27.

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

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value was estimated based on our anticipated capital structure as of July 2014 and consideration of recent initial public offering pricing data which was assumed to be significantly higher than the near-term scenario because we assumed we would continue to make progress in implementing our ECC business plan prior to the closing date; and

Applied a discount rate of 30 percent to arrive at a per share price of $15.78.

Remain as Private Company:

Assumed a 12 percent probability of remaining a private company at an enterprise value substantially less than our most recent Series F Preferred Stock sale. Our estimate of enterprise value was based on comparable public company multiples; and

allocated the enterprise value to various classes of shares using the option pricing model using a volatility of 55 percent to arrive at an implied share price of $2.83.

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 $11.37. Based upon our evaluation of the market and input received from our independent third-party valuation consultant, we determined that a 15 percent discount for lack of marketability was appropriate, resulting in a value per share of $9.67.

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

On May 9, 2013, our board of directors approved the contemporaneous valuation of our common stock at a price per share of $9.67 and on May 28, 2013 and June 4, 2013, our board of directors authorized management to grant 702,571 stock options to employees and consultants at a price of $9.67 per share.

After June 4, 2013 through the closing of our initial public offering we did not grant any additional stock options or other awards.

Initial public offering price

Our initial public offering price was $16.00 per share. In comparison, our estimate of the fair value of our common stock was $9.67 per share as of March 1, 2013. The initial public offering price was not derived using a formal determination of fair value, but was determined based upon a number of factors, including prevailing market conditions and estimates of our business potential, the general condition of the securities market and the market prices of, and demand for, publicly traded common stock of generally comparable companies. In addition we believe that the difference in value reflected between the initial public offering price and the board of

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directors determination of the fair value of our common stock on March 1, 2013 was primarily the result of the following factors:

- we commenced preparations to launch a roadshow for this offering;
- the March 1, 2013 valuation used an aggregate probability weighting for the near term initial public offering and low initial public offering scenarios of 70 percent that the initial public offering would occur during 2013 at a premium to our most recent preferred stock financing round. Our discussions with our underwriters in July 2013 considered our collective perceptions of the increased optimism regarding the overall market conditions and the market for initial public offerings and confirmed our expectations that we would complete our initial public offering during the third quarter of 2013;
- the initial public offering price assumed that the initial public offering had occurred, that a public market for our common stock had been created and that all outstanding shares of our preferred stock had been converted into common stock in connection with the initial public offering, and therefore excluded any discount for lack of marketability of our common stock, which was factored in the March 1, 2013 valuation. Accordingly, the previously used private company valuation methodology is no longer applicable;
- our preferred stock had substantial economic rights and preferences superior to our common stock. The initial public offering price assumed the conversion of our preferred stock to common stock upon the completion of the offering and the corresponding elimination of such superior economic rights and preferences; and
- 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 our initial public 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 initial public offering price.

Jumpstart our business startups act of 2012

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

We are in the process of evaluating the benefits of relying on other exemptions and reduced reporting requirements provided by the JOBS Act. Subject to certain conditions set forth in the JOBS Act, if as an emerging growth company we choose to rely on such exemptions, we may not be required to, among other things, (i) provide an auditor s attestation report on our systems of internal controls over financial reporting pursuant to Section 404, (ii) provide all of the compensation disclosure that may be required of non-emerging growth public companies under the Dodd-Frank Wall Street Reform and Consumer Protection Act, (iii) comply with any

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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 our initial public offering; (iii) the date on which we have issued more than $1 billion in nonconvertible debt during the previous three years; or (iv) the date on which we are deemed to be a large accelerated filer under the rules of the SEC.

Recent accounting pronouncements

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

In June 2011, the FASB issued ASU No. 2011-05, *Comprehensive Income (Topic 220): Presentation of Comprehensive Income*, or ASU 2011-05. Under this ASU, an entity will have the option to present the components of net income and comprehensive income in either one or two consecutive financial statements. The ASU eliminates the option in U.S. GAAP to present other comprehensive income in the statement of changes in equity. An entity should apply the ASU retrospectively. In December 2011, the FASB decided to defer the effective date of those changes in ASU 2011-05 that relate only to the presentation of reclassification adjustments in the statement of income by issuing ASU 2011-12, *Comprehensive Income (Topic 220): Deferral of the Effective Date for the Amendments to the Presentation of Reclassifications of Items Out of Accumulated Other Comprehensive Income in ASU 2011-05*. We implemented the provisions of ASU 2011-05 as of January 1, 2012. The adoption of this amendment did not have a material impact on our consolidated financial statements.

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

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

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Intrexon management

Executive officers and directors

The following table sets forth certain information regarding our executive officers and directors as of December 31, 2013. (1)

Name	Age	Position(s)
Executive Officers		
Randal J. Kirk	59	Chief Executive Officer and Chairman of the Board
Krish S. Krishnan	48	Chief Operating Officer
Thomas D. Reed, Ph.D.	48	Chief Science Officer and Director
Rick L. Sterling	49	Chief Financial Officer
Donald P. Lehr	39	Chief Legal Officer
Suma M. Krishnan	48	Senior Vice President Regulatory Affairs
Darryl Webster	53	Senior Vice President Intellectual Property
Samuel Broder, M.D.	68	Senior Vice President Health Sector (1)
Thomas R. Kasser, Ph.D.	58	Senior Vice President Food Sector
Robert F. Walsh, III	55	Senior Vice President Energy and Chemicals Sector
Nick Macris	45	Vice President Environmental Sector
Non-Employee Directors		
Cesar L. Alvarez	66	Director
Steven Frank	54	Director
Larry D. Horner	79	Director
Jeffrey B. Kindler	58	Director
Dean J. Mitchell	57	Director
Robert B. Shapiro	75	Director

(1) Effective January 6, 2014, Gregory I. Frost was hired as our Senior Vice President Health Sector and Samuel Broder was named Chairman Health Sector.

Executive officers

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

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

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

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

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

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

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

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

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

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

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

Robert F. Walsh, III, Senior Vice President Energy Sector, and President Industrial Products Division. Mr. Walsh has served as our Senior Vice President Energy Sector and President Industrial Products Division since 2013. Mr. Walsh has over 30 years of experience in the petroleum and chemical industries. Mr. Walsh served as Chief Commercial Officer of ZeaChem Inc., a cellulosic biofuel and biochemical company, from 2013 to 2011. Prior to his time at ZeaChem, Mr. Walsh served as Chief Executive Officer of Aurora Algae, Inc., an algae production company, from 2008 to 2010, President of LS9, Inc., an industrial biotechnology company, from 2007 to 2008, Senior Vice President and Chief Operating Officer of Chemoil Corporation, from 2005 to 2006, and General Manager Supply, Europe for Shell Europe Oil Products, from 2001 to 2006. 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

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

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

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

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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. Kindler 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 Chromatin, 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 former holders of our preferred stock. The shareholders agreement terminated upon the closing of our initial public offering and there are no further 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 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 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 303A.01 of the New York Stock Exchange Listed Company Manual, or NYSE Rules, requires a majority of a listed company s board of directors to be composed of independent directors within one year of listing. In addition, the NYSE Rules require that, subject to specified exceptions, each member of a listed company s audit, compensation and nominating and governance committees be independent. Under Rule 303A.02, 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. The NYSE Rules also require that audit committee members satisfy independence criteria set forth in Rule 10A-3 under the Securities Exchange Act of 1934, as amended, or the Exchange Act. 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 considering the independence of compensation committee members, the NYSE Rules require that our board of directors must consider additional factors relevant to the duties of a compensation committee member, including the source of any compensation we pay to the director and any affiliations with the company.

In July 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 Randal J. Kirk and Thomas D. Reed, is an independent director as defined under Rule 303A.02 of the NYSE Rules. Our board of directors also determined that Cesar L. Alvarez, Larry D. Horner and Jeffrey B. Kindler, who are the members of our audit committee, and Jeffrey B. Kindler, Dean J. Mitchell and Robert B. Shapiro, who are the members of our compensation committee, satisfy the independence standards for such committees established by the Securities and Exchange Commission, or SEC, and the NYSE Rules, as applicable. In making such determinations, our board of directors considered the relationships that each such non-employee director has with our Company and all other facts and circumstances our board of directors deemed relevant in determining independence, including the beneficial ownership of our capital stock by each non-employee director.

Board committees

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

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Audit committee

The members of our audit committee are Mr. Alvarez, Mr. Horner and Mr. Kindler. Mr. Horner is the chair of the audit committee. Our board of directors has determined that the chairman qualifies as an audit committee financial expert within the meaning of SEC regulations and the NYSE Rules. In making this determination, our board has considered the formal education and nature and scope of his previous experience, coupled with past and present service on various audit committees. Our audit committee assists our board of directors in its oversight of our accounting and financial reporting process and the audits of our financial statements. Our audit committee s responsibilities include, among other things, overseeing:

- our accounting and financial reporting processes;
- the integrity of the our financial statements;
- our compliance with laws and regulations;
- our independent auditor s qualifications and independence; and
- the performance of our internal audit functions and independent auditors.

Compensation committee

The members of our compensation committee are Mr. Kindler, Mr. Mitchell and Mr. Shapiro. Mr. Kindler 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. The compensation committee s responsibilities include, among other things:

- developing and maintaining an executive compensation policy and monitor the results of that policy;
- considering the impact of our compensation policy and practices on our risk profile;
- 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;

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preparing the compensation committee report required by SEC rules;

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; and

considering the application of Section 162(m) of the Internal Revenue Code to our compensation practices and developing a related policy.

Nominating and governance committee

The members of our nominating and governance committee are Mr. Alvarez, Mr. Mitchell and Mr. Shapiro. Mr. Alvarez is the chair of the nominating and corporate governance committee. The nominating and corporate governance committee s responsibilities 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 NYSE Rules 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;

reviewing and evaluating our various governance policies and guidelines;

considering chief executive officer succession planning;

reviewing committee structure and effectiveness; 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. A copy of the code is available on the Corporate Governance section of our website, which is located at www.dna.com. If we make any substantive amendments to, or grant any waivers from, the code of business conduct and ethics for any officer or director, we will disclose the nature of such amendment or waiver on our website or in a current report on Form 8-K.

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Intrexon executive compensation

The tables and discussion below present compensation information for our chief executive officer and our two other most highly compensated officers for the year ended December 31, 2013, whom we refer to collectively as our named executive officers. These officers are:

Randal J. Kirk, Chief Executive Officer and Chairman of the Board;

Samuel Broder, M.D., Senior Vice President Health Sector;

Robert F. Walsh, III, Senior Vice President Energy and Chemicals Sector

Summary compensation table

The following table sets forth the compensation paid or accrued during the fiscal years ended December 31, 2013 and 2012 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 ($)(4)	Total ($)
Randal J. Kirk(5)	2013								
Chief Executive Officer and Chairman of the Board	2012								
Samuel Broder	2013	485,333			357,840				843,173
	2012	122,733							122,733
Senior M.D., Senior Vice President Health Sector									
Robert F. Walsh, III	2013	190,962			715,680			11,767	913,908
Senior Vice President Energy and Chemicals Sector									

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

(2) Discretionary cash incentive awards for the 2013 fiscal year are not calculable as of the date of this prospectus and are expected to be determined in February 2014

(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 use 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 2013, includes the following items and amounts. For Mr. Walsh: 401(k) Plan matching contribution of $4,500; and welfare and life benefits employer premiums of $7,267.

(5) We did not compensate Mr. Kirk in 2012 or 2013.

Narrative to summary compensation table

In 2013, we paid base salaries to Dr. Broder and Mr. Walsh of $485,333 and $190,962, respectively. As of December 31, 2013, the base salaries of Dr. Broder and Mr. Walsh are $546,000 and $300,000, respectively. We did not compensate Mr. Kirk for his services during 2013, and Mr. Kirk will not receive an annual base salary for 2014. Base salaries are used to recognize the

1 Effective January 6, 2014, Samuel Broder was named Chairman Health Sector.

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experience, skills, knowledge and responsibilities required of all of our employees, including our named executive officers. None of our named executive officers is currently party to an employment agreement or other agreement or arrangement that provides for automatic or scheduled increases in base salary.

Our board of directors may, at its discretion, award bonuses to our named executive officers from time to time. We typically establish bonus targets for our named executive officers and evaluate their performance based on the achievement of 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. Bonus awards for 2013 are expected to be determined in February 2014.

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, 2013.

		Option awards				
		Number of securities underlying unexercised options		Equity incentive plan awards: Number of securities underlying unexercised unearned options	Option exercise price ($)	Option expiration date
Name	Grant date	Exercisable	Unexercisable			
Randal J. Kirk		8,571			$ 2.74	
	2/20/2008					2/20/2018
	2/20/2009	2,857			$ 3.29	2/20/2019
Samuel Broder, M.D.	5/28/2013		57,142(1)		$ 9.67	5/28/2023
Robert F. Walsh, III	5/28/2013		114,285(2)		$ 9.67	5/28/2023

(1) These options will vest annually in increments of 14,285, 14,286, 14,285 and 14,286 on each of May 1, 2014, 2015, 2016 and 2017, respectively.
(2) These options will vest annually in increments of 28,571, 28,571, 28,571 and 28,572 on each of May 13, 2014, 2015, 2016 and 2017, respectively.

Employment agreements with named executive officers

We do not have formal employment agreements with Mr. Kirk, Dr. Broder or Mr. Walsh.

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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).

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

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

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

- take such other action as the compensation committee determines reasonable to permit the holder of the award to realize the value of the award (to the extent such awards are then exercisable or exercisable by the change in control).

As of December 31, 2013 and December 31, 2012, there were options to purchase an aggregate of 2,554,648 shares and 2,313,526 shares, respectively, of common stock outstanding under the 2008 Plan at a weighted-average exercise price of $6.80 and $5.90 per share, respectively. On and after the effective date of the Intrexon Corporation 2013 Omnibus Incentive Plan described below, which we refer to as the 2013 Plan, we have not granted any further stock options or other awards under the 2008 Plan.

Intrexon Corporation 2013 Omnibus Incentive Plan

The 2013 Plan became effective upon the closing of our initial public offering in August 2013. The material terms of the 2013 Plan are summarized below. As of December 31, 2013, there were options to purchase an aggregate of 286,000 shares of common stock outstanding under the 2013 Plan at a weighted-average exercise price of $21.42 per share. As of December 31, 2013, there were 6,714,000 shares of common stock reserved for future issuance under the 2013 Plan.

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), stock appreciation rights, or 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

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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 including without limitation (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 7,000,000 shares of common stock, all of which may be issued pursuant to Options, SARs, Restricted Stock Awards, RSUs, Incentive Awards, Stock-Based Awards or Dividend Equivalents. Each share issued in connection with an award will reduce the number of shares available under the 2013 Plan by one, and each share covered under a SAR will reduce the number of shares available under the 2013 Plan by one, even though the share is not actually issued upon settlement of the SAR. Shares relating to awards that are terminated by expiration, forfeiture, cancellation or otherwise without issuance of shares of common stock, settled in cash in lieu of shares, or exchanged prior to the issuance of shares for awards not involving shares, will again be available for issuance under the 2013 Plan. Shares not issued as a result of net settlement of an award, tendered or withheld to pay the exercise price, purchase price or withholding taxes of an award or shares purchased on the open market with the proceeds of the exercise price of an award will not again be available for issuance under the 2013 Plan.

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

Transferability. Generally, an award is non-transferable except by will or the laws of descent and distribution, and during the lifetime of the participant to whom the award is granted, the award may only be exercised by, or payable to, the participant. However, the Compensation Committee may provide that awards, other than ISOs or a Corresponding SAR that is related to an ISO, may be transferred by a participant to immediate family members or trust or other entities on behalf of the Participant and/or family members for charitable donations. Any such transfer will be permitted only if (i) the participant does not receive any consideration for the transfer and (ii) the Committee expressly approves the transfer. The holder of the transferred award will be bound by the same terms and conditions that governed the award during the period that it was held by the participant, except that such transferee may only transfer the award by will or the laws of descent and distribution.

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

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

Payment. The exercise or purchase price of an award, and any taxes required to be withheld with respect to an award, may be paid in cash or, if the written agreement so provides, the Compensation Committee may allow a participant to pay all or part of the exercise or purchase

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price, and any required withholding taxes, by tendering shares of common stock, through a broker-assisted cashless exercise, by means of net exercise procedure, or any other specified medium of payment.

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

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

Types of awards

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

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

Restricted Stock Awards and RSUs. A Restricted Stock Award is the grant or sale of shares of common stock, which may be subject to forfeiture for a period of time or subject to certain conditions. An RSU entitles the participant to receive, upon vesting, shares of our common stock. We will deliver to the participant one share of common stock for each RSU that becomes earned and payable. With regard to Restricted Stock Awards, the Compensation Committee is authorized to determine the eligible individuals to whom grants will be made, the number of shares subject

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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 will be made and all other terms and conditions of the Incentive Award.

Stock-Based Awards. Stock-Based Awards may be denominated or payable in, valued by reference to or otherwise based on shares of common stock, including awards convertible or exchangeable into shares of common stock (or the cash value thereof) and common stock purchase rights and awards valued by reference to the fair market value of the common stock. The Compensation Committee has the authority to determine the eligible individuals to whom grants will be made and all other terms and conditions of Stock-Based Awards. However, the purchase price for the common stock under any Stock-Based Award in the nature of a purchase right may not be less than the fair market value of a share of 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 any of our obligations or of our affiliates to pay cash or to deliver other property under the 2013 Plan or under any other of our plans or compensatory arrangements or any of our affiliates.

Dividend Equivalents. Our Compensation Committee may also grant Dividend Equivalents under the 2013 Plan. A Dividend Equivalent is an award that entitles the participant to receive cash, shares of common stock, other awards or other property equal in value to all or a specified portion of dividends paid with respect to shares of our common stock. The Compensation Committee is authorized to determine the eligible individuals to whom grants will be made and all other terms and conditions of the Dividend Equivalents. 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 Named Executive Officers (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 1,000,000 shares of Common Stock. For these purposes, an Option and its corresponding

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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 $5,000,000 (pro-rated up or down for performance periods greater or less than 12 months). Award limits that are expressed as a number of shares are subject to the adjustment provisions of the 2013 Plan as described below.

Performance Criteria. Our Compensation Committee has the discretion to establish objectively determinable performance conditions for when awards will become vested, exercisable and payable. Objectively determinable performance conditions generally are performance conditions (a) that are established in writing (i) at the time of the grant or (ii) no later than the earlier of (x) 90 days after the beginning of the period of service to which they relate and (y) before the lapse of 25 percent of the period of service to which they relate; (b) that are uncertain of achievement at the time they are established and (c) the achievement of which is determinable by a third party with knowledge of the relevant facts. These performance conditions may be based on one or any combination of metrics related to our financial, market or business performance. The form of the performance conditions also may be measured on a company, affiliate, division, business unit or geographic basis, individually, alternatively or in any combination, subset or component thereof. Performance goals may reflect absolute entity performance or a relative comparison of entity performance to the performance of a peer group of entities or other external measure of the selected performance conditions. Profits, earnings and revenues used for any performance condition measurement may exclude any extraordinary or nonrecurring items. The performance conditions may, but need not, be based upon an increase or positive result under the aforementioned business criteria and could include, for example and not by way of limitation, maintaining the status quo or limiting the economic losses (measured, in each case, by reference to the specific business criteria). An award that is intended to become exercisable, vested or payable on the achievement of performance conditions means that the award will not become exercisable, vested or payable solely on mere continued employment or service. However, such an award, in addition to performance conditions, may be subject to continued employment or service by the participant. The performance conditions may include any or any combination of the following: (a) revenue, (b) earnings before interest, taxes, depreciation and amortization, or EBITDA, (c) cash earnings (earnings before amortization of intangibles), (d) operating income, (e) pre-or after-tax income, (f) earnings per share, (g) net cash flow, (h) net cash flow per share, (i) net earnings, (j) return on equity, (k) return on total capital, (l) return on sales, (m) return on net assets employed, (n) return on assets or net assets, (o) share price performance, (p) total shareholder return, (q) improvement in or attainment of expense levels, (r) improvement in or attainment of working capital levels, (s) net sales, (t) revenue growth or product revenue growth, (u) operating income (before or after taxes), (v) pre-or after-tax income (before or after allocation of corporate overhead and bonus), (w) earnings per share; (x) return on equity, (y) appreciation in and/or maintenance of the price of the shares of Common, (z) market share, (aa) gross profits, (bb) comparisons with various stock market indices; (cc) reductions in cost, (dd) cash flow or cash flow per share (before or after dividends), (ee) return on capital (including return on total capital or return on invested capital), (ff) cash flow return on investments; (gg) improvement in or attainment of expense levels or working capital levels, and/or (hh) shareholder equity.

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. The Compensation Committee has the authority to adjust goals and awards in the manner set forth in the 2013 Plan.

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

Amendment and Termination. The 2013 Plan expires 10 years after its effective date, 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.

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

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

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

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

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

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

to which the RSUs are subject have been satisfied and the RSUs are paid, the participant will recognize as ordinary income the fair market value of the common stock he or she receives. We generally will be entitled to a federal income tax deduction equal to the ordinary income the participant recognizes.

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

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

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

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

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

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Equity compensation plan information

The following table provides certain information with respect to our 2008 Plan and 2013 Plan as of December 31, 2013:

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)
2,840,648	$ 8.27	6,714,000

(1) Excludes securities to be issued upon exercise of 414,404 warrants at a weighted-average exercise price per share of $0.79 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 22,857 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 2,857 shares of common stock (with an exercise price equal to the fair market value on the date of grant), with one-fourth of such options vesting on January 1st of each year.

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

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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 22,857 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 8,571 shares of common stock (with an exercise price equal to the fair market value on the date of grant), which options vest upon grant.

The following table discloses all compensation provided to the non-employee directors for the most recently completed fiscal year ending December 31, 2013:

Name(1)	Equity awards ($)(1)	Option awards ($)(2)	Total($)
Cesar L. Alvarez	$ 21,164	$ 17,898	$ 39,062
Steven Frank	$ 19,707	$ 17,898	$ 37,605
Larry D. Horner	$ 22,663	$ 17,898	$ 40,561
Jeffrey B. Kindler	$ 22,655	$ 17,892	$ 40,547
Dean J. Mitchell	$ 18,193	$ 17,898	$ 36,091
Robert B. Shapiro	$ 18,942	$ 17,892	$ 36,834

(1) Our directors may elect to take any portion of their director fees in shares of our common stock instead of cash. During 2013, 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, 2013, are set out in the following table:

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		Option awards			
		Number of securities underlying unexercised options			
Name	Grant date	(#) Exercisable	(#) Unexercisable	Option exercise price ($)	Option expiration date
Cesar L. Alvarez	2/20/2008	8,571		$ 2.74	2/20/2018
	2/20/2009	2,857		$ 3.29	2/20/2019
	6/30/2010	2,142	715	$ 3.29	6/30/2020
	3/7/2011	1,428	1,429	$ 5.91	3/7/2021
	12/2/2011	4,285	4,286	$ 7.12	12/2/2021
	3/15/2012	714	2,143	$ 7.12	3/15/2022
	5/28/2013		2,858	$ 9.67	5/28/2023
Steven Frank	2/20/2008	8,571		$ 2.74	2/20/2018
	2/20/2009	2,857		$ 3.29	2/20/2019
	6/30/2010	2,142	715	$ 3.29	6/30/2020
	3/7/2011	1,428	1,429	$ 5.91	3/7/2021
	12/2/2011	4,285	4,286	$ 7.12	12/2/2021
	3/15/2012	714	2,143	$ 7.12	3/15/2022
	5/28/2013		2,858	$ 9.67	5/28/2023
Larry D. Horner	2/20/2008	8,571		$ 2.74	2/20/2018
	2/20/2009	2,857		$ 3.29	2/20/2019
	6/30/2010	2,142	715	$ 3.29	6/30/2020
	3/7/2011	1,428	1,429	$ 5.91	3/7/2021
	12/2/2011	4,285	4,286	$ 7.12	12/2/2021
	3/15/2012	714	2,143	$ 7.12	3/15/2022
	5/28/2013		2,858	$ 9.67	5/28/2023
Jeffrey B. Kindler	12/2/2011	11,428	11,429	$ 7.12	12/2/2021
	3/15/2012	714	2,143	$ 7.12	3/15/2022

	5/28/2013		2,857	$ 9.67	5/28/2023
Dean J. Mitchell	3/17/2009	8,571		$ 3.29	3/17/2019
	6/30/2010	2,142	715	$ 3.29	6/30/2020
	3/7/2011	1,428	1,429	$ 5.91	3/7/2021
	12/2/2011	4,285	4,286	$ 7.12	12/2/2021
	3/15/2012	714	2,143	$ 7.12	3/15/2022
	5/28/2013		2,858	$ 9.67	5/28/2023
Robert B. Shapiro	12/2/2011	11,428	11,429	$ 7.12	12/2/2021
	3/15/2012	714	2,143	$ 7.12	3/15/2022
	5/28/2013		2,857	$ 9.67	5/28/2023

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Certain relationships and related party transactions of Intrexon

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.

Participation in our initial public offering

Randal J. Kirk, our Chairman, President and Chief Executive Officer, on behalf of himself and certain of his affiliates, purchased an aggregate of $30.0 million in shares of our common stock, or 1,875,000 shares of the 9,999,999 shares of common stock sold in our initial public offering, at the initial public offering price. The underwriters received the same underwriting discount on the shares purchased by Mr. Kirk and these affiliates as they did on the other shares sold to the public in the initial public offering.

