
UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

SCHEDULE 14A
(Rule 14a-101)

INFORMATION REQUIRED IN PROXY STATEMENT
SCHEDULE 14A INFORMATION

Proxy Statement Pursuant to Section 14(a) of the
Securities Exchange Act of 1934

Filed by the Registrant

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))**
- Definitive Proxy Statement
- Definitive Additional Materials
- Soliciting Material Pursuant to § 240.14a-12

ZIOPHARM Oncology, 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):

- No fee required.
- Fee computed on table below per Exchange Act Rules 14a-6(i)(1) 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:

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- 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:



**One First Avenue, Parris Building 34, Navy Yard Plaza, Third Floor
Boston, Massachusetts 02129**

**NOTICE OF ANNUAL MEETING OF STOCKHOLDERS
To be Held on June 13, 2019**

To the stockholders of Ziopharm Oncology, Inc.:

NOTICE IS HEREBY GIVEN that the 2019 annual meeting of stockholders (the "annual meeting") of Ziopharm Oncology, Inc. (the "Company") will be held, pursuant to due call by the board of directors, at the offices of Cooley LLP located at 500 Boylston Street, 14th Floor, Boston, Massachusetts 02116, on Thursday, June 13, 2019, at 10:00 a.m. Eastern time, or at any adjournment or adjournments thereof, for the purpose of considering and taking appropriate action with respect to the following:

1. To elect the board's five nominees for director named in the accompanying proxy statement to hold office until the 2020 annual meeting of stockholders and until their successors are duly elected and qualified;
2. To ratify the selection by the audit committee of the board of directors of RSM US LLP as the Company's independent registered public accounting firm of the Company for its fiscal year ending December 31, 2019;
3. To approve, on an advisory basis, the compensation of the Company's named executive officers as disclosed in the proxy statement;
4. To transact any other business as may properly come before the meeting or any adjournments thereof.

These items of business are more fully described in the Proxy Statement accompanying this Notice.

The record date for the annual meeting is April 17, 2019. Only stockholders of record at the close of business on that date may vote at the annual meeting or any adjournments thereof.

By Order of the Board of Directors,

A handwritten signature in black ink, appearing to read 'R. Hadfield', is written over a light blue horizontal line.

Robert Hadfield
Secretary and General Counsel
Boston, Massachusetts
April 29, 2019

You are cordially invited to attend the annual meeting in person. Whether or not you expect to attend the annual meeting, please vote over the telephone or through the internet as instructed in these materials, as promptly as possible in order to ensure your representation at the meeting. Even if you have voted by proxy, you may still vote in person if you attend the annual meeting. Please note, however, that if your shares are held of record by a broker, bank or other nominee and you wish to vote at the annual meeting, you must obtain a proxy issued in your name from the record holder.

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**Ziopharm Oncology, Inc.
One First Avenue, Parris Building 34, Navy Yard Plaza, Third Floor
Boston, Massachusetts 02129**

**PROXY STATEMENT
FOR THE ANNUAL MEETING OF STOCKHOLDERS**

To Be Held On June 13, 2019

QUESTIONS AND ANSWERS ABOUT THESE PROXY MATERIALS AND VOTING

Why did I receive a notice regarding the availability of proxy materials through the internet?

Pursuant to rules adopted by the Securities and Exchange Commission, or the SEC, we have elected to provide access to our proxy materials over the internet. Accordingly, we have sent you a Notice of Internet Availability of Proxy Materials, or the Notice, because the board of directors of Ziopharm Oncology, Inc. (sometimes referred to as “we,” “us,” “our” or the “Company”) is soliciting your proxy to vote at our 2019 annual meeting of stockholders, or the annual meeting, including at any adjournments or postponements thereof. All stockholders will have the ability to access the proxy materials through the website referred to in the Notice or to request a printed set of the proxy materials. Instructions on how to access the proxy materials over the internet or to request a printed set may be found in the Notice.

We intend to mail the Notice on or about April 29, 2019 to all stockholders of record entitled to vote at the annual meeting.

Will I receive any other proxy materials by mail?

We may send you a proxy card, along with a second Notice, on or after April 29, 2019.

How do I attend the annual meeting?

The annual meeting will be held on Thursday, June 13, 2019, at 10:00 a.m. Eastern time, at the offices of Cooley LLP located at 500 Boylston Street, 14th Floor, Boston, Massachusetts 02116. Information on how to vote in person at the annual meeting is discussed below.

Who can vote at the annual meeting?

Only stockholders of record at the close of business on April 17, 2019, which we refer to as the Record Date, will be entitled to vote at the annual meeting. On the Record Date, there were 162,294,494 shares of common stock outstanding and entitled to vote.

Stockholder of Record — Shares Registered in Your Name: If on April 17, 2019 your shares were registered directly in your name with our transfer agent, American Stock Transfer & Trust Company, LLC, then you are a stockholder of record. As a stockholder of record, you may vote in person at the annual meeting or vote by proxy. Whether or not you plan to attend the annual meeting, we urge you to vote by proxy over the telephone, through the internet or using a proxy card that you may request as instructed below, to ensure your vote is counted.

Beneficial Owner — Shares Registered in the Name of a Broker or Bank: If on April 17, 2019 your shares were not registered in your name, but instead are held in an account at a brokerage firm, bank, dealer or similar organization, then you are the beneficial owner of shares held in “street name” and the Notice is being forwarded to you by that organization. The organization holding your account is considered to be the stockholder of record for purposes of voting at the annual meeting. As a beneficial owner, you have the right to direct your broker or

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other agent regarding how to vote the shares in your account. You are also invited to attend the annual meeting. Since you are not the stockholder of record, however, you may not vote your shares in person at the annual meeting unless you request and obtain a valid proxy from your broker or other agent.

What am I voting on?

There are three matters scheduled for a vote:

1. Election of five directors (Proposal No. 1);
2. Ratification of the selection by the audit committee of the board of directors of RSM US LLP as the Company's independent registered public accounting firm for its fiscal year ending December 31, 2019 (Proposal No. 2); and
3. Approval, on an advisory basis, of the compensation of the Company's named executive officers as disclosed in this proxy statement (Proposal No. 3).

What if another matter is properly brought before the annual meeting?

The board of directors knows of no other matters that will be presented for consideration at the annual meeting. If any other matters are properly brought before the annual meeting, it is the intention of the persons named in the accompanying proxy to vote on those matters in accordance with their best judgment.

How do I vote?

With respect to Proposal No. 1, you may vote "For" all the nominees to the board of directors or you may "Withhold" your vote for any of the nominees you specify. With respect to the other proposals, you may vote "For" or "Against," or you may abstain from voting.

The procedures for voting are fairly simple:

Stockholder of Record — Shares Registered in Your Name: If you are a stockholder of record, you may vote in person at the annual meeting, vote by proxy over the telephone, vote by proxy through the internet, or vote by proxy using a proxy card that you may request or that we may elect to deliver at a later time. Whether or not you plan to attend the annual meeting, we urge you to vote by proxy to ensure your vote is counted. You may still attend the annual meeting and vote in person even if you have already voted by proxy.

- To vote in person, come to the annual meeting and we will give you a ballot when you arrive.
- To vote using a proxy card, you may request a proxy card by following the instructions in the Notice. Once you receive the proxy card, simply complete, sign and date the proxy card and return it promptly in the envelope provided. If you return your signed proxy card to us before the annual meeting, we will vote your shares as you direct.
- To vote over the telephone from a location in the United States, dial toll-free 1-800-690-6903, using a touch-tone phone and follow the recorded instructions. You will be asked to provide the company number and control number from the Notice. Your vote must be received by 11:59 p.m. Eastern time, on June 12, 2019 to be counted.
- To vote through the internet, go to www.proxyvote.com to complete an electronic proxy card. You will be asked to provide the company number and account number from the Notice. Your vote must be received by 11:59 p.m. Eastern time, on June 12, 2019 to be counted.

Beneficial Owner — Shares Registered in the Name of a Broker or Bank: If you are a beneficial owner of shares registered in the name of your broker, bank, or other agent, you should have received a Notice containing voting instructions from that organization rather than from us. Simply follow the voting instructions in the Notice

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to ensure that your vote is counted. To vote in person at the annual meeting, you must obtain a valid proxy from your broker, bank, or other agent. Follow the instructions from your broker or bank included with these proxy materials, or contact your broker or bank to request a proxy form.

Internet proxy voting may be provided to allow you to vote your shares online, with procedures designed to ensure the authenticity and correctness of your proxy vote instructions. However, please be aware that you must bear any costs associated with your internet access, such as usage charges from internet access providers and telephone companies.

How many votes do I have?

On each matter to be voted upon, you have one vote for each share of common stock you own as of April 17, 2019.

If I am a stockholder of record and I do not vote, or if I return a proxy card or otherwise vote without giving specific voting instructions, what happens?

If you are a stockholder of record and do not vote by completing your proxy card, by telephone, through the internet or in person at the annual meeting, your shares will not be voted.

If you return a signed and dated proxy card or otherwise vote without marking voting selections, your shares will be voted, as applicable, “For” the election of all five nominees for director, “For” the ratification of the selection by the audit committee of the board of directors of RSM US LLP as our independent registered public accounting firm for our fiscal year ending December 31, 2019 and “For” the approval, on an advisory basis, of the compensation of our named executive officers as disclosed in this proxy statement. If any other matter is properly presented at the annual meeting, your proxyholder (one of the individuals named on your proxy card) will vote your shares using his best judgment.

If I am a beneficial owner of shares held in street name and I do not provide my broker or bank with voting instructions, what happens?

If you are a beneficial owner of shares held in street name and you do not instruct your broker, bank or other agent how to vote your shares, your broker, bank or other agent may still be able to vote your shares in its discretion. Under the rules of the New York Stock Exchange, or NYSE, brokers, banks and other securities intermediaries that are subject to NYSE rules may use their discretion to vote your “uninstructed” shares with respect to matters considered to be “routine” under NYSE rules, but not with respect to “non-routine” matters. Proposals No. 1 and 3 are considered to be “non-routine” under NYSE rules meaning that your broker may not vote your shares on those proposals in the absence of your voting instructions. However, Proposal No. 2 is considered to be a “routine” matter under NYSE rules meaning that if you do not return voting instructions to your broker by its deadline, your shares may be voted by your broker in its discretion on Proposal No. 2.

If you a beneficial owner of shares held in street name, in order to ensure your shares are voted in the way you would prefer, you must provide voting instructions to your broker, bank or other agent by the deadline provided in the materials you receive from your broker, bank or other agent.

Who is paying for this proxy solicitation?

We will pay for the entire cost of soliciting proxies. In addition to these proxy materials, our directors and employees may also solicit proxies in person, by telephone, or by other means of communication. Directors and employees will not be paid any additional compensation for soliciting proxies. We engaged Alliance Advisors to assist us with our shareholder engagement process, and we may pay them an estimated fee of \$25,000, plus reasonable out-of-pocket expenses if they assist us in soliciting proxies. We may also reimburse brokerage firms, banks and other agents for the cost of forwarding proxy materials to beneficial owners.

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What does it mean if I receive more than one Notice?

If you receive more than one Notice, your shares may be registered in more than one name or in different accounts. Please follow the voting instructions on each Notice to ensure that all of your shares are voted.

Can I change my vote after submitting my proxy?

Stockholder of Record: Shares Registered in Your Name

Yes. You can revoke your proxy at any time before the final vote at the annual meeting. If you are the record holder of your shares, you may revoke your proxy in any one of the following ways:

- You may submit another properly completed proxy card with a later date.
- You may grant a subsequent proxy by telephone or through the internet.
- You may send a timely written notice that you are revoking your proxy to our Secretary at our principal executive offices at One First Avenue, Parris Building 34, Navy Yard Plaza, Third Floor, Boston, Massachusetts 02129.
- You may attend the annual meeting and vote in person by ballot. Simply attending the annual meeting will not, by itself, revoke your proxy.

Your most current proxy card, telephone proxy or internet proxy is the one that is counted.

Beneficial Owner: Shares Registered in the Name of Broker or Bank

If your shares are held by your broker or bank as a nominee or agent, you should follow the instructions provided by your broker or bank.

How are votes counted?

Votes will be counted by the inspector of election appointed for the annual meeting, who will separately count, for the proposal to elect directors (Proposal No. 1), votes “For,” “Withhold” and broker non-votes; and with respect to all other proposals, votes “For” and “Against,” abstentions and, if applicable, broker non-votes. Abstentions will be counted towards the vote total for Proposals Nos. 2 and 3, and will have the same effect as “Against” votes. Broker non-votes on Proposals No. 1 and 3 will have no effect and will not be counted towards the vote total for any proposal.

What are “broker non-votes”?

As discussed above, when a beneficial owner of shares held in street name does not give voting instructions to his or her broker, bank or other securities intermediary holding his or her shares as to how to vote on matters deemed to be “non-routine” under NYSE rules, the broker, bank or other such agent cannot vote the shares. These un-voted shares are counted as “broker non-votes.” Proposals No. 1 and 3 are considered to be “non-routine” under NYSE rules and we therefore expect broker non-votes to exist in connection with those proposals.

As a reminder, if you are a beneficial owner of shares held in street name, in order to ensure your shares are voted in the way you would prefer, you must provide voting instructions to your broker, bank or other agent by the deadline provided in the materials you receive from your broker, bank or other agent.

How many votes are needed to approve each proposal?

- For Proposal No. 1, which relates to the election of directors, the five nominees receiving the most “For” votes (from the holders of votes of shares present in person or represented by proxy and entitled to vote on the election of directors) will be elected. Only votes “For” will affect the outcome. Broker non-votes will have no effect.

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- To be approved, Proposal No. 2, which relates to the ratification of the appointment of RSM US LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2019, must receive “For” votes from the holders of a majority of shares present in person or represented by proxy and entitled to vote at the meeting. If you “Abstain” from voting, it will have the same effect as an “Against” vote.
- To be approved, Proposal No. 3, which relates to the approval, on an advisory basis, of the compensation of our named executive officers, will be considered approved if it receives “For” votes from the holders of a majority of shares present in person or represented by proxy and entitled to vote at the annual meeting. If you “Abstain” from voting, it will have the same effect as an “Against” vote. Broker non-votes will have no effect.

What is the quorum requirement?

A quorum of stockholders is necessary to hold a valid meeting. A quorum will be present if stockholders holding at least a majority of the outstanding shares entitled to vote are present at the annual meeting in person or represented by proxy. On the Record Date, there were 162,294,494 shares outstanding and entitled to vote. Thus, the holders of 81,147,248 shares must be present in person or represented by proxy at the annual meeting to have a quorum.

Your shares will be counted towards the quorum only if you submit a valid proxy (or one is submitted on your behalf by your broker, bank or other nominee) or if you vote in person at the annual meeting. Abstentions and broker non-votes will be counted towards the quorum requirement. If there is no quorum, the holders of a majority of shares present at the annual meeting in person or represented by proxy may adjourn the annual meeting to another date.

How can I find out the results of the voting at the annual meeting?

Preliminary voting results will be announced at the annual meeting. In addition, final voting results will be published in a current report on Form 8-K that we expect to file within four business days after the annual meeting. If final voting results are not available to us in time to file a Form 8-K within four business days after the meeting, we intend to file a Form 8 K to publish preliminary results and, within four business days after the final results are known to us, file an additional Form 8-K to publish the final results.

PROPOSALS

Proposal No. 1. Election of Directors

Our board of directors currently consists of the following six directors: Scott Braunstein, M.D.; James A. Cannon; Laurence Cooper, M.D., Ph.D.; Elan Ezickson; Doug Pagán; and Scott Tarriff. Mr. Cannon, who has served as one of our directors since 2005, was not nominated for re-election and his term as a director will expire at the upcoming annual meeting.

Each director nominee identified below, other than Dr. Cooper, was previously elected by the stockholders. If elected, each nominee has consented to serve as one of our directors, to hold office until the next annual meeting of stockholders, until his successor is elected and shall have qualified, or until his earlier death, resignation or removal. Proxies cannot be voted for a greater number of persons than the number of nominees named in the proxy statement. If any director nominee should withdraw or otherwise become unavailable to serve, the proxies which would have otherwise been voted for that director nominee may be voted for a substitute director nominee selected by our board. We are not aware of any reason that a nominee will be unable or unwilling to serve as a director.

In 2016, we adopted a director resignation policy. Under this policy, any nominee in an uncontested election who does not receive a majority of the votes cast (i.e. receives a greater number of votes “withheld” from his or her election than votes “for” in such election) shall submit his or her offer of resignation for consideration by the corporate governance and nominating committee. The corporate governance and nominating committee shall consider all of the relevant facts and circumstances and recommend to the board the action to be taken with respect to such offer of resignation, and the board will then act on such recommendation.

There is currently one vacancy on our board of directors. Assuming that all nominees are elected at the annual meeting, we will have two vacancies on our board following the annual meeting. Vacancies on the board may be filled only by persons elected by a majority of the remaining directors or may be elected by a plurality of the stockholder votes cast. A director elected by the board to fill a vacancy, including vacancies created by an increase in the number of directors, shall serve for the remainder of the full term or until the director’s successor is duly elected and qualified, or until the director’s earlier death, resignation or removal. Our board of directors may appoint a director or directors to fill the vacancies on the board at any time following the annual meeting. The corporate governance and nominating committee is actively seeking and reviewing the qualifications of potential candidates to fill the current vacancy on our board and the vacancy that will exist after the expiration of Mr. Cannon’s term at our annual meeting.

Our corporate governance and nominating committee seeks to assemble a board that, as a whole, possesses the appropriate balance of professional and industry knowledge, financial expertise and management experience necessary to oversee and direct our business. To that end, the corporate governance and nominating committee has evaluated the board’s current members in the broader context of the board’s overall composition. The corporate governance and nominating committee maintains a goal of recruiting members who complement and strengthen the skills of other members and who also exhibit integrity, collegiality, sound business judgment and other qualities that the corporate governance and nominating committee views as critical to effective functioning of the board.

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The following table sets forth each nominee to be elected at the annual meeting, the year each nominee was first elected as a director, the position(s) currently held by each nominee with us and the year each nominee's term will expire, if such nominee is elected at the annual meeting.

<u>Name of Nominee</u>	<u>Position(s) with the Company</u>	<u>Year First Became a Director</u>	<u>Year Proposed Term Will Expire</u>
Scott Tarriff	Chair	2015	2020
Scott Braunstein	Director	2018	2020
Laurence Cooper ⁽¹⁾	Chief Executive Officer and Director	2018	2020
Elan Z. Ezickson	Director	2018	2020
Douglas W. Pagán	Director	2018	2020

(1) On October 15, 2018, Dr. Cooper was elected by the board to fill a vacancy on the board.

None of the director nominees are related by blood, marriage or adoption to any of our other director nominees or executive officers and none of the director nominees are party to an arrangement or understanding with any person pursuant to which the nominee is to be selected or nominated for election as a director.

Vote Required

Pursuant to our bylaws, directors are elected by a plurality of the votes of the holders of shares present in person or represented by proxy and entitled to vote on the election of directors. The five nominees receiving the highest number of "For" votes will be elected. Shares represented by executed proxies will be voted, if authority to do so is not withheld, for the election of the five nominees named above. If you do not vote for a particular nominee, or you withhold authority for one or all nominees, your vote will not count either "For" or "Against" the nominee, although it will be counted for purposes of determining whether there is a quorum.

The board recommends that you vote "FOR" the election of each named nominee.

Proposal No. 2. Ratification of Selection of Independent Registered Public Accounting Firm

The board of directors and management are committed to the quality, integrity and transparency of our financial reports. Independent auditors play an important part in our system of financial control. In accordance with the duties set forth in its written charter, the audit committee of the board has selected RSM US LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2019. RSM US LLP has audited our financial statements since 2010. A representative of RSM US LLP is expected to attend the annual meeting. He or she will have an opportunity to make a statement if he or she so desires and will be available to respond to appropriate questions from stockholders.

