
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, DC 20549

FORM 10-K/A
(Amendment No. 1)

(Mark One)

ANNUAL REPORT UNDER SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2019

OR

TRANSITION REPORT UNDER SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission File Number 001-33038

ZIOPHARM Oncology, Inc.
(Exact Name of Registrant as Specified in Its Charter)

Delaware
(State or Other Jurisdiction of
Incorporation or Organization)

84-1475642
(IRS Employer
Identification No.)

**One First Avenue, Parris Building 34,
Navy Yard Plaza Boston, Massachusetts**
(Address of Principal Executive Offices)

02129
(Zip Code)

(617) 259-1970
(Registrant's Telephone Number, Including Area Code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock (par value \$0.001 per share)	ZIOP	The Nasdaq Stock Market LLC

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the past 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting company. See definition of "large accelerated filer," "accelerate filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large Accelerated Filer Accelerated Filer
Non-Accelerated Filer Smaller Reporting Company
Emerging Growth Company

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes No

The aggregate market value of the registrant's common stock held by non-affiliates was \$834,869,811 as of June 28, 2019 (the last business day of the registrant's most recently completed second fiscal quarter), based on a total of 143,202,369 shares of common stock held by non-affiliates and a closing price of \$5.83 as reported on the Nasdaq Capital Market on June 28, 2019. For purposes of this computation, all officers, directors, and 10% beneficial owners of the registrant are deemed to be affiliates. Such determination should not be deemed to be an admission that such officers, directors or 10% beneficial owners are, in fact, affiliates of the registrant.

As of April 24, 2020, there were 214,286,337 shares of the registrant's common stock, \$0.001 par value per share, outstanding.

EXPLANATORY NOTE

Ziopharm Oncology, Inc. (which may be referred to herein as “we,” “us” or the “Company”) is filing this Amendment No. 1 to Annual Report on Form 10-K/A (this “Amended Filing”) to amend its Annual Report on Form 10-K for the fiscal year ended December 31, 2019 (the “Original Filing”), as originally filed with the U.S. Securities and Exchange Commission (the “SEC”) on March 2, 2020 (the “Original Filing Date”), to include the information required by Items 10 through 14 of Part III of Form 10-K (the “Part III Information”). The Part III Information was previously omitted from the Original Filing in reliance on General Instruction G(3) to Form 10-K, which permits the Part III Information to be incorporated by reference in the Form 10-K by reference from the Company’s definitive proxy statement if such statement is filed no later than 120 days after the end of the fiscal year covered by the Original Filing. The Company is filing this Amended Filing to include the Part III Information because it will not file a definitive proxy statement containing such information within 120 days after the end of the fiscal year covered by the Original Filing. The reference on the cover of the Original Filing to the incorporation by reference to portions of the Company’s definitive proxy statement into Part III of the Original Filing is hereby deleted.

This Amendment hereby amends Part III, Items 10 through 14, and Part IV, Item 15 of the Original Filing. In addition, pursuant to Rule 12b-15 under Securities Exchange Act of 1934, as amended, this Amended Filing also contains new certifications pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, which are attached hereto. Because no financial statements have been amended by or included in this Amended Filing and this Amended Filing does not contain or amend any disclosure with respect to Items 307 and 308 of Regulation S-K, paragraphs 3, 4 and 5 of the certifications have been omitted.

Except as described above, this Amended Filing does not amend, modify or otherwise update any other information in the Original Filing. Accordingly, this Amended Filing should be read in conjunction with the Original Filing. In addition, this Amended Filing does not reflect events that may have occurred subsequent to the Original Filing Date.

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ZIOPHARM Oncology, Inc.
ANNUAL REPORT ON FORM 10-K/A
FOR THE FISCAL YEAR ENDED DECEMBER 31, 2019

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All trademarks, trade names and service marks appearing in this Amendment No. 1 to Annual Report on Form 10-K are the property of their respective owners.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Our Board of Directors

Set forth below are the names and certain information about each of our directors as of April 29, 2020. The information presented includes each director’s age, principal occupation and business experience for the past five years and the names of other public companies of which he or she has served as a director during the past five years.

Name	Positions and Offices Held	Director Since	Age
Laurence James Neil Cooper, M.D., Ph.D.	Chief Executive Officer and Director	2018	55
Scott Tarriff	Chairman of the Board of Directors	2015	60
Christopher Bowden, M.D.	Director	2019	59
Scott Braunstein, M.D.	Director	2018	56
Elan Z. Ezickson	Director	2018	56
Heidi Hagen	Director	2019	51
Douglas W. Pagán	Director	2018	48

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 bone marrow transplantation (“BMT”) program) as a tenured professor at the University of Texas M.D. Anderson Cancer Center (“MD Anderson”), where he had worked since 2006. In addition to caring for children, adolescents and young adults undergoing autologous and allogeneic BMT at MD Anderson, he led a laboratory translating immunology into clinical practice. This program had multiple investigator-initiated trials that infused T cells and NK cells to target malignancies. Dr. Cooper also holds an appointment as a Visiting Scientist at MD Anderson. 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 BMT at the Fred Hutchinson Cancer Research Center in Seattle.