Private placements of securities

We have funded our operations over the past four 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 converted into one share of our common stock upon completion of our initial public 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

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Purchaser	Date of purchase	Class of preferred stock	Number of shares purchased (#)	Price per share ($)	Aggregate consideration ($)
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
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.

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

(15) A member of our board of directors.

(16) An affiliate of Robert B. Shapiro.

Transactions with Third Security, LLC and affiliates

2011 promissory notes

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

Halozyme

Effective June 6, 2011, we entered into a collaboration and license agreement with Halozyme Therapeutics, Inc., or Halozyme, under which Halozyme granted to us a worldwide exclusive license for the use of rHuPH20 enzyme in the development of a subcutaneous injectable formulation of our recombinant human alpha 1-antitrypsin. Mr. Kirk is a member of Halozyme s board of directors. Prior to the transaction, Mr. Kirk beneficially owned 15,387,869 shares of Halozyme s common stock, and as of December 31, 2013, beneficially owned 19,801,286 shares, or 17.4 percent of Halozyme s common stock. Pursuant to the agreement, we paid a nonrefundable upfront license fee of $9,000,000 to Halozyme. In addition, so long as the agreement is in effect, we are required to pay an annual exclusivity fee of $1,000,000 to Halozyme beginning on June 6, 2012 and continuing on each anniversary of the effective date of the agreement thereafter until a certain development event occurs. Halozyme is entitled to receive payments from us for research and development services and supply of rHuPH20 active pharmaceutical ingredient we request. In addition, Halozyme is entitled to receive additional cash payments from us potentially totaling $44,000,000 for each product for use in a specified field and $10,000,000 for each product for use outside that specified field upon achievement of development and regulatory milestones with respect to those products. Halozyme also is entitled to receive royalty payments in the high single to lower double digits from us on product sales at a royalty rate which increases based upon increases in net sales of product and a cash payment of $10,000,000 upon our achievement of a specified sales volume of product sales. Unless terminated earlier in accordance with its terms, the agreement continues in effect until the later of (i) expiration of the last to expire of the valid claims of Halozyme patents covering rHuPH20 or

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other specified patents developed under the collaboration which valid claim covers a product developed under the collaboration, and (ii) expiration of the last to expire royalty term for a product developed under the collaboration. The royalty term of a product developed under the agreement, with respect to each country, consists of the period equal to the longer of: (a) the duration of any valid claim of Halozyme patents covering rHuPH20 or other specified patents developed under the collaboration which valid claim covers the product in such country or (b) 10 years following the date of the first commercial sale of such product in such country. We may terminate the agreement prior to expiration for any reason on a product-by-product basis upon 90 days prior written notice to Halozyme.

Cyntellect

Effective August 31, 2011, we acquired certain assets and assumed certain liabilities of Cyntellect, Inc. in exchange for 2,386,803 shares of our common stock valued at $17,000,000. At the time of the purchase, Mr. Kirk was a member of the board of directors of Cyntellect. Prior to the purchase, affiliate entities of Mr. Kirk, NRM VI Holdings I, LLC and New River Management V, LP, held notes with outstanding balances of $4.2 million and $12 million, respectively, and NRM VI Holdings I, LLC held 93.1 percent of the senior preferred stock. Following the transaction, Cyntellect distributed the 2,386,803 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 843,432 and 1,531,866 shares, respectively, of our common stock with an approximate value at the time of $6,007,000 and $10,910,000, respectively. Through May 2012, we subleased a portion of one of our facilities to Cyntellect. The sublease included rent and a portion of applicable facility expenses.

Genopaver

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

Chief Executive Officer position

Mr. Kirk assumed the role of our Chief Executive Officer in April 2009 and served on a part-time basis in that capacity through 2011. In 2012, Mr. Kirk began serving in this role on a full-time basis. Although Mr. Kirk has not received compensation for his service as Chief Executive Officer, we recorded $1,163,000 in compensation expense for the nine months ended September 30, 2013 and $1,550,000, $210,000, and $490,000 for the years ended December 31, 2012, 2011, and 2010, respectively, based on the estimated salary and benefits appropriate for the role.

Transactions with other shareholders

At September 30, 2013, December 31, 2012 and 2011, we leased two office facilities from a preferred shareholder. During the nine months ended September 30, 2013 and the years ended December 31, 2012 and 2011, we incurred rent and other facility expenses related to these

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facilities of $680,000, $903,000 and $783,000, respectively. During 2010, we leased one facility from this preferred shareholder and incurred rent and other facility expenses related to this facility of $595,000.

We may contract with a common shareholder to provide certain research and clinical services. During the nine months ended September 30, 2013 and the years ended December 31, 2012, 2011, and 2010 we incurred total expenses for work performed under such contracts of $52,000, $91,000, $202,000, and $597,000, respectively.

In 2011, we paid a transaction fee in conjunction with the closing of our Series E Preferred Stock to a financial services firm 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 registration rights agreement, each 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 December 31, 2013, Mr. Kirk, together with his affiliates (excluding us), beneficially owned 1,450,403 shares, or 1.4 percent of ZIOPHARM s 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 September 30, 2013 and December 31, 2012, $0 and $4,862,000 remained outstanding, respectively; such amount is refundable to ZIOPHARM in the event the ECC is terminated. On October 29, 2013, we purchased an additional $10.0 million in ZIOPHARM securities reducing our future obligation to purchase ZIOPHARM common stock to $19.0 million.

Synthetic Biologics

Pursuant to an ECC, a securities purchase agreement and a registration rights agreement, each 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

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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 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. On December 17, 2013, pursuant to a stock purchase agreement, NRM VII Holdings I, LLC invested $500,000 in Synthetic Biologics and received 500,000 shares of Synthetic Biologics common stock. As of December 31, 2013, Mr. Kirk, together with his affiliates (excluding us), beneficially owned 3,625,000 shares, or 6.3 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. Pursuant to this right, on December 17, 2013, we purchased 2,000,000 shares of Synthetic Biologics common stock with an agreed value, at the time, of $2,000,000. We have also been granted the right to make purchases of Synthetic Biologics common stock in the open market up to an additional 10 percent of Synthetic Biologics common stock. We have made no open market purchases of Synthetic Biologics common stock. 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 September 30, 2013 and December 31, 2012, $1,502,000 and $2,367,000 remained outstanding, respectively; such amount is refundable to Synthetic Biologics in the event that the August 2012 ECC is terminated.

Oragenics

Pursuant to an ECC and a stock issuance agreement, each dated as of June 5, 2012, we granted to Oragenics an exclusive license to use our proprietary technologies and other intellectual property to develop and commercialize lantibiotics for the treatment of infectious diseases in humans and companion animals. Pursuant to the stock issuance agreement, we received 4,392,425 shares of Oragenics outstanding common stock in partial consideration of this license grant with a value, at the time, of $6,588,000. On July 30, 2012, pursuant to a stock purchase agreement, an affiliate of Mr. Kirk, NRM VII Holdings I, LLC, invested $1,286,000 in Oragenics and received 857,555 shares of Oragenics outstanding common stock. On November 20, 2013, pursuant to a stock purchase agreement, NRM VII Holdings I, LLC invested $357,500 in Oragenics and received 143,000 shares of Oragenics common stock.

On September 30, 2013, we entered into a second ECC with Oragenics through which we granted to Oragenics an exclusive license to use our proprietary technologies and other intellectual property to develop and commercialize probiotics for the treatment of diseases of the oral cavity, throat, sinus and esophagus, including, but not limited to, aphthous stomatitis and Behcet s disease. Pursuant to a stock issuance agreement entered in conjunction with this second ECC, we received 1,348,000 shares of Oragenics common stock and Oragenics sold to us 1,300,000 shares of Oragenics common stock at a price per share of $3.00 for gross proceeds of $3,900,000.

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Oragenics also issued a Convertible Promissory Note to us in the principal amount of $1,956,000 which is payable, at Oragenics option, in cash or shares of Oragenics common stock and which matures on December 31, 2013. The Convertible Promissory Note was converted to 698,241 shares of Oragenics common stock on December 18, 2013.

As of December 31, 2013, Mr. Kirk, together with his affiliates (excluding us), beneficially owned 1,000,555 shares, or 2.8 percent, of Oragenics outstanding common stock. In conjunction with our first ECC with Oragenics, 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. Pursuant to this right, on November 20, 2013, we purchased 1,100,000 shares of Oragenics common stock with an agreed value, at the time, of $2,750,000.

Fibrocell Science

Pursuant to an ECC, a stock issuance agreement and a registration rights agreement, each 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 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.

Effective June 28, 2013, we entered into an amendment to our ECC with Fibrocell. The amendment expands the ECC to include potential treatments based on engineered autologous fibroblast cells for the localized treatment of autoimmune and inflammatory disorders including morphea (localized scleroderma), cutaneous eosinophilias and moderate to severe psoriasis. Under the terms of the amendment, we received shares of Fibrocell s common stock valued at $7.5 million as a supplemental technology access fee.

On October 1, 2013, we and certain affiliates of Mr. Kirk acquired an aggregate amount of 3,658,536 shares of Fibrocell common stock at a price of $4.10 per share. As of December 31, 2013, Mr. Kirk, together with his affiliates (excluding us), beneficially owned 9,219,512 shares, or 23.1 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.

Effective January 10, 2014, we entered into a second amendment to our ECC with Fibrocell. The amendment expands the ECC to include potential treatments for Ehlers-Danlos syndrome hypermobility type (EDS-HT), a rare genetic disorder resulting in weakened connective tissue. Under the terms of the amendment, we received shares of Fibrocell s common stock valued at approximately $5.0 million as a supplemental technology access fee.

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

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

AmpliPhi

Pursuant to an ECC and a stock issuance agreement, each dated as of March 29, 2013, we granted to AmpliPhi an exclusive license to use our proprietary technologies and all other intellectual property to develop and commercialize new bacteriophage-based therapies to target specific antibiotic resistant infections. Pursuant to the stock issuance agreement, we received 24,000,000 shares of AmpliPhi s outstanding common stock in partial consideration of this license grant with a value, at the time, of $2,400,000. On June 26, 2013, pursuant to a stock purchase agreement, an affiliate of Mr. Kirk, NRM VII Holdings I, LLC, invested $3,000,000 in AmpliPhi and received 2,142,857 shares of AmpliPhi s Series B preferred stock, which is convertible into common shares of AmpliPhi on a 10-to-1 basis. NRM VII Holdings I, LLC received 5,357,142 warrants to purchase common shares of AmpliPhi. On December 24, 2013, pursuant to a stock purchase agreement, NRM VII Holdings I, LLC invested $5,000,000 in AmpliPhi and received 20,000,000 shares of AmpliPhi common stock. As of December 31, 2013, Mr. Kirk, together with his affiliates (excluding us), beneficially owned 46,785,712 shares of AmpliPhi common stock, or 22.4 percent, of AmpliPhi.

Soligenix

Pursuant to an ECC and a stock issuance agreement, each dated as of April 27, 2013, we granted to Soligenix an exclusive license to use our proprietary technologies and all other intellectual property to develop and commercialize human monoclonal antibody therapies for the treatment of melioidosis. Pursuant to the stock issuance agreement, we received 1,034,483 shares of Soligenix s outstanding common stock in partial consideration of this license grant. On June 20, 2013, pursuant to a stock purchase agreement, an affiliate of Mr. Kirk, NRM VII Holdings I, LLC, invested $3,500,000 in Soligenix and received 3,333,333 shares of Soligenix s outstanding common stock. NRM VII Holdings I, LLC received 2,500,000 warrants to purchase common shares of Soligenix. As of December 31, 2013, Mr. Kirk, together with his affiliates (excluding us), beneficially owned 5,833,333 shares, or 26.6 percent of Soligenix s common stock. In conjunction with the ECC, we are entitled to, at our election, participate in securities offerings conducted by Soligenix in the future, subject to certain conditions and limitations. We have made no purchases of Soligenix s common stock pursuant to this arrangement.

BioPop

On October 1, 2013, we entered into an ECC and a Common Stock Purchase Agreement with Biological & Popular Culture, Inc., or BioPop, pursuant to which BioPop received a license to our

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technologies to develop and commercialize artwork, children s toys and novelty goods that are derived from living organisms or are enabled by synthetic biology. Pursuant to the Common Stock Purchase Agreement we acquired 4,163,265 shares of BioPop common stock for an aggregate purchase price of $1.3 million, which represents 51% of BioPop s outstanding common stock. Pursuant to the Common Stock Purchase Agreement, the members of Yonder LLC, or Yonder, a California limited liability company, contributed all assets and properties of Yonder to BioPop, and BioPop assumed all Yonder obligations and liabilities.

Agilis

On October 25, 2013, we entered into an ECC with Agilis Biotherapeutics, LLC, or Agilis, a synthetic biology-based company focused on rare diseases. On December 23, 2013, pursuant to a stock purchase agreement, an affiliate of Mr. Kirk, NRM VII Holdings I, LLC, invested $1,000,000 in Agilis and received 12,500 Series A membership units. As of December 31, 2013, NRM VII Holdings I, LLC owned 12,500 Series A membership units which represents 12.5 percent of the outstanding Series A membership units of Agilis.

OvaScience

On December 18, 2013, we entered into an ECC with OvaScience, Inc., a life sciences company focused on the discovery, development and commercialization of new treatments for infertility. The ECC was formed to use our synthetic biology technology platform to develop methodologies to accelerate the development of OvaScience s OvaTureTM technology platform, a next-generation approach to in vitro fertilization. As partial payment for access to our technology, OvaScience issued 273,224 shares of its common stock to us on December 18, 2013. OvaScience will pay $2,500,000 of the technology access fee in cash on December 18, 2014.

Additionally, OvaScience and we formed a joint venture entity named OvaXon, LLC, a Delaware limited liability company (OvaXon). OvaScience and we entered into a limited liability company agreement for OvaXon (the LLC Agreement) which establishes our rights and those of OvaScience with respect to OvaXon and provides for the management of OvaXon and its business. In connection with the execution of the LLC Agreement, OvaXon entered into a worldwide Exclusive Channel Collaboration Agreement with us to create new applications for improving human and animal health. OvaScience also licensed certain technology relating to egg precursor cells to OvaXon pursuant to a separate license agreement.

Sun Pharmaceutical Industries

On September 30, 2013, we entered into an ECC with S & I Ophthalmic, LLC, or Sun JV, a joint venture between us and Caraco Pharmaceutical Laboratories, Ltd., or Sun Pharmaceutical Subsidiary, an indirect subsidiary of Sun Pharmaceutical Industries Ltd., an international specialty pharmaceutical company focused on chronic diseases.

Contemporaneously with the entry into the ECC, we also entered into a Limited Liability Company Agreement, or Sun LLC Agreement, with Sun Pharmaceutical Subsidiary and Sun JV which governs the affairs of Sun JV and the conduct of Sun JV s business. Pursuant to the Sun LLC Agreement, we, as well as Sun Pharmaceutical Subsidiary, made an initial capital contribution in exchange for a 50% membership interest in Sun JV. In cases in which the board of managers of Sun JV, or the Sun JV Board, determines that additional capital contributions are necessary in order for Sun JV to comply with its obligations under the ECC, we, as well as Sun Pharmaceutical

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Subsidiary, have committed to making additional capital contributions subject to certain limitations. Each has the right, but not the obligation, to make additional capital contributions above these limits when and if solicited by the Sun JV Board.

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 former 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. All rights under the investor rights agreement terminated upon the closing of our initial public offering other than certain registration rights for certain former 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. This policy governs the review, approval or ratification of covered related person transactions. The audit committee of our board of directors manages this policy.

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

A related person is defined as:

- Any person who is, or at any time since the beginning of our last fiscal year was, one of our directors or executive officers or a nominee to become one of our directors;

- Any person who is known to be the beneficial owner of more than five percent of any class of our voting securities;

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Any immediate family member of any of the foregoing persons, which means any child, stepchild, parent, stepparent, spouse, sibling, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law or sister-in-law of the director, executive officer, nominee or more than five percent beneficial owner, and any person (other than a tenant or employee) sharing the household of such director, executive officer, nominee or more than five percent beneficial owner; and

Any firm, corporation, or other entity in which any of the foregoing persons is employed or is a general partner or principal or in a similar position or in which such person has a ten percent or greater beneficial ownership interest.

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

the audit committee pre-approves such transaction in accordance with the guidelines set forth in the policy,

the transaction is on terms comparable to those that could be obtained in arm s length dealings with an unrelated third party and the audit committee (or the chairperson of the audit committee) approves or ratifies such transaction in accordance with the guidelines set forth in the policy,

the transaction is approved by the disinterested members of the board of directors, or

the transaction involves compensation approved by the compensation committee of the board of directors.

In the event a related person transaction is not pre-approved by the audit committee and our management determines to recommend such related person transaction to the audit committee, such transaction must be reviewed and by the audit committee. After review, the audit committee will approve or disapprove such transaction. When our Chief Legal Officer, in consultation with our Chief Executive Officer or our Chief Financial Officer, determines that it is not practicable or desirable for us to wait until the next audit committee meeting, the chairperson of the audit committee possesses delegated authority to act on behalf of the audit committee. The audit committee (or the chairperson of the audit committee) shall approve only those related person transactions that are in, or not inconsistent with, our best interests and the best interests of our shareholders, as the audit committee (or the chairperson of the audit committee) determines in good faith.

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

any employment of certain named executive officers that would be publicly disclosed;

director compensation that would be publicly disclosed;

transactions with other companies where the related person s only relationship is as a director or owner of less than ten percent of said company (other than a general partnership), if the aggregate amount involved does not exceed the greater of $200,000 or five percent of that company s consolidated gross revenues;

transactions where all shareholders receive proportional benefits;

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transactions involving competitive bids;

transactions with a related person involving the rendering of services at rates or charges fixed in conformity with law or governmental authority; and

transactions with a related person involving services as a bank depositary of funds, transfer agent, registrar, trustee under a trust indenture or similar services.

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

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

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

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Intrexon security ownership of certain beneficial owners and management

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

- each person, or group of affiliated persons, known by us to beneficially own more than five 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 is based on an aggregate 97,053,712 shares of common stock outstanding as of December 31, 2013.

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 March 1, 2014, which is 60 days after December 31, 2013. These shares are deemed to be outstanding and beneficially owned by the person holding those options or warrants for the purpose of computing the percentage ownership of that person, but they are not treated as outstanding for the purpose of computing the percentage ownership of any other person. Unless otherwise indicated, the persons or entities identified in this table have sole voting and investment power with respect to all shares shown as beneficially owned by them, subject to applicable community property laws.

Except as otherwise noted below, the address for each person or entity listed in the table is c/o Intrexon Corporation, 222 Lakeview Avenue, Suite 1400, West Palm Beach, Florida 33401.

Name and address of beneficial owner	Number of shares beneficially owned(1)	Percentage of shares beneficially owned
Randal J. Kirk(2)	62,207,700	64.1%
Samuel Broder, M.D.		*
Robert F. Walsh, III		*
Cesar L. Alvarez	55,824	*
Steven Frank	26,845	*
Larry D. Horner	87,589	*
Jeffrey B. Kindler	70,175	*
Dean J. Mitchell	24,047	*
Robert B. Shapiro(3)	127,770	*
Executive officers and directors as a group (17 persons)	63,555,071	65.5%

* 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 December 31, 2013, pursuant to the exercise of options: Randal J. Kirk, 11,428 shares; Cesar L. Alvarez, 22,854 shares; Steven Frank, 22,854 shares; Larry D. Horner, 22,854 shares; Jeffrey B. Kindler, 13,570 shares; Dean J. Mitchell, 19,997 shares; Robert B. Shapiro, 13,570 shares; and executive officers and directors as a group, 720,495 shares.

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(2) Includes shares held by the following entities over which Mr. Kirk (or an entity over which he exercises exclusive control) exercises exclusive control: 179,199 shares held by ADC 2010, LLC, 101,482 shares held by JPK 2008, LLC, 699,586 shares held by JPK 2009, LLC, 818,461 shares held by JPK 2012, LLC, 5,746,167 shares held by Kapital Joe, LLC, 131,081 shares held by Kellie L. Banks (2009) Long Term Trust, 5,428,401 shares held by Mascara Kaboom, LLC, 102,437 shares held by MGK 2008, LLC, 764,206 shares held by MGK 2009, LLC, 940,426 shares held by MGK 2011, LLC, 1,196,077 shares held by New River Management IV, LP, 22,636,052 shares held by New River Management V, LP, 1,679,578 shares held by NewVa Capital Partners, LP, 13,340,645 shares held by NRM VI Holdings I, LLC, 4,711,852 shares held by R.J. Kirk Declaration of Trust, 678,323 shares held by Third Security Incentive 2010 LLC, 1,356,648 shares held by Third Security Senior Staff 2008 LLC, 178,724 shares held by Third Security Staff 2001 LLC, 1,356,648 shares held by Third Security Staff 2010 LLC, 76,611 shares held by ZSK 2008, LLC, and 73,668 shares held by ZSK 2009, LLC.

(3) Includes 80,116 shares held in the Robert B. Shapiro Revocable Trust, an affiliate of Robert B. Shapiro.

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Description of Medistem business

Overview

Medistem Inc., a Nevada corporation (with respect to this section, the "Company, "Medistem, us , our or we) was formed in 2001 under the nam SGC Holdings, Inc., and has also formerly been known as Medistem Laboratories, Inc. Based in San Diego, California, we are a therapeutics company focused on the emerging field of regenerative medicine. Our business strategy is to develop and ultimately commercialize safe and efficacious adult stem cell therapies to address unmet medical needs. We anticipate that therapies generated using our product platform will be scalable and reimbursable.

We are developing the Endometrial Regenerative Cell (ERC), our universal donor adult stem cell product. ERCs were discovered by us in 2007, and preclinical tests have shown their likely ability to promote new blood vessel formation (angiogenesis), reduce inflammation, regulate immune system function, and augment tissue repair and healing. We believe ERCs have the potential to treat a range of diseases, including ischemic conditions, cardiovascular disease, certain neurological diseases, autoimmune diseases (such as Type 1 Diabetes), kidney failure, liver failure, pulmonary diseases and a range of orphan disease indications. Cook General BioTechnology, LLC, located in Indianapolis, Indiana, currently manufactures ERCs for us under cGMP. Our intellectual property protecting our ERC business consists of an issued patent and several patent applications, trade secrets, and proprietary manufacturing know-how that we believe provide us with a competitive advantage.

Our primary focus is to address the unmet medical needs in Critical Limb Ischemia (CLI), Congestive Heart Failure (CHF), and Type 1 Diabetes. We have been cleared by the U.S. Food and Drug Administration (FDA) to begin clinical studies of ERCs in the United States for CLI. In addition, we have initiated a Phase II clinical trial in CHF in Moscow, Russia in collaboration with a major cardiovascular center in Moscow. The Russian regulatory system does not use Phase nomenclature and the FDA has not approved or cleared any clinical trials of ERCs for CHF in the U.S. or any other country. The FDA has no jurisdiction over our Russian clinical trial in CHF; however, we have structured and are endeavoring to conduct this trial in conformity with FDA guidelines, and this trial has been approved by Russian authorities. Nonetheless, in this proxy statement/prospectus we refer to our CHF clinical trial as a Phase II clinical trial, as it is a study to establish safety and efficacy. Investors and authorities in the United States often consider that clinical trial results from trials not conducted in the United States or Western Europe are less reliable than those from trials conducted in the United States or Western Europe. Therefore it is possible the FDA may not honor some or all the data derived from this trial.

We are committed to the rapid commercialization of the ERC platform technology. Our ongoing strategy is to maximize shareholder value through rapid completion of existing clinical programs and to expand our market opportunities by initiating new programs based on the biological properties of our platform. We intend to partner with commercial and academic organizations as a key component of our ongoing strategy. We need to raise funds in order to finance our clinical and research activities further.

Since September 7, 2013, shares of Medistem common stock have traded on the OTC Markets Group s OTCQB marketplace under the stock symbol MEDS. Prior to that time, shares of Medistem common stock traded on OTCPink marketplace.

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Emerging growth company

We qualify as an emerging growth company (EGC) under the Jumpstart Our Business Startups Act of 2012 (the JOBS Act). An EGC may take advantage of public reporting requirements that are in certain respects reduced from those otherwise applicable to public companies. The reduced reporting requirements include having to present only two years of audited financial statements and only two years of related Management s Discussion and Analysis of Financial Condition and Results of Operations, and reduced disclosure obligations regarding executive compensation. Section 107(a) of the JOBS Act allows an EGC to elect to be treated as a non-EGC, thereby forgoing the special provisions of the JOBS Act and choosing to make disclosure and provide financial reporting required of non-EGC companies. We have elected, under Section 107(b), to be treated as an EGC for all purposes of the JOBS Act. We shall continue to be deemed an emerging growth company until the earliest of:

a. the last day of our fiscal year following the fifth anniversary of the date of the first sale of our common equity securities pursuant to an effective Securities Act registration statement;

b. the last day of our fiscal year in which we have total annual gross revenues of $1,000,000,000 (as such amount is indexed for inflation every 5 years by the Securities and Exchange Commission to reflect the change in the Consumer Price Index for All Urban Consumers published by the Bureau of Labor Statistics) or more;

c. the date on which we have, during the previous 3-year period, issued more than $1,000,000,000 in non-convertible debt; or

d. the date on which we are deemed to be a large accelerated filer, as defined in section 240.12b-2 of title 17, Code of Federal Regulations, or any successor thereto.