We are not required by statute or our bylaws or other governing documents to obtain stockholder ratification of the appointment of RSM US LLP as our independent registered public accounting firm. The audit committee has submitted the selection of RSM US LLP to the stockholders for ratification as a matter of good corporate practice. If the stockholders do not ratify the appointment, the audit committee may reconsider its selection. Notwithstanding the proposed ratification of the selection of RSM US LLP by the stockholders, the audit committee, in its discretion, may direct the appointment of a new independent registered public accounting firm at any time during the year without notice to, or the consent of, the stockholders, if the audit committee determines that such a change would be in our best interests and the best interests of our stockholders.

Vote Required

The affirmative vote of the holders of a majority of the shares present in person or represented by proxy and entitled to vote at the annual meeting will be required to ratify the selection of RSM US LLP. Abstentions will be counted toward the tabulation of votes cast on proposals presented to the stockholders and will have the same effect as “Against” votes.

The board recommends that you vote “FOR” the ratification of the selection of RSM US LLP as our independent registered public accounting firm for our fiscal year ending December 31, 2019.

Proposal No. 3. Advisory Vote on Executive Compensation

Under the Dodd-Frank Wall Street Reform and Consumer Protection Act, or the Dodd-Frank Act, and Section 14A of the Securities Exchange Act of 1934, as amended, or the Exchange Act, our stockholders are entitled to vote to approve, on an advisory basis, the compensation of our named executive officers as disclosed in this proxy statement in accordance with the SEC rules. At the 2017 annual meeting of stockholders, our stockholders indicated their preference that we solicit a non-binding advisory vote on the compensation of the named executive officers, commonly referred to as a “say-on-pay vote,” every year. The board has adopted a policy that is consistent with that preference indicated by our stockholders. Accordingly, this year we are again asking the stockholders to approve, on an advisory basis, the compensation of our named executive officers as disclosed in this proxy statement.

This vote is not intended to address any specific item of compensation, but rather the overall compensation of our named executive officers and the philosophy, policies and practices described in this proxy statement. The compensation of our named executive officers is disclosed in the section entitled “Executive Compensation” below, including the tabular and narrative disclosures set forth in such section under the headings “Executive Compensation Tables” and “Compensation Discussion and Analysis.” As discussed in those disclosures, we believe that our compensation policies and decisions are focused on pay-for-performance principles and strongly aligned with our stockholders’ interests. Compensation of our named executive officers is designed to enable us to attract and retain talented and experienced executives, whose knowledge, skills and performance are critical to our success, and motivate these executive officers to achieve our business objectives and to lead us in a competitive environment.

We are asking our stockholders to indicate their support for the compensation of our named executive officers as described in this proxy statement by casting a non-binding advisory vote “FOR” the following resolution:

“RESOLVED, that the stockholders hereby approve the compensation of the “named executive officers” of Ziopharm Oncology, Inc., as disclosed in the section entitled “Executive Compensation” in the proxy statement for the Ziopharm Oncology, Inc. 2019 Annual Meeting of Stockholders pursuant to the compensation disclosure rules of the Securities and Exchange Commission, including the Compensation Discussion and Analysis, compensation tables and narrative discussion.”

Vote Required

The affirmative vote of the holders of a majority of the shares present in person or represented by proxy and entitled to vote at the annual meeting will be required to approve, on an advisory basis, the compensation of our named executive officers as described herein. Because the vote is advisory, it will not be binding on us, the board or our compensation committee. Nevertheless, the views expressed by our stockholders, whether through this vote or otherwise, are important to us and, accordingly, the board and our compensation committee intend to consider the results of this vote in making determinations in the future regarding executive compensation arrangements.

The board recommends that you vote “FOR” the proposal to approve the compensation of our named executive officers, as described in this proxy statement.

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Other Matters

The board of directors is not aware of any matter to be presented for action at the annual meeting other than the three proposals described above. The board does not intend to bring any other matters before the annual meeting.

Stockholder Proposals for the 2020 Annual Meeting of Stockholders

For a proposal to be considered for inclusion in our proxy materials for presentation at the 2020 annual meeting of stockholders pursuant to Rule 14a-8 under the Exchange Act, the proposal must be received by our Secretary at our principal executive offices at One First Avenue, Parris Building 34, Navy Yard Plaza, Third Floor, Boston, Massachusetts 02129, by no later than December 31, 2019, unless the date of 2020 annual meeting of stockholders is changed by more than 30 days from the one-year anniversary of this year's annual meeting, in which case the deadline will be a reasonable time before we begin to distribute the proxy materials for the 2020 annual meeting of stockholders. Due to the complexity of the respective rights of the stockholders and us in this area, any stockholder desiring to propose such an action is advised to consult with his or her legal counsel with respect to such rights. We suggest that any such proposal be submitted to us by certified mail, return receipt requested.

Rule 14a-4 under the Exchange Act governs our use of our discretionary proxy voting authority with respect to a stockholder proposal that the stockholder has not sought to include in our proxy statement. Rule 14a-4 provides that if a proponent of a proposal fails to notify us at least 45 days prior to the month and day of mailing of the prior year's proxy statement, management proxyholders will be allowed to use their discretionary voting authority as to whether the proposal is raised at the annual meeting, without any discussion of the matter. If a stockholder wishes to bring a matter before the stockholders at the 2020 annual meeting of stockholders but does not notify us before March 15, 2020 (or a reasonable time before we begin to distribute the proxy materials for the 2020 annual meeting of stockholders if the date of the 2020 annual meeting of stockholders is changed by more than 30 days from the one-year anniversary of this year's annual meeting), for all proxies we receive, the management proxyholders will have discretionary authority to vote on the matter, including discretionary authority to vote in opposition to the stockholder's proposal.

CURRENT DIRECTORS, DIRECTOR NOMINEES AND EXECUTIVE OFFICERS

The following table contains biographical information, as of the date of this proxy statement, of each of our current directors, director nominees and executive officers. In addition, the table contains information about the specific and particular experience, qualifications, attributes or skills of each current director and each nominee for director at the annual meeting that led the corporate governance and nominating committee to believe that such current director was appropriate for nomination at a previous annual meeting of stockholders and, in the case of each nominee for director at the annual meeting, that such nominee should serve on the board following election at the annual meeting.

<p>Scott Tarriff <i>Chair</i></p>	<p>Mr. Tarriff has served as a member of our board since September 2015 and served as the board's non-executive Lead Director from August 2018 until April 2019 when he was appointed as chair of the board. Mr. Tarriff has served as the Chief Executive Officer and as a member of the Board of Directors of Eagle Pharmaceuticals, Inc. since its inception in January 2007. Prior to joining Eagle, Mr. Tarriff held various executive positions at Par Pharmaceutical Companies, Inc., a publicly-traded developer, manufacturer and marketer of specialty pharmaceuticals, including as President and Chief Executive Officer from September 2003 to September 2006, after joining Par in 1998. Prior to that, Mr. Tarriff held various positions with Bristol-Meyers Squibb, a publicly-traded biopharmaceutical company, including senior director of marketing. Mr. Tarriff has served as a member of the board of directors of Synthetic Biologics, Inc., a publicly-traded biotechnology company, since February 2012 and previously served on the board of directors of Clinical Data, Inc., a publicly-traded pharmaceutical company, from September 2009 until its acquisition by Forest Laboratories, Inc. in April 2011. Mr. Tarriff holds a B.S. in marketing from Pennsylvania State University and an M.B.A. from Rider College. Mr. Tarriff is 59 years old.</p> <p>Mr. Tarriff has consistently demonstrated an ability to dedicate a great deal of time and focus on his duties as a member of our board and the board feels it is important for Mr. Tarriff to remain a director given the continuity Mr. Tarriff provides the board's new members and his depth of experience with our programs. The board believes that Mr. Tarriff's long-term record of achievement and extensive experience as a board member and senior executive in the pharmaceutical and biotechnology industries, coupled with his extensive expertise in company operations and management, including his knowledge of the clinical development and regulatory process, qualifies him to serve as the board's chair.</p>
<p>James A. Cannon <i>Non-Continuing Director</i></p>	<p>Mr. Cannon has served as a member of our board since our September 2005 acquisition of Ziopharm, Inc. and previously served as a director of Ziopharm, Inc. since December 2004. Mr. Cannon is currently Vice Chairman, Chief Financial Officer and a member of the board of directors of BBDO Worldwide, an advertising agency. In these capacities, he oversees the financial management of BBDO operations in 77 countries. Mr. Cannon joined BBDO in 1967, was promoted to Chief Financial Officer of the agency in 1984, and was elected to its board of directors one year later. An integral member of the team that formed Omnicom via a unique three-agency merger of BBDO, DDB and Needham Harper & Steers, Mr. Cannon became Comptroller of the new group and a member of its board of directors in 1986, a position he held through 2002. In 1987, he</p>

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was appointed Director of Financial Operations of the Omnicom Group, serving in this capacity until early 1989 when he rejoined BBDO Worldwide as Executive Vice President and Chief Financial Officer. Mr. Cannon is a graduate of Pace University and served in the U.S. Marine Corps. Mr. Cannon is 80 years old. Mr. Cannon will not be standing for re-election at the annual meeting and, accordingly, his service on our board will end on June 13, 2019, the date of the annual meeting.

Scott Braunstein, M.D.
Director

Dr. Braunstein has served as a member of our board since September 2018. Dr. Braunstein is an operating partner at Aisling Capital, a private investment firm, a position he has held since August 2015. From 2015 to 2018, he held positions of increasing responsibility at Pacira Pharmaceuticals, Inc., a publicly traded specialty pharmaceutical company, including most recently serving as its Chief Operating Officer. His prior roles at Pacira including serving as its Senior Vice President of Strategy and Chief Strategy Officer. Prior to then, Dr. Braunstein served as a healthcare portfolio manager at Everpoint Asset Management from 2014 through 2015. From 2002 to 2014, he worked in various positions at JP Morgan Asset Management, a division of JPMorgan Chase & Co., most recently as a managing director, senior portfolio manager for the JPM Global Healthcare Fund and the JPM asset global equity analyst for the U.S. pharmaceutical and biotechnology industry. Dr. Braunstein has served as a member of the board of directors of Esperion Therapeutics, Inc., a publicly traded pharmaceutical company, since 2015, on the board of directors of Trevena, Inc. and Marinus Pharmaceuticals, Inc., both publicly traded pharmaceutical companies, since September 2018 and on the board of directors of Constellation Pharmaceuticals, a publicly traded biopharmaceutical company, since February 2019.

Dr. Braunstein is board certified in internal medicine, having completed his residency at the New York Hospital/Cornell Medical Center, and achieved the title of assistant clinical professor of medicine at Albert Einstein College of Medicine and for Columbia University Medical Center. He earned his B.S. from Cornell University and his M.D. from the Albert Einstein College of Medicine at Yeshiva University. Dr. Braunstein is 55 years old.

The board believes that Dr. Braunstein's experience as a senior executive in the pharmaceutical and biotechnology industries as well as his prior medical background and training enables Dr. Braunstein to provide strategic guidance to the Company and qualifies him to serve on the board.

Elan Z. Ezickson
Director

Mr. Ezickson has served as a member of our board since September 2018. Mr. Ezickson served as Chief Operating Officer & Head of Corporate Development for Scholar Rock Holding Corporation from August 2014 until his retirement in December 2018. Prior to Scholar Rock, Mr. Ezickson served as Executive Vice President and Chief Operating Officer of Aveo Pharmaceuticals, Inc., where he worked from 2003 to July 2013. Previously, Mr. Ezickson worked at Biogen Inc. in roles of increasing responsibility, including serving as the President of Biogen Canada, Program Executive and Associate General Counsel. Mr. Ezickson holds a B.A. in Political Science from Yale University and a J.D. from the Columbia University School of Law. Mr. Ezickson is 55 years old.

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The board believes that Mr. Ezickson's deep operating and management experience at several leading life science companies, as well as his legal training, qualifies him to serve on the board.

Douglas W. Pagán
Director

Mr. Pagán has served as a member of our board since September 2018. Mr. Pagán currently serves as Chief Financial Officer of KSQ Therapeutics, a position he has held since April 2019. Prior to KSQ Therapeutics, Mr. Pagán was the Chief Financial Officer of Paratek Pharmaceuticals, Inc. from December 2014 until April 2019, where he was responsible for fundraising, financial reporting, investor relations, and strategic planning. Prior to that, Mr. Pagán served as Vice President, Finance at Acceleron Pharma Inc., which he joined in 2008. There, he was responsible for strategic and financial planning, accounting, SEC reporting, treasury and financial operations, including undertaking a significant role in the company's initial public offering. Prior to working at Acceleron, Mr. Pagán served in strategic and financial management roles at Biogen Idec and Bristol-Myers Squibb. Previously, Mr. Pagán worked in healthcare investment banking at J.P. Morgan, as well as pharmaceutical operational roles at Johnson & Johnson. Mr. Pagán received his B.S.E. in Chemical Engineering from Princeton University and his M.B.A. from Columbia Business School. Mr. Pagán is 47 years old.

The board believes that Mr. Pagán's experience as a financial executive in life science and pharmaceutical companies, as well as his prior investment banking experience, allows Mr. Pagán to provide financial and strategic guidance to the Company and qualifies him to serve on the board.

Laurence James Neil Cooper, M.D., Ph.D.
Chief Executive Officer and Director

Dr. Cooper has served as our Chief Executive Officer since May 2015 and as a director since October 2018. Prior to joining us, Dr. Cooper led the Pediatric Cell Therapy service (formally named the BMT program) as a tenured professor at the University of Texas M.D. Anderson Cancer Center, or MD Anderson, where he had worked since 2006. In addition to caring for children, adolescents and young adults undergoing autologous and allogeneic hematopoietic stem-cell transplantation, referred to as HSCT, at MD Anderson, he ran a laboratory translating immunology into clinical practice. His program had multiple investigator-initiated trials that infuse T cells and NK cells to target malignancies. Dr. Cooper also holds an appointment as a Visiting Scientist at MD Anderson and as Adjunct Professor of Pathology & Laboratory Medicine at the Perelman School of Medicine at the University of Pennsylvania. Dr. Cooper obtained his B.A. at Kenyon College in Gambier, Ohio and M.D. and Ph.D. degrees at Case Western Reserve University in Cleveland before training in Pediatric Oncology and Bone Marrow Transplantation at the Fred Hutchinson Cancer Research Center in Seattle. Dr. Cooper is 54 years old.

The board believes that Dr. Cooper's scientific expertise, industry background and prior experience, including serving as our Chief Executive Officer, allows Dr. Cooper to make an effective contribution to the medical and scientific understanding of the board and qualifies him to serve on the board.

David M. Mauney, M.D.
President

Dr. Mauney has served as our President since December 2018. Prior to his appointment as President, Dr. Mauney served as our Executive Vice President and Chief Business Officer from September 2017 to December

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2018 and as our Interim Chief Operating Officer from November 2017 until December 2018. Prior to joining us, he served as managing director of Harvest Capital Strategies LLC, where he had worked since 2015. From 2000 to 2015, Dr. Mauney served as managing director of De Novo Ventures, a health care investment firm he co-founded. Dr. Mauney holds a B.A. from Duke University and an M.D. from Dartmouth Medical School. Dr. Mauney is 51 years old.

Robert Hadfield,
*Executive Vice President, General Counsel,
Secretary and Chief Compliance Officer*

Mr. Hadfield has served as our Executive Vice President, General Counsel, Secretary and Chief Compliance Officer since December 2018 and as our General Counsel and Secretary since April 2018. Previously, Mr. Hadfield was the General Counsel of Longwood Fund, a health care venture capital fund, from November 2017 until April 2018. Prior to Longwood Fund, Mr. Hadfield was the General Counsel of Flex Pharma, Inc. from April 2014 until November 2017. Mr. Hadfield was an attorney in the business department of Cooley LLP from August 2007 to August 2011 and then from April 2012 to April 2014. From August 2011 to April 2012, Mr. Hadfield served as the Corporate Counsel at Kiva Systems, Inc. prior to its acquisition by Amazon.com, Inc. Mr. Hadfield began his career as a financial analyst in the health care investment banking group of SG Cowen Securities Corporation. Mr. Hadfield holds a B.S. degree in Finance from Providence College and a J.D. from the Georgetown University Law Center. Mr. Hadfield is 41 years old.

Kevin G. Lafond
*Sr. Vice President – Finance, Chief Accounting
Officer and Treasurer*

Mr. Lafond has served as our Sr. Vice President Finance, Chief Accounting Officer and Treasurer since June 2013 and is our principal financial and accounting officer. Previously, Mr. Lafond served as our Corporate Controller since he joined us in February 2009 until June 2013. Prior to joining us, Mr. Lafond served as Controller of Helicos Biosciences Corporation, a public life sciences equipment manufacturer, from February 2007 to October 2008. Mr. Lafond holds a bachelor's degree from Plymouth State University, master's degrees in both accounting and taxation from Bentley University and is a Certified Public Accountant. Mr. Lafond is 63 years old.

There are no family relationships among any of our current directors, director nominees or executive officers. None of the executive officers is related by blood, marriage or adoption to any of our other directors, director nominees or executive officers.

EXECUTIVE COMPENSATION

We are a “smaller reporting company” under Item 10 of Regulation S-K promulgated under the Securities Exchange Act of 1934, as amended. Although we are permitted to provide less detail about our executive compensation program under the scaled disclosure requirements applicable to smaller reporting companies, the compensation committee is committed to providing the information necessary to help stockholders understand its executive compensation-related decisions. Accordingly, this section includes supplemental narratives that describe our 2018 executive compensation program for our named executive officers and we have included additional compensation tables not required for smaller reporting companies following this section: “Grants of Plan-Based Awards,” “Option Exercises and Stock Vested,” and “Potential Payments upon Termination or Change in Control” and supplemental narratives that describe our pay ratio.

Compensation Discussion and Analysis

Overview

This Compensation Discussion and Analysis explains our executive compensation philosophy and objectives, programs and practices, compensation setting process and the 2018 compensation of our named executive officers. As discussed in Proposal No. 3 of this proxy statement, we are conducting our annual advisory vote on executive compensation, or “say-on-pay” vote, that requests your approval of the compensation of our named executive officers, as described in this subsection titled “—Compensation Discussion and Analysis” and in the tables and accompanying narrative contained below under this section “Executive Compensation.” To assist you with this vote, please review our compensation philosophies, the design of our executive compensation programs and how, we believe, these programs have met our objectives.

For 2018, our named executive officers were:

- Dr. Laurence James Neil Cooper, our Chief Executive Officer
- Dr. David M. Mauney, our President⁽¹⁾
- Robert Hadfield, our Executive Vice President, General Counsel, Secretary and Chief Compliance Officer⁽²⁾
- Kevin G. Lafond, our Senior Vice President — Finance, Chief Accounting Officer and Treasurer
- Caesar Belbel, our former Executive Vice President, Chief Legal Officer and Secretary⁽³⁾

⁽¹⁾ Dr. Mauney served as our Interim Chief Operating Officer from November 2017 to December 2018 and was promoted to President effective December 2018.

⁽²⁾ Mr. Hadfield joined us on April 9, 2018.

⁽³⁾ Mr. Belbel’s employment with us terminated on February 15, 2018.

Executive Summary

Business Highlights

We believe that 2018 was a transformative year for Ziopharm, due in large part, to the realignment of our relationship with Precigen, Inc., or Precigen, the addition of four new directors and the advancement of our programs. Some of our highlights from 2018 include:

- In October 2018, we entered into an exclusive license agreement, or the License Agreement, with Precigen, a wholly-owned subsidiary of Intrexon Corporation, or Intrexon. The terms of the License Agreement replaced all existing agreements between us and Precigen and provides us with certain exclusive and non-exclusive rights to technology controlled by Precigen as well as development control of all our programs.