As an emerging growth company we are exempt from Section 404(b) of the Sarbanes-Oxley Act of 2002. Section 404(a) of the Sarbanes-Oxley Act requires issuers to publish information in their annual reports concerning the scope and adequacy of the internal control structure and procedures for financial reporting. This statement shall also assess the effectiveness of such internal controls and procedures. Section 404(b), from which EGCs are exempt, requires that the issuer s independent registered public accounting firm shall, in the same report, attest to and report on the assessment on the effectiveness of the internal control structure and procedures for financial reporting.

As an emerging growth company we are also exempt from Section 14A (a) and (b) of the Securities Exchange Act of 1934 which deal with shareholder voting as to executive compensation and golden parachutes.

We have elected to use the extended transition period for complying with new or revised accounting standards under Section 102(b)(2) of the JOBS Act, thereby allowing us to delay the adoption of new or revised accounting standards that have different effective dates for public and private companies until those standards apply to private companies. As a result of this election, our financial statements may not be comparable to those of companies that comply with public company effective dates.

It is possible that even after we lose EGC status we could still be able to qualify as a smaller reporting company as defined by Securities Exchange Act of 1934 regulations (for example, if we lose EGC status on the last day of our fiscal year following the fifth anniversary of the date of the first sale of our common equity securities pursuant to an effective Securities Act registration

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statement). Under current law, smaller reporting companies are eligible for many of the same exemptions and reduced reporting requirements as EGCs are.

Regenerative medicine industry

Historically, efforts toward preventing and treating disease focused on the use of drugs, specifically chemicals identified to alter or slow the course of a disease by selectively affecting one or a handful of molecular targets. This approach has led to the development of drugs that can combat infection, suppress cancer progression, and alleviate symptoms in numerous diseases. Unfortunately, diseases are often multifactorial and require a broader approach for effective treatment. Drawbacks of drug approaches include a) lack of target specificity that leads to complications (e.g. side effects); b) the ability of diseases to acquire resistance to the drug and c) lack of efficacy.

Regenerative medicine is the process of replacing or regenerating human cells, tissues or organs to restore or establish normal function and has been described as the "next evolution of medical treatments" and the vanguard of 21st century healthcare by the U.S. Department of Health and Human Services. This new field of medicine is expected to revolutionize health care. Our business focus is the development of regenerative medicine therapies.

Cell therapies potentially offer a complete solution for complex pathological processes that are not addressed using traditional drug approaches. Cell therapies hold the potential to regenerate damaged tissues or to stimulate the body's own repair mechanisms. By altering the course of disease, cell therapies could make it possible to eliminate the need for daily treatments, reduce hospitalizations and avert expensive medical procedures, while enabling patients to lead healthier lives.

Regenerative medicine focuses on the use of stem cells as a cell therapy. Stem cells are non-specialized cells with a potential for both self-renewal and differentiation into cell types with a specialized function, such as blood vessels, heart tissue, and pancreatic cells. Stem cells have the ability to undergo asymmetric division such that one of the two daughter cells retains the properties of the stem cell, while the other begins to differentiate into a more specialized cell type. Stem cells are therefore central to normal human growth and development, and also are a potential source of new cells for the regeneration of diseased and damaged tissue. Stem cell therapy aims to restore diseased tissue function by the replacement and/or regeneration of healthy cells.

Currently, companies and researchers are exploring two principal approaches for stem cell therapy: (i) embryonic stem cells, isolated from the inner mass of a few days old embryo; and (ii) adult stem cells, sourced from bone marrow, cord blood and various organs. Although embryonic stem cells are the easiest to grow and differentiate, their use in human therapy is limited by safety concerns associated with their tendency to develop teratomas (a type of tumor) and their potential to elicit immune rejection. In addition, embryonic stem cells have generated significant political and ethical debate due to their origin from early human embryos. Some of the drawbacks of embryonic stem cells have been recently overcome by the introduction of inducible pluripotent stem cells. These cells are generated from adult tissue by the process of reprogramming. While these cells overcome ethical issues associated with embryonic stem cell production, clinical use has not occurred to date, in part due to potential safety issues.

Adult stem cell therapy does not share the same drawbacks. Because adult stem cells have a limited ability to multiply and are more differentiated, teratoma formation has not been

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observed in clinical studies to date. In fact, adult stem cells have been used for over 4 decades in over 200,000 patients in the context of bone marrow transplantation, which is the standard of care for numerous hematological conditions including leukemia, lymphoma and other cancers. Adult stem cells do not have the ethical and political issues associated with embryonic stem cells.

Generally, adult stem cells can be isolated from either the same patient, referred to as autologous , or from a donor, referred to as allogeneic . For many adult stem cell therapies, the use of allogeneic cells is not feasible due to the immune rejection that occurs following the injection of cells from an unrelated donor. However, our ERCs possess properties such that they typically do not trigger an immune response when injected into unrelated recipients, thus allowing for allogeneic use.

Our ERCs are characterized by low to absent expression of Human Leukocyte Antigen (HLA) 2 genes.[1] HLA-2 is responsible for stimulation of immune responses against transplanted tissues or cells. Given the low expression of this molecule in ERCs, the immune system of an unmatched recipient does not "recognize" ERC as foreign, and as a result immune responses are not mediated against ERCs that are derived from a different individual. Studies supporting this include the demonstration that ERCs do not stimulate, but actively inhibit, multiplication of non-matched immune cells in vitro[2]; in addition, in vivo studies show that human ERCs mediate therapeutic effects in immune competent animals without rejection.[3] Additionally, human studies involving multiple administrations of ERCs isolated from non-matched donors have not resulted in sensitization of the patient to ERC.[4]

Since patients with metabolic, cardiovascular or chronic disease have markedly suppressed stem cell activity, the procurement of cells from young healthy donors permits the selection of stem cells with optimal activity.

Endometrial regenerative cells

We are developing an allogeneic adult stem cell product, the ERC, which we believe has potential utility for treating a broad range of diseases and could have widespread application in the field of regenerative medicine. Our product is obtained by culturing cells isolated from the menstrual blood of healthy female volunteers. By this process we have identified a novel population of stem cells that originate from the endometrium (lining of the uterus). The endometrium is the only tissue in the body that undergoes approximately 500 cycles of highly vascularized growth and regression in the lifetime of the average female. These cells appear to coordinate the monthly production of new blood vessels that occurs as part of the menstrual cycle. In a 2007 publication by Thomas E. Ichim, Ph.D., our President and Chief Scientific Officer and others, describing the discovery of these cells, we named this cell population Endometrial Regenerative Cells (ERCs).[4]

Preclinical studies by others and us indicate that ERCs can alter the immune system in a manner that is beneficial for autoimmunity. Specifically, ERCs can augment expression of immune suppressive cytokines and several immune regulatory enzymes[4,5] . In addition, in vitro and in vivo studies have shown that ERCs induce the generation of T regulatory cells.[3]

1 Meng et al. Journal of Translational Medicine. 2007 Nov 15;5:57.
2 Wang et al. Journal of Translational Medicine, 2012 Oct 5;10:207.
3 Murphy et al. Journal Translational Medicine, 2008 Aug 19;6:45.
4 Meng et al. Journal of Translational Medicine. 2007 Nov 15;5:57.
5 Peron et al. Stem Cell Review, 2012 Sep;8(3):940-52.

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We believe that ERCs confer the following advantages over other adult stem cells:

Non-invasive Method of Collection. Unlike the painful and highly invasive process of collecting bone marrow cells, our collection processes involves extraction of a small amount of menstrual blood from young healthy donors. Even other types of stem cell therapy require tissue sources that are more difficult to procure than ERCs are, for example, placental, cord blood, and adipose tissue.

ERCs are Universal Donor Stem Cells. Unlike traditional bone marrow or hematopoietic stem cell transplants that require extensive genetic matching between donor and recipient or reinsertion of a patient s own autologous cells, ERCs are administered without tissue matching or the requirement for immune suppressive drugs. ERCs are delivered to the point-of-care as a cryogenically preserved allogeneic product that is ready to use, without need for end user manipulation, in any and all patients. This feature could make it practical for clinicians to efficiently deliver stem cell therapy to large numbers of patients. Additionally, we believe commercialized ERCs will be able to provide an off-the-shelf therapy with a validated one-year storage life, comparable to the shelf life of many prescription drugs.

ERCs are Safe. Safety of ERCs has been demonstrated in pilot and preclinical studies. Animal studies in immune competent and immune deficient models have shown safety after both acute and chronic administration. Published pilot clinical trials provide evidence for human safety when ERCs are administered via intramuscular, intravenous, intracoronary, and intrathecal routes.[4,5,6] No infusion reactions or allo-sensitization has been observed in a total of 17 patients treated under our cardiac protocol as well as 4 multiple sclerosis patients, 1 Duchenne muscular dystrophy patient , and 1 heart failure patient.[7,8] We plan to conduct additional clinical trials, which we believe will further establish ERCs safety.

ERCs Should Have Advantageous Therapeutic Properties Compared to Other Adult Stem Cells. Preclinical studies conducted by us, and subsequently independently confirmed, support the belief that ERCs are superior to competitor stem cell types at stimulating new blood vessel formation, self-renewing, and immune modulating. A recent study by the National Institutes of Health demonstrated that ERCs possess 40-fold higher expression of the stem cell potency gene aldehyde dehydrogenase compared to bone marrow mesenchymal stem cells (MSCs).[6] An animal study from the University of Keio, Japan, demonstrated ERCs were more effective than bone marrow MSCs at regenerating heart muscle and reducing fibrosis after experimental myocardial infarction.[9] We plan to conduct additional clinical trials, which we believe will further establish ERCs therapeutic properties.

ERCs Can Readily Be Collected and Cultured. After culturing, one ERC donor procedure can provide 20,000 doses (100 million cells per dose) in a well validated and reproducible manner. Since the ERCs express high levels of regenerative genes (OCT4 and hTERT), they can be expanded in significantly higher numbers compared to some other kind of adult stem cells. Additionally, the rapid doubling time of ERCs compared to some other kinds of adult stem cells allows for less reagent use in production, thus providing a modest manufacturing advantage.

6 Zhong et al. Journal of Translational Medicine, 2009 Feb 20;7:15.
7 Ichim et al. International Archives of Medicine, 2010 Apr 14;3(1):5.
8 Bockeria et al. Journal of Translational Medicine, 2013 Mar 5;11:56.
9 Wang et al. Journal of Translational Medicine 2012, 10:207.

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Our Clinical Programs

Critical limb ischemia (CLI)

CLI is a debilitating condition caused by occlusion of the arteries supplying blood to the legs and feet, and is often associated with other serious conditions including hypertension, cardiovascular disease, dyslipidemia, diabetes, obesity and stroke. CLI is the most serious and advanced stage of peripheral arterial disease resulting from chronic inflammation and lipid accumulation. In addition to chronic pain, patients experience ulcers, gangrene, and high mortality. Approximately 20-45% of patients require amputation. For these patients, the 1-year mortality rate is estimated to be as high as 45%. According to the Inter-Society Consensus for the Management of Peripheral Arterial Disease (TASC II), treatment for CLI should be focused on revascularization using surgical or percutaneous means. Unfortunately, because of disease severity, less than half of the patients are eligible to undergo these procedures. For the patients that are eligible, efficacy is limited due to high levels of restenosis and the need for further surgery. Non-surgical options for CLI are limited to drug therapy, which offers minimal or no benefit. Many CLI patients are considered unsuitable for revascularization (also known as no option) as they have exhausted all other reasonable treatment options and will likely require amputation. According to the SAGE Group (2010) there are an estimated 1.1-2.0 million CLI patients that are currently ineligible for revascularization. In addition, the SAGE Group estimates the annual amputation rate due to CLI is approximately 150,000 in the US per year.

Angiogenesis, the process of making new blood vessels in tissues lacking oxygen, is an attempt by the body to correct inadequate circulation in the legs of patients with CLI. Patients who have higher propensity for angiogenesis have better outcomes and fewer amputations compared to those with lower angiogenic ability. Attempts have been made at augmenting this natural process through gene therapy by administration of HGF-1 or FGF-4 genes. Unfortunately these approaches have yielded poor results that appear to be related to the fact that the process of angiogenesis requires a coordinated symphony of cytokines. Evidence suggests that administration of stem cells, which naturally produce these cytokines in a coordinated manner, should elicit a markedly superior therapeutic effect.

Although difficult to scale up and implement, autologous bone marrow stem cell therapy has provided clinical signals that stem cell based approaches are effective in the treatment of CLI. In 2002 Tateishi-Yuyama et al treated 45 CLI patients with autologous bone marrow cells harvested from the hip and injected the cells into the gastrocnemius muscle of the ischemic leg. A statistically significant increase in ankle brachial index, transcutaneous oxygen pressure, pain free walking time, and amelioration of rest pain was observed at 4 and 24-week follow-up. Importantly, the new blood vessels that were generated in response to bone marrow cell administration were stable at 24 weeks. Additionally, clinical improvement was persistent for the length of the study follow-up, which was more than one year. Further studies have confirmed the therapeutic benefit of bone marrow administration for treatment of CLI. For example, Nizankowski et al treated 10 CLI patients with autologous bone marrow and observed improvement in circulation, walking distance and decrease in pain severity. Furthermore, Durdu et al performed intramuscular injection of autologous bone marrow mononuclear cells in 28 CLI patients. Of the 28 patients, only 1 required amputation in the one-year follow-up period. Statistically significant increases in rest pain scores, walking time, and quality of life were noted. Angiographic evidence of collateral vessel formation was observed in 22 of the patients at 6 months.

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Thus, autologous bone marrow therapy for CLI appears to be a promising solution to the current lack of treatments. However, the invasiveness of the bone marrow extraction procedure precludes many patients from therapy because of the co-morbidities of this patient population. Specifically, many vascular surgeons refuse to allow their patients to undergo the highly invasive procedure of bone marrow harvest. Additionally, it is widely accepted that bone marrow from patients with CLI have markedly impaired angiogenic properties. An "off-the-shelf" product, such as our ERC product, may overcome the current drawbacks of autologous bone marrow therapy. Specifically, our ERC therapy does not require bone marrow extraction, does not even need to be autologous, and possesses highly angiogenic properties.

Our critical limb ischemia program

Since 2008 we have developed preclinical data to support the utilization of ERCs in patients with CLI. In 2008 our President and Chief Scientific Officer, Thomas E. Ichim, Ph.D., published with Michael P. Murphy, M.D., a vascular surgeon and associate professor of surgery at Indiana University School of Medicine, who is considered an opinion leader in the CLI space, animal efficacy data demonstrating that administering ERCs in a mouse model of CLI was effective at preventing limb loss associated with experimentally induced ischemia.3 Based on this data, we applied for an Investigational New Drug (IND) application to treat 15 no option CLI patients by intramuscular administration of ERCs. The clinical protocol was cleared by the FDA in September of 2011 and granted IND #13898. As designed, the Phase I clinical trial will assess safety of 3 escalating doses of ERCs injected into 3 cohorts of 5 patients each. We anticipate starting our U.S. Phase I CLI trial during the second half of 2013. The trial will run through the fourth quarter of 2015 and we expect to dose 15 subjects.

The purpose of the trial will be to determine safety of intramuscularly delivered ERCs in patients with critical limb ischemia ineligible for revascularization. Safety will be defined as freedom from treatment associated adverse events.

In order to reduce risks associated with implementation of our FDA clinical trial, we provided our ERCs to Shanghai Jia Fu Medical Apparatus Inc., a Chinese conglomerate, to conduct a three no-option patient pilot CLI clinical study in China. The pilot CLI clinical study mirrors the Phase I CLI clinical trial we anticipate initiating in the U.S. The ERCs were shipped from Cook General BioTechnology in Bloomington, Indiana, to Shanghai, China, in a cryogenic shipping container. On arrival in Shanghai, China, and before administration to the patients, the ERCs were thawed and exceeded our viability criteria of a minimum of 70%. A total of three no-option CLI patients were injected intramuscularly (into the gastrocnemius muscle in the calf of the leg) and showed no adverse effects over the initial period of evaluation of 30 days. Patients will remain under evaluation through January 2014.

The pilot CLI clinical study was not conducted under a formal agreement with Shanghai Jia Fu Medical Apparatus Inc. and no payments were made or will be made for this study.

Under the protocol for the pilot CLI clinical study in China and also our FDA-cleared Phase I clinical trial, patients received/will receive 25, 50, or 100 million ERCs in ten injections of 2.5, 5, or 10 million ERCs suspended in a volume of 1 milliliter per injection. Injections were/will be spaced at least 2 centimeters apart from each other in the gastrocnemius muscle above the failed vascular perfusion area.

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Critical limb ischemia market

According to the SAGE Group, endovascular procedures for revascularization of CLI patients represent a market of approximately $2.9 billion annually. Despite these procedures, approximately 150,000 amputations occur each year in the U.S. due to this condition. Additionally, medical treatments for CLI, which have not demonstrated meaningful limb salvage but merely provide amelioration of symptoms, such as Alprostadil (PGE1) and Iloprost (PGI2 analogue), represent hundreds of millions of dollars in yearly drug sales for this condition alone.

Congestive heart failure (CHF)

Congestive Heart Failure (CHF) has emerged as a major chronic disease in the United States. The initial stages of heart failure are managed with medical therapy and end-stage heart failure is managed with surgical procedures in addition to medical therapy. These patients have severely compromised perfusion of the myocardium leading to angina, which significantly limits their daily activities and interferes with their rest at night. Some of the proven surgical procedures include myocardial revascularization, ventricular assist devices, and heart transplantation. Although surgical and catheter based revascularization of ischemic myocardium can treat angina, reduce the risk of myocardial infarction, and improve function of viable myocardium, these treatments cannot restore the viability of severely ischemic and/or necrotic myocardium. Many patients with reversible ischemia in regions of the myocardium are not amenable to Coronary Artery Bypass Graft (CABG) or Percutaneous Transluminal Coronary Angioplasty (PTCA).

A major advance in the treatment of CHF would be to reverse this condition of ischemia and to restore perfusion within the affected area of the myocardium. Thus, the aim of stem cell based therapies is to repopulate the myocardium with cells that may restore blood supply, improve cardiac function and thereby enhance the patient s quality of life.

Our congestive heart failure (CHF) program

In January 2012, we announced the initiation of our RECOVER-ERC (Non-Revascularizable IschEmic Cardiomyopathy treated with Retrograde COronary Sinus Venous DElivery of Cell TheRapy) Phase II clinical trial. Although we refer to this CHF clinical trial as a Phase II clinical trial (as it is a study to establish safety and efficacy), the FDA has not approved or cleared any clinical trials of ERCs for CHF in the U.S. or any other country. The FDA has no jurisdiction over our Russian clinical trial in CHF; however, we have structured and are endeavoring to conduct this trial in conformity with FDA guidelines, and this trial has been approved by Russian authorities.

This trial is being conducted at the Bakulev Scientific Center for Cardiovascular Surgery, Moscow, Russia, in collaboration with ERCell LLC, our majority owned Moscow-based ERC Russia/ Commonwealth of Independent States commercialization subsidiary. The trial is a 60 patient double blind placebo controlled study evaluating safety and efficacy of ERCs in end stage CHF patients. Patients will be randomized into 3 groups of 20 patients each, with 15 patients receiving ERCs and 5 patients receiving placebo per group. Group 1 will receive 50 million ERCs, Group 2 will receive 100 million ERCs, and Group 3 will receive 200 million ERCs. Cells are administered via our patent-pending catheter-based retrograde administration technique into the coronary sinus. Intra-coronary sinus administration is a minimally invasive 30-minute procedure. Efficacy endpoints include ECHO and MRI analysis, conducted at 6 months after treatment with additional assessments at 12 months. To date 18 patients have entered the trial.

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The process of retrograde administration into the coronary sinus involves temporary occlusion of afferent coronary circulation by means of a balloon catheter followed by administration against the outflowing blood. This results in the solution entering the myocardium via post capillary venules. In contrast to arterioles or capillaries, post-capillary venules have the smallest vessel diameter and conceptually would allow for greatest transfer of material into the heart muscle. Given that MSC, hematopoietic stem cell, and various tissue specific progenitors migrate into tissue using similar mechanisms/molecules of extravasation as activated leukocytes, it is reasonable to directly deliver cells to exit ports within the coronary microcirculation as compared to intra-arterially. The procedure used in the clinical trial takes approximately 30 minutes to complete and involves administration of 40 ml volume of cells in retrograde against a balloon that is inflated for 10 minutes.[10]

The Principal Investigator of the RECOVER-ERC trial is Leo Bockeria, M.D., Chairman of the Bakulev Center and Academician of the Russian Academy of Science. The Bakulev Center is Russia's premier institute for cardiovascular surgery and cardiology. Every year the Bakulev Center performs approximately 30,000 procedures including 7,000 open heart surgeries and more than 12,000 angioplasties. The International Principal Investigator for the trial is Amit Patel, M.D., Director of Clinical Regenerative Medicine at University of Utah, who is the first physician to administer stem cells into the human heart and is currently running 17 FDA clinical trials in regenerative medicine. Safety oversight for the trial is performed by the independent Data Safety Monitoring Board, which is chaired by Warren Sherman, M.D., Director of Cardiac Cell-Based Endovascular Therapies at Columbia University Medical Center. We anticipate completion of this clinical trial by the first quarter of 2015.

As noted above, the Russian regulatory system does not use "Phase" nomenclature and the FDA has not approved or cleared any clinical trials of ERCs for CHF in the U.S. or any other country. The FDA has no jurisdiction over our Russian clinical trial in CHF; however, we have structured and are endeavoring to conduct this trial in conformity with FDA guidelines, and this trial has been approved by Russian authorities. Nonetheless, we refer to the CHF clinical trial being conducted at the Bakulev Scientific Center for Cardiovascular Surgery as a Phase II clinical trial, as it is a study to establish safety and efficacy. Investors and authorities in the United States often consider that clinical trial results from trials not conducted in the United States or Western Europe are less reliable than those from trials conducted in the United States or Western Europe. Therefore it is possible the FDA may not honor some or all the data derived from this trial.

We are providing sponsorship and funding through ERCell, LLC, our majority owned Moscow-based subsidiary, for the RECOVER-ERC trial. ERCell, LLC is utilizing Cromos Pharma, LLC as the contract research organization (CRO) for the RECOVER-ERC trial. Cromos Pharma, LLC is an entity controlled by Vladimir Bogin, our Chairman of the board of directors, however, Dr. Bogin has recused himself from the conduct of the study.

Congestive heart failure market

We believe CHF represents a large and expanding market opportunity for our products. Heart failure is believed to affect at least 5.7 million adult Americans or 2.4% of the adult population and costs the US healthcare system approximately $35 billion per year in direct medical expenses. Heart failure patients account for approximately 10 million office visits per year. Heart failure incidence

[10] Bockeria et al. Journal of Translational Medicine 2013 Mar 5;11:56.

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exceeds 700,000 new cases per year in the US. Given the aging population this incidence is expected to rise. In 2007, there were 277,000 deaths documented in the US as a direct result of heart failure. Sales of palliative medications for heart failure in the US exceed $3 billion per year.

Type 1 Diabetes

Type 1 Diabetes, commonly known as juvenile diabetes or insulin-dependent diabetes, is an autoimmune disorder that attacks and destroys insulin producing islet cells in the pancreas causing glucose accumulation. As a result, those suffering from Type 1 Diabetes must take insulin injections over the course of their lifetime to regulate blood sugar levels. Over time, poorly controlled diabetes can lead to serious health conditions, including heart disease, stroke, blindness, amputations, kidney disease and nerve damage.

Type 1 Diabetes program

We have discovered that ERCs are capable of suppressing pathological immune responses that are associated with Type 1 Diabetes. In 2008, our President and Chief Scientific Officer, Thomas E. Ichim, published results of preclinical research indicating that ERCs can inhibit production of interferon gamma, a cytokine associated with diabetes progression, and augment production of interleukin 4, a cytokine that protects animals from diabetes. Subsequently we generated data demonstrating that administration of ERCs can protect mice from immunological-mediated diabetes in the Non Obese Diabetes model.

On March 2, 2012, we licensed from Yale University U.S. patent application number 61/510,812 (and all foreign equivalents thereof) covering the use of ERCs as a source of insulin producing cells. Under the license agreement we received an exclusive worldwide license to develop and commercialize the licensed products. The license agreement called for a $5,000 payment on execution of the agreement and annual minimum-royalty license maintenance payments of $5,000, $6,000, $7,500 and $9,000 on the first four anniversaries of the date of the agreement and $12,000 on each anniversary thereafter. In addition, the agreement calls for us to pay a milestone payment of $100,000 when we initiate a Phase I clinical trial of a licensed product and a milestone payment of $1,000,000 when we obtain a biologics license application approval from the FDA. Yale is also entitled to a 2% royalty payment on net sales of licensed products. We are responsible for all past, present and future patent and patent application filing, prosecution and maintenance costs. Yale can terminate the license if we have not initiated a Phase I clinical trial of a licensed product by the fifth anniversary of the date of the agreement. The term of this license will automatically expire, on a country-by-country basis, on the date on which the last of the claims of the patent expires, lapses or is declared to be invalid by a non-appealable decision of a court or other authority of competent jurisdiction through no fault or cause by us.

Hugh Taylor, M.D., who sits on our Scientific Advisory Board, is inventor of this technology and has published preclinical animal data demonstrating de novo production of insulin from ERC derived cells. Dr. Taylor is Professor of Obstetrics, Gynecology, and Reproductive Sciences, Professor of Molecular, Cellular, and Developmental Biology, and Professor of Women's Health at Yale, and is Chief of Obstetrics and Gynecology at Yale-New Haven Hospital. Based on demonstrated safety data of ERCs, as well as a FDA-cleared IND for another indication, we anticipate filing an IND application for using ERCs for treatment of Type 1 Diabetes. We anticipate completing a US preclinical study by the second half of 2014.

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Type 1 Diabetes market

The incidence of Type 1 Diabetes has been increasing for the last 3-4 decades in the US, Europe and Australia. What is quite striking is that the disease is occurring much earlier in life. In European children 1-5 years of age the incidence is increasing at a rate of 5.4% annually, a rate much higher than other age groups. This increase in incidence will lead to a doubling of the number of cases in that age group in Europe in this decade. Similar trends are being seen in the US. According to the Juvenile Diabetes Research Foundation an estimated three million Americans have Type 1 Diabetes. Currently, each diabetic patient costs the U.S. health care system more than $10,000 per year. Insulin sales in the US for Type 1 Diabetics are $2 billion per year. Complications of Type 1 Diabetes such as blindness, renal failure, peripheral artery disease and heart disease cost the healthcare system approximately $14.9 billion per year.

Commercialization strategy

The key elements of our commercialization strategy are outlined below:

Efficiently Conduct Clinical Development to Establish Clinical Proof of Concept with our Lead Product Candidates. ERCs represent a novel therapeutic modality for the treatment of ischemia, CHF, and autoimmune diseases such as Type 1 Diabetes. ERCs may be administered intravenously, via catheter, intrathecally or by local injection. The cells appear to be responsive to their environment, homing to sites of injury and producing proteins such as cytokines and MMPs that may provide benefit in acute or chronic conditions. Additionally, ERCs may deliver therapeutic benefit through several distinct mechanisms of action, including stimulation of angiogenesis, reducing inflammation, and promoting tissue repair. We are conducting and planning a number of clinical studies with the intent to establish proof of concept in a number of important disease areas where the cell therapies would be expected to have benefit such as CLI and CHF. These studies do not feature large patient populations. Our focus is on conducting well-designed studies early in the clinical development process to establish a robust foundation for subsequent development, partnering activity and expansion into complementary areas. We are committed to a rigorous clinical and regulatory framework, which we believe has helped us to advance our programs efficiently, providing high quality, transparent regulatory submissions.

Continue to Refine and Improve our Manufacturing and Related Processes and Deepen our Understanding of Therapeutic Mechanisms of Action. A key aspect of the ERC product is its substantial expansion capacity in tissue culture relative to other stem cell types. This enables industrial scale production, which allows for greater consistency, specificity and cost of goods advantages over other stem cell therapies. We plan to build on this intrinsic biological advantage by continuing to advance and optimize our production and process development approaches, further developing new manufacturing techniques, and optimizing the supply chain to support late-stage development and commercialization of the ERCs. Additionally, we will continue to refine our understanding of our products activities and mechanisms of action to enable optimization of administration and dosing and to prepare the foundation for product enhancements and next generation opportunities.

Enter into Licensing or Product Co-Development Arrangements in Core Areas, while Out-Licensing Opportunities in Non-Core Areas. In addition to our internal development efforts, an important part of our product development strategy is to work with collaborators and partners to accelerate product development, reduce our development costs, and broaden our

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commercial access. We will seek to enter into licensing and product co-development arrangements with qualified commercial partners to achieve these objectives.

Efficiently Explore New High Potential Therapeutic Applications, Leveraging Third-Party Research Collaborations and our Results from Related Areas. Our strategy includes establishing collaborative research relationships with investigators from research and clinical institutions across the United States, Asia and Europe. Some of these institutions at which we have, at some level, already established such relationships include: Yale University, Harvard University, University of California San Diego, University of Utah, Indiana University, University of Florida, and the University of Western Ontario. Through this network of collaborations, we have studied the effects of ERCs in a range of preclinical models that reflect various types of human disease or injury in the cardiovascular, neurological, and immunological areas. These collaborative relationships have enabled us to cost effectively explore where ERCs may have therapeutic relevance. We will seek to expand and deepen such relationships.

Continue to Expand our Intellectual Property Portfolio. We have an intellectual property estate that covers our proprietary products, and technologies, as well as methods of production and methods of use. Our intellectual property is important to our business and we take significant steps to protect its value. To maximize this value, it is important that valid patents ultimately are issued based upon our current and future patent applications. We have ongoing research and development efforts, both through internal activities and through collaborative research activities with others, which aim to develop new intellectual property and enable us to file patent applications that cover new uses of our existing technologies or product candidates, including ERC and other opportunities.

Intellectual property

Our strategy is to establish an extensive portfolio of intellectual property. Part of our intellectual property portfolio consists of technology, trade secrets and know-how that we protect from being appropriated by third parties through the use of confidentiality agreements with our employees and licensees. Additionally, we are in the process of obtaining further protection for some of our intellectual property by filing patent applications with the United States Patent and Trademark Office ("PTO") and under the Patent Cooperation Treaty ("PCT"). If we do not obtain patent protection for our business, we would be subject to copycat competition and our business could suffer. We own (or in one case as noted below, we license-in) the following issued US patent and patent applications:

PATENT #	PATENT NAME	EXPIRATION DATE
8,241,621(1)	STEM CELL MEDIATED TREG ACTIVATION/EXPANSION FOR THERAPEUTIC IMMUNE MODULATION	12/18/26
PATENT APPLICATION #	**PATENT APPLICATION NAME**	**FILING DATE**
11/353,692	METHOD FOR EXPANSION OF STEM CELLS	2/14/06
11/486,635	COMPOSITIONS OF PLACENTALLY-DERIVED STEM CELLS FOR THE TREATMENT OF CANCER	7/13/06
12/098,420	STEM CELL THERAPY FOR THE TREATMENT OF AUTISM AND OTHER DISORDERS	4/5/08

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PATENT #	PATENT NAME	EXPIRATION DATE
12/127,697	ENDOMETRIAL STEM CELLS AND METHODS OF MAKING AND USING SAME	5/27/08
12/470,438	STEM CELL THERAPY FOR BLOOD VESSEL DEGENERATION	5/21/09
12/730,145	TREATMENT OF MUSCULAR DYSTROPHY	3/23/10
12/823,960	METHOD FOR EXPANSION OF STEM CELLS	6/25/10
13/688,864	METHODS OF INDUCING CELL DIFFERENTIATION WITH PLACENTAL EXTRACTS	11/29/12
12/681,600	COMPOSITIONS AND METHODS OF STEM CELL THERAPY FOR AUTISM	10/3/08
12/442,356	**ALLOGENEIC STEM CELL TRANSPLANTS IN NON-CONDITIONED RECIPIENTS**	**9/20/07**
13/756,310	THERAPEUTIC IMMUNE MODULATION BY STEM CELL SECRETED EXOSOMES	**1/31/13**
PCT/US2012/047611(2)	ENDOMETRIAL DERIVED STEM CELLS AND THEIR METHODS OF USE	**7/20/12**
PROVISIONAL APPLICATION #(3)	**APPLICATION NAME**	**FILING DATE**
61/618974	ENDOMETRIAL REGENERATIVE CELLS FOR TREATMENT OF TRAUMATIC BRAIN INJURY	3/30/13
61/566460	RETROGRADE DELIVERY OF CELLS AND NUCLEIC ACIDS FOR TREATMENT OF CARDIOVASCULAR DISEASES	12/3/12
61/867955	TREATMENT OF MUSCULOSKELETAL DEFECTS UTILIZING ENDOMETRIAL REGENERATIVE CELLS	8/20/13
61/625657	STEM CELLS AND STEM CELL GENERATED NANOPARTICLES FOR TREATMENT OF INFLAMMATORY CONDITIONS AND ACUTE RADIATION SYNDROME	4/17/13
61/885909	TOLEROGENIC USES OF ENDOMETRIAL REGENERATIVE CELLS	10/2/13

(1) On July 10, 2013 we entered into an agreement granting Cytori Therapeutics, Inc., an exclusive license to use our US patent #8,241,621, Stem Cell Mediated Treg Activation in the US and its territories for the field of autoimmune disease. Under the license agreement we received a one-time $10,000 licensing fee and are entitled to an annual royalty payment of 3.5% on net sales of licensed products. The term of this license agreement will automatically expire on the date on which the last of the claims of the patent expires, lapses or is declared to be invalid by a non-appealable decision of a court or other authority of

competent jurisdiction. However, we do not expect to receive material revenue from this source for several years, if ever.

(2) Licensed from Yale University

(3) The term Provisional indicates that a US Provisional patent application was filed with the PTO. A provisional application is a legal document that establishes an early filing date, but which cannot potentially result in an issued patent unless the applicant files a regular non-provisional patent application within one year.

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Manufacturing and sources of supply

Although we have no internal manufacturing activities, we have a cancellable manufacturing agreement with Cook General BioTechnology, LLC, to produce our ERCs under current good manufacturing practices (cGMP). Currently Cook is a sole-source provider and if we were to lose our arrangement with Cook we would experience a short-term disruption until we could procure alternate manufacturing. Although we require access to sources of adult endometrial stem cells to support our research and development activities, such donor sources are readily available.

Laboratory facilities

We require access to laboratory equipment and facilities to support our business activities, which we obtain through outsourcing agreements and collaborations with third parties. We do not consider access to laboratory equipment and facilities to be a significant risk in pursuing our business interests.

Competition

The biotechnology industry is characterized by rapidly evolving technology and intense competition. Although we are not aware of any competitors using ERCs as a therapy, our competitors include startup, development-stage, and major commercial companies offering services, techniques, treatments and services for producing, processing and marketing stem cell derived therapies from all classes of adult stem cells, as well as competing therapies that do not involve stem cells. Some of these companies are well established and possess technical, research and development, financial, manufacturing, reputational, regulatory affairs, and sales and marketing resources significantly greater than ours. In addition, many smaller biotech companies have formed strategic collaborations, partnerships and other types of alliances with larger, well-established industry competitors that afford these companies potential research and development and commercialization advantages in product areas currently being pursued by us. Academic institutions and other public and private research organizations are also conducting and financing research activities which may produce products and processes directly competitive to those being commercialized by us. Moreover, many of these competitors may be able to obtain patent protection, obtain FDA and other regulatory approvals and begin commercial sales of their products before we do. Competitors focusing primarily on stem cells include Aastrom Biosciences, Inc., Advanced Stem Cell Technology, Inc., Athersys, Inc., Biomet, Inc., Cytomedix, Inc., Harvest Technologies Corporation, International Stem Cell Corporation, Mesoblast Limited, Opexa Therapeutics, Osiris Therapeutics, Inc., Pluristem Therapeutics, Inc., and Stem Cells, Inc.

Regulatory approval (FDA)

The FDA approval process required to be complied with in order to market our potential products and therapeutics in the United States includes the following five steps:

Preclinical laboratory and animal tests must be conducted. Preclinical tests include laboratory evaluation of the cells and the formulation intended for use in humans for quality and consistency. In vivo studies are performed in normal animals and specific disease models to assess the potential safety and efficacy of the cell therapy product. Additional testing required includes identification of cellular distribution in animals, observation for potential of cellular transformation, and assurance that ectopic tissue is not formed as a result of cell administration.

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An investigational new drug application, or IND, must be submitted to the FDA, and the IND must become effective before human clinical trials in the United States may commence. The IND submitted to the FDA contains, among other things, preclinical data, a proposed development plan and a proposed protocol for a study in humans. The IND becomes effective 30 days following receipt by the FDA, provided there are no questions, requests for delay or objections from the FDA. If the FDA has questions or concerns, it notifies the sponsor, and the IND will then be on clinical hold until a satisfactory response is made by the sponsor. In some situations the sponsor may be the investigator performing the clinical trial, in such situations the IND is said to be "Investigator Initiated".

Adequate and well-controlled human clinical trials must be conducted to establish the safety and efficacy of the product. Clinical trials involve the evaluation of a potential product under the supervision of a qualified physician, in accordance with a protocol that details the objectives of the study, the parameters to be used to monitor safety and the efficacy criteria to be evaluated. Each protocol is submitted to the FDA as part of the IND. The protocol for each clinical study must be approved by an independent institutional review board, or IRB, of the institution at which the study is conducted, and an informed consent of all participants must be obtained. The IRB reviews the existing information on the product, considers ethical factors, the safety of human subjects, the potential benefits of the therapy, the scientific/medical knowledge that will be generated from the study and the possible liability of the institution. The IRB is responsible for ongoing safety assessment of the subjects during the clinical investigation. Clinical development is traditionally conducted in three sequential phases.

Phase I studies are designed to evaluate safety in a small number of subjects in a selected patient population by assessing adverse effects, and may include multiple dose levels. This study may also gather preliminary evidence of a beneficial effect on the disease. Unlike pharmaceutical therapeutics in which Phase I trials are usually conducted in healthy volunteers, cell therapy Phase I studies are usually performed in patients afflicted with the indication for which the therapeutic is being developed to treat.

Phase II may involve studies in a limited patient population to determine biological and clinical effects of the product and to identify possible adverse effects and safety risks of the product in the selected patient population.

Phase III trials would be undertaken to conclusively demonstrate clinical benefit or effect and to test further for safety within a broader patient population, generally at multiple study sites. Generally Phase III trials are performed in a double blind manner, meaning that neither the physician nor the patient know whether an active treatment or a placebo is being administered.

Marketing authorization applications must be submitted to the FDA. In the area of biologics, such as cell therapy, the authorization for marketing is made under a Biologics License Application (BLA). The results of the preclinical studies and clinical studies are submitted to the FDA in the form of marketing approval authorization applications.

The FDA must approve the applications before any commercial sale or practice of the technology or product. Biologic product manufacturing establishments located in certain states also may be subject to separate regulatory and licensing requirements. The time for approval is affected by a number of factors, including relative risks and benefits demonstrated in clinical trials, the availability of alternative treatments and the severity of the disease, and animal studies or clinical trials that may be requested during the FDA review period.

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In September 2011, we received FDA clearance to initiate a dose-escalating Phase I clinical trial in patients with critical limb ischemia using our ERCs. We have not yet commenced this clinical trial. Continuation of clinical development will require substantial time, effort and expense.

Our research and development is based largely on the use of human stem and progenitor cells. The FDA has initiated a risk-based approach to regulating human cell, tissue and cellular and tissue-based products and has published current Good Tissue Practices and Good Manufacturing Practices regulations and guidance. As part of this approach, the FDA has published final rules for registration of establishments that engage in the recovery, screening, testing, processing, storage or distribution of human cells, tissues, and cellular and tissue-based products, and for the listing of such products. While we believe we are in compliance with all such practices and regulation, we are not required to register until we apply for licensure from the FDA for our product, subject to successful completion of human trials. In addition, the FDA has published rules for making suitability and eligibility determinations for donors of cells and tissue and for current Good Tissue Practices for manufacturers using them, which have recently taken effect. We cannot now determine the full effects of this regulatory initiative, including precisely how it may affect the clarity of regulatory obligations and the extent of regulatory burdens associated with our stem cell research and the manufacture and marketing of stem cell products.

Research and development

We spent $481,286 and $353,408 on research and development activities in the years ended December 31, 2012 and 2011, respectively. In the nine months ended September 30, 2013 we spent $274,637 and in the nine months ended September 30, 2012 we spent $418,594.

Employees

As of December 31, 2012, we employed three full-time and one part-time employees. None of our employees are represented by a union or other collective bargaining agreement, and we consider our relations with our employees to be good. Our business model relies heavily on the outsourcing of research and development and general and administrative activities. We have established affiliations with numerous organizations throughout the world to help support our biotech activities.

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Medistem management s discussion and analysis of financial condition and results of operations

Special note regarding forward-looking statements

In this document we make a number of statements, referred to as "forward-looking statements," that are intended to convey our expectations or predictions regarding the occurrence of possible future events or the existence of trends and factors that may impact our future plans and operating results. The safe harbor for forward-looking statements provided by the Private Securities Litigation Reform Act of 1995 does not apply to us. We note, however, that these forward-looking statements are derived, in part, from various assumptions and analyses we have made in the context of our current business plan and information currently available to us and in light of our experience and perceptions of historical trends, current conditions and expected future developments and other factors we believe to be appropriate in the circumstances. You can generally identify forward-looking statements through words and phrases such as WILL, "SEEK", "ANTICIPATE", "BELIEVE", "ESTIMATE", "EXPECT", "INTEND", "PLAN", "BUDGET", "PROJECT", "MAY BE", "MAY CONTINUE", "MAY LIKELY RESULT", and similar expressions. When reading any forward looking-statement you should remain mindful that all forward-looking statements are inherently uncertain as they are based on current expectations and assumptions concerning future events or future performance of our company, and that actual results or developments may vary substantially from those expected as expressed in or implied by that statement for a number of reasons or factors, including those relating to:

- whether or not markets for our products develop and, if they do develop, the pace at which they develop;
- our ability to attract and retain the qualified personnel to implement our growth strategies;
- our ability to obtain approval from the Food and Drug Administration for our products;
- our ability to obtain and then protect the patents on our proprietary technology;
- our ability to fund our short-term and long-term operating needs;
- changes in our business plan and corporate strategies; and
- other risks and uncertainties discussed in greater detail in the sections of this document, including those captioned "Risk Factors and "Management s Discussion and Analysis Of Financial Condition and Results of Operations.

Each forward-looking statement should be read in context with, and with an understanding of, the various other disclosures concerning our company and our business made elsewhere in this document as well as other public reports filed with the United States Securities and Exchange Commission (the "SEC"). You should not place undue reliance on any forward-looking statement as a prediction of actual results or developments. We are not obligated to update or revise any forward-looking statement contained in this document to reflect new events or circumstances unless and to the extent required by applicable law.

Overview

We are a pre-revenue therapeutics company focused on the emerging field of regenerative medicine.

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We are developing the Endometrial Regenerative Cell (ERC) universal donor adult stem cell product (ERC-124). ERCs were discovered by us in 2007, and preclinical tests have shown their likely ability to promote new blood vessel formation (angiogenesis), reduce inflammation, regulate immune system function, and augment tissue repair and healing. We believe the ERC-124 product has the potential to treat a range of diseases, including ischemic conditions, cardiovascular disease, certain neurological diseases, autoimmune diseases (such as Type 1 Diabetes), kidney failure, liver failure, pulmonary diseases and a range of orphan disease indications.

Our primary focus is to address the unmet medical needs in Critical Limb Ischemia (CLI), Congestive Heart Failure (CHF), and Type 1 Diabetes. We have been cleared by the Food and Drug Administration (FDA) to begin clinical studies of ERC-124 in the United States for CLI. In addition, we have initiated a Phase II[1] clinical trial in CHF in collaboration with the Bakulev Scientific Center for Cardiovascular Surgery, located in Moscow, Russia.

Results of operations

THREE MONTHS ENDED SEPTEMBER 30, 2013 COMPARED TO THE THREE MONTHS ENDED SEPTEMBER 30, 2012.

Revenues

	Revenue	Change From Prior Year	Three Months Ended September 30, Percent Change From Prior Year
2013	$ 10,000	$ 10,000	N/A
2012			

Revenue generated for the three months ended September 30, 2013 was from a one-time exclusive license of a non-core patent to an unrelated party. We do not anticipate generating additional revenues in the year ended December 31, 2013.

Research and development (R&D) expenses

	Research & Development	Change From Prior Year	Three Months Ended September 30, Percent Change From Prior Year
2013	$ 65,354	$ (52,050)	-44%
2012	117,404		

Research and development expenses are comprised primarily of contracted research payments, the cost of internal research personnel, the cost of cell manufacturing, expensing our costs related to our intellectual property and travel expense. For the three months ended September 30, 2013,

[1] The Russian regulatory system does not use Phase nomenclature and the FDA has not approved or cleared any clinical trials of ERCs for CHF in the U.S. or any other country. The FDA has no jurisdiction over our Russian clinical trial in CHF; however, we have structured and are endeavoring to conduct this trial in conformity with FDA guidelines, and this trial has been approved by Russian authorities.

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research and development expenses decreased $52,050 or 44% over the three months ended September 30 of the prior year, primarily due to decreased study expenses related to our Phase II CHF clinical study at the Bakulev Scientific Center for Cardiovascular Surgery.

As we continue to recruit subjects for our Phase II CHF study in Russia, we anticipate contract research and development expenses to increase through the remainder of 2013. We also expect increased ERC production and shipment expenses as ERC-124 inventories are replenished at the Bakulev Scientific Center for Cardiovascular Surgery.

General and administrative expenses

		Three months ended September 30,	
	General and Administrative	Change From Prior Year	Percent Change From Prior Year
2013	$ 201,437	$ 116,621	137%
2012	84,816		

General and administrative expenses are comprised primarily of internal personnel expenses; non-cash compensation; professional fees and marketing efforts. For the three months ended September 30, 2013, general and administrative expenses increased $116,621 or 137% over the three months ended September 30 of the prior year, primarily due to increased stock-based compensation combined with accounting and legal fees associated with returning to a public reporting status.

We expect general and administrative expenses to increase through the remainder of 2013 as we complete our efforts to return to a public reporting status. Once the non-recurring efforts to return to a public reporting status are complete, we anticipate continued increased professional fee expenses associated with ongoing public reporting requirements and increased use of outside accounting and legal services for our continued operations and any financings.

Operating loss

		Three Months Ended September 30,	
	Operating Loss	Change From Prior Year	Percent Change From Prior Year
2013	$ (256,791)	$ 54,571	27%
2012	(202,220)		

For the three months ended September 30, 2013, the operating loss increased $54,571, or 27% over the three months ended September 30 of the prior year due to increased general and administrative expenses, the specifics of which are described above.

We expect to incur continued operating losses through the remainder of 2013 as we continue to develop ERC therapies.

Interest expense

		Three months ended September 30,	
	Interest Expense	Change From Prior Year	Percent Change From Prior Year

2013	$ (10,169)	$ 6,835	205%
2012	(3,334)		

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Interest expense is comprised primarily of interest accrued on our convertible debt and interest incurred on trade payables. For the three months ended September 30, 2013, interest expense increased $6,835 or 205% over the three months ended September 30 of the prior year due to higher convertible debt and trade payable balances.

Income tax provision

We are in a taxable loss position. We do not expect to incur income tax expense in the immediate future.

Net Loss

	Three months Ended September 30,		
	Net Loss	Change From Prior Year	Percent Change From Prior Year
2013	$ (266,960)	$ 61,406	30%
2012	(205,554)		

For the three months ended September 30, 2013, the net loss increased $61,406, or 30%, due to increased general and administrative expenses, the specifics of which are described above.

Nine months ended September 30, 2013 compared to nine months ended September 30, 2012.

Revenues

	Nine Months Ended September 30,		
	Revenue	Change From Prior Year	Percent Change From Prior Year
2013	$ 10,000	$ 10,000	N/A
2012			

Revenue generated for the nine months ended September 30, 2013 was from a one-time, exclusive license of a non-core patent to an unrelated party. We do not anticipate generating additional revenues in the year ended December 31, 2013.

Research and development (R&D) expenses

	Nine months ended September 30,		
	Research & Development	Change From Prior Year	Percent Change From Prior Year
2013	$ 274,637	$ (143,957)	-34%
2012	418,594		

Research and development expenses are comprised primarily of contracted research payments, the cost of internal research personnel, the cost of cell manufacturing, expensing our costs related to our intellectual property and travel expense. For the nine months ended September 30, 2013, research and development expenses decreased $143,957 or 34% over the nine months ended September 30 of the prior year, primarily due to decreased study expenses related to our Phase II CHF clinical study at the Bakulev Scientific Center for Cardiovascular Surgery.

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As we continue to recruit subjects for our Phase II CHF study in Russia, we anticipate contract research and development expenses to increase through the remainder of 2013. We also expect increased ERC-124 production and shipment expenses as ERC-124 inventories are replenished at the Bakulev Scientific Center for Cardiovascular Surgery.

General and administrative expenses

	General And Administrative	Nine Months Ended September 30, Change From Prior Year	Percent Change From Prior Year
2013	$ 569,711	$ 233,654	70%
2012	336,057		

General and administrative expenses are comprised primarily of internal personnel expenses; non-cash compensation; professional fees and marketing efforts. For the nine months ended September 30, 2013, general and administrative expenses increased $233,654 or 70% over the nine months ended September 30 of the prior year, primarily due to $287,615 of restricted share and stock option issuance expense and accounting and legal fees associated with returning to a public reporting status offset by reductions in discretionary expenditures.

We expect general and administrative expenses to increase through the remainder of 2013 as we complete our efforts to return to a public reporting status. Once the non-recurring efforts to return to a public reporting status are complete, we anticipate continued increased professional fee expenses associated with ongoing public reporting requirements and increased use of outside accounting and legal services for our continued operations and any financings.