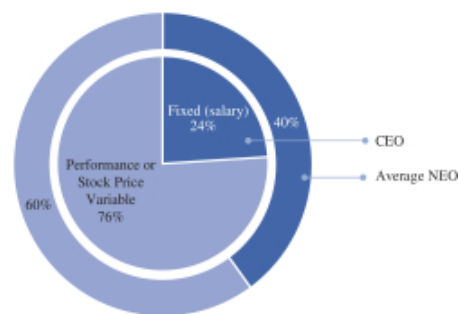
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- In consideration of our entry into the License Agreement, Intrexon forfeited and returned to us all shares of the Series 1 Preferred Stock held by or payable to Intrexon as of the date of the License Agreement, which had been valued at approximately \$156.9 million as of September 30, 2018.
- We added four new members to our board, including Dr. Cooper, our Chief Executive Officer. In addition, Scott Tarriff, a member of our board of directors since 2015, was elected to serve as lead director of our board of directors in August 2018 and was subsequently appointed to serve as the chair of the board in April 2019.
- In November 2018, we presented a poster with updated survival data for a group of 15 patients who received Ad-RTS-hIL-12 during surgical resection and the 20mg dose of vedolimex at the 2018 Annual Meeting and Education Day of the Society for Neuro-Oncology (SNO). The data presented includes the group of patients who received stereotactic administration of Ad-RTS-hIL-12 and further analysis of the effect of dexamethasone, which suggests that a lower versus higher dose of steroids improves overall patient survival.
- In June 2018, we initiated a Phase 1 expansion clinical trial of our monotherapy trial in patients with recurrent glioblastoma, or rGBM, who have not received bevacizumab for their disease and are not receiving steroids for the four weeks prior to therapy initiation.
- In June 2018, we initiated a Phase 1 clinical trial to evaluate Ad-RTS-hIL-12 plus vedolimex in combination with OPDIVO® (nivolumab).
- We and the National Cancer Institute made significant progress for the proposed Phase 1 clinical trial of *Sleeping Beauty*-modified TCRs to treat solid tumors, with enrollment expected to begin in mid-2019.
- In November 2018, we announced a clinical supply agreement with Regeneron Pharmaceuticals, Inc., or Regeneron, to evaluate Ad-RTS-hIL-12 plus vedolimex in combination with Regeneron's PD-1 antibody Libtayo® (cemiplimab-rwlc) for the treatment of patients with rGBM.
- In December 2018, we announced a joint venture with TriArm Therapeutics, Ltd. to form Eden BioCell, Ltd., to lead clinical development and commercialization of *Sleeping Beauty*-generated CD19-specific CAR-T therapies in the People's Republic of China, Taiwan and Korea.

Compensation Highlights

Key features of our executive compensation program include the following:

- *We tie pay to performance and emphasize "at risk" compensation.* Our compensation committee structures a significant portion of our named executive officers' target total direct compensation (consisting of base salary, an annual performance bonus opportunity and equity awards) to be variable, at risk and tied directly to our performance over the short- and long-term. The following chart shows the portion of the three year (2016-2018) total direct compensation of our Chief Executive Officer and our other named executive officers that was "at-risk", consisting of annual performance bonus earned and the accounting value of equity awards granted, as reported in our "Summary Compensation Table":



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Data in the chart above was calculated as follows: (1) for years in which the named executive officer did not hold the position for the entire year, the named executive officer's base salary and bonus target amounts were annualized, and (2) for years in which the named executive officer did not hold the role for any portion of the applicable year, the compensation data of the named executive officer's predecessor holding such position is included.

- *The annual performance bonuses are tied to meeting key corporate objectives.* Our annual performance bonus opportunities for our named executive officers are tied to our achievement of annual corporate objectives established each year. No bonuses are guaranteed.
- *We engage with our stockholders to understand their views on our executive compensation program* and expect to make changes where appropriate, as described in the section below entitled "Stockholder Engagement and Actions in Response to 2018 Advisory Vote on Named Executive Officer Compensation."
- *Our severance payments are reasonable in amount,* and we do not provide our named executive officers with any 280G tax gross ups in connection with a change in control.
- *We have adopted stock ownership guidelines.* In April 2019, we adopted stock ownership guidelines, which ensure that our officers and directors will maintain a meaningful equity stake in our Company. These guidelines require our Chief Executive Officer to own equity interests in our Company with a value equal to 3x times his base salary, each other senior executive officer to own equity interests with a value equal to 1x time his respective base salary, and all non-employee members of our board to own equity interests with a value equal to 3x times their respective director's annual retainer, each as calculated under our policy.
- *Our compensation committee has retained an independent compensation consultant to provide assistance in the discharge of its responsibilities.* Our compensation committee has engaged Haigh and Company, or Haigh, which advises the compensation committee on market practices so that our compensation committee can regularly assess our executive compensation program against our peer companies, the general marketplace and other industry data points.

Stockholder Engagement and Actions in Response to 2018 Advisory Vote on Executive Compensation

At our 2018 annual meeting of stockholders, our stockholders approved, on an advisory basis, the compensation of our named executive officers, as disclosed in our 2018 proxy statement. The proposal was supported by approximately 64.4% of the total votes cast. Our board of directors felt it was important to understand the reason for this lower level of support as our say on pay advisory vote in 2017 received 84.9% support, and engage in dialogue with our stockholders regarding our compensation program. As a result, members of our management, and in some cases members of our board of directors, actively engaged in a dialogue with several of our largest stockholders to gain a better understanding of their views regarding our executive compensation program as well as other governance matters. Specifically, we contacted approximately 20 of our largest stockholders, and in the first and second quarters of 2019, we held informative discussions with several of our top holders who expressed interest in speaking with us.

In response to the feedback and actions resulting from our advisory vote and stockholder outreach, our board:

- updated its policies to reflect the importance we place on diversity. In particular, our policies now provide that any search firm retained to assist the corporate governance and nominating committee in seeking candidates for our board of directors will be instructed to seek to include diverse candidates in terms of race, gender, geography, thought, viewpoints, backgrounds, skills, experience, and expertise.
- implemented ownership guidelines pursuant to which, after a phase-in period, directors and officers will be required to maintain minimum holdings of stock options and/or our common stock.

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- implemented a more traditional leadership structure for our board, with a board chair rather than lead director. Scott Tarriff, who had served as our lead director, was appointed as our chair in April 2019.

Several stockholders also provided feedback regarding our compensation programs and requested better disclosure on the performance metrics used for our annual performance bonus plan. As a result, we have significantly enhanced the disclosure regarding the performance metrics for our annual performance bonus plan.

Our compensation committee generally evaluates our compensation practices at or near the end of each year and will continue to monitor and evaluate our executive compensation program throughout the year in light of our stockholders' views, before making any appropriate adjustments during the 2019 year-end compensation review process. Our compensation committee expects to continue to consider the outcome of our "say on pay" votes and our stockholders' views when making future compensation decisions for our named executive officers.

Overview of our Executive Compensation Program

Objectives, Philosophy and Elements of Compensation

We believe that our executive compensation programs should:

- (i) be tied to overall Company performance;
- (ii) reflect each executive's level of responsibility, performance and contributions;
- (iii) include a significant equity component to ensure alignment of our executive's interests with our stockholders; and
- (iv) provide competitive total compensation opportunities, consistent with our performance, that allow us to attract, retain and motivate talented employees, including our named executive officers.

We believe that by structuring the executive compensation program so that a significant portion of each of our named executive officers' pay is at risk, including a significant equity-based component, we can best ensure our named executive officers are incentivized to maximize our performance and increase value for our stockholders. To this end, our program is comprised of three primary elements:

<u>Compensation Element</u>	<u>Objective</u>	<u>Key Features</u>
Base Salary (fixed cash)	To attract and retain executives.	Fixed compensation that is competitive with peer company data and that recognizes each executive's position, role, responsibility and experience.
Annual Performance Bonus (at-risk cash)	To motivate and reward the achievement of our short-term strategic and business goals that support our longer term objectives.	Target annual performance bonus opportunities, which are expressed as a percentage of base salary, are generally reviewed annually. Actual bonus payments are determined at the end of the year and are dependent upon the actual achievement of specific corporate performance objectives, determined by our compensation committee and our board of directors.
Equity Awards (at-risk equity)	Motivates and rewards for long-term company performance; aligns executives' interests with stockholder interests and changes in	Stock options and restricted stock awards that are subject to multi-year vesting based on continued service.

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<u>Compensation Element</u>	<u>Objective</u>	<u>Key Features</u>
	stockholder value. Attracts highly qualified executives and encourages their continued employment over the long-term.	Individual awards are determined based on a number of factors, including current corporate and individual performance, outstanding equity holdings and their retention value and total ownership, internal equity among executives and competitive market data provided by our compensation committee's compensation consultant.

Other Significant Factors in Determining Executive Compensation

The biotechnology industry is characterized by a very long product development cycle, including a lengthy research and development period and a rigorous approval phase involving preclinical studies, clinical trials and governmental regulatory approval. As a result, many of the traditional benchmarking metrics, such as product sales, revenues and profits are inappropriate for a development-stage biotechnology company like us. Instead, the specific performance factors our compensation committee considers when determining the compensation of our named executive officers include:

- key research and development achievements, including advances in our Controlled IL-12 and *Sleeping Beauty* platforms;
- initiation and progress of clinical trials for our product candidates and continued development of our product candidate pipeline;
- achievement of scientific and regulatory milestones;
- establishment and maintenance of key strategic relationships, collaborations and new business initiatives;
- achievement of extension of cash runway, including financings and other capital raising initiatives; and
- expansion of our research and development infrastructure.

These performance factors are considered by our compensation committee in connection with our annual performance reviews described below and are a critical component in the determination of annual cash and equity incentive awards for our executives.

Role of our Compensation Committee, Management and Consultant

Compensation Committee

Our compensation committee is responsible for reviewing, evaluating, approving, administering and interpreting our executive compensation and benefits policies, programs and plans, including our equity compensation plans. In particular, with respect to the compensation of our named executive officers, our compensation committee is responsible for reviewing and recommending to the outside, independent and non-employee members of the board of directors the compensation levels and performance goals relevant to the compensation of these officers, and for evaluating the officers' performance in light of those goals and objectives. The outside, independent and non-employee members of the board of directors approved the compensation committee's recommendations for the 2018 compensation of our named executive officers.

Management

Our human resources, finance and legal departments work with our Chief Executive Officer to design and develop new executive compensation programs, to recommend changes to existing compensation programs, to

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recommend financial and other performance targets to be achieved under those programs, to prepare analyses of financial data, to prepare peer group data comparisons and other briefing materials for consideration by the compensation committee and ultimately, to implement the decisions of the compensation committee.

The Chief Executive Officer recommends to the compensation committee for its discussion and ultimately, approval, proposed corporate performance and strategic goals and their relative weighting for the upcoming fiscal year, and provides input on the level of attainment of the prior year's strategic goals, for purposes of determining awards under the annual performance bonus plan for all our executives, including the Chief Executive Officer. For executives other than the Chief Executive Officer, the compensation committee will consider the individual performance of the executives, as assessed by the Chief Executive Officer, and the compensation recommendations submitted to the compensation committee by the Chief Executive Officer. Our Chief Executive Officer and other members of management generally attend our compensation committee meetings for a portion of the meeting. No executive officer was present or voted in the compensation committee or the board of directors' final determinations regarding the amount of any component of his own 2018 compensation package.

Consultant

The compensation committee re-engaged Haigh as an independent compensation consultant. The compensation committee originally retained Haigh in 2012 after considering a number of other national compensation consulting firms because of Haigh's strong reputation and record in advising similarly situated biopharmaceutical and biotechnology companies in the Greater Boston/Cambridge, Massachusetts area. Haigh is engaged by and reports directly to the compensation committee.

As part of its duties, Haigh provided the compensation committee with the following services:

- completed a competitive analysis of our executive compensation program;
- prepared a competitive analysis of the board of directors' compensation program, including observations and recommendations;
- reviewed and updated our peer group for use in determining executive compensation; and
- reviewed our 2018 proxy statement and CD&A.

During 2018, the compensation committee conducted a performance and independence assessment of Haigh with respect to Haigh's role in recommending or determining the amount and form of executive compensation during the fiscal year ended December 31, 2018, and to determine whether it would continue to serve as the compensation committee's independent advisor for 2019. Other than providing limited advice to our management and our compensation committee regarding competitive salary data and broad-based stock plan share reserve modeling, Haigh did not provide any other services to us in 2018. The compensation committee also considered that the individual representative of Haigh who works directly with the compensation committee has no other business relationships with the board, management or the Company, Haigh's own policies on ethics, stock ownership and conflicts of interest, and the total revenue that Haigh received from us in 2018 and how this amount compared to Haigh's 2018 total gross revenues. As a result, the compensation committee concluded that Haigh's services to the compensation committee during 2018 did not raise any conflict of interest.

Peer Group, Survey Sources and Market Benchmarking

Peer Group

In November 2017, in consultation with Haigh, the compensation committee evaluated the list of companies that should be included in the peer group used as a reference point in determining the levels of December 2017

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equity compensation grants, which we refer to as the November 2017 peer group. The selected November 2017 peer group companies were chosen based upon the following selection criteria:

- companies with 20 to 100 employees with a median of 74 employees;
- companies with market values between \$200 million to \$2 billion with a median of \$635.6 million;
- companies with R&D expense greater than \$50 million annually with a median of \$59.1 million; and
- companies with accumulated deficits from operations between \$100 million and \$500 million with a median of \$391.4 million.

The compensation committee determined that the foregoing selection criteria were appropriate in selecting the November 2017 peer group because at such time we had approximately 40 employees, a market value of approximately \$917.0 million, an R&D expense forecast of approximately \$41.2 million and accumulated deficits from operations of approximately \$686.5 million. The following 18 companies were approved by the compensation committee as the 2017 peer group used for purposes of setting 2018 base salary and bonus target levels for our executives:

Accelaron Pharma Inc.	Celldex Therapeutics, Inc.	Heron Therapeutics, Inc.
Achillion Pharmaceuticals, Inc.	Concert Pharmaceuticals, Inc.	Idera Pharmaceuticals, Inc.
Akebia Therapeutics, Inc.	Curis, Inc.	Selecta Biosciences, Inc.
Biocryst Pharmaceuticals, Inc.	CytomX Therapeutics, Inc.	Syros Pharmaceuticals, Inc.
Blueprint Medicines Corporation	Editas Medicine, Inc.	Xencor, Inc.
Calithera Biosciences, Inc.	Geron Corporation	Zogenix, Inc.

In November 2018, in consultation with Haigh, the compensation committee evaluated the list of companies that should be included in the peer group used as a reference point in determining 2019 compensation, which we refer to as the November 2018 peer group. Similar to the November 2017 peer group, the November 2018 peer group considered many of the same components as those listed above. The selected November 2018 peer group companies were chosen based upon the following selection criteria:

- companies focused on oncology drug development but without commercial products;
- companies with 20 to 100 employees with a median of 64 employees;
- companies with market values between \$200 million to \$1 billion with a median of \$633.4 million;
- companies with R&D expense between \$30 million and \$100 million annually with a median of \$51.2 million; and
- companies located in Massachusetts, with 13 of the 19 peer group companies located in New England.

The compensation committee determined that the foregoing selection criteria were appropriate in selecting the November 2018 peer group because at such time we had approximately 46 employees, a market value of approximately \$384.0 million and an R&D trailing expense of approximately \$40.0 million. The following 19 companies were approved by the compensation committee as the November 2018 peer group for purposes of determining the January 2019 equity grants and in setting 2019 base salary and bonus target levels:

Achillion Pharmaceuticals, Inc.	Concert Pharmaceuticals, Inc.	Idera Pharmaceuticals, Inc.
Ardelyx Inc.	CytomX Therapeutics, Inc.	Progenics Pharmaceuticals Inc.
ArQule Inc.	Dicerna Pharmaceuticals Inc.	Ra Pharmaceuticals, Inc.
Albireo Pharma Inc.	Editas Medicine, Inc.	Selecta Biosciences, Inc.
Biocryst Pharmaceuticals, Inc.	Epizyme, Inc.	Syros Pharmaceuticals, Inc.
Cara Therapeutics Inc.	Geron Corporation	Verastem, Inc.
Calithera Biosciences, Inc.		

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Other Survey Sources

In making its decisions for recommended 2018 compensation levels and the January 2019 equity grants and 2019 base salary and bonus targets, the compensation committee also reviewed Radford survey data as an additional market frame of reference.

2018 Compensation Decisions

Overview

As a general approach, the compensation committee reviews each component and the total compensation for each named executive officer to ensure their compensation is in line with the peer group and/or survey market data. In general, the compensation committee references the 50th to 75th percentile of our peer group and/or survey market data in assessing the competitiveness of total compensation of the executives, with a greater emphasis placed on equity compensation in order to align the interests of our executive team with the interests of our stockholders.

Base Salary

Our compensation committee generally reviews base salaries in the fourth quarter of the preceding fiscal year with adjusted salaries becoming effective January 1 of the following fiscal year. In addition to considering the peer group and/or other survey market data, the compensation committee also considers, among other factors, our performance; stock price appreciation; individual performance; experience; and breadth of each position's role.

In December 2017, our compensation committee recommended for approval, and the board of directors approved, 2018 base salaries for our named executive officers, as described in the table below. In making its determination, the compensation committee considered the Chief Executive Officer's review of and recommendation for Dr. Mauney and Messrs. Lafond and Belbel as well as a competitive analysis prepared by Haigh for all executive officers. The Company determined Mr. Hadfield's base salary as the result of negotiations in connection with his recruitment in April 2018. The compensation committee believed that the 2018 base salary levels set forth below were appropriate in light of our performance during fiscal year 2017 and in order to maintain or make our named executive officer's base salaries competitive in reference to the mid-market salary levels of the November 2017 peer group. Based on these considerations, the compensation committee determined that no increase to the base salaries of Dr. Cooper and Mr. Belbel was necessary, in part because their overall cash compensation was already at or above mid-market levels, and that no increase to the base salary of Dr. Mauney was necessary since he had recently joined us and his base salary had been set at an appropriate level at his time of hire. The compensation committee determined to increase Mr. Lafond's 2018 base salary by 3.0% in order to position his salary in line with the mid-market salary levels of the November 2017 peer group and Radford survey data.

<u>Executive Officer</u>	<u>2017 Base Salary (\$)</u>	<u>2018 Base Salary (\$)</u>	<u>Percentage Increase from 2017</u>
Laurence James Neil Cooper	500,000	500,000	0
David M. Mauney	400,000 ⁽¹⁾	400,000	0
Robert Hadfield	N/A	350,000 ⁽²⁾	N/A
Kevin G. Lafond	275,000	283,250	3.0
Caesar Belbel ⁽³⁾	375,000	375,000	0

(1) Represents Dr. Mauney's annual base salary rate for 2017. Dr. Mauney's actual 2017 base salary was pro-rated based on his September 28, 2017 hire date.

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- (2) Represents Mr. Hadfield's annual base salary rate for 2018. Mr. Hadfield's actual 2018 base salary was pro-rated based on his April 9, 2018 hire date.
- (3) Mr. Belbel's employment with us terminated on February 15, 2018.

Annual Incentive Compensation

An important component of our total compensation program is the annual cash incentive, which is based on the achievement of annual company performance objectives and individual executive performance. Our compensation committee recognizes the important role that variable cash compensation plays in attracting and retaining executives, as well as focusing executives (and all other employees) on the achievement of key annual financial, research, clinical, business development and individual goals.

2018 Annual Performance Bonus Target Levels

The compensation committee generally places a greater percentage of our named executive officer's target cash compensation at risk and tied to achievement of our performance goals. This also serves as an important incentive and retention purpose in the highly competitive Greater Boston/Cambridge, Massachusetts area and national and international biopharmaceutical and biotechnology employment marketplace within which we compete for top executive talent. The 2018 target bonus amounts for all of our named executive officers, other than Dr. Mauney, remained unchanged from 2017 levels as a percentage of base salary as the compensation committee determined that such levels continued to provide adequate performance incentives and were competitive with the peer group and reflective of the executive's level of responsibility for attaining our corporate performance objectives. The compensation committee increased Dr. Mauney's target bonus amount from 35% to 40% as a result of his increased responsibility within the company.

2018 Annual Performance Objectives

In the first quarter of each year, the compensation committee, in consultation with management, establishes Company goals that will be used to assess management's performance during the year. In most years, the Company goals are primarily directed to the advancement of our two platform technologies, Controlled IL-12 and *Sleeping Beauty*, and other corporate or business development activities and financial objectives. Our board of directors had the discretion under the 2018 annual cash incentive program to adjust upward or downward any cash incentive award and/or the bonus pool as it deemed appropriate, including for developments and achievements not contemplated at the time the performance goals for the annual cash incentive program were established. When determining the bonus amounts for 2018, our board considered several factors that were not contemplated at the time the original company goals were established, as described below.

The table below describes the Company goals our compensation committee, in consultation with management, established for 2018, along with the compensation committee's and board of directors' assessment of our achievement of these goals:

<u>Program</u>	<u>Company Goals</u>	<u>Board of Directors' Assessment</u>
<i>Controlled IL-12 Platform</i>	<ul style="list-style-type: none">• Meet clinical development milestones for the Phase 1 clinical trial to evaluate Ad-RTS-hIL-12 plus veledimex in combination with Bristol-Myers Squibb Company's OPDIVO® (nivolumab), an immune checkpoint inhibitor, or PD-1 inhibitor, in adult patients with patients with recurrent glioblastoma multiforme (rGBM).	The board of directors determined that all of the corporate objectives for the Controlled IL-12 platform had been achieved, other than the commencement of a study of Ad-RTS-hIL-12 plus veledimex in combination with an immune checkpoint inhibitor in a second indication. We elected to pursue an alternative study of Ad-RTS-hIL-12 plus veledimex in combination in combination with Libtayo®

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<u>Program</u>	<u>Company Goals</u>	<u>Board of Directors' Assessment</u>
	<ul style="list-style-type: none"> • Meet clinical development milestones for the Phase 1 expansion substudy evaluating Ad-RTS-hIL-12 plus vedolimex as a monotherapy to treat adult patients with patients with rGBM. • Meet clinical development milestones for a Phase 1 clinical trial to evaluate Ad-RTS-hIL-12 plus vedolimex in combination with an immune checkpoint inhibitor in a second indication. • Prepare data package to support regulatory submission. 	(cemiplimab-rwlc) instead of the study in a second indication.
<i>Sleeping Beauty Platform</i>	<ul style="list-style-type: none"> • Achieve regulatory and clinical development milestones for the Phase 1 trial to evaluate CD19-specific CAR⁺ T therapies very rapidly manufactured. • Achieve regulatory milestones for the Phase 1 clinical trial in patients with a variety of solid tumors using the <i>Sleeping Beauty</i> platform to genetically modify T-cells to target patient-specific neoantigens. • Meet clinical development milestones for the Phase 1 investigator-led trial at MD Anderson to infuse CD33-specific CAR⁺ T cells. • Execute on additional pre-clinical objectives for the CAR⁺ T program. 	The board of directors determined that while several of the specified objectives for the <i>Sleeping Beauty</i> platform were not achieved, we had made significant progress in regards to the <i>Sleeping Beauty</i> platform, positioning it for several significant advancements expected during 2019.
<i>Additional Objective Goals</i>	<ul style="list-style-type: none"> • Raise additional funding to support activities. • Achieve satisfactory results in the negotiations with Precigen. 	<p>The board of directors determined that the November 2018 financing, raising gross proceeds of \$50 million, constituted full achievement of the fundraising goal.</p> <p>The board directors determined that we had exceeded expectations with respect to the negotiations with Precigen, providing us with significant programs that enabled future growth and financial flexibility as a result of the forfeiture of all shares of our Series 1 Preferred Stock held by or payable to Intrexon, which had been valued at approximately \$156.9 million as of September 30, 2018.</p>

In assessing our achievements under the 2018 annual cash incentive program, our compensation committee and board of directors used their discretion based on other Company achievements to increase the overall bonus award pool. In particular, the board of directors noted the efforts of the executive team to retain and motivate

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employees during a critical transition year as well as several significant achievements that occurred following the execution of the License Agreement with Precigen in October 2018, including:

- the execution of a clinical supply agreement with Regeneron to evaluate Ad-RTS-hIL-12 plus veledimex in combination with Regeneron's PD-1 antibody Libtayo® (cemiplimab-rwlc) for the treatment of patients with rGBM;
- our announcement of a joint venture with TriArm Therapeutics, Ltd., pursuant to which the parties would launch Eden BioCell, Ltd. to lead clinical development and commercialization of *Sleeping Beauty*-generated CAR-T therapies in the People's Republic of China (including Macau and Hong Kong), Taiwan and Korea; and
- the closing of our private placement in November 2018, raising gross proceeds of \$50 million.

In light of these accomplishments, the board of directors determined that 2018 annual incentive payout levels of 100% of the targeted cash bonus were appropriate for each of the named executive officers. Following discussion with the board of directors, Dr. Cooper offered to receive fully-vested shares of our common stock with a trading value equal to the cash bonus in order to preserve our capital resources. The board of directors accepted Dr. Cooper's offer and we issued Dr. Cooper 446,428 shares of common stock in January 2019. The number of shares underlying the award were calculated based on Dr. Cooper's cash bonus award and divided by the most recent closing trading price of our common stock prior to the day the shares were issued.

The target short-term incentive compensation amounts for 2018, expressed as a percentage of 2018 base salaries, for each of our named executive officers, are set forth in the following table. In addition, the compensation committee recommended, and the board of directors approved the following cash bonuses for 2018 performance:

Name	2018 Target Bonus		2018 Actual Bonus		Percentage of Target Bonus Paid Out
	Percentage of Base Salary	Amount (\$)	Percentage of Base Salary	Amount (\$)	
Dr. Laurence James Neil Cooper	200.0	1,000,000	200.0	1,000,000	100.0
Dr. David M. Mauney	40.0	160,000	40.0	160,000	100.0
Robert Hadfield	30.0	105,000	30.0	105,000	100.0
Kevin G. Lafond	35.0	99,138	35.0	99,138	100.0
Caesar Belbel ⁽¹⁾	100.0	375,000	12.6	47,260	12.6

(1) Upon his termination, Mr. Belbel received a pro-rated bonus pursuant to the terms of his employment agreement with us.

One-Time Discretionary Bonuses

In June 2018, our board awarded one-time discretionary bonuses to all employees, including our named executive officers, other than Dr. Cooper. The bonuses were awarded as a result of the Company's performance, with the amounts determined based on the employees' seniority, performance and tenure with the Company. The board approved a bonus of \$37,000 for Dr. Mauney, \$8,000 for Mr. Hadfield, and \$5,000 for Mr. Lafond. Mr. Belbel was not an employee in June 2018 and, therefore, was not eligible to receive a discretionary bonus.

Long-Term Incentive Compensation

We award equity incentives in order to directly link the interests of our named executive officers with those of our stockholders and create incentives for them to maximize the long-term value of our stock. In determining the aggregate size of equity grants, the compensation committee may consider, in any given year, the peer group

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or survey data and one or more other factors, including the internal pay equity among our named executive officers other than our Chief Executive Officer, and ensuring that the Chief Executive Officer's award appropriately reflects the importance of his or her responsibilities for our success.

Equity Grants during 2018 and January 2019

Mr. Hadfield joined us in April 2018. As part of our negotiations with Mr. Hadfield, we granted him a stock option to purchase 150,000 shares of our common stock under the terms of our amended and restated 2012 Equity Incentive Plan, as amended, or the 2012 Equity Plan.

Historically, we have granted equity in December for all employees, including our named executive officers. In December 2018, we elected to adjust our practices to begin granting equity to named executive officers in January instead of December of the prior year. Accordingly, none of our executives received regular annual equity grants during 2018, but instead received such grants in January 2019. The board of directors believes that granting equity in January is a more customary approach and will provide the board with additional time to evaluate market practices, the performance of the named executive officers and the requirements of our business.

For the past several years, we have granted our executive officers restricted stock because it was less dilutive to our stockholders than stock options, as fewer shares of our common stock are granted to achieve an equivalent value relative to stock options. In January 2019, the board of directors elected to grant a mix of restricted stock awards and stock options, with an equivalent value of each granted to executives. The board of directors believes this practice is more in line with our peers and, while it will likely increase the dilution to our stockholders, provides greater alignment between our executives and stockholders because our executives will only realize value with respect to the stock options if the value of our shares increases after the date of grant.

Other than the option granted to Mr. Hadfield in connection with the commencement of his employment, no equity incentive grants were made to our named executive officers in 2018. In January 2019, after referencing the November 2018 peer group data, the compensation committee granted equity awards that it believed to be at a reasonable level to be competitive with such peer group and continue to align our executives' interests with those of our stockholders in order to motivate their performance to increase our share value. In January 2019, the following equity incentive grants were made to our named executive officers:

<u>Name</u>	<u>Restricted Stock</u>	<u>Stock Options</u>	<u>Total Equity Value⁽¹⁾</u>
Laurence James Neil Cooper	337,266	531,813	\$1,618,183
David M. Mauney	159,010	250,733	\$ 762,921
Robert Hadfield	117,572	185,391	\$ 564,103
Kevin G. Lafond	37,122	58,536	\$ 178,110
Caesar Belbel ⁽²⁾	—	—	—

(1) Amounts have been calculated in accordance with ASC Topic 718.

(2) Mr. Belbel was not employed by us in January 2019 and was not eligible to receive any 2019 equity awards.

The restricted stock and stock options granted to our named executive officers vest in three equal annual installments and the stock options vest quarterly in equal installments over three years. Vesting of all awards is subject to continued service. These vesting schedules are designed to promote retention and encourage executives to consider the long-term stock price effects of their decisions.

Equity Compensation Policies

Options are granted with an exercise price that is not less than the closing price of our common stock on the Nasdaq Capital Market on the grant date. It is our policy not to purposely accelerate or delay the public release of

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material information in consideration of a pending equity grant to allow the grantee to benefit from a more favorable stock price. To avoid our release of information in close proximity to an equity grant, which may appear to be an effort to time the announcement to a grantee's benefit (even if no such benefit was intended), it is our policy for our management to make a good faith effort to advise the compensation committee whenever it is aware that material non-public information is planned to be released to the public in close proximity to the grant of equity awards.

2019 Base Salary and Bonus Target Changes

In December 2018 and January 2019, the compensation committee analyzed our cash compensation practices in relation to our November 2018 peer group and determined that increases to 2019 cash compensation levels of our executives were warranted to remain competitive with our peers. Accordingly, the compensation committee approved the following increases to the base salaries of all our named executive officers, which became effective January 1, 2019:

<u>Executive Officer</u>	<u>2019 Base Salary (\$)</u>	<u>Percentage Increase from 2018</u>
Laurence James Neil Cooper	573,000	14.4
David M. Mauney	440,000	10.0
Robert Hadfield	370,000	5.7
Kevin G. Lafond	290,000	2.4

Additionally, in December 2018, in connection with Dr. Mauney's promotion to President, his 2019 bonus target was increased from 40% to 45% to reflect his increased responsibilities, and Mr. Hadfield's 2019 bonus target was increased from 30% to 40% to bring his target bonus in line with the peer group data and internal pay among the executive team.

Stock Ownership Guidelines

In April 2019, we adopted stock ownership guidelines to help ensure that our senior executive officers and the non-employee members of our Board each maintain an equity stake in the Company, and by doing so, appropriately link their interests with those of our other stockholders. These guidelines require our Chief Executive Officer to own equity interests in the Company with a value equal to 3 times his base salary, each other senior executive officer to own equity interests with a value equal to 1 times his or her respective base salary, and all non-employee members of our board to own equity interests with a value equal to 3 times their respective annual retainer, each as calculated under our policy. Compliance is assessed annually, and executive officers and directors have an initial compliance period (ranging from three to five years, depending on how long they have been in such capacity with the Company at the time the guidelines are effective) from the date on which they become subject to the guidelines to acquire the required shares, and are allotted a shorter compliance period when an ownership guideline is increased due to a change in base salary, retainer or service status.

As of December 31, 2018, Dr. Cooper had beneficial ownership of our equity with a value equal to 3.28 times his 2018 annual base salary, based on our stock price as of December 31, 2018. For such purposes, shares owned outright by Dr. Cooper and his family members and subject to Dr. Cooper's vested equity awards, less the number of shares necessary to cover any option exercise price or tax withholding, are considered beneficially owned. The decrease in value of Dr. Cooper's total equity holdings from the value of such holdings as of the preceding year is mainly a result of the decline in our stock price during 2018. Due to their shorter tenure, as of December 31, 2018, our other named executive officers had not acquired beneficial ownership of our equity with a significant dollar value.

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We have a policy that prohibits our executive officers, directors and other members of management from engaging in short sales, transactions in put or call options, hedging transactions or other inherently speculative transactions with respect to our stock.

Severance and Change in Control Benefits

We have agreements with each of our named executive officers providing them with severance benefits, as further described in “*Employment and Change in Control Agreements*” below. The amounts and terms and conditions of these severance rights reflect the negotiations between each of our named executive officers and us at the time these documents were entered into, the benefits provided by our peer companies to similarly situated executives at the time they were negotiated, as well as our desire for internal pay equity among our executive officers. We believe that these existing arrangements are consistent with market practices and are critical to attracting and retaining high quality executives. We also believe the involuntary termination benefits allow our executives to focus on normal business operations rather than worrying about how business decisions that may be in our best interest will impact their own financial security. We do not provide golden parachute excise tax gross ups.

Mr. Belbel’s Separation Agreement

In connection with his departure from the Company on February 15, 2018, we entered into a separation agreement with Mr. Belbel providing for the same severance benefits as provided to Mr. Belbel under his employment agreement as well as certain additional benefits that were negotiated with Mr. Belbel in connection with his termination. Pursuant to the terms of the separation agreement, in consideration for a release of claims from Mr. Belbel and the commitments and other agreements provided by Mr. Belbel in his separation agreement: (i) we agreed to pay to Mr. Belbel a severance payment of \$375,000, which is equal to 100% of his annual base salary at the time of his departure, (ii) we agreed to pay to Mr. Belbel an additional severance payment of \$47,260, which is equal to his 2018 target bonus amount, prorated based upon the number of days he worked in 2018, (iii) we agreed to pay the employer portion of the premium cost of COBRA continuation coverage for Mr. Belbel and his dependents for twelve months following his separation, if he so elects, (iv) all unvested shares of restricted stock and all unvested stock options held by Mr. Belbel as of February 15, 2018 were accelerated and deemed to have fully vested as of such date and (v) the post-separation exercise period of all vested stock options held by Mr. Belbel was extended to twelve months following his separation date. The additional benefits provided to Mr. Belbel under his separation agreement that were not previously provided under his employment agreement were the 12 months of employer paid COBRA premium benefits and the 12-month extended post-termination exercise period for his stock options. Our compensation committee determined to provide these additional benefits to Mr. Belbel in connection with his separation because the cost of our provision of such benefits was low and in consideration of the commitments and other agreements provided to us by Mr. Belbel under the terms of his separation agreement.

401(k) Plan

Our employees, including our named executive officers, are eligible to participate in our 401(k) plan. Our 401(k) plan is intended to qualify as a tax qualified plan under Section 401 of the Internal Revenue Code of 1986, as amended, or the Code. Our 401(k) plan provides that each participant may contribute a portion of his or her pretax compensation, up to a statutory limit, which for most employees was \$18,500 in 2018, with an additional “catch up” contribution of up to \$6,000 permitted for employees age 50 and older, to the 401(k) plan. Employee contributions are held and invested by the 401(k) plan’s trustee. In 2018, we matched employee contributions at a rate of 100% up to 4% of an employee’s base salary contributed to the plan. We believe that this benefit is consistent with the practices of our peer companies, and therefore helps us to recruit and retain key talent at a minimal cost to us.

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Other Benefits and Perquisites

We provide medical insurance, dental insurance, life insurance and disability insurance benefits to our U.S. employees, including our named executive officers based in the United States. These benefits are available to all employees on the same terms and conditions and are subject to applicable laws.

Our executive officers generally do not receive any perquisites, except for limited perquisites provided on a case by case basis. In considering potential perquisites, the compensation committee reviews our cost of such benefits, as compared to the perceived value we receive. We provided Dr. Cooper certain transportation perquisites and both Drs. Cooper and Mauney housing perquisites under the terms of their employment agreements. We view the overall cost of these benefits to be reasonable in light of the benefit of continuing to retain the services of Drs. Cooper and Mauney and focus their efforts on attaining our performance objectives.

We do not sponsor any defined benefit pension plan or nonqualified deferred compensation plan or arrangement for our employees.

Tax Deductibility of Executive Compensation

Under Section 162(m) of the Code, or Section 162(m), compensation paid to any publicly held corporation's "covered employees" that exceeds \$1 million per taxable year for any covered employee is generally non-deductible.

Prior to the enactment of the Tax Cuts and Jobs Act, Section 162(m) provided a performance-based compensation exception, pursuant to which the deduction limit under Section 162(m) did not apply to any compensation that qualified as "performance-based compensation" under Section 162(m). Pursuant to the Tax Cuts and Jobs Act, the performance-based compensation exception under Section 162(m) was repealed with respect to taxable years beginning after December 31, 2017, except that certain transition relief is provided for compensation paid pursuant to a written binding contract which was in effect on November 2, 2017 and which is not modified in any material respect on or after such date.

Compensation paid to each of our "covered employees" in excess of \$1 million per taxable year generally will not be deductible unless it qualifies for the performance-based compensation exception under Section 162(m) pursuant to the transition relief described above. Because of certain ambiguities and uncertainties as to the application and interpretation of Section 162(m), as well as other factors beyond the control of the compensation committee, no assurance can be given that any compensation paid by us will be eligible for such transition relief and be deductible by us in the future. Although the compensation committee will continue to consider tax implications as one factor in determining executive compensation, the compensation committee also looks at other factors in making its decisions and retains the flexibility to provide compensation for our named executive officers in a manner consistent with the goals of our executive compensation program and the best interests of us and our stockholders, which may include providing for compensation that is not deductible by us due to the deduction limit under Section 162(m). The compensation committee also retains the flexibility to modify compensation that was initially intended to be exempt from the deduction limit under Section 162(m) if it determines that such modifications are consistent with our business needs.

Accounting Considerations

We account for equity compensation paid to our employees under the Financial Accounting Standards Board Accounting Standards Codification Topic 718, or ASC 718, which requires us to estimate and record an expense over the service period of the equity award. Our cash compensation is recorded as an expense over the period the bonus is earned. The accounting impact of our compensation programs are one of many factors that the compensation committee considers in determining the structure and size of our executive compensation programs.

Compensation Recovery Policy

As a public company subject to the provisions of Section 304 of the Sarbanes-Oxley Act of 2002, if we are required as a result of misconduct to restate our financial results due to our material noncompliance with any financial reporting requirements under the federal securities laws, our Chief Executive Officer and chief financial officer may be legally required to reimburse us for any bonus or other incentive-based or equity-based compensation they receive. We have considered, and are aware that some companies, a small portion of our peer companies, have voluntarily adopted clawback policies to attempt to recover cash bonus payments to executive officers if performance objectives that led to the determination of such payments are restated or found not to have been met to the extent the compensation committee originally believed. We have not currently adopted such a policy but we will comply with the requirements of the Dodd-Frank Act and will adopt a compensation recovery policy once the SEC adopts final regulations on the subject.

Risk Analysis of Our Compensation Program

Our compensation committee has reviewed our compensation policies as generally applicable to our employees and believes that our policies do not encourage excessive or inappropriate risk taking and that the level of risk that they do encourage is not reasonably likely to have a material adverse effect on us. As part of its assessment, the compensation committee considered, among other factors, the allocation of compensation among base salary and short- and long-term compensation, our approach to establishing company-wide and individual financial, operational and other performance targets, our bonus structure of payouts at multiple levels of performance (including maximum payout caps and payments for performance below target levels), and the nature of our key performance metrics.