Operating loss

	Operating Loss	Nine Months Ended September 30, Change From Prior Year	Percent Change From Prior Year
2013	$ (834,348)	$ 79,697	11%
2012	(754,651)		

For the nine months ended September 30, 2013, the operating loss increased $79,697, or 11%, due to increased general and administrative expenses offset by reduced research and development expenses, the specifics of which are described above.

We expect to incur continued operating losses through the remainder of 2013 as we continue to develop ERC-124 therapies.

Interest expense

	Interest Expense	Nine Months Ended September 30, Change From Prior Year	Percent Change From Prior Year
2013	$ (21,874)	$ 8,212	60%

2012	(13,662)

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Interest expense is comprised primarily of interest accrued on our convertible debt and interest incurred on trade payables. For the nine months ended September 30, 2013, interest expense increased $8,212, or 60%, over the nine months ended September 30 of the prior year due to higher convertible note and trade payable balances.

Income tax provision

We are in a taxable loss position. We do not expect to incur income tax expense in the immediate future.

Net loss

	Net Loss	Nine Months Ended September 30, Change From Prior Year	Percent Change From Prior Year
2013	$ (856,222)	$ 87,909	11%
2012	(768,313)		

For the nine months ended September 30, 2013, the net loss increased $87,909, or 11%, over the nine months ended September 30 of the prior year due to increased general and administrative expenses offset by lower research and development expenses, the specifics of which are described above.

Liquidity and capital resources

We require significant additional cash resources to fund the expenditures necessary to maintain our operating infrastructure, to pay for research and development activities, and to pay our personnel and management team. As we seek to further expand our pre-clinical and clinical programs and expand our intellectual property portfolio, we will need cash to fund such activities and enable in-licensing opportunities and other research and development endeavors.

We have historically relied on financing activities to provide the cash needed for our operating expenses. At December 31, 2012 we had cash of $6,654. As of September 30, 2013 we had cash of $510,886.

We expect that cash infusions from future equity or debt offerings, or both, will permit us to finance our existing operating activities for the next twelve months. Without such financings, however, we would be unable to continue operations. There can be no assurance that such equity or borrowings will be available or, if available, will be at rates or prices acceptable to us. Our auditor has stated in the audit report that there is substantial doubt about our ability to continue as a going concern. Furthermore, in connection with the merger, Medistem incurred an additional $700,000 in debt financing from Intrexon and is subject to certain restrictive covenants under the merger agreement, which could prevent it from obtaining additional equity or debt financing on favorable terms, if at all.

Cash flows

Operating activities

Cash used for operating activities for the nine months ended September 30, 2013 was $375,468 compared to $549,714 for the nine months ended September 30, 2012. The decrease relates

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primarily to a $158,077 increase in accounts payable and an increase of $167,814 in non-cash compensation for the 2013 period.

Investing activities

We had no material cash flows for investing activities for the nine months ended September 30, 2013 and 2012

Financing activities

Cash provided by financing activities for the nine months ended September 30, 2013 totaled $879,700 compared to $498,420 for the nine months ended September 30, 2012. Funds were secured through the issuance of common stock and convertible notes.

Off-balance sheet arrangements

We have no off-balance sheet arrangements.

Critical accounting policies, judgments and estimates

Significant recent accounting pronouncements

Management has evaluated significant recent accounting pronouncements that are not yet effective for the Company and does not believe any such pronouncements will have a significant effect on our present or future financial statements.

Use of estimates

The preparation of financial statements in conformity with United States generally accepted accounting principles (GAAP) requires management to make estimates and assumptions that affect the amounts reported in the financial statements and disclosures made in the accompanying notes to the financial statements. Actual results could differ materially from those estimates.

Cash and cash equivalents

Accounting standards define "cash and cash equivalents" as any short-term, highly liquid investment that is both readily convertible to known amounts of cash and so near their maturity that they present insignificant risk of changes in value because of changes in interest rates. For the purpose of financial statement presentation, we consider all highly liquid investment instruments with original maturities of three months or less when purchased, or any investment redeemable without penalty or loss of interest, to be cash equivalents. As of September 30, 2013 and 2012, we had no assets that were classified as cash equivalents.

*Fair value of financial instrument*s

The carrying amount of our cash, accounts payable and accrued liabilities approximates their estimated fair values due to the short-term maturities of those financial instruments. The carrying amount of the notes payable approximates their fair value due to the short maturity of the notes and as the interest rate approximates current market interest rates for similar instruments.

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The Company does not have any assets or liabilities that are measured at fair value on a recurring or non-recurring basis.

Concentration of credit risk

Cash is maintained at one financial institution in two checking accounts. At September 30, 2013, the Federal Deposit Insurance Corporation s maximum level of deposit insurance at financial institutions was $250,000. Our cash balances are above such insured amounts for the period ended September 30, 2013 and were below such insured amounts for the period ended December 31, 2012.

Long-lived assets

ASC 360 "Impairment or Disposal of Long-Lived Assets" requires that long-lived assets be reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable.

We evaluate long-lived assets for impairment annually or whenever changes in circumstances indicate that the carrying amount of the 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 future undiscounted cash flows expected to be generated by the asset. If assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amounts exceed the fair values of the assets. Assets to be disposed of are reported at the lower of carrying values or fair values, less costs of disposal.

Revenue recognition

We recognize revenues when such revenues are earned in accordance with the relevant agreements.

Stock-based compensation

We account for stock-based compensation in accordance with ASC 718, "Compensation - Stock Compensation" (ASC 718). ASC 718 requires companies to estimate the fair value of equity-based payment awards on the date of grant using an option-pricing model.

We estimate the fair value of stock options granted using the Black-Scholes-Merton option-pricing model.

We account for employee share-based payment awards classified as equity awards using the grant-date fair value method. The fair value of share-based payment transactions is recognized as an expense over the requisite service period, net of estimated forfeitures. We estimate forfeitures based on historical experience and anticipated future conditions.

When stock options are granted as consideration for services provided by consultants and other non-employees, the grant is accounted for based on the fair value of the consideration received or the fair value of the stock options issued, whichever is more reliably measurable. The fair value of the options granted is measured on a final basis at the end of the related service period and is recognized over the related service period using the accelerated method.

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The assumptions below are relevant to restricted shares granted in 2012:

In accordance with ASC 718, restricted stock awards are measured at their grant date fair value. All restricted shares to employees and non-employees granted in 2012 were granted for nominal consideration; therefore their fair value was equal to the fair value on the date of issuance. The estimated fair value of the restricted stock of $0.20 per share is being recognized as compensation expense on a straight-line basis over the vesting period of five years.

Quantitative and qualitative disclosures about market risk

Market risk represents the risk of loss that may impact our financial position, results of operations, or cash flows due to adverse changes in financial and commodity market prices and rates. As of September 30, 2013 we do not believe we are exposed to significant market risks due to changes in U.S. interest rates or foreign currency exchange rates as measured against the U.S. dollar.

Inflation and seasonality

We do not believe that our operations are significantly impacted by inflation. Our business is not seasonal in nature.

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Medistem management

The names, ages and positions of our directors and executive officers are listed below:

Name	Age	Position(s)
Alan J. Lewis, Ph.D.	68	Director, Chief Executive Officer
Thomas E. Ichim, Ph.D.	38	Director, President and Chief Scientific Officer
John P. Salvador, J.D.	45	Chief Operations Officer
Donald F. Dickerson	48	Chief Financial Officer
Vladimir Bogin, M.D.(2)	40	Chairman
Vladimir Zaharchook-Williams(1)	47	Vice Chairman
Sergey Sablin(2)	53	Director
John Chiplin, Ph.D.(2)	54	Director
Herm Rosenman(1)	65	Director

(1) Member of the Audit Committee

(2) Member of the Compensation Committee

Executive officers

Alan J. Lewis, Ph.D., has served on our board of directors and as our Chief Executive Officer since October 2012. Dr. Lewis was elected to the board of directors as a result of his appointment as our Chief Executive Officer of Medistem, and his in depth knowledge of the pharmaceutical industry. From November 2011 to October 2012, Dr. Lewis served as a member of the Boards of Directors of Cytochroma, Inc. (since acquired by OPKO Health), Biotica Technology Limited and America Stem Cell, Inc., as well as advising Medistem. From July 2010 to November 2011, he served as President, CEO and Chairman of Ambit BioSciences, and from January 2009 to June 2010 served as President and CEO of the Juvenile Diabetes Research Foundation. From January 2006 to December 2008, he was President, CEO and Director of Novocell, Inc., a private stem cell company. From February 1994, served as CEO and Director of Signal Pharmaceuticals before its acquisition in June 2000 by Celgene, Inc., a biopharmaceutical company, after which he served as President of the Signal Research Division at Celgene until January 2006. From February 1989 to February 1994, Dr. Lewis held the position of Vice President of Research at Wyeth-Ayerst, where he led research efforts in diabetes, CNS, cardiovascular, inflammatory, allergy, and bone metabolism diseases. Dr. Lewis has also served as a Director of BioMarin Pharmaceutical Inc., since June 2005. He holds a Ph.D. in pharmacology from the University of Wales in Cardiff and completed his postdoctoral training at Yale University.

Thomas E. Ichim, Ph.D., served as our Chief Executive Officer from March 2008 to October 2012 and since October 2012 has served as our President and Chief Scientific Officer. Dr. Ichim was elected to the board of directors as a result of his appointment as our Chief Scientific Officer, and his in depth knowledge of the pharmaceutical industry and of our company. Dr. Ichim is a seasoned biotechnology entrepreneur and has founded/co-founded several companies including Medvax Pharma Corp, ToleroTech Inc., bioRASI, and OncoMune LLC. To date he has published 87 peer-reviewed articles and is co-editor of the textbook RNA Interference: From Bench to Clinical Translation . Dr. Ichim is an ad-hoc editor and sits on several editorial boards. Dr. Ichim is inventor on over 30 patents and patent applications.

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John P. Salvador has served as our Chief Operating Officer since December 2012. Previously, since February 2010, Mr. Salvador served as Director of Corporate Communications and Investor Relations for Aethlon Medical, Inc. From April 2007 to January 2010, Mr. Salvador served as Executive Director of Business, Legal Affairs and Investor Relations for Left Behind Games, Inc., a religious oriented video game company. Mr. Salvador, from March 2005 to March 2007, also served as head of investor relations for People s Choice Financial Corporation. Mr. Salvador holds a Juris Doctor from Boston University.

Donald F. Dickerson has served as our Chief Financial Officer since August 2011. Mr. Dickerson also functions as our Chief Accounting Officer and Controller. From March 2009 to August 2011, Mr. Dickerson served as Managing Director of GMT Ventures, a venture capital firm. From April 2005 to August 2009, Mr. Dickerson served as a Vice President of Finance for JPMorgan Chase & Co. Mr. Dickerson has over 24 years of successful experience in senior business management leadership roles. Working in diverse business environments spanning Fortune 500 companies such as Boeing and Dell to smaller start-ups in the clinical trials arena, he has successfully launched domestic and international divisions and has re-engineered existing operations to accelerate sales and profit growth. Mr. Dickerson holds an MBA from the University of Southern California.

Non-executive directors

Vladimir Bogin, M.D., joined our board of directors in July 2010 and serves as our Chairman of the board of directors. Dr. Bogin was elected to the board of directors as a result of his investment in the company and his in depth knowledge and experience in clinical research in the US and Russia. Since August 2006, Dr. Bogin has also served as Chief Executive Officer for Cromos Pharma, LLC, a contract research organization (CRO) that he founded, and that specializes in biopharmaceutical clinical outsourcing to Russia, Ukraine and countries of Eastern Europe. For over 15 years, Dr. Bogin has been involved in the drug development cycle, from basic discovery research, to clinical trial initiation, to multi-center Phase III and IV trials. Dr. Bogin was trained at Yale and Brown, received his M.D. degree from Moscow State University of Medicine and Dentistry and held director-level positions with several international pharmaceutical companies before founding Cromos Pharma, LLC.

Vladimir Zaharchook-Williams, M.B.A ., joined our board of directors in July 2010 and serves as our Vice Chairman of the board of directors. Mr. Zaharchook-Williams was elected to the board of directors as a result of his investment in the company and his in depth knowledge and experience in the investment community in the US and Russia. Since 1996, Mr. Zaharchook-Williams has been a Principal at Prudential Northwest Properties where he advises on residential sales and real estate development for private investors. The Wall Street Journal has named Mr. Zaharchook-Williams as one of the most successful Real Estate Brokers in the U.S. for 7 years running. Previous to Prudential Northwest Properties, he organized private business enterprises in the Post-Soviet Russia, helped develop the banking sector, and occupied top managerial positions in a number of Russian companies including Formika and Kronos. Mr. Zaharchook-Williams was awarded both a Bachelors and a Master s degree from the St. Petersburg University of Economics & Finance. He is also a graduate of the School of Bank Managers in Moscow, Russia, and the School of Upper Managerial Personnel for Insurance Companies also located in Moscow, Russia. Mr. Zaharchook-Williams has over 20 publications in the field of Currency/Monetary Circulation and Banking Loans.

Sergey O. Sablin, Ph.D., joined our board of directors in July 2010. In October 2003, Dr. Sablin co-founded Medivation, Inc., which became a $4 billion biopharmaceutical corporation traded on

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NASDAQ, and served as its Scientific Director until December 2005. Dr. Sablin was elected to the board of directors as a result of his investment in the company and his in depth knowledge of the pharmaceutical industry in the US and Russia. In May 1998 Dr. Sablin founded Selena Pharmaceuticals, Inc., a company focused on research and development of medications to treat neurological disorders, and served as its CEO until December 2008. Since January 2008 to present, Dr. Sablin has also served as Partner for D2E, LLC, a company that is focused on research and development of medications to treat neurological disorders. In addition, from December 2010 to December 2011, Dr. Sablin served as a member of the Investment Committee of Bio-Fund, Russian Venture Company, a venture group specializing in the biotechnology sector. Dr Sablin received his Ph.D. in biochemistry from the Lomonosov Moscow State University and is an author of over 40 scientific publications and patents.

John Chiplin, Ph.D., joined our board of directors in January 2013. Dr. Chiplin has over 25 years of experience as a biopharmaceutical executive. Dr. Chiplin was elected to the board of directors because of his in depth knowledge of the pharmaceutical industry. Since January 2000, Dr. Chiplin has served as Managing Director of Newstar Ventures, Ltd., an international investment fund, focused on providing direct investments, advisory, and independent analytical capabilities to small-medium sized companies. In addition, since May 2012, Dr. Chiplin has also served as Chief Executive Officer of Polynoma, Inc., a biotech company with a cancer vaccine product in Phase III clinical trials. In January 2007, Dr. Chiplin founded Arana Therapeutics, a new generation antibody developer, and served as its Chief Executive Officer until its acquisition in August 2009 by Cephalon, Inc. From January 2006 Dr. Chiplin also served on the board of directors of Domantis, Inc., until its acquisition by GlaxoSmithKline in December 2006. Before founding Arana, Dr. Chiplin was Managing Director of U.K. based ITI Life Sciences investment Fund. Dr. Chiplin holds Pharmacy and Doctoral degrees from the University of Nottingham, UK.

Herm Rosenman joined our board of directors in May 2013 and serves as the Chair of our Audit Committee. Mr. Rosenman was elected to the board of directors because of his in depth knowledge of public companies and the pharmaceutical industry. Before joining our Board, Mr. Rosenman was the Senior Vice President of Finance and Chief Financial Officer of Gen-Probe Incorporated, where he was instrumental in its 2002 IPO, as well as in its later 2012 sale to Hologic, Inc. for $3.7 billion. Preceding his work with Gen-Probe, Mr. Rosenman served as President and Chief Executive Officer of Ultra Acquisition Corp. (1997-2000); President and Chief Executive Officer of RadNet Management, Inc. (1994-1997); Chief Financial Officer of Rexene Corp. (1988-1990); and partner at Coopers & Lybrand (now PricewaterhouseCoopers LLP) through 1988. Mr. Rosenman has served in board, audit chair, and lead independent director capacities at ARYx Therapeutics (NASDAQ), Infinity Pharmaceuticals, Inc. (NASDAQ), Emphasys Medical, Inc., and Discovery Partners International, Inc. (NASDAQ). A CPA, Mr. Rosenman received a B.B.A. in finance and accounting from Pace University and an M.B.A. in finance from the Wharton School of the University of Pennsylvania.

Family relationships

There are no family relationships between or among any of our directors or executive officers.

Except for the lock-up agreement and voting agreement described in this proxy statement/prospectus in connection with the merger, there are no arrangements or understandings between any two or more of our directors or executive officers, and there is no arrangement, plan or understanding as to whether non-management shareholders will exercise their voting

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rights to continue to elect the current board of directors. There are also no arrangements, agreements or understandings between non-management shareholders that may directly or indirectly participate in or influence the management of our affairs.

Involvement in legal proceedings

Except for the class action litigation described in this proxy statement/prospectus, to the best of our knowledge, during the past ten years, none of the following occurred with respect to a present or former director or executive officer of the Company: (1) any bankruptcy petition filed by or against such person or any business of which such person was a general partner or executive officer either at the time of the bankruptcy or within two years prior to that time; (2) any conviction in a criminal proceeding or being subject to a pending criminal proceeding (excluding traffic violations and other minor offenses); (3) being subject to any order, judgment or decree, not subsequently reversed, suspended or vacated, of any court of any competent jurisdiction, permanently or temporarily enjoining, barring, suspending or otherwise limiting his involvement in any type of business, securities or banking activities; (4) being found by a court of competent jurisdiction (in a civil action), the SEC or the Commodities Futures Trading Commission to have violated a federal or state securities or commodities law, and the judgment has not been reversed, suspended or vacated; and (5) being the subject of, or a party to, any federal or state judicial or administrative order, judgment, decree or finding, not subsequently reversed, suspended or vacated, relating to an alleged violation of any federal or state securities or commodities law or regulation, law or regulation respecting financial institutions or insurance companies or law or regulation prohibiting mail or wire fraud or fraud in connection with any business entity; or (6) being the subject of, or a party to, any sanction or order, not subsequently reversed, suspended or vacated, of any self-regulatory organization (as defined in Section 3(a)(26) of the Securities Exchange Act), any registered entity (as defined in Section 1(a)(29) of the Commodity Exchange Act), or any equivalent exchange, association, entity or organization that has disciplinary authority over its members or associated persons.

Code of conduct

On February 28, 2008, the board of directors approved a "Code of Conduct, which applies to our board of directors, executive officers and employees. The Code of Conduct is posted on our website, www.medisteminc.com .

Committees of the board of directors

Our board of directors has the following standing committees: an Audit Committee and a Compensation Committee. The charters of our Audit and Compensation Committees, are posted on our website, www.medisteminc.com. In connection with Medistem s evaluation of potential business combinations including the merger, our board of directors also established a Transaction Committee comprised of Messrs. Vladimir Bogin, Alan J. Lewis, Ph.D. and John Chiplin on November 7, 2013.

Compensation committee

John Chiplin (the Chairman), Vladimir Bogin, and Sergey Sablin serve as members of the Compensation Committee. Our board of directors has delegated to the Compensation Committee strategic and administrative responsibility on a broad range of issues. The Compensation

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Committee's basic responsibility is to assure that the Chief Executive Officer, other officers, and key management are compensated effectively in a manner consistent with our compensation strategy and competitive practice. In addition, the Compensation Committee is responsible for establishing general compensation guidelines for non-management employees.

The Compensation Committee will be responsible for overseeing and, as appropriate, making recommendations to the Board regarding the annual salaries and other compensation of our executive officers, our general employee compensation and other policies and providing assistance and recommendations with respect to our compensation policies and practices. The Compensation Committee is authorized to carry out these activities and other actions reasonably related to the Compensation Committee's purposes or assigned by the Board from time to time. The Committee's specific responsibilities are delineated in its charter.

Audit committee

Herm Rosenman (the Chairman), and Vladimir Zaharchook-Williams serve as members of the Audit Committee. We believe that Mr. Rosenman is an "audit committee financial expert" as that term is defined by Item 407 of Regulation S-K.

The Audit Committee assists the board of directors in its oversight of the quality and integrity of our accounting, auditing, and reporting practices. The Audit Committee's role includes overseeing the work of our internal accounting and financial reporting and auditing processes and discussing with management our processes to manage business and financial risk, and compliance with significant applicable legal, ethical, and regulatory requirements. The Audit Committee is responsible for the appointment, compensation, retention, and oversight of the independent auditor engaged to prepare or issue audit reports on our financial statements and internal control over financial reporting. The Audit Committee relies on the expertise and knowledge of management in carrying out its oversight responsibilities. The Audit Committee's specific responsibilities are delineated in its charter.

Nominating committee

We do not have a formal Nominating Committee, however our board of directors acts in this capacity.

Board leadership structure

Separate people will hold the positions of Chairman of the Board and Chief Executive Officer. Vladimir Bogin is the Chairman of the Board. The Chairman of the Board will provide leadership to the board and work with the board to define its structure and activities in the fulfillment of its responsibilities. The Chairman of the Board will set the board agendas with board and management input, facilitate communication among directors, provide an appropriate information flow to the board and preside at meetings of the board of directors and shareholders. The Chairman of the Board will work with other board members to provide strong, independent oversight of the company s management and affairs. Future modification of the board leadership structure will be made at the sole discretion of our board of directors.

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Medistem executive compensation

The following table sets forth for the two years ended December 31, 2012 and December 31, 2011 the compensation awarded to, paid to, or earned by each person who in 2012 served as our Chief Executive Officer, and our executive officers whose total compensation during the year ended December 31, 2012 exceeded $100,000.

Summary Compensation Table

Name and Principal Position	Year	Salary ($)	Bonus ($)	Stock Awards ($)	Option Awards ($)	Non-Equity Incentive Plan Compensation ($)	Nonqualified Deferred Compensation Earnings ($)	All Other Compensation ($)	Total Compensation ($)
Alan J. Lewis(1)	2012				10,784				10,784
Chief Executive Officer	2011								
Thomas E. Ichim	2012	147,500	20,000	102,857					270,357
President & Chief Scientific Officer	2011	132,140							132,140

(1) Dr. Lewis became an officer on October 6, 2012 and did not accrue nor receive any compensation from October 6, 2012 through December 31, 2012, because the contingency set forth in his employment agreement has not been met.

Outstanding Equity Awards at Fiscal Year-End

The following table presents, for each named executive officer, information regarding outstanding stock options and restricted stock held as of December 31, 2012:

	Option Awards				Stock Awards	
Name	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price ($)	Option Expiration Date	Number of Shares or Units of Stock that Have not Vested (#)	Market Value of Shares of Units of Stock that Have not Vested ($)(6)

Alan J. Lewis	50,000	.35	1/14/17		
	4,000	12.50	2/1/16		
	2,000	10.00	7/3/16		
Thomas E. Ichim	80,000	3.00	1/2/17	514,286(5)	591,429

We did not engage in any repricings or other modifications or cancellations to any of our named executive officers outstanding option awards during the year ended December 31, 2012.

Employment agreements

On October 6, 2012, we entered into an employment agreement with Dr. Lewis. Pursuant to the agreement, Dr. Lewis is entitled to receive a base salary of $350,000 and is eligible for year-end bonus awards based upon individual performance. The employment agreement provides, however, that Dr. Lewis will not accrue nor receive any salary until such time that we close a debt or equity financing in which the gross proceeds to the Company equals or exceeds $3 million; or

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complete a corporate partnership transaction that includes gross proceeds to the Company of at least $3 million to support our general and administrative expenses. The employment agreement called for us to issue 1,183,000 stock options to Dr. Lewis. The employment agreement does not have a fixed termination date.

On March 18, 2008, Dr. Ichim was appointed Chief Executive Officer and served in that capacity until October 6, 2012, when he became our President and Chief Scientific Officer.

On October 6, 2012, we entered into an employment agreement with Dr. Ichim. Pursuant to the agreement, Dr. Ichim is entitled to receive a base salary of $275,000 and is eligible for year-end bonus awards based upon individual performance. The employment agreement provides, however, that Dr. Ichim will not accrue nor receive any salary until such time that we close a debt or equity financing in which the gross proceeds to the Company equals or exceeds $3 million; or complete a corporate partnership transaction that includes gross proceeds to the Company of at least $3 million to support our general and administrative expenses. The employment agreement called for us to issue 300,000 stock options to Dr. Ichim. The employment agreement does not have a fixed termination date.

In addition, for approximately six months after October 6, 2012, Dr. Ichim received cash payments totaling $98,500 from us, which we have characterized as additional compensation.

On October 6, 2012, we entered into an employment agreement with Mr. Dickerson. Pursuant to the agreement, Mr. Dickerson is entitled to receive a monthly base salary of $4,000, and is eligible for year-end bonus awards based upon individual performance. The employment agreement provides, however, that Mr. Dickerson will not accrue nor receive any salary until such time that we close a debt or equity financing in which the gross proceeds to the Company equals or exceeds $3 million; or complete a corporate partnership transaction that includes gross proceeds to the Company of at least $3 million to support our general and administrative expenses. The employment agreement called for us to issue 100,000 stock options to Mr. Dickerson. The employment agreement does not have a fixed termination date.