Compensation Committee Report

The compensation committee has reviewed and discussed with management the Compensation Discussion and Analysis portion contained in this proxy statement. Based on this review and discussion, the compensation committee has recommended to the board of directors, and the board has agreed, that the section titled "Compensation Discussion and Analysis" as it appears above be included in this proxy statement.

COMPENSATION COMMITTEE

Scott Tariff, Chairman

Scott Braunstein, M.D.

James Cannon

This report is not "soliciting material," is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference in any of our filings under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether before or after the date hereof and irrespective of any general incorporation language in any such filing.

Executive Compensation Tables

Summary Compensation Table

The following table sets forth information regarding compensation awarded to or earned by our named executive officers, who consist of our principal executive officer, our principal financial officer and our two other executive officers who were serving as of December 31, 2018, as well as one additional executive officer who was no longer serving as an executive officer as of December 31, 2018, for the years covered in the table:

<u>Name and Principal Position</u>	<u>Year</u>	<u>Salary (\$)</u>	<u>Bonus (\$)</u>	<u>Stock Awards (\$)⁽¹⁾</u>	<u>Option Awards (\$)⁽¹⁾</u>	<u>All Other Compensation (\$)</u>	<u>Total (\$)</u>
Laurence James Neil Cooper, M.D., Ph.D. <i>Chief Executive Officer</i>	2018	500,000	1,000,000 ⁽²⁾	—	—	89,239 ⁽³⁾	1,589,239
	2017	500,000	875,000	1,140,720	—	78,524 ⁽⁴⁾	2,894,244
	2016	500,000	700,000	1,135,538	—	77,071 ⁽⁵⁾	2,412,609
David M. Mauney, M.D. ⁽⁶⁾ <i>President</i>	2018	400,000	197,000 ⁽⁷⁾	—	—	11,756 ⁽⁸⁾	608,756
	2017	103,077	36,158	—	2,156,550	2,189 ⁽⁹⁾	2,297,974
Robert Hadfield ⁽¹⁰⁾ <i>Executive Vice President, General Counsel and Secretary</i>	2018	254,647	113,000 ⁽¹¹⁾	—	459,390	9,054 ⁽¹²⁾	836,091
Kevin G. Lafond <i>Sr. Vice President – Finance, Chief Accounting Officer and Treasurer</i>	2018	283,250	104,138 ⁽¹³⁾	—	—	11,610 ⁽¹⁴⁾	398,998
	2017	275,000	84,219	219,420	—	2,585 ⁽¹⁵⁾	581,224
	2016	245,000	51,450	210,255	—	2,469 ⁽¹⁶⁾	509,174
Caesar J. Belbel ⁽¹⁷⁾ <i>Former Executive Vice President, Chief Legal Officer and Secretary</i>	2018	71,513 ⁽¹⁸⁾	47,260	—	—	708,966 ⁽¹⁹⁾	827,739
	2017	375,000	328,125	360,180	—	2,745 ⁽²⁰⁾	1,066,050
	2016	375,000	262,500	504,773	—	2,713 ⁽²¹⁾	1,144,986

- (1) These amounts have been calculated in accordance with ASC Topic 718. Pursuant to SEC rules, the amounts shown exclude the impact of estimated forfeitures related to service-based vesting conditions. For a discussion of the assumptions relating to our valuations of these restricted stock awards and stock options, please see Note 3 to the financial statements included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018, filed with the SEC on March 5, 2019. These amounts reflect our accounting expense for these restricted stock awards and stock options and do not correspond to the actual value that may be recognized by our named executive officers.
- (2) Dr. Cooper offered to receive his 2018 annual incentive bonus in shares of our common stock with a trading value equal to the \$1,000,000 cash bonus, rounded down to the nearest whole share. The board of directors accepted Dr. Cooper's offer and Dr. Cooper was issued 446,428 shares of common stock in January 2019. The number of shares underlying the award were calculated based on Dr. Cooper's cash bonus award and divided by the most recent closing price of our common stock prior to the day the shares were issued.
- (3) Of such amount, (i) \$756 represents the dollar value of group term life insurance premiums we paid for the benefit of Dr. Cooper during 2018, (ii) \$77,483 represents taxable perquisites, including \$73,597 for housing expenses and \$3,886 for commuting expenses, and (iii) \$11,000 represents the amount we contributed to Dr. Cooper's 401(k) plan account pursuant to our matching program.
- (4) Of such amount, (i) \$756 represents the dollar value of group term life insurance premiums we paid for the benefit of Dr. Cooper during 2017, (ii) \$75,768 represents taxable perquisites, including \$71,990 for housing expenses, \$3,118 for commuting expenses and \$660 for parking, and (iii) \$2,000 represents the amount we contributed to Dr. Cooper's 401(k) plan account pursuant to our matching program.
- (5) Of such amount, (i) \$421 represents the dollar value of group term life insurance premiums we paid for the benefit of Dr. Cooper during 2016, (ii) \$72,915 represents taxable perquisites, including \$65,577 for housing expenses, \$6,538 for commuting expenses and \$800 for parking, (iii) \$1,735 represents "gross up" amounts reimbursed to Dr. Cooper for the payment of taxes on such perquisites, and (iv) \$2,000 represents the amount we contributed to Dr. Cooper's 401(k) plan account pursuant to our matching program.
- (6) Dr. Mauney joined us as Chief Business Officer in September 2017, was appointed our Interim Chief Operating Officer in November 2017, and our President in December 2018.
- (7) Of such amount, \$37,000 was a special, one-time bonus and \$160,000 was an annual bonus.

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- (8) Of such amount, (i) \$756 represents the dollar value of group term life insurance premiums we paid for the benefit of Dr. Mauney during 2018 and (ii) \$11,000 represents the amount we contributed to Dr. Mauney’s 401(k) plan account pursuant to our matching program.
- (9) Of such amount, (i) \$189 represents the dollar value of group term life insurance premiums we paid for the benefit of Dr. Mauney during 2017 and (ii) \$2,000 represents the amount we contributed to Dr. Mauney’s 401(k) plan account pursuant to our matching program.
- (10) Mr. Hadfield joined us as Executive Vice President, General Counsel and Secretary in April 2018.
- (11) Of such amount, \$8,000 was a special, one-time bonus and \$105,000 was an annual bonus.
- (12) Of such amount, (i) \$567 represents the dollar value of group term life insurance premiums we paid for the benefit of Mr. Hadfield during 2018 and (ii) \$8,487 represents the amount we contributed to Mr. Hadfield’s 401(k) plan account pursuant to our matching program.
- (13) Of such amount, \$5,000 was a special, one-time bonus and \$99,138 was an annual bonus.
- (14) Of such amount, (i) \$610 represents the dollar value of group term life insurance premiums we paid for the benefit of Mr. Lafond during 2018 and (ii) \$11,000 represents the amount we contributed to Mr. Lafond’s 401(k) plan account pursuant to our matching program.
- (15) Of such amount, (i) \$585 represents the dollar value of group term life insurance premiums we paid for the benefit of Mr. Lafond during 2017 and (ii) \$2,000 represents the amount we contributed to Mr. Lafond’s 401(k) plan account pursuant to our matching program.
- (16) Of such amount, (i) \$469 represents the dollar value of group term life insurance premiums we paid for the benefit of Mr. Lafond during 2016 and (ii) \$2,000 represents the amount we contributed to Mr. Lafond’s 401(k) plan account pursuant to our matching program.
- (17) Mr. Belbel’s employment with us terminated effective February 15, 2018.
- (18) Of such amount, \$46,875 was salary and \$24,638 was payment for unused accrued vacation.
- (19) Of such amount, (i) \$126 represents the dollar value of group term life insurance premiums we paid for the benefit of Mr. Belbel during 2018, (ii) \$11,000 represents the amount we contributed to Mr. Belbel’s 401(k) plan account pursuant to our matching program, (iii) \$375,000 represents the amount of severance that Mr. Belbel received, and (iv) \$322,840 represents the value of Mr. Belbel’s stock option modification and vesting acceleration.
- (20) Of such amount, (i) \$745 represents the dollar value of group term life insurance premiums we paid for the benefit of Mr. Belbel during 2017 and (ii) \$2,000 represents the amount we contributed to Mr. Belbel’s 401(k) plan account pursuant to our matching program.
- (21) Of such amount, (i) \$713 represents the dollar value of group term life insurance premiums we paid for the benefit of Mr. Belbel during 2016 and (ii) \$2,000 represents the amount we contributed to Mr. Belbel’s 401(k) plan account pursuant to our matching program.

Grants of Plan-Based Awards for Fiscal 2018

The following table sets forth information regarding grants of compensation in the form of plan-based awards made during 2018 to our named executive officers. The equity awards granted in 2018 identified in the table below are also reported in the table titled “Outstanding Equity Awards at 2018 Fiscal Year-End”:

Name	Grant Date	Estimated Future Payouts Under Non-Equity Incentive Plan Award(s) ⁽¹⁾			All Other Stock Awards: Number of Shares of Stock or Units (#)	All Other Option Awards: Number of Securities Underlying Options (#)	Exercise or Base Price of Option Awards (\$/Sh)	Grant Date Fair Value of Stock and Option Awards (\$) ⁽²⁾
		Threshold (\$)	Target (\$)	Maximum (\$)				
Laurence James Neil Cooper, M.D., Ph.D	N/A	—	1,000,000	—	—	—	—	
David M. Mauney, M.D.	N/A	—	160,000	—	—	—	—	
Robert Hadfield	N/A	—	105,000	—	—	—	—	
	4/25/18	—	—	—	—	150,000	4.32	459,390
Kevin G. Lafond	N/A	—	99,138	—	—	—	—	
Caesar J. Belbel	N/A	—	—	—	—	—	—	

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- (1) Reflects performance-based cash bonuses that our named executive officers were eligible to earn in 2018 if certain performance metrics were achieved whether pursuant to an employment agreement with us or otherwise. See “—Employment and Change in Control Agreements” for a description of our performance-based compensation arrangements with our named executive officers. For amounts actually earned and paid for 2018 performance, see the Bonus column of the Summary Compensation Table above.
- (2) The amounts shown represent compensation expense recognized for financial statement purposes under ASC Topic 718. Pursuant to SEC rules, the amounts shown exclude the impact of estimated forfeitures related to service-based vesting conditions. For a discussion of the assumptions relating to our valuations of restricted stock awards and option awards, see Note 3 to the financial statements included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018 filed with the SEC on March 5, 2019. These amounts reflect our accounting expense for these restricted stock awards and do not correspond to the actual value that may be recognized by our named executive officers.

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Outstanding Equity Awards at 2018 Fiscal Year-End

The following table sets forth information regarding option awards and restricted stock awards held as of December 31, 2018 by our named executive officers.

Name	Option Awards				Stock Awards	
	Number of Securities Underlying Unexercised Options		Option Exercise Price (\$) ⁽¹⁾	Option Expiration Date	Shares or Units of Stock That Have Not Vested	
	Exercisable (#)	Unexercisable (#)			Number (#)	Market Value (\$) ⁽²⁾
Laurence James Neil Cooper, M.D., Ph.D.	—	—	—	—	70,750 ⁽³⁾	132,303
	—	—	—	—	232,000 ⁽⁴⁾	433,840
David M. Mauney, M.D.	166,667	483,333 ⁽⁵⁾	6.19	9/28/27	—	—
Robert Hadfield		150,000 ⁽⁶⁾	4.32	4/25/28	—	—
Kevin G. Lafond	11,667	—	2.85	12/31/19	—	—
	25,000	—	4.77	12/31/20	—	—
	20,000	—	4.16	12/31/22	—	—
	55,000	—	2.30	6/27/23	—	—
	35,000	—	4.34	12/31/23	—	—
	75,000	—	5.07	12/31/24	—	—
	—	—	—	—	13,100 ⁽⁷⁾	24,497
	—	—	—	—	35,333 ⁽⁸⁾	66,073
Caesar J. Belbel	200,000	—	5.17	2/15/19	—	—
	150,000	—	4.16	2/15/19	—	—
	150,000	—	4.34	2/15/19	—	—
	175,000	—	5.07	2/15/19	—	—

- (1) Each stock option was granted with an exercise price equal to the fair market value of our common stock on the grant date.
- (2) Market values are calculated based on the closing market price of our common stock as reported on the Nasdaq Capital Market on December 31, 2018, which was \$1.87 per share.
- (3) Such shares are subject to transfer and forfeiture restrictions that lapse with respect to 70,750 shares on December 30, 2019.
- (4) Such shares are subject to transfer and forfeiture restrictions that lapse with respect to 116,000 shares on each of December 29, 2019 and December 29, 2020.
- (5) Vests with respect to 166,667 shares on September 28, 2019, and with respect to 166,666 shares on September 28, 2020.
- (6) Vests with respect to 50,000 shares on each of April 25, 2019, 2020, and 2021.
- (7) Such shares are subject to transfer and forfeiture restrictions that lapse with respect to 13,100 shares on December 30, 2019.
- (8) Such shares are subject to transfer and forfeiture restrictions that lapse with respect to 17,667 shares on December 29, 2019, and with respect to 17,666 shares on December 29, 2020.

Option Exercises and Stock Awards Vested during Fiscal 2018

The following table provides certain information regarding option awards that were exercised and restricted stock that vested during the fiscal year ended December 31, 2018 with respect to our named executive officers.

Name	Option Awards		Stock Awards	
	Number of Shares Acquired on Exercise(#)	Value Realized on Exercise(\$) ⁽¹⁾	Number of Shares Acquired on Vesting(#) ⁽²⁾	Value Realized on Vesting(\$) ⁽³⁾
Laurence James Neil Cooper, M.D., Ph.D.	—	—	563,749	1,861,659
David M. Mauney, M.D.	—	—	—	—
Robert Hadfield	—	—	—	—
Kevin G. Lafond	—	—	40,101	68,528
Caesar J. Belbel	76,667	55,200	188,233	730,344

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- (1) Value realized is calculated by multiplying (i) the number of shares of common stock for which the stock options were exercised by (ii) the difference between the exercise price and the closing price of our common stock as reported on the NASDAQ Capital Market on the date of exercise. These amounts may not correspond to the actual value that may be recognized by the officers.
- (2) Each of the named executive officers in the table above, other than Dr. Mauney and Mr. Hadfield, elected to have shares withheld to pay associated income taxes. The number of shares reported represents the gross number prior to withholding of such shares.
- (3) Value realized is calculated by multiplying the number of shares vested on the applicable date during 2017 by the closing market price of our common stock as reported on the Nasdaq Capital Market on such date. These amounts do not correspond to the actual value that may be recognized by our named executive officers.

Securities Authorized for Issuance under Equity Compensation Plans

Our Amended and Restated 2003 Stock Option Plan, or the 2003 Plan, and our 2012 Equity Plan are our only equity compensation plans approved by our stockholders. The following table sets forth certain information as of December 31, 2018 with respect to our equity compensation plans:

<u>Plan Category</u>	<u>Number of Securities to be Issued Upon Exercise of Outstanding Options (A)</u>	<u>Weighted-Average Exercise Price of Outstanding Options (B)</u>	<u>Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (A)) (C)</u>
Equity compensation plans approved by stockholders:			
2003 Stock Option Plan	674,167	\$ 4.31	—
2012 Equity Plan ⁽¹⁾	4,602,918	\$ 4.23	5,110,235
Total:	<u>5,277,085</u>	<u>\$ 4.24</u>	<u>5,110,235</u>
Equity compensation plans not approved by stockholders:			
Inducement award	500,000	\$ 6.19	—
Total:	<u>500,000</u>	<u>\$ 6.19</u>	<u>—</u>

- (1) In our Annual Report on Form 10-K for the fiscal year ended December 31, 2018 filed with the SEC on March 5, 2019, we previously reported the number of shares available for future issuance under the 2012 Plan as 3,895,923 shares, which, due to a clerical error, was incorrect. The correct number of shares is 5,110,235.

Employment and Change in Control Agreements

We were previously a party to an employment agreement with Mr. Belbel prior to the termination of his employment with us. We have the following employment agreements in place with our currently serving named executive officers.

Employment Agreement with Laurence James Neil Cooper, M.D., Ph.D.

Dr. Cooper has served as our Chief Executive Officer since May 5, 2015, the date of his written employment agreement. Dr. Cooper has an at-will employment relationship with us.

Base Salary. In 2018, Dr. Cooper received a base salary of \$500,000. Under his employment agreement, his base salary is subject to review by the board of directors or the compensation committee at least annually. In January 2019, the board increased Dr. Cooper's base salary to \$573,000.

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Annual Performance Bonus. Under his employment agreement, Dr. Cooper is eligible to receive an annual bonus based on his performance as determined by the board or the compensation committee. The target amount of the annual performance bonus is 200% of his base salary, with the actual amount to be received determined by the board or the compensation committee. Dr. Cooper is also eligible to receive an additional annual discretionary bonus in such amount as may be determined by the board. In January 2019, the board adopted the compensation committee's recommendations for end-of-year cash bonuses pursuant to which Dr. Cooper was eligible to receive a bonus of \$1,000,000. Following discussion with the board, Dr. Cooper offered to receive shares of our common stock in lieu of a cash bonus in order to preserve our capital resources. The board accepted Dr. Cooper's offer and we issued Dr. Cooper 446,428 shares of common stock, and the shares underlying the award were calculated based on Dr. Cooper's \$1,000,000 bonus award and the closing price of our common stock on the date the shares were issued.

Equity Incentive Grants. Dr. Cooper is eligible under his employment agreement to receive equity awards as determined by the board in its discretion from time to time. In January 2019, the board adopted the compensation committee's recommendations for 2018 annual equity awards under our 2012 Equity Plan pursuant to which Dr. Cooper received (i) 337,266 shares of restricted common stock, which restricted stock vests in equal annual installments over three years commencing on the one-year anniversary of the grant date, and (ii) an option to purchase 531,813 shares of our common stock, which option has an exercise price of \$2.24 per share and vests in equal quarterly installments over three years measured from the date of grant. Under certain circumstances, the vesting of Dr. Cooper's equity awards may be accelerated in the event of a change in control or if Dr. Cooper's employment with us is terminated. See "Severance Provisions" and "Potential Payments Upon Termination or Change in Control" below for further discussion on Dr. Cooper's severance benefits.

Expense Reimbursement. Under his agreement, Dr. Cooper is eligible for reimbursement of normal, usual and necessary expenses incurred by him in furtherance of our business and affairs, including reasonable travel and entertainment expenses and the ordinary and necessary expenses incurred in connection with his commute and relocation from Houston, Texas to the Philadelphia or Boston metropolitan area (as applicable).

Severance Provisions. If (i) we terminate Dr. Cooper for a reason other than death, disability or "Cause" (as that term is defined in his employment agreement), or (ii) Dr. Cooper resigns for "Good Reason" (as that term is defined in his employment agreement), Dr. Cooper will be entitled to receive continuing payments of his then-current base salary for a period of twelve months, plus a portion of the target amount of his annual performance bonus for the calendar year in which such termination occurs (which portion will be determined pro rata based on the number of days in such calendar year during which we employed Dr. Cooper), plus payment of our portion of the contributions for medical and dental insurance coverage for twelve months, subject to Dr. Cooper's execution and delivery of a general release in favor of the Company. In this situation, Dr. Cooper's stock options that have vested as of the date of termination shall remain exercisable for a period of 90 days, and the unvested stock options and unvested awards of restricted stock awarded to Dr. Cooper in 2016 and 2017 shall be deemed to have expired as of the date of termination. In the case of either (i) a termination by us for a reason other than death, disability or "Cause," or (ii) a resignation for "Good Reason," in each case that occurs within 90 days prior to and in connection with a "Change in Control" (as that term is defined in his employment agreement), or within 18 months after the occurrence of a "Change in Control," all unvested stock options and unvested awards of restricted stock (including the restricted stock awards and stock options granted to Dr. Cooper in January 2019) held by Dr. Cooper at the time that such termination occurs will be accelerated and deemed to have vested as of his employment termination date, and in lieu of the pro-rata bonus described above, Dr. Cooper will be entitled to full target amount of his annual performance bonus for the calendar year in which such termination occurs.

Non-competition and Non-solicitation. Dr. Cooper has entered into an Invention, Non-Disclosure and Non-Competition Agreement, which provides that he will not compete with us or solicit our clients or customers for a year after the termination or cessation of his employment with us, and further provides that he will not solicit our employees for one year after the termination or cessation of his employment with us.

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Employment Agreement with David M. Mauney, M.D.

Dr. Mauney has served as our President since December 2018, and previously served as our Executive Vice President and Chief Business Officer from September 2017 to December 2018, and as our Interim Chief Operating Officer from November 2017 to December 2018. In April 2019, we entered into an employment agreement with Dr. Mauney that replaced his offer letter. Dr. Mauney has an at-will employment relationship with us.

Base Salary. In 2018, Dr. Mauney received a base salary of \$400,000. In connection with Dr. Mauney's promotion to President, his base salary was increased to \$440,000, effective January 1, 2019. Under his employment agreement, Dr. Mauney's annual base salary is subject to review by the board of directors or the compensation committee at least annually.

Annual Performance Bonus. Under his original offer letter, Dr. Mauney was eligible to receive an annual bonus based on his performance as determined by the board or the compensation committee. The target amount of the annual performance bonus was 35% of his base salary, with the actual amount to be received determined by the board or the compensation committee. For 2018, the board adopted the compensation committee's recommendations for end-of-year cash bonuses pursuant to which Dr. Mauney received a cash bonus of \$160,000, which represented 100% of his target bonus. Under his employment agreement, Dr. Mauney will be eligible to receive an annual target bonus of 45% of his base salary, with the actual amount to be received determined by the board or the compensation committee.

Equity Incentive Grants. Dr. Mauney is eligible to receive equity awards as determined by the board in its sole discretion from time to time. In January 2019, the board adopted the compensation committee's recommendations for 2018 annual equity awards under our 2012 Equity Plan pursuant to which Dr. Mauney received (i) 159,010 shares of restricted common stock, which restricted stock vests in equal annual installments over three years commencing on the one-year anniversary of the grant date, and (ii) an option to purchase 250,733 shares of our common stock, which option has an exercise price of \$2.24 per share and vests in equal quarterly installments over three years measured from the date of grant. In the case of either (i) a termination by us for a reason other than death, disability or "Cause," or (ii) a resignation for "Good Reason," in each case that occurs within 90 days prior to and in connection with a "Change in Control" (as that term is defined in his employment agreement), or within 18 months after the occurrence of a "Change in Control," all unvested stock options and unvested awards of restricted stock held by Dr. Mauney at the time that such termination occurs will be accelerated and deemed to have vested as of his employment termination date.

Severance Provisions. If (i) we terminate Dr. Mauney for a reason other than death, disability or "Cause" (as that term is defined in his employment agreement), or (ii) Dr. Mauney resigns for "Good Reason" (as that term is defined in his employment agreement), Dr. Mauney will be entitled to receive a severance payment equal to his then-current annual base salary, plus a portion of the target amount of his annual performance bonus for the calendar year in which such termination occurs, plus payment of our portion of the contributions for medical and dental insurance coverage for twelve months, subject to Dr. Mauney's execution and delivery of a general release in favor of the Company. In the case of either (i) a termination by us for a reason other than death, disability or "Cause," or (ii) a resignation for "Good Reason," in each case that occurs within 90 days prior to and in connection with a "Change in Control" (as that term is defined in his employment agreement), or within 18 months after the occurrence of a "Change in Control," all unvested stock options and unvested awards of restricted stock held by Dr. Mauney at the time that such termination occurs will be accelerated and deemed to have vested as of his employment termination date, and in lieu of the pro-rata bonus described above, Dr. Mauney will be entitled to full target amount of his annual performance bonus for the calendar year in which such termination occurs.

Non-competition and Non-solicitation. Dr. Mauney has entered into an Invention, Non-Disclosure and Non-Competition Agreement, which provides that he will not compete with us or solicit our clients or customers

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for a year after the termination or cessation of his employment with us, and further provides that he will not solicit our employees for one year after the termination or cessation of his employment with us.

Employment Agreement with Robert Hadfield

Mr. Hadfield has served as our Executive Vice President, General Counsel, Secretary and Chief Compliance Officer since December 2018, and previously served as our General Counsel and Secretary from April 2018 to December 2018. In April 2019, we entered into an employment agreement with Mr. Hadfield that replaced his original offer letter. Mr. Hadfield has an at-will employment relationship with us.

Base Salary. Pursuant to his original offer letter, Mr. Hadfield's annual base salary in 2018 was \$350,000, pro rated based on the number of days worked. Mr. Hadfield's base salary was increased to \$370,000, effective January 1, 2019. Under his employment agreement, Mr. Hadfield's annual base salary is subject to review by the board of directors or the compensation committee at least annually.

Annual Performance Bonus. Under his original offer letter, Mr. Hadfield was eligible to receive an annual bonus based on his performance as determined by the board or the compensation committee. The target amount of the annual performance bonus was 30% of his base salary, with the actual amount to be received determined by the board or the compensation committee. For 2018, the board adopted the compensation committee's recommendations for end-of-year cash bonuses pursuant to which Mr. Hadfield received a cash bonus of \$105,000, which represented 100% of his target bonus. Under his employment agreement, Mr. Hadfield will be eligible to receive an annual target bonus of 40% of his base salary, with the actual amount to be received determined by the board or the compensation committee.

Equity Incentive Grants. In connection with his appointment as our General Counsel and pursuant to his offer letter, on April 25, 2018, the board granted to Mr. Hadfield an option to purchase 150,000 shares of our common stock. Mr. Hadfield is also eligible to receive equity awards as determined by the board in its sole discretion from time to time. In January 2019, the board adopted the compensation committee's recommendations for 2018 annual equity awards under our 2012 Equity Plan pursuant to which Mr. Hadfield received (i) 117,572 shares of restricted common stock, which restricted stock vests in equal annual installments over three years commencing on the one-year anniversary of the grant date, and (ii) an option to purchase 185,391 shares of our common stock, which option has an exercise price of \$2.24 per share and vests in equal quarterly installments over three years measured from the date of grant. In the case of either (i) a termination by us for a reason other than death, disability or "Cause," or (ii) a resignation for "Good Reason," in each case that occurs within 90 days prior to and in connection with a "Change in Control" (as that term is defined in his employment agreement), or within 18 months after the occurrence of a "Change in Control," all unvested stock options and unvested awards of restricted stock held by Mr. Hadfield at the time that such termination occurs will be accelerated and deemed to have vested as of his employment termination date.

Severance Provisions. If (i) we terminate Mr. Hadfield for a reason other than death, disability or "Cause" (as that term is defined in his employment agreement), or (ii) Mr. Hadfield resigns for "Good Reason" (as that term is defined in his employment agreement), Mr. Hadfield will be entitled to receive a severance payment equal to nine months of his then-current base salary, plus payment of our portion of the contributions for medical and dental insurance coverage for nine months, subject to Mr. Hadfield's execution and delivery of a general release in favor of the Company. In the case of either (i) a termination by us for a reason other than death, disability or "Cause," or (ii) a resignation for "Good Reason," in each case that occurs within 90 days prior to and in connection with a "Change in Control" (as that term is defined in his employment agreement), or within 18 months after the occurrence of a "Change in Control," all unvested stock options and unvested awards of restricted stock held by Mr. Hadfield at the time that such termination occurs will be accelerated and deemed to have vested as of his employment termination date, and Mr. Hadfield will be entitled to full target amount of his annual performance bonus for the calendar year in which such termination occurs.

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Non-competition and Non-solicitation. Mr. Hadfield has entered into an Invention, Non-Disclosure and Non-Competition Agreement, which provides that he will not compete with us or solicit our clients or customers for a year after the termination or cessation of his employment with us, and further provides that he will not solicit our employees for one year after the termination or cessation of his employment with us.

Employment Relationship with Kevin G. Lafond

Base Salary. In 2018, Mr. Lafond received an annual base salary of \$283,250, which is subject to review by the board or the compensation committee at least annually. The board increased Mr. Lafond's base salary to \$290,000 for 2019.

Annual Performance Bonus. Mr. Lafond is eligible to receive an annual bonus based on his performance as determined by the board or the compensation committee. For 2018, the board adopted the compensation committee's recommendations for end-of-year cash bonuses pursuant to which Mr. Lafond received a cash bonus of \$99,138.

Equity Incentive Grants. Mr. Lafond is eligible to receive equity awards as determined by the board in its sole discretion from time to time. In January 2019, the board adopted the compensation committee's recommendations for 2018 annual equity awards under our 2012 Equity Plan pursuant to which Mr. Lafond received (i) 37,122 shares of restricted common stock, which restricted stock vests in equal annual installments over three years commencing on the one-year anniversary of the grant date, and (ii) an option to purchase 58,536 shares of our common stock, which option has an exercise price of \$2.24 per share and vests in equal quarterly installments over three years measured from the date of grant. The vesting of certain of Mr. Lafond's equity awards may be accelerated if Mr. Lafond's employment with us is terminated under certain circumstances. See "Severance Provisions" and "Potential Payments Upon Termination or Change in Control" below for further information regarding Mr. Lafond's severance benefits.

Severance Provisions. If Mr. Lafond is terminated by us for a reason other than for "Cause" (as that term is defined in his severance agreement), or other than for retirement, death or disability, Mr. Lafond will be entitled to receive a severance payment in a single lump sum equal to six months of his then-current annualized base salary, subject to Mr. Lafond's execution and delivery of a general release in favor of us.

Mr. Belbel's Separation Agreement

In connection with his departure from the Company on February 15, 2018, we entered into a separation agreement with Mr. Belbel providing for severance benefits as described in "*Executive Compensation – 2018 Compensation Decisions – Mr. Belbel's Separation Agreement*" above.

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Potential Payments Upon Termination or Change in Control

The following table sets forth estimated compensation that would have been payable to each of our currently serving named executive officers as severance or upon a change in control of the Company under three alternative scenarios, assuming the termination triggering severance payments or a change in control took place on December 31, 2018. The following table shows the actual compensation provided to Mr. Belbel under the terms of his separation agreement.

<u>Name and Principal Position</u>	<u>Cash Payment (\$)⁽¹⁾</u>	<u>Accelerated Vesting of Stock Options (\$)⁽²⁾</u>	<u>Accelerated Vesting of Restricted Stock Awards (\$)⁽³⁾</u>	<u>Welfare Benefits (\$)⁽⁴⁾</u>	<u>Total (\$)</u>
Laurence James Neil Cooper, M.D., Ph.D.					
Termination without cause or with good reason prior to change in control	1,500,000	—	566,143	22,627	2,088,770
Change in control only	—	—	—	—	—
Change in control with termination without cause or good reason	1,500,000	—	566,143	22,627	2,088,770
David M. Mauney, M.D.					
Termination without cause or with good reason prior to change in control	560,000	—	—	22,627	582,627
Change in control only	—	—	—	—	—
Change in control with termination without cause or good reason	560,000	—	—	22,627	582,627
Robert Hadfield					
Termination without cause or with good reason prior to change in control	262,500	—	—	22,627	285,127
Change in control only	—	—	—	—	—
Change in control with termination without cause or good reason	262,500	—	—	22,627	285,127
Kevin G. Lafond					
Termination without cause or with good reason prior to change in control	141,625	—	—	7,962	149,587
Change in control only	—	—	—	—	—
Change in control with termination without cause or good reason	141,625	—	259,117	7,962	408,704
Caesar Belbel ⁽⁵⁾	422,260	—	—	19,596	441,856

- (1) Amounts shown reflect payments based on salary and bonus as well as payment of estimated cost of life, disability and accident insurance benefits during the agreement period.
- (2) Amounts shown represent the value of stock options upon the applicable triggering event described in the first column. The value of stock options is based on the difference between the exercise price of the options and \$1.87, which was the closing price of our common stock on the Nasdaq Capital Market on December 31, 2018.
- (3) Amounts shown represent the value of restricted stock awards upon the applicable triggering event described in the first column, based on the closing price of our common stock on the Nasdaq Capital Market on December 31, 2018.
- (4) Amounts shown represent the estimated cost of providing employment-related benefits during the agreement period.

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- (5) Mr. Belbel's employment terminated on February 2018. The amounts disclosed in the table above reflect the actual value of the severance benefits provided to him pursuant to his separation agreement. For further information please see "*Executive Compensation – 2018 Compensation Decisions – Mr. Belbel's Separation Agreement*" above.

Pay Ratio Disclosure

Under SEC rules, we are required to calculate and disclose the annual total compensation of our median employee, as well as the ratio of the annual total compensation of our median employee as compared to the annual total compensation of Dr. Cooper, our Chief Executive Officer, for our last fiscal year. To identify our median employee, as permitted under SEC rules, we used the following methodology:

- To determine our total population of employees, we included all our employees as of December 31, 2018 regardless of their FTE schedule or anticipated employment duration and all individuals classified by us as independent contractors for tax reporting and employee benefits eligibility purposes but whose compensation we arguably control.
- To identify our median employee from our employee population, excluding our Chief Executive Officer, we calculated the total direct compensation paid as of December 31, 2018. Total direct compensation included 2018 base salary, actual annual bonus paid for 2018 performance (paid in December) and the fair value of stock options and/or restricted stock awards granted during 2018 (using the same methodology we use for estimating the value of the equity awards granted to our named executive officers and reported in our Summary Compensation Table). For part-time employees and/or independent contractors, we used actual compensation paid as of December 31, 2018.
- Using this approach to identify the median employee, we then calculated the annual total compensation of this median employee for 2018 using the same methodology we used for calculation of annual total compensation of our named executive officers in accordance with the requirements of the Summary Compensation Table.

For the fiscal year ended December 31, 2018, the annual total compensation of our median employee was \$161,725 and the annual total compensation of our Chief Executive Officer, as reported in the Summary Compensation Table included in this proxy statement, was \$1,589,239. Based on this information, the ratio of the annual total compensation of our Chief Executive Officer to our median employee was 9.83 to 1. We believe this ratio is a reasonable estimate calculated in a manner consistent with Item 402(u) of Regulation S-K under the Exchange Act.

INFORMATION REGARDING THE BOARD OF DIRECTORS AND CORPORATE GOVERNANCE

This section provides further information regarding the board of directors and the independence of our directors and describes key corporate governance guidelines and practices that we have adopted.

Independence of the Board of Directors

The board of directors uses the definition of independence established by The Nasdaq Stock Market. Under applicable Nasdaq rules, a director qualifies as an “independent director” if, in the opinion of the board, he or she does not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. The board has determined that all of our directors, other than Dr. Cooper, are “independent directors,” as such term is defined in Nasdaq Rule 5605(a)(2).

Board Leadership Structure

The board of directors has appointed an independent director, Scott Tarriff, to serve as its non-executive board chair. The board has elected to separate the chair function from that of the Chief Executive Officer, who serves as our principal executive officer, due to a belief that separating these functions, and empowering an independent director to chair the board meetings, reinforces the independence of the board in its oversight of our business and affairs. In addition, we believe that having an independent chair creates an environment that is more conducive to objective evaluation and oversight of management’s performance, increasing management accountability and improving the ability of the board to monitor whether management’s actions are in the best interests of the Company and our stockholders. As a result, we believe that having an independent chair can enhance the effectiveness of the board as a whole.

Director Attendance at Board and Stockholder Meetings

The board of directors met 12 times during 2018, either in person or by teleconference. During 2018, each director attended at least 75% of the aggregate number of meetings of the board and of the committees on which he served, held during the last fiscal year or portion thereof of which he was a director or committee member, other than Mr. Ezickson, who attended all of the regularly scheduled board meetings held in 2018 after he joined the board of directors but did not attend two special meetings of the board of directors.

Although we have no formal policy regarding directors’ attendance at our annual stockholders meetings, we encourage such attendance by members of the board. Three of the five then-current directors attended our 2018 annual meeting of stockholders either in person or by teleconference.

Board Committees

The board of directors has established three standing committees: an audit committee, a compensation committee and a corporate governance and nominating committee. Each committee operates under a charter that has been approved by the board. Current copies of each committee’s charter are posted on the “Investors—Corporate Governance” section of our website, www.ziopharm.com. Our website and its contents are not incorporated into this proxy statement.

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The current members of the committees are as follows:

	<u>Audit</u>	<u>Compensation</u>	<u>Nominating</u>
Scott Braunstein, M.D.	■	■	
James A. Cannon	■	■	
Laurence Cooper, M.D., Ph.D.			
Elan Ezickson			■
Douglas W. Pagán	■		
Scott Tarriff*		■	■

* = Board Chair ■ = Chair ■ = Member

Audit Committee

The current members of the audit committee are Mr. Douglas W. Pagán, who serves as the committee's Chairman, Dr. Scott Braunstein and Mr. James A. Cannon, who was not nominated for re-election. Scott Tarriff served on the audit committee until September 18, 2018. The board plans to appoint a new member to the audit committee to replace Mr. Cannon immediately following the annual meeting. As set forth in the audit committee charter, the primary responsibility of the audit committee is to oversee our financial reporting processes and internal control system on behalf of the board. In that regard, the audit committee is responsible for, among other things, the appointment, compensation, retention and oversight of the work performed by the independent registered public accounting firm employed by us.

Each member of the audit committee is an "independent director," as such term is defined in Nasdaq Rule 5605(a)(2), and meets the criteria for independence set forth in Rule 10A-3(b)(1) under the Exchange Act. The board of directors has also determined that each of the audit committee members is able to read and understand fundamental financial statements and that at least one member of the audit committee has past employment experience in finance or accounting. The board has determined that at least one member of the audit committee, Mr. Douglas W. Pagán, is an "audit committee financial expert," as that term is defined in Item 407(d)(5)(ii) of Regulation S-K promulgated under the Exchange Act.

The audit committee held four meetings during 2018.

Compensation Committee

The current members of the compensation committee are Mr. Scott Tarriff, who serves as the committee's Chairman, Dr. Scott Braunstein and Mr. James A. Cannon, who was not nominated for re-election. As set forth in the compensation committee charter, the compensation committee reviews our compensation policies and practices and makes recommendations to the board of directors in connection with all compensation matters affecting our executive officers.

Each member of the compensation committee is an "independent director," as such term is defined in Nasdaq Rule 5605(a)(2), and meets the criteria for independence set forth in Rule 10A-3(b)(1) under the Exchange Act.

The compensation committee held five meetings during 2018.

Corporate Governance and Nominating Committee

The current members of the corporate governance and nominating committee are Mr. Scott Tarriff, who currently serves as the committee's Chairman, and Mr. Elan Ezickson. As set forth in the corporate governance

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and nominating committee charter, the primary responsibility of the corporate governance and nominating committee is to consider and make recommendations to the board of directors concerning the appropriate size, function and needs of the board and its committees. In that regard, the corporate governance and nominating committee is, among other things, responsible for establishing criteria for membership on board, recruiting and recommending candidates to fill newly created or vacant positions on the board and reviewing any candidates recommended by stockholders. In addition, the corporate governance and nominating committee evaluates and assesses the performance of the board as a whole and its committees.

Each member of the corporate governance and nominating committee is an “independent director,” as such term is defined in Nasdaq Rule 5605(a)(2), and meets the criteria for independence set forth in Rule 10A-3(b)(1) under the Exchange Act.

The corporate governance and nominating committee held three meetings during 2018.

Director Nomination Process

The corporate governance and nominating committee (or a subcommittee thereof) recruits and considers director candidates and presents qualified candidates to the full board of directors for consideration. There is no fixed process for identifying and evaluating potential candidates to be nominees for directors, and there is no fixed set of qualifications that must be satisfied before a candidate will be considered. Rather, the corporate governance and nominating committee has the flexibility to consider such factors as it deems appropriate. These factors may include education, general business and industry experience, ability to act on behalf of stockholders, potential concerns regarding independence or conflicts of interest and other factors relevant in evaluating board nominees.