On November 1, 2012, we entered into an employment agreement with John P. Salvador. Pursuant to the agreement, Mr. Salvador is entitled to receive a base salary of $200,000 and is eligible for year-end bonus awards based upon individual performance. The employment agreement provides, however, that Mr. Salvador will not accrue nor receive any salary until such time that we close a debt or equity financing in which the gross proceeds to the Company equals or exceeds $3 million; or complete a corporate partnership transaction that includes gross proceeds to the Company of at least $3 million to support our general and administrative expenses. The employment agreement called for us to issue 500,000 stock options to Mr. Salvador. The employment agreement does not have a fixed termination date.

Restricted stock awards

On June 16, 2012 our board of directors awarded unvested restricted shares to certain Board and management members as compensation for services rendered from 2010 through 2012. Dr. Bogin was granted 1,714,286 restricted shares, Mr. Zaharchook-Williams was granted 1,142,857 restricted shares, Dr. Sablin was granted 857,143 restricted shares, Dr. Ichim was granted 514,286 restricted shares and Mr. Dickerson was granted 186,214 restricted shares. These unvested restricted shares will vest on the earliest of June 16, 2017, or the closing of an underwritten public offering of shares of our Common Stock for gross proceeds of at least $20,000,000, or the

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occurrence of a change in control; provided that these shares may be repurchased by us for a nominal price if, before they vest, we have not raised at least $1,200,000 from stock sales between June 16, 2012 and May 1, 2015. We valued the compensatory aspect of these issuances at $0.20 per share.

Director compensation

The following director compensation disclosure reflects all compensation awarded to, earned by or paid to the directors as such for the year ended December 31, 2012.

Name	Fees Earned or Paid in Cash ($)	Stock Awards ($)(1)	Option Awards ($)	Non-Equity Incentive Plan Compensation ($)	Nonqualified Deferred Compensation Earnings ($)	All Other Compensation ($)	Total ($)
Vladimir Bogin		342,857					342,857
Vladimir Zaharchook-Williams		228,571					228,571
Sergey O. Sablin		171,429					171,429

(1) See Restricted Stock Awards above.

(2) Includes compensation for services rendered from 2010 through 2012.

Directors compensation program

We have entered into Director Services Agreements with each of the members of our board of directors.

In March 2005, we adopted our 2005 Officer and Director Equity Ownership Plan (the "2005 Equity Ownership Plan") which advances our interests by helping us to obtain and retain the services of outside directors upon whose judgment, initiative, efforts and/or services we are substantially dependent, by offering to or providing those persons with incentives or inducements affording them an opportunity to become owners of our capital stock.

It is the policy of the board of directors that, during any time we are a publicly reporting company, a newly elected independent director (within the meaning of the SEC s rules and the independence requirements in the listing requirements of NASDAQ Marketplace Rule 4200(a)(15), may receive under the 2005 Equity Ownership Plan a one-time grant of a non-qualified stock option for shares of our common stock as determined by our Compensation Committee. Additionally, each director may also receive an annual grant of a non-qualified stock option for shares of our common stock as determined by our Compensation Committee. Furthermore, annually the Chair of the Compensation Committee may receive an additional grant of a non-qualified stock option for shares of our common stock as determined by our Compensation Committee. Furthermore, annually the Chair of the Audit Committee may receive an additional grant of a non-qualified stock option for shares of our common stock as determined by our Compensation Committee. The exercise price for the options under the 2005 Equity Ownership Plan will equal the closing price of our common stock on the award date.

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Medistem certain relationships and related transactions, and director independence

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.

Sale of Unicell Bio International, LLC.

On September 18, 2013, Dr. Bogin, Mr. Zaharchook-Williams, Dr. Sablin, Dr. Ichim, and an unaffiliated person sold 100% of the ownership interests in Unicell Bio International, LLC, a Delaware limited liability company, to us for $5.00. Unicell Bio International, LLC holds a 90% interest in ERCell, LLC, our Moscow based ERC Russia/Commonwealth of Independent States commercialization partner, resulting in us now holding a direct 100% ownership interest in Unicell Bio International, LLC, and an indirect 90% ownership interest in ERCell, LLC. This structure is designed to enable us to do business in the territory of Russia and other former Soviet republics. The two limited liability companies and are consolidated subsidiaries of the Company. An unaffiliated person holds a 10% interest in ERCell, LLC.

Transactions with Randber, LLC and affiliates

On August 19, 2013, we borrowed $500,000 from Randber, LLC, an entity controlled by our Vice Chairman Vladimir Zaharchook-Williams, against a $500,000 Promissory Note (the Note) with a conversion price of $0.50 per share. The note had a maturity date of on August 19, 2015. However, we could not use the funds except upon the approval of Mr. Zaharchook-Williams given from time to time. On January 23, 2014, our board of directors authorized the termination of the Note. All unused principal was returned to Randber LLC and we will pay Randber $10,685, which is the accrued interest owed on the Note from the Date of Note to the date of the termination at a semiannual compounded rate of 5%. The accrued interest will be paid as 21,370 shares of Medistem common stock that represents a conversion rate of $0.50 per share the conversion rate stated in the Note. We did not incur any early termination penalties.

On October 15, 2012, the Company issued, in a private placement, at par, a $50,000 two-year, unsecured, convertible note bearing interest at 5% per annum to Randber, LLC. The note was convertible into 142,858 shares of common stock at any time. On November 19, 2013 Randber, LLC converted the note and we issued 142,858 shares of common stock.

On April 1, 2011, we issued, in a private placement, at par, a $100,000 two-year, unsecured, convertible note bearing interest at 5% per annum to Randber, LLC, with the option to convert into 500,000 shares of common stock at any time. On November 30, 2011, Randber, LLC converted the note and we issued 500,000 shares of common stock to Randber, LLC.

Restricted stock awards

On June 16, 2012 our board of directors awarded unvested restricted shares to certain directors and management members as compensation for services rendered from 2010 through 2012.

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Dr. Bogin was granted 1,714,286 restricted shares, Mr. Zaharchook-Williams was granted 1,142,857 restricted shares, Dr. Sablin was granted 857,143 restricted shares, Dr. Ichim was granted 514,286 restricted shares and Mr. Dickerson was granted 186,214 restricted shares. These unvested restricted shares will vest on the earliest of June 16, 2017, or the closing of an underwritten public offering of shares of our common stock for gross proceeds of at least $20,000,000, or the occurrence of a change in control; provided that these shares may be repurchased by us for a nominal price if, before they vest, we have not raised at least $1,200,000 from stock sales between June 16, 2012 and May 1, 2015. We valued the compensatory aspect of these issuances at $0.20 per share.

Option awards

On May 1, 2013, we granted Herm Rosenman, a member of our board of directors, options to purchase 120,000 shares of common stock. The options have an exercise price of $0.35 per share, expire in ten years, and vest 50% upon the grant date, with the remaining vesting on May 1, 2014.

Cromos Pharma, LLC

Cromos Pharma, LLC, a full service contract-research organization (CRO) controlled by Dr. Bogin, our Chairman of the board of directors, provides oversight of our CHF clinical trial at the Bakulev Scientific Center for Cardiovascular Surgery, however, Dr. Bogin has recused himself from the conduct of the study. ERCell, LLC invoices us for services provided by Cromos Pharma, LLC, and ERCell, LLC then pays Cromos Pharma, LLC for such services. In 2012, our indirect expenses for Cromos Pharma, LLC in connection with the CHF clinical trial were $17,500; we expect our indirect expenses in 2013 for Cromos Pharma, LLC in connection with the CHF clinical trial will total approximately $153,000.

Employment agreements

On October 6, 2012, we entered into an employment agreement with Dr. Lewis. Pursuant to the agreement, Dr. Lewis is entitled to receive a base salary of $350,000 and is eligible for year-end bonus awards based upon individual performance. The employment agreement provides, however, that Dr. Lewis will not accrue nor receive any salary until such time that we close a debt or equity financing in which the gross proceeds to the Company equals or exceeds $3 million; or complete a corporate partnership transaction that includes gross proceeds to the Company of at least $3 million to support our general and administrative expenses. The employment agreement called for us to issue 1,183,000 stock options to Dr. Lewis. The employment agreement does not have a fixed termination date.

On October 6, 2012, we entered into an employment agreement with Dr. Ichim. Pursuant to the agreement, Dr. Ichim is entitled to receive a base salary of $275,000 and is eligible for year-end bonus awards based upon individual performance. The employment agreement provides, however, that Dr. Ichim will not accrue nor receive any salary until such time that we close a debt or equity financing in which the gross proceeds to the Company equals or exceeds $3 million; or complete a corporate partnership transaction that includes gross proceeds to the Company of at least $3 million to support our general and administrative expenses. The employment agreement called for us to issue 300,000 stock options to Dr. Ichim. The employment agreement does not have a fixed termination date.

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On November 1, 2012, we entered into an employment agreement with John P. Salvador. Pursuant to the agreement, Mr. Salvador is entitled to receive a base salary of $200,000 and is eligible for year-end bonus awards based upon individual performance. The employment agreement provides, however, that Mr. Salvador will not accrue nor receive any salary until such time that we close a debt or equity financing in which the gross proceeds to the Company equals or exceeds $3 million; or complete a corporate partnership transaction that includes gross proceeds to the Company of at least $3 million to support our general and administrative expenses. The employment agreement called for us to issue 500,000 stock options to Mr. Salvador. The employment agreement does not have a fixed termination date.

Indemnification of directors and officers

Our articles of incorporation provide that we will, to the full extent permitted by law, indemnify and advance or reimburse the expenses of anyone made a party to a proceeding because he is or was a director of the Company. Our bylaws provide that we will indemnify every director, officer, or employee of the Company against all expenses and liabilities, including counsel fees, reasonably incurred by or imposed upon him in connection with any proceedings to which he may become involved, by reason of his service as (by request of the Company), being or having been a director, officer, employee or agent of the Company. Moreover, we have entered into indemnification agreements with each of our members of the board of directors and our Chief Executive Officer, Chief Scientific Officer, Chief Operations Officer, and Chief Financial Officer. We maintain directors and officers liability insurance policies, which insure against liabilities that directors or officers may incur in such capacities. These insurance policies, together with the indemnification agreements, may be sufficiently broad to permit indemnification of our directors and officers for liabilities, including reimbursement of expenses incurred, arising under the securities laws or otherwise.

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Medistem security ownership of certain beneficial owners and management

The following table sets forth certain information with respect to the beneficial ownership of our common stock as December 31, 2013 for: each person whom we know beneficially owns more than 5% of our capital stock; each of our directors; each of our named executive officers; and all of our directors and executive officers as a group.

Beneficial ownership is calculated pursuant to Rule 13d-3(d)(1) of the Securities Exchange Act of 1934. Under Rule 13d-3(d)(1), shares not outstanding that are subject to options, warrants, rights or conversion privileges exercisable by a person within 60 days are deemed outstanding for the purpose of calculating the number and percentage owned by such person but not deemed outstanding for the purpose of calculating the percentage owned by any other person listed. Except where otherwise noted, we believe that each individual or entity named has sole investment and voting power with respect to the shares of Common Stock indicated as beneficially owned by such person, subject to community property laws, where applicable.

The address of each beneficial owner listed in the table below is c/o Medistem Inc., 9255 Towne Centre Drive, #450, San Diego, CA 92121.

Name and Address	Amount and Nature of Beneficial Ownership	Percentage of Beneficial Ownership
Vladimir Bogin(1)(7)	3,643,759	22.6%
Vladimir Zaharchook-Williams(1)(2)(7)	3,097,330	19.2%
Thomas E. Ichim(1)(3)	891,341	5.5%
Sergey O. Sablin(1)(7)	1,521,879	9.4%
Alan J. Lewis(4)	861,096	5.3%
John Chiplin(5)	120,000	*
All Current Directors and Executive Officers as a Group, 9 members (1)(2)(3)(4)(5)(6)(7)	10,929,777	67.8%

* Represents less than 1%.

(1) Includes unvested restricted shares owned by Dr. Bogin (1,714,286 shares), Mr. Zaharchook-Williams (1,142,857 shares), Dr. Sablin (857,143 shares), and Dr. Ichim (514,286 shares) and Mr. Dickerson (186,214 shares).

(2) Includes 642,858 shares owned by Randber LLC, of which Mr. Zaharchook-Williams is 50% owner.

(3) Includes 298,055 shares underlying stock options.

(4) Includes 761,096 shares underlying stock options.

(5) Includes 120,000 shares underlying stock options.

(6) Includes 300,548 shares underlying stock options in favor of Mr. Salvador. Includes 60,110 shares underlying stock options in favor of Mr. Dickerson.

(7) Includes 50,000 shares underlying stock options in favor of Dr. Bogin. Includes 25,000 shares underlying stock options in favor of Mr. Zaharchook-Williams. Includes 25,000 shares underlying stock options in favor of Dr. Sablin.

As of December 31, 2013, there were no preferred shares (and no derivative securities overlying preferred shares) issued and outstanding.

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Advisory vote on merger-related compensation

Medistem is providing its shareholders with the opportunity to vote, on a non-binding, advisory basis, to approve the agreements or understandings between Medistem s named executive officers and Medistem concerning compensation that is based on or otherwise relates to the merger, as required by Section 14A of the Exchange Act and the applicable SEC rules issued thereunder, which were enacted pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. This proposal, commonly known as the say on golden parachute vote, gives Medistem shareholders the opportunity to vote on a non-binding, advisory basis on such agreements or understandings and the related compensation that will or may be paid to its named executive officers in connection with the merger. This non-binding, advisory proposal relates only to already existing contractual obligations of Medistem that may result in a payment or benefit to Medistem s named executive officers in connection with, or following, the consummation of the merger and does not relate to any new compensation or other arrangements between Medistem s named executive officers and Intrexon or any of its subsidiaries.

The compensation payments that Medistem s named executive officers may be entitled to receive in connection with the merger are summarized in the table entitled Golden Parachute Compensation under the section entitled The Merger Interests of Medistem s Directors and Executive Officers in the Merger Quantification of Potential Payments to Medistem Named Executive Officers in Connection with the Merger.

The Medistem board of directors encourages you to carefully review the compensation information disclosed in this proxy statement/prospectus, including in the table described above.

The Medistem board of directors unanimously recommends that the Medistem shareholders approve the following resolution:

RESOLVED, that the shareholders of Medistem approve, solely on a non-binding, advisory basis, the agreements or understandings between Medistem s named executive officers and Medistem and the related compensation that will or may be paid to its named executive officers in connection with the merger, as disclosed pursuant to Item 402(t) of Regulation S-K in the Golden Parachute Compensation table and the related narrative disclosures in the section of the proxy statement/prospectus entitled The Merger Interests of Medistem s Directors and Executive Officers in the Merger Quantification of Potential Payments to Medistem Named Executive Officers in Connection with the Merger.

The vote on the merger-related compensation payments is a vote separate and apart from the vote on the adoption of the merger agreement and is not a condition to completion of the merger. Accordingly, you may vote to adopt the merger agreement and vote not to approve the merger-related compensation payments proposal and vice versa. This proposal is merely an advisory vote and will not be binding on Medistem or Intrexon or the Medistem board of directors regardless of whether the merger agreement is adopted. Further, the underlying agreements and understandings are contractual in nature and not, by their terms, subject to shareholder approval. Regardless of the outcome of the advisory vote, if the merger is completed, Medistem s named executive officers will be eligible to receive the merger-related compensation payments and benefits, in accordance with the terms and conditions applicable to those payments and benefits.

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Approval of this non-binding, advisory merger-related compensation payments proposal requires the affirmative vote of the holders of a majority of the shares of Medistem common stock present, in person or by proxy, at the special meeting and entitled to vote thereon, provided a quorum is present. Abstentions and broker non-votes are not counted as votes for or against this proposal and therefore do not affect the outcome. If you fail to submit a proxy and do not attend the special meeting in person, or if you do not provide your broker or other nominee with voting instructions on the proposal, your shares of Medistem common stock will have no effect on this proposal.

THE MEDISTEM BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT ITS SHAREHOLDERS VOTE FOR THE APPROVAL, ON A NON-BINDING, ADVISORY BASIS, OF THE MERGER-RELATED COMPENSATION PAYMENTS PROPOSAL, AS DISCLOSED IN THIS PROXY STATEMENT/PROSPECTUS.

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Adjournment of the meeting

Although it is not currently expected, the Medistem special meeting may be adjourned to another time or place, if necessary to obtain additional votes in favor of the merger proposal.

If, at the Medistem special meeting, the number of shares of Medistem common stock present or represented and voting in favor of the merger proposal is insufficient to approve such proposal, Medistem may move to adjourn the Medistem special meeting in order to solicit additional proxies in favor of the merger proposal. Medistem does not intend to call a vote on this proposal if the vote on the merger proposal has been approved at the Medistem special meeting unless Medistem is advised by counsel that failure to do so could reasonably be expected to result in a violation of U.S. federal securities laws.

The proposal to adjourn the Medistem special meeting requires the affirmative vote of the holders of a majority of the shares of common stock constituting a quorum at the special meeting.

THE MEDISTEM BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT ITS SHAREHOLDERS VOTE FOR THE APPROVAL OF THE ADJOURNMENT OF THE MEDISTEM SPECIAL MEETING, IF NECESSARY TO SOLICIT ADDITIONAL PROXIES IF THERE ARE NOT SUFFICIENT VOTES TO APPROVE THE MERGER PROPOSAL AT THE TIME OF THE MEDISTEM SPECIAL MEETING.

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Legal matters

The validity of the shares of Intrexon common stock to be issued in the merger will be passed upon by Troutman Sanders LLP. Certain U.S. federal income tax consequences relating to the merger will be passed upon for Intrexon by Troutman Sanders LLP, and for Medistem by Eisner Amper LLP.

Experts

The consolidated financial statements of Intrexon Corporation as of December 31, 2012 and December 31, 2011, and for each of the two years in the period ended December 31, 2012, included in this prospectus have been so included in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

The financial statements of Immunologix, Inc. as of October 20, 2011 and for the period from January 1, 2011 through October 20, 2011, included in this prospectus have been so included in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

The financial statements of GT Life Sciences, Inc. as of October 5, 2011 and for the period from January 1, 2011 through October 5, 2011, included in this prospectus have been so included in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

The financial statements of ZIOPHARM Oncology, Inc. appearing in this Prospectus and Registration Statement of Intrexon Corporation have been audited by McGladrey LLP, an independent registered public accounting firm, as stated in their report appearing elsewhere herein (which report expresses an unqualified opinion and includes an explanatory paragraph relating to the Company s ability to continue as a going concern, and also noted the reliance on other auditors for cumulative amounts from September 9, 2003 (date of inception) through December 31, 2009), and is included in reliance upon such reports and upon the authority of such firm as experts in accounting and auditing.

The statements of operations, changes in preferred stock and stockholders equity (deficit) and cash flows of ZIOPHARM Oncology, Inc, for the period from September 9, 2003 (date of inception) through December 31, 2009, not separately presented in this Prospectus, have been audited by Caturano and Company, P.C. (whose name has since been changed to Caturano and Company, Inc.), an independent registered public accounting firm, as stated in their report appearing elsewhere herein, and is included in reliance upon such report and upon the authority of such firm as experts in accounting and auditing.

The financial statements of Medistem Inc. as of December 31, 2012 and 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 Squar, Milner, Peterson, Miranda & Williamson, LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

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Future shareholder proposals

General

If the merger is completed, Medistem will become a wholly owned subsidiary of Intrexon and it will not hold its 2014 annual meeting of shareholders and there will be no public participation in any future meetings of shareholders of Medistem. If the merger is not completed, Medistem s shareholders will continue to be entitled to attend and participate in Medistem shareholders meetings and Medistem expects to hold a 2014 annual meeting of shareholders at a date to be determined by its board of directors.

Submission of shareholder proposals for inclusion in proxy statement for 2014 annual meeting of shareholders

If the merger is not completed, Medistem expects that its board of directors will establish a new date, time and place for its 2014 annual meeting of shareholders and Medistem will publicly disclose the new date, time and place of the rescheduled 2014 annual meeting. In such case shareholder proposals will be eligible for consideration for inclusion in the revised proxy statement and form of proxy for the rescheduled 2014 annual meeting of shareholders in accordance with Rule 14a-8 under the Exchange Act. The deadline for shareholders to submit proposals to be considered for inclusion in its revised proxy materials for the rescheduled 2014 annual meeting of shareholders will be a reasonable amount of time before Medistem begins to print and send such proxy materials for the rescheduled 2014 annual meeting of shareholders. This deadline will be publicly disclosed at the time Medistem discloses the date, time and place of the rescheduled 2014 annual meeting of shareholders. Any shareholder proposal submitted for inclusion in the revised proxy materials for the rescheduled 2014 annual meeting of shareholders must comply with applicable requirements of the SEC.

Advance notice procedures for proposing actions for consideration at 2014 annual meeting of shareholders

If the merger is not completed and Medistem s 2014 annual meeting of shareholders is rescheduled, Medistem will publicly disclose the new date, time and place of the rescheduled 2014 annual meeting.

Other matters

As of the date of this proxy statement/prospectus, the Medistem board of directors knows of no matters that will be presented for consideration at the Medistem special meeting other than as described in this proxy statement/prospectus. If any other matters properly come before the Medistem special meeting or any adjournments or postponements of the meeting and are voted upon, the enclosed proxy will confer discretionary authority on the individuals named as proxy to vote the shares represented by the proxy as to any other matters. The individuals named as proxies intend to vote in accordance with their best judgment as to any other matters.

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Where you can find more information

Intrexon and Medistem file annual, quarterly and current reports, proxy statements and other information with the SEC under the Exchange Act. You may read and copy any of this information at the SEC s Public Reference Room at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the Public Reference Room. The SEC also maintains an Internet website that contains reports, proxy and information statements, and other information regarding issuers, including Intrexon and Medistem, who file electronically with the SEC. The address of that site is *www.sec.gov*. Investors may also consult Medistem s and Intrexon s websites for more information concerning the merger described in this proxy statement/prospectus. Medistem s website is *www.medisteminc.com* and Intrexon s website is *www.dna.com* Information included on these websites is not incorporated by reference into this proxy statement/prospectus.

Intrexon has filed with the SEC a registration statement of which this proxy statement/prospectus forms a part. The registration statement registers the shares of Intrexon common stock to be issued to Medistem shareholders in connection with the merger. The registration statement, including the attached exhibits and schedules, contains additional relevant information about Intrexon common stock.

Intrexon and Medistem also incorporate by reference the merger agreement attached to this proxy statement/prospectus as Annex A.

This document is a prospectus of Intrexon and is a proxy statement of Medistem for the Medistem special meeting. You should only rely on the information contained or incorporated by reference into this proxy statement/prospectus to vote on the proposals to the Medistem shareholders in connection with the merger. Neither Intrexon nor Medistem has authorized anyone to give any information or make any representation about the merger or Intrexon or Medistem that is different from, or in addition to, that contained in this proxy statement/prospectus or in any of the materials that Intrexon or Medistem has incorporated by reference into this proxy statement/prospectus. Therefore, if anyone does give you information of this sort, you should not rely on it. The information contained in this proxy statement/prospectus speaks only as of the date of this proxy statement/prospectus unless the information specifically indicates that another date applies.