The corporate governance and nominating committee believes that a board comprised of directors with diverse skills and experiences relevant to our industry and operations will result in efficient and competent oversight of our various core competencies, which include pharmaceutical development, strategic partnering, commercialization activities, regulatory compliance, corporate finance and accounting. As such, the corporate governance and nominating committee gives consideration to the interplay of a director candidate’s experience with that of other members of the board and the evolving needs of our business.

In April 2019, our board of directors updated our policies to reflect the importance our board places on diversity. More specifically, we have updated our corporate governance and nominating committee charter to emphasize our commitment to seeking to attain diversity and balance among directors of race, gender, geography, thought, viewpoints, backgrounds, skills, experience, and expertise. As a result, under our policies any search firm retained to assist the corporate governance and nominating committee in seeking candidates for the board of directors will be instructed to seek to include diverse candidates in terms of race, gender, geography, thought, viewpoints, backgrounds, skills, experience, and expertise from, among other areas, the traditional corporate environment, government, academia, private enterprise, non-profit organizations, and professions such as accounting, finance, marketing, human resources, and legal services. We currently have one vacancy on our board and have engaged a third-party search firm to assist in our director candidate search. Consistent with the policy described above, we have instructed this search firm to seek to include candidates with diverse backgrounds.

Qualified candidates will be considered without regard to race, color, religion, sex, ancestry, national origin or disability, and the corporate governance and nominating committee will consider director candidates recommended by security holders. If the corporate governance and nominating committee approves a candidate for further review following an initial screening, the corporate governance and nominating committee will establish an interview process for the candidate. Generally, the candidate will meet with at least one member of the corporate governance and nominating committee, along with other members of the board, and management, including our Chief Executive Officer. Contemporaneously with the interview process, the corporate governance

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and nominating committee will conduct a comprehensive conflicts-of-interest assessment of the candidate. The corporate governance and nominating committee will consider reports of the interviews and the conflicts-of-interest assessment to determine whether to recommend the candidate to the full board. The corporate governance and nominating committee will also take into consideration the candidate's personal attributes, including, without limitation, personal integrity, loyalty to us and concern for our success and welfare, willingness to apply sound and independent business judgment, awareness of a director's vital part in our good corporate citizenship and image, time available for meetings and consultation on our matters and willingness to assume broad, fiduciary responsibility.

Recommendations for candidates to be considered for election to the board of directors at our annual stockholders' meeting may be submitted to the corporate governance and nominating committee by our stockholders. In order to make such a recommendation, a stockholder must submit the recommendation in writing to the Chairperson of the corporate governance and nominating committee, in care of our Secretary at our principal executive offices at One First Avenue, Parris Building 34, Navy Yard Plaza, Third Floor, Boston, Massachusetts 02129, at least 120 days prior to the mailing date of the previous year's annual meeting proxy statement. To enable the corporate governance and nominating committee to evaluate the candidate's qualifications, stockholder recommendations must include the following information:

- The name and address of the nominating stockholder and of the director candidate;
- A representation that the nominating stockholder is a holder of record of ours entitled to vote at the current year's annual meeting;
- A description of any arrangements or understandings between the nominating stockholder and the director candidate or candidates being recommended pursuant to which the nomination or nominations are to be made by the stockholder;
- A resume detailing the educational, professional and other information necessary to determine if the nominee is qualified to become a director of ours;
- Such other information regarding each nominee proposed by such stockholder as would have been required to be included in a proxy statement filed pursuant to the proxy rules of the SEC had each nominee been nominated by the board; and
- The consent of each nominee to serve as a director of ours if so elected.

Each of the individuals nominated for re-election to the board of directors pursuant to Proposal No. 1 were approved for such nomination by the corporate governance and nominating committee.

Risk Management and Oversight

One of the board's key functions is informed oversight of the Company's risk management process. The board does not have a standing risk management committee, but rather administers this oversight function directly through the board as a whole, as well as through various board standing committees that address risks inherent in their respective areas of oversight. In particular, our board is responsible for monitoring and assessing strategic risk exposure, including a determination of the nature and level of risk appropriate for the Company. Our audit committee has the responsibility to consider and discuss our major financial risk exposures and the steps our management has taken to monitor and control these exposures, including guidelines and policies to govern the process by which risk assessment and management is undertaken. Our corporate governance and nominating committee monitors the effectiveness of our corporate governance guidelines. Our compensation committee assesses and monitors whether any of our compensation policies and programs has the potential to encourage excessive risk-taking.

Communicating with Directors

We have established means for stockholders and others to communicate with the board of directors. If a stockholder wishes to address a matter regarding our financial statements, accounting practices or internal

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controls, the matter should be submitted in writing addressed to the chairperson of the audit committee in care of the Secretary at our principal executive offices at One First Avenue, Parris Building 34, Navy Yard Plaza, Third Floor, Boston, Massachusetts 02129. If the matter relates to our governance practices, business ethics or corporate conduct, it should be submitted in writing addressed to the Chairperson of the corporate governance and nominating committee in care of the principal financial officer at our principal executive offices. If a stockholder is unsure where to direct a communication, the stockholder may direct it in writing to the chairperson of the audit committee, or to any one of our independent directors, in care of the principal financial officer at our principal executive offices. All of these stockholder communications will be forwarded by the principal financial officer to the addressee.

Compensation Committee Interlocks and Insider Participation

The current members of the compensation committee are Mr. Scott Tarriff, Dr. Scott Braunstein and Mr. James A. Cannon. No member of the compensation committee has ever been an officer or employee of the Company or any subsidiary of ours and no member of the compensation committee had any relationship with us during 2018 requiring disclosure under Item 404 of Regulation S-K of the SEC.

None of our executive officers has served as a director or member of the compensation committee (or other committee serving an equivalent function) of any other entity that has an executive officer serving as a member of our board of directors or our compensation committee.

Code of Ethics and Business Conduct

The board of directors adopted a Code of Ethics and Business Conduct to be applicable to all officers, directors and employees. The Code of Ethics and Business Conduct is intended to be designed to deter wrong-doing and promote honest and ethical behavior, full, fair, timely, accurate and understandable disclosure, and compliance with applicable laws. In addition to provisions that are applicable to officers, directors and employees generally, the Code of Ethics and Business Conduct contains provisions that are specifically applicable to our Chief Executive Officer and senior financial officer(s). The Code of Ethics and Business Conduct is available on our website at www.ziopharm.com and a copy may be obtained without charge upon written request to our Legal Affairs department at our principal executive offices at One First Avenue, Parris Building 34, Navy Yard Plaza, Third Floor, Boston, Massachusetts 02129. Our website and its contents are not incorporated into this proxy statement.

Report of the Audit Committee of the Board

The Audit Committee has reviewed and discussed the audited financial statements for the fiscal year ended December 31, 2018 with management of the Company. The Audit Committee has discussed with the independent registered public accounting firm the matters required to be discussed by Auditing Standard No. 1301, *Communications with Audit Committees*, as adopted by the Public Company Accounting Oversight Board (“PCAOB”). The Audit Committee has also received the written disclosures and the letter from the independent registered public accounting firm required by applicable requirements of the PCAOB regarding the independent accountants’ communications with the audit committee concerning independence, and has discussed with the independent registered public accounting firm the accounting firm’s independence. Based on the foregoing, the Audit Committee has recommended to the Board of Directors that the audited financial statements be included in the Company’s Annual Report on Form 10-K for the fiscal year ended December 31, 2018.

AUDIT COMMITTEE

Douglas W. Pagán, Chairman

Scott Braunstein, M.D.

James A. Cannon

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This report is not “soliciting material,” is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference in any of our filings under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether before or after the date hereof and irrespective of any general incorporation language in any such filing.

DIRECTOR COMPENSATION

Compensatory Arrangements with Outside Directors

Under our director compensation policy, each non-employee director was entitled to the following in 2018:

- an annual retainer fee of \$40,000 for service on the board; and
- additional annual retainer fees for board committee service as follows:

	<u>Chair</u>	<u>Other Member</u>
Audit Committee	\$15,000	\$ 8,000
Compensation Committee	12,500	7,000
Corporate Governance and Nominating Committee	8,500	5,000

In addition, in 2018, our non-executive lead director received an additional retainer fee of \$15,000. All cash retainers were paid on a quarterly basis in arrears to non-employee directors who continue to serve as members of the board on the last business day of each calendar quarter. In connection with a director's initial election to the board, he or she shall receive, an option to purchase 50,000 shares of our common stock with an exercise price equal to the fair market value of the common stock on the grant date. This award shall vest in two equal annual installments on the anniversary of the director's election to our board.

In December 2018, our board of directors, following the recommendation of our compensation committee and review of peer group data, updated our director compensation policy to more closely align with the pay practices of our peer group, including an increase in the cash retainer fees payable to our non-employee directors. The new director compensation policy was effective immediately with respect to the annual equity grants and effective as of January 1, 2019 with respect to the retainer fees. Under our new director compensation policy, each non-employee director is entitled to the following:

- an annual retainer fee of \$50,000 for service on the board; and
- additional annual retainer fees for board committee service as follows:

	<u>Chair</u>	<u>Other Member</u>
Audit Committee	\$20,000	\$ 12,000
Compensation Committee	15,000	9,000
Corporate Governance and Nominating Committee	10,000	6,000

The non-executive board chair also receives further annualized cash compensation of \$25,000. All cash retainers are paid on a quarterly basis in arrears to non-employee directors who continue to serve as members of the board on the last business day of each calendar quarter.

In addition, under our updated director compensation policy, each director receives an annual equity grant equal to \$150,000. Each director may elect to receive their equity grant in the form of restricted shares of our common stock and/or options to purchase shares of our common stock, with the number of restricted shares determined based on our then-current stock price and the number of options determined using the Black-Scholes methodology.

Under our updated director compensation policy, in connection with a director's initial election to the board, he or she shall receive options to purchase shares of our common stock with a value at the time of grant equal to \$250,000, with the number of options determined using the Black-Scholes methodology. The award shall have an exercise price equal to the fair market value of the common stock on the grant date and will vest on the second anniversary of the director joining our board.

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As set forth in its written charter, the compensation committee annually reviews director compensation practices in consultation with our compensation consultant and recommends any changes for adoption by the full board. As such, the director compensation described above is subject to change at the discretion of the board.

2018 Non-Employee Director Compensation

The following table provides information regarding non-employee director compensation for 2018.

<u>Name</u>	<u>Fees Earned or Paid in Cash (\$)</u>	<u>Option Awards⁽¹⁾ (\$)</u>	<u>Stock Awards⁽¹⁾ (\$)</u>	<u>Total (\$)</u>
Scott Braunstein, M.D.	13,981	257,680	—	271,661
Murray Brennan, M.D. ⁽²⁾	50,385	—	—	50,385
James A. Cannon	57,679	150,000	—	207,679
Elan Ezickson	12,840	107,680	150,000	270,520
Wyche Fowler, Jr. ⁽³⁾	38,092	—	—	38,092
Randal J. Kirk ⁽⁴⁾	30,000	—	—	30,000
Douglas Pagán	16,549	182,680	75,000	274,229
Scott Tarriff	62,582	150,000	—	212,582
Michael Weiser, M.D., Ph.D. ⁽⁵⁾	16,375	—	—	16,375

(1) The amounts shown represent compensation expense recognized for financial statement purposes under ASC Topic 718. For Dr. Braunstein, such amount consists of (i) an option award granted on September 18, 2018 with a grant date fair value of \$107,680 and (ii) an option award granted on December 31, 2018 with a grant date fair value of \$150,000. For Mr. Ezickson, such amount consists of (i) an option award granted on September 18, 2018 with a grant date fair value of \$107,680 and (ii) a stock award granted on December 31, 2018 with a grant date fair value of \$150,000. For Mr. Pagán, such amount consists of (i) an option award granted on September 18, 2018 with a grant date fair value of \$107,680, (ii) an option award granted on December 31, 2018 with a grant date fair value of \$75,000 and (iii) a stock award granted on December 31, 2018 with a grant date fair value of \$75,000. For all other directors, such amount represents the grant date fair value of a single equity award granted on December 31, 2018. Pursuant to SEC rules, the amounts shown exclude the impact of estimated forfeitures related to service-based vesting conditions. For a discussion of the assumptions relating to our valuations of these restricted stock awards and stock options, please see Note 3 to the financial statements included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018 filed with the SEC on March 5, 2019. These amounts reflect our accounting expense for these restricted stock awards and stock options and do not correspond to the actual value that may be recognized by the directors. As of December 31, 2018:

- Dr. Braunstein held options to purchase 176,700 shares at a weighted average exercise price of \$2.19 per share, of which no shares had vested.
- Dr. Brennan held options to purchase 167,500 shares at a weighted average exercise price of \$4.18 per share, of which 167,500 shares had vested. In addition, Dr. Brennan held 56,252 shares of restricted stock, of which 56,252 shares have had transfer and forfeiture restrictions lapse.
- Mr. Cannon held options to purchase 194,200 shares at a weighted average exercise price of \$2.31 per share, of which 67,500 shares had vested. In addition, Mr. Cannon held 166,327 shares of restricted stock, of which 166,327 shares have had transfer and forfeiture restrictions lapse.
- Mr. Ezickson held options to purchase 50,000 shares at a weighted average exercise price of \$3.00 per share, of which no shares had vested. In addition, Mr. Ezickson held 80,214 shares of restricted stock, of which no shares have had transfer and forfeiture restrictions lapse.

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- Senator Fowler held options to purchase 92,500 shares at a weighted average exercise price of \$3.91 per share, of which 92,500 shares had vested. In addition, Senator Fowler held 142,920 shares of restricted stock, of which 142,920 shares have had transfer and forfeiture restrictions lapse.
 - Mr. Kirk held options to purchase 50,000 shares at a weighted average exercise price of \$4.68 per share, of which 50,000 shares had vested. In addition, Mr. Kirk held 139,513 shares of restricted stock, of which 139,513 shares have had transfer and forfeiture restrictions lapse.
 - Mr. Pagán held options to purchase 113,350 shares at a weighted average exercise price of \$2.37 per share, of which no shares had vested. In addition, Mr. Pagán held 40,107 shares of restricted stock, of which no shares have had transfer and forfeiture restrictions lapse.
 - Mr. Tarriff held options to purchase 216,700 shares at a weighted average exercise price of \$3.72 per share, of which 90,000 shares had vested. In addition, Mr. Tarriff held 4,186 shares of restricted stock, of which 4,186 shares have had transfer and forfeiture restrictions lapse.
 - Dr. Weiser held options to purchase 117,500 shares at a weighted average exercise price of \$4.14 per share, of which 117,500 shares had vested. In addition, Dr. Weiser held 119,941 shares of restricted stock, of which 119,491 shares have had transfer and forfeiture restrictions lapse.
- (2) Dr. Brennan's term expired on September 18, 2018.
 - (3) Senator Fowler's term expired on September 18, 2018.
 - (4) Mr. Kirk resigned from the board of directors and all committees thereof on October 5, 2018.
 - (5) Dr. Weiser resigned from the board of directors and all committees thereof on March 12, 2018.

LIMITATION OF LIABILITY AND INDEMNIFICATION

Our charter limits the personal liability of directors for breach of fiduciary duty to the maximum extent permitted by the Delaware corporation law. The charter provides that no director will have personal liability to us or to stockholders for monetary damages for breach of fiduciary duty as a director. These provisions do not, however, eliminate or limit the liability of any of the directors for:

- any breach of the director's duty of loyalty to us or our stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- voting or assenting to unlawful payments of dividends, stock repurchases or other distributions; or
- any transaction from which the director derived an improper personal benefit.

Any amendment, repeal or modification of these provisions will not adversely affect any right or protection of a director in respect of any act or omission occurring prior to such amendment, repeal or modification. If the Delaware corporation law is amended to provide for further limitations on the personal liability of directors of corporations, then the personal liability of the directors will be further limited to the greatest extent permitted by the Delaware corporation law.

The charter also provides that we must indemnify directors and officers in certain circumstances. We believe this provision is important in attracting and retaining qualified individuals to serve as directors and executive officers.

We maintain director and officer insurance providing for indemnification of our directors and officers for certain liabilities, including certain liabilities under the Securities Act. We also maintain a general liability insurance policy that covers certain liabilities of directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers. We have also entered into indemnification agreements with each of our directors and named executive officers.

CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

The following discussion relates to certain transactions that involve both the Company and one of our executive officers, directors, director nominees or five-percent stockholders, each of whom we refer to as a “related party.” For purposes of this discussion, a “related-party transaction” is a transaction, arrangement or relationship:

- in which we participate;
- that involves an amount in excess of \$120,000; and
- in which a related party has a direct or indirect material interest.

Related-Party Transaction Policy

In April 2012, the board of directors adopted our initial written policies and procedures for the review of any related-party transaction. If a related party proposes to enter into a related-party transaction, the related party must report the proposed related-party transaction to the chief legal officer. The policy calls for the proposed related-party transaction to be reviewed and, if deemed appropriate, approved by the audit committee. Whenever practicable, the review and approval by the audit committee will occur prior to entry into the related-party transaction. If advance review and approval is not practicable, the audit committee will review, and, in its discretion, may ratify the related-party transaction. The policy also permits the chair of the audit committee to review and, if deemed appropriate, approve proposed related-party transactions that arise between audit committee meetings, subject to ratification by the audit committee at its next meeting. Any related-party transactions that are ongoing in nature will be reviewed annually.

A related-party transaction reviewed under the policy will be considered approved or ratified if it is authorized by the committee after full disclosure of the related party’s interest in the transaction. As appropriate for the circumstances, the committee will review and consider:

- the related party’s interest in the related-party transaction;
- the approximate dollar value of the amount involved in the related-party transaction;
- the approximate dollar value of the amount of the related party’s interest in the transaction without regard to the amount of any profit or loss;
- whether the transaction was undertaken in the ordinary course of our business;
- whether the terms of the transaction are no less favorable to us than terms that could have been reached with an unrelated third party;
- the purpose of, and the potential benefits to us of, the transaction; and
- any other information regarding the related-party transaction or the related party in the context of the proposed transaction that would be material to investors in light of the circumstances of the particular transaction.

The audit committee may approve or ratify the 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 audit committee may impose any conditions on the related-party transaction that it deems appropriate.

In addition to the transactions that are excluded by the instructions to the SEC’s related-party transaction disclosure rule, the board has determined that the following transactions do not create a material direct or indirect interest on behalf of related parties and, therefore, are not related-party transactions for purposes of the policy:

- interests arising solely from the related party’s position as an executive officer of another entity (whether or not the person is also a director of such entity) that is a participant in the transaction, where

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(a) the related party and all other related parties own in the aggregate less than a 10% equity interest in such entity, (b) the related party and his or her immediate family members are not involved in the negotiation of the terms of the transaction and do not receive any special benefits as a result of the transaction, and (c) the amount involved in the transaction is less than the greater of \$200,000 and 5% of the annual gross revenues of the Company receiving payment in the transaction; and

- a transaction that is specifically contemplated by provisions of our charter or bylaws.

The policy provides that transactions involving compensation of executive officers shall be reviewed and approved by the compensation committee.

Certain Related-Party Transactions

Exclusive License Agreement with Precigen, Inc.

On January 12, 2011, Mr. Randal Kirk was appointed to our board of directors and remained a director until his resignation on October 5, 2018. Mr. Kirk serves as Chief Executive Officer of Intrexon Corporation, or Intrexon. On October 5, 2018, we entered into an exclusive license agreement, or the License Agreement, with Precigen, Inc., or Precigen, a wholly owned subsidiary of Intrexon. As between us and Precigen, the terms of the License Agreement replace and supersede the terms of: (a) that certain Exclusive Channel Partner Agreement by and between us and Intrexon, dated January 6, 2011, as amended by the First Amendment to Exclusive Channel Partner Agreement effective September 13, 2011, the Second Amendment to the Exclusive Channel Partner Agreement effective March 27, 2015, and the Third Amendment to Exclusive Channel Partner Agreement effective June 29, 2016, which was subsequently assigned by Intrexon to Precigen; (b) certain rights and obligations pursuant to that certain License and Collaboration Agreement effective March 27, 2015 between us, Intrexon and ARES TRADING Trading S.A., or Ares Trading, a subsidiary of Merck KGaA, or Merck, as assigned by Intrexon to Precigen, or the Ares Trading Agreement; (c) that certain License Agreement between us, Intrexon, and MD Anderson, with an effective date of January 13, 2015, or the MD Anderson License, which was subsequently assigned by Intrexon and assumed by Precigen effective as of January 1, 2018; and (d) that certain Research and Development Agreement between us, Intrexon and MD Anderson with an effective date of August 17, 2015, or the Research and Development Agreement, and any amendments or statements of work thereto.