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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, except for the effect of the reverse stock split as described in Note 16, as to which the date is July 26, 2013

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Intrexon Corporation and Subsidiaries

Consolidated Balance Sheets

December 31, 2012 and 2011

(Amounts in thousands, except share and per share data)	2012	2011
Assets		
Current assets		
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
Total current assets	13,533	22,978
Equity securities	83,116	39,097
Property, plant 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
Total assets	$ 151,646	$ 114,828

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

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Intrexon Corporation and Subsidiaries

Consolidated Balance Sheets

December 31, 2012 and 2011

(Amounts in thousands, except share and per share data)	2012	2011
Liabilities, Redeemable Convertible Preferred Stock and Shareholder s Deficit		
Current liabilities		
Accounts payable	$ 632	$ 3,100
Accrued compensation and benefits	3,766	1,325
Other accrued liabilities	2,208	3,982
Deferred revenue	9,963	1,402
Capital lease obligations, current	49	71
Related party payables	99	279
Subscriptions payable		7,440
Total current liabilities	16,717	17,599
Capital lease obligations, net of current portion	42	97
Deferred revenue	48,673	15,519
Other long term liabilities	1,108	1,191
Total liabilities	66,540	34,406
Commitments and contingencies (Note 12)		
Series A redeemable convertible preferred stock, no par value; $1.21 stated value (liquidation preference of $1,406 and $1,327 as of December 31, 2012 and 2011, respectively); 705,400 shares authorized, issued and outstanding at December 31, 2012 and 2011	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	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	1,360	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	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	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	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	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	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	211,403	117,954

Shareholder s deficit		
Common stock, no par value, 160,000,000 shares and 155,000,000 shares authorized as of December 31, 2012 and 2011, respectively; 5,661,525 and 5,453,893 shares issued and outstanding as of December 31, 2012 and 2011, respectively		
Additional paid-in capital		
Accumulated deficit	(321,553)	(221,259)
Total shareholder s deficit	(321,553)	(221,259)
Total liabilities, redeemable convertible preferred stock and shareholder s deficit	$ 151,646	$ 114,828

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

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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
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		1,912
Total operating expenses	89,082	90,598
Operating loss	(75,157)	(82,427)
Other Income (Expense)		
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)	(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 attributable to common shareholders per share, basic and diluted	$ (18.77)	$ (18.92)
Weighted average shares outstanding, basic and diluted	5,533,690	5,240,647
Unaudited pro forma net loss attributable to Intrexon per share (note 14):		
Net loss attributable to Intrexon per share basic and diluted	$ (1.17)	
Weighted average shares basic and diluted	70,055,471	

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

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Intrexon Corporation and Subsidiaries

Consolidated Statements of Shareholders Deficit

Years ended December 31, 2012 and 2011

(Amounts in thousands, except share data)	Common stock Shares	Amount	Additional paid-in capital	Accumulated deficit	Total shareholders deficit
Balances at December 31, 2010	2,357,494	$	$	$ (127,734)	$ (127,734)
Stock-based compensation expense			983		983
Exercises of stock options	75,840		184		184
Acquisitions	3,019,294		4,237		4,237
Contribution of services by shareholder			210		210
Shares issued to nonemployee members of the Board of Directors	1,265		9		9
Accretion of dividends on redeemable convertible preferred shares			(5,623)	(8,245)	(13,868)
Net loss				(85,280)	(85,280)
Balances at December 31, 2011	5,453,893			(221,259)	(221,259)
Stock-based compensation expense			1,458		1,458
Exercises of stock options	194,570		473		473
Contribution of services by shareholder			1,550		1,550
Shares issued to nonemployee members of the Board of Directors	13,062		93		93
Accretion of dividends on redeemable convertible preferred shares			(3,574)	(18,420)	(21,994)
Net loss				(81,874)	(81,874)
Balances at December 31, 2012	5,661,525			(321,553)	(321,553)

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

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Intrexon Corporation and Subsidiaries

Consolidated Statements of Cash Flows

Years ended December 31, 2012 and 2011

(Amounts in thousands)	2012	2011
Cash flows from operating activities		
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	(61,529)	(81,758)
Cash flows from investing activities		
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	(23,636)	(64,097)

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

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Intrexon Corporation and Subsidiaries

Consolidated Statements of Cash Flows

Years ended December 31, 2012 and 2011

(Amounts in thousands)	2012	2011
Cash flows from financing activities		
Proceeds from issuance of Series D redeemable convertible preferred shares		26,442
Proceeds from issuance of Series E redeemable convertible preferred shares	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
Cash and cash equivalents		
Beginning of period	19,628	17,372
End of period	$ 10,403	$ 19,628
Supplemental disclosure of cash flow information		
Cash paid during the period for interest	$ 12	$ 18
Significant noncash financing and investing activities		
Conversion of subscriptions payable into Series D redeemable convertible preferred shares	$	2,500
Conversion of subscriptions payable into Series E redeemable convertible preferred shares	7,440	
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.

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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). All share and per share data of the Company s common stock, including shares of common stock underlying stock options and warrants, have been retroactively adjusted in the accompanying consolidated financial statements to reflect a reverse stock split (Note 16).

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.

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Intrexon Corporation and Subsidiaries

Notes to Consolidated Financial Statements

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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

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services are performed and collection of such amounts is reasonable assured. Payments received from manufacturing services will be recognized when the earnings process related to the manufactured materials has been completed. Royalties to be received under the agreements will be recognized as earned.

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

Research and Development

The Company considers that regulatory and other uncertainties inherent in the research and development of new products preclude it from capitalizing such costs. Research and development expenses include salaries and related costs of research and development personnel, and the costs of consultants, facilities, materials and supplies associated with research and development projects as well as various laboratory studies. Indirect research and development costs include depreciation, amortization and other indirect overhead expenses.

The Company has research and development arrangements with third parties that include upfront and milestone payments. At December 31, 2012 and 2011, the Company had research and development commitments with third parties totaling $3,164 and $6,220, respectively, of which $1,431 and $1,665, respectively, had not yet been incurred. The commitments are generally cancellable by the Company at any time upon written notice.

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.

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Equity Securities

The Company holds equity securities received and/or purchased from certain collaborative partners. Other than the investment in AquaBounty which was accounted for using the equity method and discussed below, the Company elected the fair value option to account for its equity securities held in these partners, including Ziopharm Oncology, Inc. (Ziopharm) which is an equity method investment. 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.

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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 Investments

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.

The Company determined that it has significant influence over one of its collaborative partners, Ziopharm, a publicly traded small molecule late-stage oncology drug development company, as of December 31, 2012 and 2011, based on its ownership interest, representation on Ziopharm s board of directors, as well as other qualitative factors. The Company accounts for this investment using the fair value option. The fair value of the Company s equity securities of Ziopharm is $56,298 and $35,162 as of December 31, 2012 and 2011, respectively, and is included as equity securities in the respective consolidated balance sheets. The Company s ownership percentage of Ziopharm is 16.3% and 11.5% at December 31, 2012 and 2011, respectively. Unrealized depreciation in the fair value of the Company s equity securities held in Ziopharm is $7,194 and $4,924 for the years ended December 31, 2012 and 2011, respectively.

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

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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 as of December 31, 2012 was limited to the carrying value of the investment in affiliate.

Property, Plant and Equipment

Property, plant and equipment are stated at cost, less accumulated depreciation and amortization. Major additions or betterments are charged to the property accounts while repairs and maintenance are generally expensed as incurred. Depreciation and amortization is calculated on the straight-line method over the estimated useful lives of the assets. The estimated useful lives of these assets are as follows:

	Years
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 subject to amortization consist of patents and related technologies acquired as a result of the Company s mergers and acquisitions (Note 3) and a favorable lease asset acquired upon the assumption of a lease agreement. These intangible assets subject to amortization were recorded at fair value at the date of acquisition and are stated net of accumulated amortization.

The Company applies the provisions of ASC Topic 350, *Intangibles, Goodwill and Other*, which requires the amortization of long-lived intangible assets to reflect the pattern in which the economic benefits of the intangible asset are expected to be realized. The intangible assets are amortized over their remaining estimated useful lives, ranging from seven to fourteen years for the patents and related technologies, and through the end of the original lease term, February 1, 2013, for the favorable lease asset.

Impairment of Long-Lived Assets

Long-lived assets to be held and used, including property, plant and equipment and intangible assets subject to amortization, are reviewed for impairment whenever events or changes in

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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 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.

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 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.

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The calculations for the unaudited pro forma basic and diluted net loss per share assume the conversion of all outstanding shares of redeemable convertible preferred stock, plus the cumulative dividends payable to the convertible preferred shareholders, into shares of common stock upon the closing of a qualified initial public offering, as if the conversions had occurred at the beginning of the period or issuance date, if later. The unaudited pro forma net loss used in the calculations of unaudited pro forma basic and diluted net loss per share has been adjusted to remove the cumulative preferred stock dividends.

Segment Information

The Company has determined that it operates in one segment. The Company uses synthetic biology for the creation of distinct products for collaboration with partners. All of the Company s revenues are derived in the United States of America. As of December 31, 2012 and 2011, all of the Company s assets are located in the United States of America.

Recently Issued Accounting Pronouncements

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

In June 2011, the FASB issued ASU No. 2011-05, *Comprehensive Income (Topic 220): Presentation of Comprehensive Income* (ASU 2011-05). Under this ASU, an entity will have the option to present the components of net income and comprehensive income in either one or two consecutive financial statements. The ASU eliminates the option in U.S. GAAP to present other comprehensive income in the statement of changes in equity. An entity should apply the ASU retrospectively. In December 2011, the FASB decided to defer the effective date of those changes in ASU 2011-05 that relate only to the presentation of reclassification adjustments in the statement of income by issuing ASU 2011-12, *Comprehensive Income (Topic 220): Deferral of the Effective Date for the Amendments to the Presentation of Reclassifications of Items Out of Accumulated Other Comprehensive Income in ASU 2011-05.* The Company has implemented the provisions of ASU 2011-05 as of January 1, 2012. The adoption of this amendment did not have a material impact on the Company s consolidated financial statements.

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

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income based on its source and the income statement line items affected by the reclassification. If a component is not required to be reclassified to net income in its entirety, companies would instead cross reference to the related footnote for additional information. ASU 2013-02 is effective for interim and annual reporting periods beginning after December 15, 2012. The Company will implement the provisions of ASU 2013-02 as of January 1, 2013. The adoption of this amendment did not have a material impact on the Company s consolidated financial statements.

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

Reclassifications

Certain reclassifications have been made to the prior year consolidated financial statements to conform to the current year presentation.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting periods. Actual results could differ from those estimates.

3. Mergers and Acquisitions

Agarigen, Inc.

On January 26, 2011, the Company acquired 100% of the outstanding common stock of Agarigen, Inc. (Agarigen), a North Carolina-based company which developed a novel mushroom-based platform for the production of proteins, by merging Agarigen into a newly formed wholly-owned subsidiary. The acquisition allows the Company to combine Agarigen s technology with the Company s technology and capability in a specific agricultural sector. As consideration for the acquisition, the Company paid $1,178 cash and issued 386,142 shares of its common stock at closing. The Company also issued 165,255 options to purchase the Company s common stock at strike prices ranging from $0.38 to $1.98 and issued warrants to purchase up to 511,098 shares of

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the Company s common stock at a price per share of $0.79. The results of Agarigen s operations subsequent to January 26, 2011 have been included in the consolidated financial statements.

The fair value of the total consideration transferred was $3,773. The acquisition date fair value of each class of consideration transferred was as follows:

Cash	$ 1,178
Common shares	1,014
Stock options and warrants	1,581
	$ 3,773

The fair value of the shares of the Company s common stock issued was based upon the value of the Company s common stock at the acquisition date determined under an option-pricing method as prescribed by the American Institute of Certified Public Accountants Practice Aid, *Valuation of Privately-Held Company Equity Securities Issued as Compensation* (AICPA Practice Aid). The option-pricing method treats common stock and preferred stock as call options on the enterprise s equity value, with exercise prices based on the liquidation preferences of the preferred stock. The fair value of stock options and warrants issued were determined in accordance with ASC Topic 718, *Compensation Stock Compensation*. The estimated fair value of assets acquired and liabilities assumed at the acquisition date is as follows:

Cash	$ 334
Trade receivables	53
Other receivables	436
Prepaid expenses and other	11
Property and equipment	30
Intangible assets	3,122
Other assets	3
Total assets acquired	3,989
Accounts payable	60
Accrued compensation and benefits	65
Other accrued liabilities	91
Total liabilities assumed	216
Net assets acquired	$ 3,773

The fair value of acquired intangible assets was determined using the relief-from-royalty method, a variation of the income approach that estimates the benefit of owning the intangible assets rather than paying royalties for the right to use comparable assets. The acquired intangible assets are being amortized over the expected useful life of nine years and consist of acquired patents and related technology.

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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 $0.79 per share and expire in December 2017. The Company considered the applicable provisions of ASC No. 480, *Distinguishing Liabilities and Equity* and ASC No. 815, *Derivatives and Hedging* and determined the warrants should be classified as shareholders equity.

GT Life Sciences, Inc.

On October 5, 2011, the Company acquired 100% of the outstanding common stock of GT Life Sciences, Inc. (GT Life), a California company, by merging a newly formed wholly-owned subsidiary with and into GT Life. The acquisition allows the Company to combine GT Life s technology with the Company s technology and capability for the development and deployment of high value production cell lines. The Company paid $14,250 cash at closing, which was the acquisition date fair value of the total consideration transferred. The results of GT Life s operations subsequent to October 5, 2011 have been included in the consolidated financial statements.

The estimated fair value of assets acquired and liabilities assumed at the acquisition date is as follows:

Cash	$ 21
Other receivables	161
Related party receivable	33
Prepaid expenses and other	1
Property and equipment	32
Intangible assets	14,094
Total assets acquired	14,342
Accounts payable	55
Accrued compensation and benefits	29
Other accrued liabilities	8
Total liabilities assumed	92
Net assets acquired	$ 14,250

The fair value of acquired intangible assets was determined using the multi-period excess earnings method, a variation of the income approach. The multi-period excess earnings method estimates the value of an intangible asset equal to the present value of the incremental after-tax cash flows attributable to the intangible asset. The acquired intangible assets are being amortized over the expected useful life of thirteen years and consist of acquired patents and related technology.

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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 153,365 shares of its common stock at closing. The results of Immunologix s operations from October 21, 2011 have been included in the consolidated financial statements.

The transaction also includes a contingent consideration arrangement which may require the Company to pay the former shareholders of Immunologix 50% of revenue generated from Immunologix s antibody technology in a specific target defined in the agreement up to a maximum of $2,000. The potential undiscounted amount of all future payments that could be required under the contingent consideration arrangement is between $0 and $2,000. The fair value of the contingent consideration arrangement is estimated at $0 based on the risk-adjusted valuation performed by the Company.

The fair value of the total consideration transferred was $13,850. The acquisition date fair value of each class of consideration transferred was as follows:

Cash	$ 12,758
Common shares	1,092
	$ 13,850

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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 (ASC 805)*, from a private California company for consideration of $1,400, including $850 cash and 92,984 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:

	2011
(Unaudited)	**Pro forma**
Revenues	$ 9,146
Net loss	(89,116)
Accretion of dividends on redeemable convertible preferred stock, not declared	(13,868)
Net loss attributable to common shareholders	$ (102,984)
Net loss attributable to common shareholders per share, basic and diluted	$ (19.01)

4. Collaboration Revenue

Ziopharm Oncology, Inc. ECC

Effective January 6, 2011, the Company entered into a worldwide ECC with Ziopharm. 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, which is the sole milestone under this ECC. Since the Ziopharm Milestone was not substantive, the Company allocated the milestone consideration to Ziopharm Unit of Accounting 1 and Ziopharm Unit of Accounting 2 using the same relative selling price allocation as the upfront consideration. As a result, $1,171 of the milestone consideration was allocated to Ziopharm Unit of Accounting 1 and immediately recognized as collaboration revenue for the year ended December 31, 2012 and the remaining $17,159 was allocated to Ziopharm Unit of Accounting 2. The Company recognized $2,420 of the milestone consideration allocated to Ziopharm Unit of Accounting 2 as collaboration revenue at the date the Ziopharm Milestone was achieved, which represented the amount that would have 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

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outstanding shares at the date of the dosing of the first patient in a Phase II clinical trial of a product candidate created, produced or developed by Synthetic Biologics using the Company s technology (Synthetic Biologics Field One Milestone). The Company will receive reimbursement payments for research and development services provided pursuant to the agreement and manufacturing services for Company materials provided to Synthetic Biologics during the ECC. Subject to certain expense allocations, Synthetic Biologics will pay the Company 50% of the quarterly net profits derived from the sale of products developed from the ECC. Synthetic Biologics is responsible for conducting preclinical and clinical development of product candidates, as well as for other aspects of commercialization or manufacturing of the product candidates. The term of the ECC commenced on November 18, 2011 and continues until terminated pursuant to the ECC agreement. The ECC may be terminated by either party in the event of certain material breaches defined in the agreement and may be terminated voluntarily by Synthetic Biologics upon 90 days written notice to the Company provided that no voluntary termination by Synthetic Biologics can be made during the first 18 months of the ECC.

The Company identified the deliverables at the inception of the ECC which include the license to the Company s technology platform, participation on the JSC, the research and development services and any manufacturing services to be provided. The Company grouped the deliverables into two units of accounting based on the nature of the deliverables and the separation criteria: (i) the license to the Company s technology platform, the Company s participation on the JSC and research and development services to be provided (Synthetic Biologics Field One Unit of Accounting 1), as these deliverables could not be separated, and (ii) manufacturing services to be provided for any Company materials in an approved product from the ECC (Synthetic Biologics Field One Unit of Accounting 2), which have standalone value and are contingent due to uncertainties on whether an approved product would be developed and require manufacturing by the Company. As VSOE and third party evidence of selling price was not available or practical, the BESP for each unit of accounting was determined using a historical cost approach due to the early stage of development of the Company s technology. In establishing BESP for Synthetic Biologics Field One Unit of Accounting 1, the Company used the accumulated costs incurred as of the ECC by the Company on its technology platform licensed to Synthetic Biologics to approximate the cost to recreate the deliverables included in this unit of accounting. All upfront consideration was allocated to Synthetic Biologics Field One Unit of Accounting 1. Synthetic Biologics Field One Unit of Accounting 2 was determined to be a contingent deliverable at the inception of the ECC due to the uncertainties surrounding whether an approved product would be developed and require manufacturing by the Company. The $1,687 of upfront consideration was allocated to Synthetic Biologics Field One Unit of Accounting 1 and will be recognized over the expected life of the Company s technology platform using a straight-line approach. The Company recognized $130 and $22 of collaboration revenue for the years ended December 31, 2012 and December 31, 2011, respectively. The remaining $1,535 is recorded as deferred revenue at December 31, 2012, of which $130 is expected to be recognized in 2013.

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At inception of the agreement, the Company determined that the Synthetic Biologics Milestone is not substantive and cannot be recognized when earned in accordance with ASU 2010-17 as the Milestone Method substantive criteria discussed in Note 2 were not met. Royalties related to product sales will be recognized when earned as the payments relate directly to products that have been fully developed and for which the Company has satisfied all of its obligations.

On August 6, 2012, the Company entered into its second worldwide ECC with Synthetic Biologics. Under this ECC, at the transaction effective date, Synthetic Biologics received a license to the Company s technology platform within a second designated field (Field Two). Upon Synthetic Biologics shareholders approval on October 5, 2012, the Company received a technology access fee of 3,552,210 shares of Synthetic Biologics common stock valued at $7,815 as upfront consideration. Upon the filing by Synthetic Biologics of an investigational new drug application with the U.S. Food and Drug Administration, or FDA, the Company will receive cash or common stock at the option of Synthetic Biologics valued at $2,000. Upon the first to occur of either the first commercial sale of a product developed under the ECC or the granting of regulatory approval of a product developed under the ECC, the Company will receive cash or common stock at the option of Synthetic Biologics valued at $3,000. The ECC initially targets three infectious diseases and Synthetic Biologics may elect to target up to five more infectious diseases by paying the Company a field expansion fee of $2,000 in either cash or common stock for each additional infectious disease selected. The regulatory milestones and field expansion fee(s) are referred to 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

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these deliverables could not be separated, and (ii) the potential manufacturing services to be provided for a product(s) from the ECC (Synthetic Biologics Field Two Unit of Accounting 2), which have standalone value and are contingent due to uncertainties on whether an approved product would be developed and require manufacturing by the Company. As VSOE and third party evidence of selling price was not available or practical, the BESP for each unit of accounting was determined using a historical cost approach due to the early stage of development of the Company s technology. In establishing BESP for Synthetic Biologics Field Two Unit of Accounting 1, the Company used the accumulated costs incurred as of the ECC by the Company on its technology platform licensed to Synthetic Biologics to approximate the cost to recreate the deliverables included in this unit of accounting. All up-front consideration was allocated to Synthetic Biologics Field Two Unit of Accounting 1. Synthetic Biologics Field Two Unit of Accounting 2 was determined to be a contingent deliverable at the inception of the ECC due to the uncertainties surrounding whether any approved products would be developed and whether the Company is elected by Synthetic Biologics to be the manufacturer of any approved products. The $7,815 of upfront consideration was allocated to Synthetic Biologics Field Two Unit of Accounting 1 and will be recognized over the expected life of the Company s technology platform using a straight-line approach. The Company recognized $163 of collaboration revenue for the year ended December 31, 2012. The remaining $7,652 is recorded as deferred revenue at December 31, 2012, of which $651 is expected to be recognized in 2013.

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.

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Elanco ECC

Effective November 28, 2011, the Company entered into a worldwide ECC with Elanco, the animal health division of Eli Lilly and Company (Elanco). The Company received cash upfront and is entitled to additional amounts up to an aggregate of $2,250 per product candidate based on the occurrence of separate performance, regulatory and sales-based milestones. The Company receives reimbursement payments for research services provided to Elanco during the ECC up to a certain maximum per calendar year. Elanco will pay the Company royalties with percentages ranging from mid-to-upper single digits to lower double digits based on net sales of products developed from the ECC. The term of the ECC commenced on November 28, 2011 and continues until terminated pursuant to the agreement. The ECC may be terminated by either party in the event of certain material breaches and may be voluntarily terminated in its entirety or on target-by-target basis upon 90 days written notice to the Company or 180 days written notice if the Company is performing research services on a product target.

The Company identified the deliverables at the inception of the ECC which are the license to the Company s technology platform, participation on the ECC s JSC, the research services and potential manufacturing services. The Company grouped the deliverables into two units of accounting based on the nature of the deliverables and the separation criteria: (i) the license to the Company s technology platform, the Company s participation on the JSC and research services to be provided (Elanco Unit of Accounting 1), as these deliverables could not be 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.

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At inception of the agreement, the Company determined that the performance milestone is substantive and can be recognized when earned in accordance with ASU 2010-17 as the milestone met all the criteria required by ASU 2010-17 to be considered substantive. The regulatory milestone is not substantive as the milestone did not meet all of the criteria required by ASU 2010-17 to be considered substantive. The sales-based milestone and royalties will be recognized when earned as the payments relate directly to products that have been fully developed and for which the Company has satisfied all of its obligations.

Oragenics, Inc. ECC

Effective June 5, 2012, the Company entered into a worldwide ECC with Oragenics, Inc. (Oragenics), a publicly traded company focused on becoming the world leader in novel antibiotics against infectious disease and probiotics for oral health for humans and pets. Under the ECC, at the transaction effective date, Oragenics received a license to the Company s technology platform within the field of lantibiotics for the treatment of infectious diseases in humans and companion animals as defined more specifically in the agreement. Upon execution of the ECC, the Company received a technology access fee of 4,392,425 shares of Oragenics common stock valued at $6,588 as upfront consideration. The Company is entitled to receive additional shares of common stock, or at Oragenics option, receive a cash payment based upon the fair market value of the shares, upon the separate achievement of certain regulatory milestones of the first product candidate developed from the ECC (Oragenics Milestones). The Oragenics Milestones include: (i) 1% of Oragenics outstanding shares as defined in the ECC agreement at the date of the filing of the first Investigative New Drug Application with the U.S. Food and Drug Administration (U.S. FDA) for a product candidate created, produced or developed using the Company s technology (Oragenics Product); (ii) 1.5% of Oragenics outstanding shares as defined in the ECC agreement at the date of the dosing of the first patient in the first Phase II clinical trial of an Oragenics Product; (iii) 2% of Oragenics outstanding shares as defined in the ECC agreement at the date of the dosing of the first patient in the first Phase III clinical trial of an Oragenics Product; (iv) 2.5% of Oragenics outstanding shares as defined in the ECC agreement at the date of the first New Drug Application or Biologics License Application with the U.S. FDA for an Oragenics Product, or alternatively the first equivalent regulatory filing with a foreign agency; and (v) 3% of Oragenics outstanding shares as defined in the ECC agreement at the date of the granting of the first regulatory approval of an Oragenics Product. The Company receives reimbursement payments for research and development services provided pursuant to the agreement during the ECC and manufacturing services for Company materials provided to Oragenics during the ECC. Oragenics will pay the Company 25% of the quarterly profits derived from the sale of products developed from the ECC.

Oragenics is responsible for funding the further development of lantibiotics toward the goal of commercialization, conducting preclinical and clinical development of product candidates, as well as for other aspects of commercialization or manufacturing of the product candidates. The term of the ECC commenced on June 5, 2012 and continues until terminated pursuant to the ECC

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agreement. The ECC may be terminated by either party in the event of certain material breaches defined in the agreement and may be terminated voluntarily by Oragenics upon 90 days written notice to the Company provided that no voluntary termination by Oragenics can be made during the first 18 months of the ECC. See Note 13 for additional arrangements with Oragenics.

The Company identified the deliverables at the inception of the ECC which include the license to the Company s technology platform, participation on the JSC, the research and development services and any manufacturing services to be provided. The Company grouped the deliverables into two units of accounting based on the nature of the deliverables and the separation criteria: (i) the license to the Company s technology platform, the Company s participation on the JSC and research and development services to be provided (Oragenics Unit of Accounting 1), as these deliverables could not be separated, and (ii) any manufacturing services to be provided for any Company materials in an approved product from the ECC (Oragenics Unit of Accounting 2), which have standalone value and are contingent due to uncertainties on whether an approved product would be developed and require manufacturing by the Company. As VSOE and third party evidence of selling price was not available or practical, the BESP for each unit of accounting was determined using a historical cost approach due to the early stage of development of the Company s technology. In establishing BESP for Oragenics Unit of Accounting 1, the Company used the accumulated costs incurred as of the ECC by the Company on its technology platform licensed to Oragenics to approximate the cost to recreate the deliverables included in this unit of accounting. All upfront consideration was allocated to Oragenics Unit of Accounting 1. Oragenics 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.

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Fibrocell Science, Inc. ECC

Effective October 5, 2012, the Company entered into an ECC with Fibrocell Science, Inc. (Fibrocell), a publicly traded, autologous cellular therapeutic company focused on the development of innovative products for aesthetic, medical and scientific applications. Under the ECC, at the transaction effective date, Fibrocell received a license to the Company s technology platform to develop and commercialize genetically modified and non-genetically modified autologous fibroblasts and autologous dermal cells in the United States of America. Upon execution of the ECC, the Company received a technology access fee of 1,317,520 shares of Fibrocell s common stock valued at $7,576 as upfront consideration. The number of shares received reflects a 1-for-25 reverse stock split of Fibrocell s common stock effective April 30, 2013. The Company receives reimbursement payments for research and development services provided pursuant to the agreement during the ECC and manufacturing services for Company materials provided to Fibrocell during the ECC. On a quarterly basis, Fibrocell will pay the Company royalties of 7% of net sales up to $25,000 and 14% of net sales above $25,000 on each product developed from the ECC. If Fibrocell uses the Company s technology platform to improve the production of a current or new Fibrocell products not developed from the ECC, Fibrocell will pay 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

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due to the uncertainties surrounding whether an approved product would be developed and require manufacturing by the Company and whether the Company would elect to be the manufacturer. The $7,576 of upfront consideration was allocated to Fibrocell Unit of Accounting 1 and will be recognized over the expected life of the Company s technology platform using a straight-line approach. The Company recognized $158 of collaboration revenue for the year ended December 31, 2012. The remaining balance of $7,418 is recorded as deferred revenue at December 31, 2012, of which $631 is expected to be recognized in 2013.

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 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
Assets				
Equity securities (Note 4)	$ 72,988	$ 10,128	$	$ 83,116
	$ 72,988	$ 10,128	$	$ 83,116

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The following table presents the placement in the fair value hierarchy of financial assets that are measured at fair value on a recurring basis, including the items for which the fair value option has been elected, at December 31, 2011:

	Quoted prices in active markets (level 1)	Significant other observable inputs (level 2)	Significant unobservable inputs (level 3)	December 31, 2011
Assets				
Equity securities (Note 4)	$ 39,097	$	$	$ 39,097
	$ 39,097	$	$	$ 39,097

There were no financial liabilities measured on a recurring basis at December 31, 2012 and 2011.

The method used to estimate the fair value of the Level 1 assets in the tables above is based on observable market data as these equity securities are publicly-traded. The method used to estimate the fair value of the Level 2 assets in the tables above is based on the quoted market price of the publicly-traded security, adjusted for a discount for lack of marketability.

There were no transfers between levels of the fair value hierarchy in the years ended December 31, 2012 and 2011.

6. Investment in AquaBounty

On November 16, 2012, the Company acquired 48,631,444 shares of AquaBounty common stock, representing 47.56% of the then outstanding shares of AquaBounty, for $6,000 through a definitive purchase agreement with an existing AquaBounty shareholder and its affiliate. The carrying amount of the investment in AquaBounty was $5,726 at December 31, 2012. Based on closing quoted market prices (Level 1), the fair value of the investment in AquaBounty was approximately $14,300 at December 31, 2012. Summarized unaudited financial information for AquaBounty as of December 31, 2012 and for the period subsequent to the Company s investment to December 31, 2012 is as follows:

	2012
Current assets	$ 514
Non-current assets	1,962
Total assets	2,476

Current liabilities	706
Non-current liabilities	2,741
Total liabilities	3,447
Net liabilities	$ (971)

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	2012
Revenues	$
Operating expenses	578
Loss from operations	(578)
Other expense	(1)
Net loss	$ (579)

On November 29, 2012, the Company entered into a promissory note purchase agreement (promissory note) with AquaBounty. The promissory note allows for the Company to loan up to $500 to AquaBounty. Draws on the promissory note by AquaBounty accrue annual interest of 3% and mature no later than May 28, 2013. As of December 31, 2012, AquaBounty had drawn $200 on the promissory note. This outstanding balance plus accrued interest is included in related party receivables on the December 31, 2012 consolidated balance sheet. See Note 16 for discussion of additional matters related to the Company s relationship with AquaBounty.

7. Property, Plant and Equipment, net

Property, plant and equipment consist of the following:

	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, plant 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.

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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

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

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applicable U.S. federal corporate income tax rate of 34% to loss before income taxes as a result of the following:

	2012	2011
Computed statutory income tax benefit	$ (27,837)	$ (28,995)
(Increase) reduction in income tax benefit resulting from State income tax benefit, net of federal income taxes	(3,711)	(3,893)
Nondeductible stock based compensation	333	203
Contribution of services by shareholder	527	71
Research and development tax credits		(2,515)
Other, net	(238)	477
	(30,926)	(34,652)
Change in valuation allowance for deferred tax assets	30,926	34,652
Total income tax provision	$	$

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

	2012	2011
Deferred tax assets		
Equity securities	$ 4,346	$ 1,098
Accrued liabilities	1,910	915
Stock-based compensation	363	178
Deferred revenue	22,684	6,546
Research and development tax credits	5,848	5,556
Net operating loss carryforwards	80,159	70,679
Total deferred tax assets	115,310	84,972
Less: Valuation allowance	113,051	82,125
Net deferred tax assets	2,259	2,847
Deferred tax liabilities		
Property and equipment	478	406
Intangible assets	1,781	2,441

Total deferred tax liabilities	2,259	2,847
Net deferred tax assets (liabilities)	$	$

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

	2012	2011
Valuation allowance at beginning of year	$ 82,125	$ 52,036
(Decrease) increase in valuation allowance as a result of		
Mergers and acquisitions, net		(4,563)
Current year operations	30,926	34,652
Valuation allowance at end of year	$ 113,051	$ 82,125

In assessing the realizability of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Management considers the scheduled reversal of deferred tax liabilities, projected future taxable income and tax planning strategies in making this assessment. Due to the Company s history of net losses incurred from inception, no income tax benefit has been recorded and the corresponding deferred tax assets have been fully reserved as the Company cannot sufficiently be assured that these deferred tax assets will be realized in accordance with the provisions of ASC 740. The components of the deferred tax assets and liabilities as of the date of the mergers and acquisitions by the Company prior to consideration of the valuation allowance are substantially similar to the components of deferred tax assets presented herein.

The American Taxpayer Relief Act of 2012, which retroactively reinstated the federal research and development tax credit for 2012, was not enacted into law until January 2013. Therefore, the deferred tax asset and corresponding increase in the valuation allowance for the amount of the tax credit generated in 2012 will not be reflected until 2013 for financial statement purposes.

The Company s past issuances of stock and mergers and acquisitions have resulted in ownership changes as defined in Section 382 of the Internal Revenue Code of 1986. As a result, utilization of portions of the net operating losses may be subject to annual limitations. As of December 31, 2012, approximately $16,400 of the Company s net operating losses generated prior to 2008 are limited by Section 382 to annual usage limits of approximately $1,500. As of December 31, 2012, approximately $14,800 of the Company s net operating losses were inherited via acquisition and are limited based on the value of the target at the time of the transaction.

At December 31, 2012, the Company has loss carryforwards for federal income tax purposes of approximately $207,000 available to offset future taxable income and federal and state research and development tax credits of $5,848, prior to consideration of annual limitations that may be imposed under Section 382. These carryforwards will begin to expire in 2022.

The Company applies provisions related to the accounting for uncertain income tax positions in ASC 740-10. The Company does not have material unrecognized tax benefits as of December 31,

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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.

10. Redeemable Convertible Preferred Stock and Shareholders Deficit

The tables below represent a rollforward of the Redeemable Convertible Preferred Stock:

	Series A redeemable convertible preferred stock		Series B redeemable convertible preferred stock		Series B-1 redeemable convertible preferred stock	
	Shares	Amount	Shares	Amount	Shares	Amount
Balances at December 31, 2010	705,400	$ 802	694,000	$ 609	1,212,360	$ 1,240
Issuance of shares						
Accretion of dividends				30		60
Stock issuance costs						
Balances at December 31, 2011	705,400	802	694,000	639	1,212,360	1,300
Issuance of shares						
Accretion of dividends		556		30		60
Stock issuance costs						
Balances at December 31, 2012	705,400	$ 1,358	694,000	$ 669	1,212,360	$ 1,360

	Series C redeemable convertible preferred stock		Series C-1 redeemable convertible preferred stock		Series C-2 redeemable convertible preferred stock	
	Shares	Amount	Shares	Amount	Shares	Amount
Balances at December 31, 2010	4,546,360	$ 6,346	15,934,528	$ 30,436	18,617,020	$ 39,605
Issuance of shares						
Accretion of dividends		383		1,828		2,382
Stock issuance costs						

Balances at December 31, 2011	4,546,360	6,729	15,934,528	32,264	18,617,020	41,987
Issuance of shares						
Accretion of dividends		405		1,937		2,525
Stock issuance costs						
Balances at December 31, 2012	4,546,360	$ 7,134	15,934,528	$ 34,201	18,617,020	$ 44,512

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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
Balances at December 31, 2010	13,297,872	$ 26,489	11,240,794	$ 39,019		$
Issuance of shares			8,562,891	28,942	22,285,716	117,000
Accretion of dividends		1,593		3,971		3,621
Stock issuance costs				(8)		(2,667)
Balances at December 31, 2011	13,297,872	28,082	19,803,685	71,924	22,285,716	117,954
Issuance of shares					15,809,523	83,000
Accretion of dividends		1,688		4,328		10,465
Stock issuance costs						(16)
Balances at December 31, 2012	13,297,872	$ 29,770	19,803,685	$ 76,252	38,095,239	$ 211,403

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:

	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 a majority of the outstanding Series Preferred.

Dividends

The holders of Series A shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series A stated value. Once declared, dividends will be accrued and compounded annually from the initial date of issue. No dividends have been declared to date.

Conversion

The holders of Series A at any time may elect to convert all or any of their Series A into common stock, fully paid and nonassessable and free from all taxes, liens or charges. The Company will automatically convert all of the outstanding Series A into common stock upon the closing of a qualified IPO, or upon the written election of the holders of a majority of the outstanding Series A. Series A convert to common stock on a one to one basis and is subject to adjustment for stock splits and stock dividends. 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 a majority of the outstanding Series Preferred.

Dividends

The holders of Series B and B-1 shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series B and B-1 stated value. Once declared, dividends will be accrued annually from the initial date of issue and paid quarterly. No dividends have been declared to date.

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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 and is subject to adjustment for stock splits and stock dividends. Upon automatic conversion of Series B and B-1, cumulative dividends are converted to common stock at a price per share equal to the fair market value of a common share at the time of conversion.

Series C Redeemable Convertible Preferred Stock

Liquidity

In the event of any liquidation, dissolution, or winding up of the Company, all distributions will be made to Series C shareholders in the order described within Liquidation Preference above.

Voting

The holders of Series C shall be entitled to the number of votes on each matter submitted to a vote of the shareholders equal to the number of shares of common stock into which said shares could be converted. Any matter which requires approval of the Series Preferred shall require the approval of a majority of the outstanding Series Preferred.

Dividends

The holders of Series C shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series C stated value. Once declared, dividends will be accrued and compounded annually from the initial date of issue and paid quarterly. No dividends have been declared to date.

Conversion

The holders of Series C at any time may elect to convert all or any of their Series C into common stock, fully paid and nonassessable and free from all taxes, liens or charges. The shares of Series C shall be automatically converted into fully paid and nonassessable common stock upon the closing of a qualified IPO or at the election of the holders of a majority of the outstanding Series C. Series C convert to common stock on a one to one basis and is subject to adjustment for stock splits and stock dividends. 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 a majority of the outstanding Series Preferred.

Dividends

The holders of Series C-1 shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series C-1 stated value. Once declared, dividends will be accrued and compounded annually from the initial date of issue and paid quarterly. No dividends have been declared to date.

Conversion

The holders of Series C-1 at any time may elect to convert all or any of their Series C-1 into common stock, fully paid and nonassessable and free from all taxes, liens or charges. The shares of Series C-1 shall be automatically converted into fully paid and nonassessable common stock upon the closing of a qualified IPO or at the election of the holders of a majority of the outstanding Series C-1. Series C-1 converts to common stock on a one to one basis and is subject to adjustment for stock splits and stock dividends. 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 could be converted. Any matter which requires approval of the Series Preferred shall require the approval of a majority of the outstanding Series Preferred.

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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 and is subject to adjustment for stock splits and stock dividends. Upon automatic conversion of Series C-2, cumulative dividends are converted to common stock at a price per share equal to the fair market value of a common share at the time of conversion.

Series C-3 Redeemable Convertible Preferred Stock

Liquidity

In the event of any liquidation, dissolution, or winding up of the Company, all distributions will be made to Series C-3 shareholders in the order described within Liquidation Preference above.

Voting

The holders of Series C-3 shall be entitled to the number of votes on each matter submitted to a vote of the shareholders equal to the number of shares of common stock into which said shares could be converted. Any matter which requires approval of the Series Preferred shall require the approval of a majority of the outstanding Series Preferred.

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 and is subject to adjustment for stock splits and stock dividends. Upon automatic conversion of Series C-3, cumulative dividends are converted to common stock at a price per share equal to the fair market value of a common share at the time of conversion.

Series D Redeemable Convertible Preferred Stock

Liquidity

In the event of any liquidation, dissolution, or winding up of the Company, all distributions will be made to Series D shareholders in the order described within Liquidation Preference above.

Voting

The holders of Series D shall be entitled to the number of votes on each matter submitted to a vote of the shareholders equal to the number of shares of common stock into which said shares could be converted. Any matter which requires approval of the Series Preferred shall require the approval of a majority of the outstanding Series Preferred.

Dividends

The holders of Series D shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series D stated value. Once declared, dividends will be accrued and compounded annually from the initial date of issue and paid quarterly. No dividends have been declared to date.

Conversion

The holders of Series D at any time may elect to convert all or any of their Series D into common stock, fully paid and nonassessable and free from all taxes, liens or charges. The shares of Series D shall be automatically converted into fully paid and nonassessable common stock upon the 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 and is subject to adjustment for stock splits and stock dividends. 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 a majority of the outstanding Series Preferred.

Dividends

The holders of Series E shall be entitled to receive, when and if declared by the Board of Directors out of the retained earnings of the Company, dividends, payable in cash or shares of common stock, at the rate of six percent (6%) per annum on the Series E stated value. Once declared, dividends will be accrued and compounded annually from the initial date of issue and paid quarterly. No dividends have been declared to date.

Conversion

The holders of Series E at any time may elect to convert all or any of their Series E into common stock, fully paid and nonassessable and free from all taxes, liens or charges. The shares of Series E shall be automatically converted into fully paid and nonassessable common stock upon the closing of a qualified IPO or at the election of the holders of a majority of the outstanding Series E. Series E converts to common stock on a one to one basis and is subject to adjustment for stock splits and stock dividends. 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 2,857,142 to 5,714,285. 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 2,920,609 remaining shares available for the Company to grant under the 2008 Plan. The Company uses the Black-Scholes option pricing model to estimate the grant-date fair value of all stock options. The Black-Scholes option pricing model requires the use of assumptions for estimated expected volatility, estimated expected term of stock options, risk-free rate, estimated expected dividend yield, and the fair value of the underlying common stock at the date of grant. Since the Company does not have sufficient history to estimate the expected volatility of our common stock price, expected volatility is based on the average volatility of peer public entities that are similar in size and industry. The Company estimates the expected term of all options based on previous history of exercises. The risk-free rate is based on the U.S. Treasury yield curve in effect at the time of grant for the expected term of the option. The expected dividend yield is 0% as the Company has not declared any common stock dividends to date and does not expect to declare common stock dividends in the near future. The fair value of the underlying common stock is determined based on a valuation of the Company s common stock. Actual forfeitures are recorded when incurred and estimated forfeitures are reviewed and adjusted at least annually. The assumptions used in the Black-Scholes option pricing model for the years ended December 31, 2012 and 2011 are set forth below:

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

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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
Balances at December 31, 2010	1,448,145	2.71	6.99
Granted	2,429,684	6.48	
Exercised	(75,840)	(2.43)	
Forfeited	(145,214)	(3.34)	
Expired	(42,245)	(2.94)	
Balances at December 31, 2011	3,614,530	5.22	6.67
Granted	548,571	7.12	
Exercised	(194,570)	(2.43)	
Forfeited	(1,210,857)	(6.30)	
Expired	(444,148)	(2.29)	
Balances at December 31, 2012	2,313,526	5.90	7.87
Exercisable at December 31, 2012	808,633	4.06	6.43
Vested and Expected to Vest at December 31, 2012(1)	2,194,790	5.85	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 $4.60 and $4.13, respectively. The aggregate intrinsic value of options exercised during 2012 and 2011 was $913 and $264, respectively. The aggregate intrinsic value of options is calculated as the difference between the exercise price of the underlying options and the fair value of the Company s common stock for those shares that had exercise prices lower than the fair value of the Company s common stock.

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

	Options outstanding			Options exercisable		
Exercise price	**Number of options**	**Weighted average remaining life (years)**	**Aggregate intrinsic value**	**Number of options**	**Weighted average remaining life (years)**	**Aggregate intrinsic value**
$0.38	57,264	8.07	$ 385	57,264	8.07	$ 385
$1.34	106,777	3.10	617	106,777	3.10	617
$1.92	23,143	4.25	120	23,143	4.25	120
$2.74	186,286	4.62	815	186,286	4.62	815
$3.29	183,442	6.77	703	126,014	6.72	483
$5.91	169,857	7.64	205	42,571	7.59	51
$7.12	1,586,757	8.77		266,578	8.53	
	2,313,526	7.87	$ 2,845	808,633	6.43	$ 2,471

The following table summarizes additional information about stock options outstanding as of December 31, 2011:

	Options outstanding			Options exercisable		
Exercise price	**Number of options**	**Weighted average remaining life (years)**	**Aggregate intrinsic value**	**Number of options**	**Weighted average remaining life (years)**	**Aggregate intrinsic value**
$0.38	145,406	9.07	$ 978	145,406	9.07	$ 978
$1.34	257,680	4.10	1,489	257,680	4.10	1,489
$1.68	58,286	2.84	317	58,286	2.84	317
$1.92	23,143	5.26	120	23,143	5.26	120
$1.96	3,015	9.07	16	3,015	9.07	16
$2.74	312,572	5.54	1,368	307,572	5.54	1,346
$3.29	564,286	7.50	2,163	212,929	7.35	816
$5.91	363,142	8.41	438			
$7.12	1,887,000	6.58				

	3,614,530	6.67	$	6,889	1,008,031	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
	$ 11,097

Rent expense, including other facility expenses, was $5,036 and $4,000 in 2012 and 2011, respectively.

During 2011, the Company began subleasing space in two of its facilities to two different entities, one of which is an affiliate of certain preferred shareholders (Note 13). One of these agreements was terminated during 2011 while the other was terminated during 2012. During 2012, the Company began subleasing another of its facilities to another entity. This agreement remained in effect as of December 31, 2012. Rental income under sublease agreements was $151 and $158 for the years ended December 31, 2012 and 2011, respectively. Future rental income for the sublease agreement in effect at the end of 2012 is $365 for each year in 2013 and 2014 and $152 for 2015.

Capital Leases

The Company leases certain lab equipment, computer equipment, and leasehold improvements under capital leases. At December 31, 2012, future minimum lease payments under capitalized lease obligations are as follows:

2013	$ 54
2014	35
2015	10
	99
Less: Amounts representing interest	(8)

$ 91

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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 Cyntellect, Inc. (Cyntellect) to purchase the assets required to operate Cyntellect s cell processing platform business and assume certain liabilities related to the assets acquired, including assumption of the remaining term on the facility lease. The Company anticipates using the assets acquired to establish the capability to develop proprietary cell lines to be used internally by the Company or with the Company s collaborative partners. As consideration for the asset purchase, the Company issued 2,386,803 shares of its common stock valued at $17,000. Cyntellect was a related party and under common control by affiliates of Third Security. The Company recorded the transaction as a transaction between entities under common control using the guidance in ASC Subtopic 805-50, *Business Combinations: Related Issues* (ASC 805-50). ASC 805-50 requires that assets acquired and liabilities assumed be recorded on the transaction date at the carrying amount in the accounts of the transferring entity. The carrying amounts of the assets acquired and liabilities assumed is as follows:

Cash	$ 88
Other current assets	23
Property and equipment, net	1,724
Other assets	262
Total assets acquired	2,097
Accounts payable	41
Other accrued liabilities	107
Long-term debt	116
Total liabilities assumed	264
Net assets acquired	$ 1,833

ASC 805-50 also requires that results of operations be presented as if the transaction occurred at the beginning of the period and represent the combined operations of both entities. Financial statements and financial information presented for prior years in which the entities were under common control should also be retrospectively adjusted to furnish comparative information as if the entities were combined. The Company applied these presentation requirements of ASC 805-50.

The Company paid $128 of costs associated with this asset purchase, which are included in general and administrative expenses in the accompanying consolidated statement of operations for the year ended December 31, 2011.

The Company subleased a portion of one of its facilities to Cyntellect. The sublease included rent and a portion of applicable facility expenses. The sublease expired in May 2012. The Company received $64 and $77 of sublease income during 2012 and 2011, respectively.

The Manager of Third Security who is also a member of the Company s Board of Directors, (Board Member) assumed the role of CEO of the Company in April 2009 and served on a part-

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time basis in that capacity through 2011. In 2012, the CEO began serving in this role on a full-time basis. Although the CEO has not received compensation for his services as CEO, the 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:

	Year ended December 31,	
	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	(103,868)	(99,148)
Denominator:		
Weighted average shares outstanding, basic and diluted	5,533,690	5,240,647
Net loss attributable to common shareholders per share, basic and diluted	$ (18.77)	$ (18.92)
Pro forma net loss per share (unaudited):		
Numerator:		
Net loss attributable to Intrexon used to compute pro forma net loss per share, basic and diluted	$ (81,874)	
Denominator:		
Weighted average shares outstanding, basic and diluted	5,533,690	
Add: Shares issued upon conversion of all Series Preferred	61,368,058	
Add: Shares issued upon conversion of cumulative dividends on all Series Preferred	3,153,723	
Weighted average shares used in computing pro forma net loss per share, basic and diluted	70,055,471	
Pro forma net loss attributable to Intrexon per share, basic and diluted	$ (1.17)	

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	December 31, 2011
Common shares issuable upon conversion of all Series Preferred	64,517,977	55,483,966
Options	2,313,526	3,614,530
Warrants	511,098	511,098
Total	67,342,601	59,609,594

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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 originally issued, and through July 26, 2013, the date on which those consolidated financial statements were available to be reissued.

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 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

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automatically converted info 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.

Effective July 26, 2013, the Company s board of directors and shareholders approved a reverse stock split of 1-for-1.75 of the Company s shares of common stock. Shareholders entitled to fractional shares as a result of the reverse stock split will receive a cash payment in lieu of receiving fractional shares. Shares of common stock underlying outstanding stock options and warrants were proportionately reduced and the respective exercise prices were proportionately increased in accordance with the terms of the agreements governing such securities.

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Consolidated Balance Sheets

(Unaudited)

(Amounts in thousands, except share and per share data)	September 30, 2013	December 31, 2012
Assets		
Current assets		
Cash and cash equivalents	$ 61,222	$ 10,403
Short-term investments	136,672	260
Receivables		
Trade	195	141
Related parties	4,538	531
Other	616	35
Prepaid expenses and other	2,992	2,163
Total current assets	206,235	13,533
Long-term investments	81,109	
Equity securities	107,567	83,116
Property, plant and equipment, net	17,020	18,687
Intangible assets, net	42,263	29,506
Goodwill	13,846	
Investment in affiliate	5,000	5,726
Other assets	1,158	1,078
Total assets	$ 474,198	$ 151,646

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

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Consolidated Balance Sheets

(Unaudited)

(Amounts in thousands, except share and per share data)	September 30, 2013	December 31, 2012
Liabilities, Redeemable Convertible Preferred Stock and Total Equity (Deficit)		
Current liabilities		
Accounts payable	$ 949	$ 632
Accrued compensation and benefits	3,693	3,766
Other accrued liabilities	2,299	2,208
Deferred revenue	7,398	9,963
Capital lease obligations, current	33	49
Current portion of long term debt	211	
Related party payables	5,134	99
Total current liabilities	19,717	16,717
Capital lease obligations, net of current portion	16	42
Long term debt, net of current portion	2,305	
Deferred revenue	59,994	48,673
Other long term liabilities	958	1,108
Total liabilities	82,990	66,540
Commitments and contingencies (Note 13)		
Series A redeemable convertible preferred stock, no par value; $1.21 stated value (liquidation preference of $0 and $1,406 as of September 30, 2013 and December 31, 2012, respectively); 0 and 705,400 shares authorized, issued and outstanding at September 30, 2013 and December 31, 2012, respectively		1,358
Series B redeemable convertible preferred stock, no par value; $0.72 stated value (liquidation preference of $0 and $709 as of September 30, 2013 and December 31, 2012, respectively); 0 and 694,000 shares authorized, issued and outstanding at September 30, 2013 and December 31, 2012, respectively		669
Series B-1 redeemable convertible preferred stock, no par value; $0.83 stated value (liquidation preference of $0 and $1,380 as of September 30, 2013 and December 31, 2012, respectively); 0 and 1,212,360 shares authorized, issued and outstanding at September 30, 2013 and December 31, 2012, respectively		1,360
Series C redeemable convertible preferred stock, no par value; $1.10 stated value (liquidation preference of $0 and $7,162 as of September 30, 2013 and December 31, 2012, respectively); 0 and 4,546,360 shares authorized, issued and outstanding at September 30, 2013 and December 31, 2012, respectively		7,134
Series C-1 redeemable convertible preferred stock, no par value; $1.57 stated value (liquidation preference of $0 and $34,222 as of September 30, 2013 and December 31, 2012, respectively); 0 and 15,934,528 shares authorized, issued and outstanding at September 30, 2013 and December 31, 2012, respectively		