Pursuant to the terms of the License Agreement, Precigen has granted us an exclusive, worldwide, royalty-bearing, sub-licensable license to research, develop and commercialize (i) products utilizing Precigen's RheoSwitch® gene switch, or RTS, for the treatment of cancer, referred to as IL-12 Products, (ii) CAR products directed to (A) CD19 for the treatment of cancer, referred to as CD19 Products, and (B) a second target, subject to the rights of Merck to pursue such target under the Ares Trading Agreement, and (iii) TCR products designed for neoantigens for the treatment of cancer. Precigen has also granted us an exclusive, worldwide, royalty-bearing, sub-licensable license for certain patents relating to the *Sleeping Beauty* technology to research, develop and commercialize TCR products for both neoantigens and shared antigens for the treatment of cancer, referred to as "TCR Products."

We will be solely responsible for all aspects of the research, development and commercialization of the exclusively licensed products for the treatment of cancer. We are required to use commercially reasonable efforts to develop and commercialize IL-12 products and CD19 products and after a two-year period, the TCR Products.

Precigen has also granted us an exclusive, worldwide, royalty-bearing, sub-licensable license to research, develop and commercialize products utilizing an additional construct that expresses RTS IL-12 for the treatment of cancer, referred to as Gorilla IL-12 Products.

In consideration of the licenses and other rights granted by Precigen, we will pay Precigen an annual license fee of \$100 thousand and we have agreed to reimburse Precigen for certain historical costs of the licensed programs up to \$1.0 million, payable quarterly.

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We will make milestone payments totaling up to an additional \$52.5 million for each exclusively licensed program upon the initiation of later stage clinical trials and upon the approval of exclusively licensed products in various jurisdictions. In addition, we will pay Precigen tiered royalties ranging from low-single digit to high-single digit on the net sales derived from the sales of any approved IL-12 products and CAR products. We will also pay Precigen royalties ranging from low-single digit to mid-single digit on the net sales derived from the sales of any approved TCR products, up to a maximum royalty amount of \$100.0 million in the aggregate. We will also pay Precigen 20% of any sublicensing income received by us relating to the licensed products.

We are responsible for all development costs associated with each of the licensed products, other than Gorilla IL-12 products. We and Precigen will share the development costs and operating profits for Gorilla IL-12 products, and we are responsible for 80% of the development costs and receiving 80% of the operating profits, and Precigen responsible for the remaining 20% of the development costs and receiving 20% of the operating profits.

Precigen will pay us royalties ranging from low-single digits to mid-single digits on the net sales derived from the sale of Precigen's CAR products, up to \$50.0 million.

In consideration of our entry into the License Agreement, Intrexon forfeited and returned to us all shares of our Series 1 preferred stock held by or payable to Intrexon as of the date of the License Agreement.

Employment and Indemnification Agreements

Employment Agreements

We have entered into employment agreements with certain of our executive officers. See "*Executive Compensation — Employment and Change in Control Agreements.*"

Stock Option Grants to Executive Officers and Directors

We have granted stock options to our executive officers and non-employee directors. See "*Executive Compensation*" and "*Director Compensation.*"

Indemnification Agreements with Executive Officers and Directors

We have entered into an indemnification agreement with each of our directors and executive officers. These indemnification agreements and our certificate of incorporation and our bylaws indemnify each of our directors and officers to the fullest extent permitted by the Delaware General Corporation Law. See "*Limitation of Liability and Indemnification.*"

STOCK OWNERSHIP

Directors, Officers and Principal Stockholders

The following table sets forth information with respect to the beneficial ownership of common stock as of April 17, 2019 for:

- each beneficial owner of more than five percent of our outstanding common stock;
- each of our current directors, director nominees and named executive officers; and
- all of our current directors and executive officers as a group.

Beneficial ownership is determined 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, or have the right to acquire such powers within 60 days. Common stock subject to options that are currently exercisable or exercisable within 60 days of April 17, 2019 are deemed to be outstanding and beneficially owned by the person holding the options. These shares, however, are not deemed outstanding for the purposes of computing the percentage ownership of any other person. Except as otherwise indicated, all persons listed below have sole voting and investment power with respect to the shares beneficially owned by them, subject to applicable community property laws. Percentage ownership calculations are based on 162,294,494 shares outstanding as of April 17, 2019. Except as otherwise noted below, the address for persons listed in the table is c/o Ziopharm Oncology, Inc., One First Avenue, Parris Building 34, Navy Yard Plaza, Third Floor, Boston, Massachusetts 02129.

<u>Name and Address of Beneficial Owner</u>	<u>Number of Shares Beneficially Owned</u>	<u>Percentage Ownership (%)</u>
5% Stockholders:		
Miller Value Partners, LLC ⁽¹⁾	13,052,579	8.0
White Rock Capital Partners ⁽²⁾	12,412,420	7.6
MSD Credit Opportunity Master Fund, L.P. ⁽³⁾	11,005,096	6.8
BlackRock, Inc. ⁽⁴⁾	9,288,084	5.7
Directors, Director Nominees and Named Executive Officers:		
James A. Cannon	450,550	*
Scott Braunstein	—	*
Scott Tarriff	94,186	*
Douglas W. Pagán	40,107	*
Elan Z. Ezickson	80,214	*
Laurence James Neil Cooper, M.D., Ph.D.	1,799,325	1.1
David M. Mauney, M.D.	384,339	*
Robert Hadfield	167,572	*
Kevin G. Lafond	264,445	*
Caesar Belbel ⁽⁵⁾	770,868	*
All of our current directors and executive officers as a group (9 persons) ⁽⁶⁾	3,280,738	2.0

* Less than one percent.

(1) Based on the Schedule 13G filed with the SEC on February 14, 2019. Includes 3,787,879 shares of common stock issuable upon the exercise of a warrant. The number of shares of common stock into which the warrant is convertible is limited to that number of shares of common stock which would result in the

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stockholder, together with its affiliates, having an aggregate beneficial ownership of no more than 9.99% of the total issued and outstanding shares of common stock. Miller Value Partners, LLC (“Miller Value”), an investment adviser, is the beneficial owner of 9,264,700 shares and has shared voting power with respect to 9,264,700 shares and shared investment power with respect to 9,264,700 shares. William H. Miller III Living Trust, the control person of Miller Value, may be deemed to exercise voting and/or dispositive power over the shares held for the account of Miller Value. The address of Miller Value is One South Street, Suite 2550, Baltimore, MD 21202.

- (2) Based on the Schedule 13G/A filed with the SEC on February 12, 2019. Includes 3,787,879 shares of common stock issuable upon the exercise of a warrant. The number of shares of common stock into which the warrant is convertible is limited to that number of shares of common stock which would result in the stockholder, together with its affiliates, having an aggregate beneficial ownership of no more than 9.99% of the total issued and outstanding shares of common stock. White Rock Capital Management, L.P. (“White Rock Management”) may be deemed to exercise voting and/or dispositive power over the shares held for the account of White Rock Capital Partners, L.P. (“White Rock Partners”). The general partner of White Rock Partners is White Rock Management, the general partner of which is White Rock Capital (TX), Inc. Thomas U. Barton and Joseph U. Barton are the shareholders of White Rock Capital (TX), Inc. In such capacities, each of Thomas U. Barton and Joseph U. Barton each may be deemed to be the beneficial owner of the shares held for the account of White Rock Partners. The address of White Rock Partners is 3131 Turtle Creek Boulevard, Suite 800, Dallas, Texas 75219.
- (3) Based on the Schedule 13G filed with the SEC on November 21, 2018. Excludes 7,575,758 shares of common stock issuable upon the exercise of a warrant, which are not fully exercisable within 60 days of April 17, 2019 by virtue of the beneficial ownership limitation described below. The number of shares of common stock into which the warrant is convertible is limited to that number of shares of common stock which would result in the stockholder, together with its affiliates, having an aggregate beneficial ownership of no more than 9.99% of the total issued and outstanding shares of common stock. MSD Partners, L.P. (“MSD Partners”) is the investment manager of, and may be deemed to beneficially own securities beneficially owned by, MSD Credit Opportunity Master Fund, L.P. MSD Partners (GP), LLC (“MSD GP”) is the general partner of, and may be deemed to beneficially own securities beneficially owned by, MSD Partners. Each of Glenn R. Fuhrman, John C. Phelan and Marc R. Lisker is a manager of, and may be deemed to beneficially own securities beneficially owned by, MSD GP. The address of MSD Credit Opportunity Master Fund, L.P. is c/o Maples Corporate Services Limited, P.O. Box 309, Ugland House, Grand Cayman, KY1-1104, Cayman Islands.
- (4) Based solely on the Schedule 13G/A filed with the SEC on February 6, 2019, BlackRock, Inc., as a parent holding company, is the beneficial owner of 9,288,084 shares and has sole voting power with respect to 9,027,299 shares and sole investment power with respect to 9,288,084 shares. Aggregate beneficial ownership reported by BlackRock, Inc. is on a consolidated basis and includes beneficial ownership of its subsidiaries Blackrock (Netherlands) B.V., BlackRock Advisors, LLC, BlackRock Asset Management Canada Limited, BlackRock Asset Management Ireland Limited, BlackRock Asset Management Schweiz AG, BlackRock Financial Management, Inc., BlackRock Fund Advisors, BlackRock Institutional Trust Company, N.A., BlackRock Investment Management (Australia) Limited, BlackRock Investment Management (UK) Ltd. and BlackRock Investment Management, LLC. The address of BlackRock, Inc. is 55 East 52nd Street, New York, New York 10055.
- (5) Mr. Belbel’s employment with us terminated on February 15, 2018. Shares beneficially owned by Mr. Belbel are set forth as of July 23, 2018, the date used to calculate beneficial ownership in our 2018 proxy statement.
- (6) Consists of shares beneficially owned by our current directors and current executive officers, which does not include shares beneficially owned by Mr. Belbel.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires our directors and executive officers, as well as stockholders beneficially owning more than ten percent of the outstanding common stock, to file with the SEC initial reports

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of ownership and reports of changes in ownership with respect to common stock. All of these reporting persons are required by SEC regulations to furnish us with copies of all reports they file with the SEC pursuant to Section 16(a).

Based solely on our review of the copies of such forms received by us and written representations of our directors and executive officers received by us, we believe each reporting person filed on a timely basis all of the reports required to be filed pursuant to Section 16(a) in 2018, except for Dr. Laurence Cooper who due to administrative error filed one Form 4 twelve business days after the applicable deadline.

INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM FEES AND OTHER MATTERS

Audit and Related Fees

RSM US LLP served as our independent registered public accounting firm for the years ended December 31, 2018 and 2017. The following table presents the collective fees billed by RSM US LLP during such years. These audit fees relate to professional services rendered for (a) audits of our financial statements, (b) reviews of our quarterly financial statements and (c) services related to other regulatory filings.

<u>Fee Category</u>	<u>2018</u>	<u>2017</u>
Audit fees	\$204,250	\$186,400
All other fees	\$110,561 ⁽¹⁾	\$134,769 ⁽²⁾

- (1) \$21,500 of such fees were incurred in connection with the preparation of a registration statement and an annual report by Intrexon that incorporated our financial statements. Intrexon reimbursed us for all such costs. \$89,061 of such fees were incurred in connection with our November 2018 financing and other filings and special accounting services.
- (2) \$41,250 of such fees were incurred in connection with the preparation of a registration statement and an annual report by Intrexon that incorporated our financial statements. Intrexon reimbursed us for all such costs. \$93,519 of such fees were incurred in connection with our May 2017 financing and other filings and special accounting services.

We did not incur any fees of RSM US LLP for audit-related, tax or other services in 2018 or 2017.

Audit Committee Pre-Approval Policy and Procedures

The audit committee charter provides that all audit and non-audit accounting services that are permitted to be performed by our independent registered public accounting firm under applicable rules and regulations must be pre-approved by the audit committee or by designated independent members of the audit committee, other than with respect to de minimis exceptions permitted under Section 202 of the Sarbanes-Oxley Act of 2002. All services performed by RSM US LLP in 2018 and 2017 have been pre-approved in accordance with the charter.

Prior to or as soon as practicable following the beginning of each fiscal year, a description of audit, audit-related, tax, and other services expected to be performed by the independent registered public accounting firm in the following fiscal year is presented to the audit committee for approval. Following such approval, any requests for audit, audit-related, tax, and other services not presented and pre-approved must be submitted to the audit committee for specific pre-approval and cannot commence until such approval has been granted. Normally, pre-approval is provided at regularly scheduled meetings. However, the authority to grant specific pre-approval between meetings, as necessary, may be delegated to one or more members of the audit committee who are independent directors. In the event such authority is so delegated, the full audit committee must be updated at the next regularly scheduled meeting with respect to any services that were granted specific pre-approval by delegation. During 2018, the audit committee functioned in conformance with these procedures.

HOUSEHOLDING OF PROXY MATERIALS

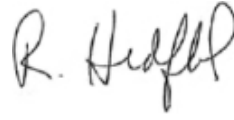
The SEC has adopted rules that permit companies and intermediaries (such as brokers) to satisfy the delivery requirements for Notices of Internet Availability of Proxy Materials or other annual meeting materials with respect to two or more stockholders sharing the same address by delivering a single Notice of Internet Availability of Proxy Materials or other annual meeting materials addressed to those stockholders. This process, which is commonly referred to as “householding,” potentially means extra convenience for stockholders and cost savings for companies.

This year, a number of brokers with account holders who are our stockholders will be “householding” our proxy materials. A single Notice of Internet Availability of Proxy Materials or other annual meeting materials will be delivered to multiple stockholders sharing an address unless contrary instructions have been received from the affected stockholders. Once you have received notice from your broker that they will be “householding” communications to your address, “householding” will continue until you are notified otherwise or until you revoke your consent. If, at any time, you no longer wish to participate in “householding” and would prefer to receive a separate Notice of Internet Availability of Proxy Materials or other Annual Meeting materials, please notify your broker. Direct your written request to Ziopharm Oncology, Inc., One First Avenue, Parris Building 34, Navy Yard Plaza, Third Floor, Boston, Massachusetts 02129, Attention: Legal Affairs Department or contact us at (617) 259-1970. Stockholders who currently receive multiple copies of the Notice of Internet Availability of Proxy Materials or other Annual Meeting materials at their addresses and would like to request “householding” of their communications should contact their brokers.

OTHER MATTERS

The board of directors knows of no other matters that will be presented for consideration at the annual meeting. If any other matters are properly brought before the annual meeting, it is the intention of the persons named in the accompanying proxy to vote on such matters in accordance with their best judgment.

By Order of the Board of Directors

A handwritten signature in black ink, appearing to read "R. Hadfield". The signature is written in a cursive style with a large, looped initial "R".

Robert Hadfield
Secretary and General Counsel

ZIOPHARM ONCOLOGY, INC.
 ATTN: CORPORATE SECRETARY
 ONE FIRST AVENUE, PARRIS BLDG #34
 THIRD FLOOR, NAVY YARD PLAZA
 BOSTON, MA 02129

VOTE BY INTERNET - www.proxyvote.com

Use the Internet to transmit your voting instructions and for electronic delivery of information up until 11:59 P.M. Eastern Time the day before the cut-off date or meeting date. Have your proxy card in hand when you access the web site and follow the instructions to obtain your records and to create an electronic voting instruction form.

ELECTRONIC DELIVERY OF FUTURE PROXY MATERIALS

If you would like to reduce the costs incurred by our company in mailing proxy materials, you can consent to receiving all future proxy statements, proxy cards and annual reports electronically via e-mail or the Internet. To sign up for electronic delivery, please follow the instructions above to vote using the Internet and, when prompted, indicate that you agree to receive or access proxy materials electronically in future years.

VOTE BY PHONE - 1-800-690-6903

Use any touch-tone telephone to transmit your voting instructions up until 11:59 P.M. Eastern Time the day before the cut-off date or meeting date. Have your proxy card in hand when you call and then follow the instructions.

VOTE BY MAIL

Mark, sign and date your proxy card and return it in the postage-paid envelope we have provided or return it to Vote Processing, c/o Broadridge, 51 Mercedes Way, Edgewood, NY 11717.

TO VOTE, MARK BLOCKS BELOW IN BLUE OR BLACK INK AS FOLLOWS:

KEEP THIS PORTION FOR YOUR RECORDS
 DETACH AND RETURN THIS PORTION ONLY

THIS PROXY CARD IS VALID ONLY WHEN SIGNED AND DATED.

<p>The Board of Directors recommends you vote FOR the following:</p> <p>1. Election of Directors</p> <p>Nominees</p> <p>01 Scott Braunstein 02 Laurence J.N. Cooper 03 Elan Z. Ezickson 04 Douglas W. Pagan 05 Scott Tarriff</p> <p>The Board of Directors recommends you vote FOR proposals 2 and 3.</p> <p>2. To ratify the appointment of RSM US LLP as the Company's independent registered public accounting firm for 2019</p> <p>3. To approve, on an advisory basis, the compensation of the Company's named executive officers as disclosed in the proxy statement</p> <p>NOTE: To transact any other business as may properly come before the meeting or any adjournments or postponements thereof.</p> <p>For address change/comments, mark here. (see reverse for instructions)</p> <p>Please indicate if you plan to attend this meeting</p> <p>Please sign exactly as your name(s) appear(s) hereon. When signing as attorney, executor, administrator, or other fiduciary, please give full title as such. Joint owners should each sign personally. All holders must sign. If a corporation or partnership, please sign in full corporate or partnership name by authorized officer.</p>	<p>For All</p> <p><input type="checkbox"/></p>	<p>Withhold All</p> <p><input type="checkbox"/></p>	<p>For All Except</p> <p><input type="checkbox"/></p>	<p>To withhold authority to vote for any individual nominee(s), mark "For All Except" and write the number(s) of the nominee(s) on the line below.</p> <p>_____</p>												
				<table border="1"> <tr> <td style="width: 30%;"></td> <td style="width: 10%; text-align: center;">For</td> <td style="width: 10%; text-align: center;">Against</td> <td style="width: 10%; text-align: center;">Abstain</td> </tr> <tr> <td>2.</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>3.</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>		For	Against	Abstain	2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Signature [PLEASE SIGN WITHIN BOX]	Date															
Signature (Joint Owners)	Date															

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Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting:
The Notice and Proxy Statement and Form 10-K are available at www.proxyvote.com

**ZIOPHARM ONCOLOGY, INC.
Annual Meeting of Stockholders
June 13, 2019 10:00 AM EDT
This proxy is solicited by the Board of Directors**

The undersigned hereby appoints Laurence James Neil Cooper, M.D., Ph.D. and Robert Hadfield or either of them, as proxies, each with the power to act without the other and to appoint his substitute, and hereby authorizes them to represent and to vote, as designated on the reverse side, all of the shares of common stock of ZIOPHARM ONCOLOGY, INC. that the stockholder(s) is/are entitled to vote at the Annual Meeting of Stockholders of the Company to be held at 10:00 AM EDT on June 13, 2019, at the offices of Cooley LLP located at 500 Boylston Street, 14th Floor, Boston, Massachusetts 02116 and any adjournment or postponement thereof.

This proxy, when properly executed, will be voted in the manner directed herein. If no such direction is made, this proxy will be voted in accordance with the Board of Directors' recommendations.

Address change / comments:

(If you noted any Address Changes and/or Comments above, please mark corresponding box on the reverse side.)

Continued and to be signed on reverse side