The board believes that Dr. Cooper’s insight into our operations and strategy as a result of being our Chief Executive Officer, and his scientific expertise and industry background qualifies him to serve on the board.

Scott Tarriff
Chair

Mr. Tarriff is the chair of our board. He 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 our chair. 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 has demonstrated an ability to dedicate a significant 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.

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Christopher Bowden, M.D. <i>Director</i>	<p>Dr. Bowden, an oncology drug development executive with more than 20 years leadership experience including the approval of several cancer medicines, has served as a member of our board since October 2019. He has been the chief medical officer of Agios Pharmaceuticals since May 2014. Previously, Dr. Bowden was vice president product development oncology, at Genentech for eight years. From 2003 to 2006, he was the executive director for EMEA regions for Bristol-Myers Squibb. Earlier, Dr. Bowden held positions of increasing responsibility in oncology clinical development, at Pharmacia Corporation and Janssen Pharmaceutical. Prior to industry, Dr. Bowden was on the oncology faculty at the University of Virginia Health Science Center. Since 2017, Dr. Bowden has served as a member of the board of directors of miRagen Therapeutics, Inc., a publicly-traded biopharmaceutical company discovering and developing proprietary RNA-targeted therapies with a specific focus on microRNAs. Dr. Bowden received his M.D. from Hahnemann University School of Medicine followed by internal medicine training at Roger Williams Medical Center and the Providence VA Medical Center, Rhode Island. He completed his medical oncology fellowship at the National Cancer Institute Medicine Branch. Dr. Bowden is board certified in internal medicine and medical oncology.</p> <p>The board believes that Dr. Bowden’s extensive background in drug development and leadership experience at several leading life science and pharmaceutical companies qualifies him to serve on the board.</p>
Scott Braunstein, M.D. <i>Director</i>	<p>Dr. Braunstein has served as a member of our board since September 2018. Dr. Braunstein has served as the chief executive officer of Marinus Pharmaceuticals, Inc., a publicly-traded pharmaceuticals company, since August 2019, and as a member of its board of directors since September 2018. Dr. Braunstein is also 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 Trevena, Inc., a traded pharmaceutical company, since September 2018, on the board of directors of Constellation Pharmaceuticals, a publicly traded biopharmaceutical company, since February 2019, and on the board of directors of Artara Therapeutics, Inc., a publicly-traded company, since May 2018. Dr. Braunstein previously served as a member of the board of directors of Esperion Therapeutics, Inc. from 2015 until 2020.</p> <p>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.</p> <p>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 us and qualifies him to serve on the board.</p>
Elan Z. Ezickson <i>Director</i>	<p>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. Since December 2019, Mr. Ezickson has served on the board of directors of Marinus Pharmaceuticals, Inc., a publicly-held company focused on developing and commercializing innovative therapeutics to treat patients suffering from rare seizure disorders. Mr. Ezickson holds a B.A. in Political Science from Yale University and a J.D. from the Columbia University School of Law.</p> <p>The board believes that Mr. Ezickson’s deep operating and management experience at several leading life science companies, as well as his legal expertise and operational experience, qualifies him to serve on the board.</p>

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Heidi Hagen
Director

Ms. Hagen has served as a member of our board since June 2019. Ms. Hagen has held the position of a biotechnology and pharmaceutical operations and technology consultant with HH Consulting LLC since October 2012. Since October 2015, Ms. Hagen has served as Co-founder and Advisor for Vineti, Inc., a privately-held company that develops and sells cloud-based software platforms for ordering, manufacturing and delivering personalized medicines. Previously, Ms. Hagen served as interim Chief Commercial Officer at ZappRx, Inc. from January 2015 to June 2015. Prior to that, Ms. Hagen served as Global Chief Operating Officer at Sotio LLC, a biotechnology company developing new therapies for the treatment of cancer and autoimmune diseases using its immunotherapy platform and proprietary cell-based technologies, from March 2013 to April 2014. Prior to joining Sotio, Ms. Hagen was Senior Vice President of Operations at Dendreon Corporation from 2002 to 2012, where she was responsible for, among other duties, manufacturing and supply chain operations. Prior to joining Dendreon, Ms. Hagen spent nearly ten years at Immunex Corporation, where she held several positions in drug development and supply chain and operations management. Ms. Hagen has served on the board of directors of Vericel Inc., a publicly-held company developing advanced cell therapies and specialty biologics for the sports medicine and severe burn care markets, since August 2013, and on the board of directors of Lykan Biosciences LLC, a privately held contract manufacturing company, since June 2019. Ms. Hagen earned her B.S. in cell and molecular biology, M.S. in bioengineering, and MBA at the University of Washington.

The board believes that Ms. Hagen's background and extensive experience as a life sciences executive, with a particular focus on cell therapy manufacturing qualifies her 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.

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. Pagan to provide financial and strategic guidance to us and qualifies him to serve on the board.

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Our Executive Officers

The following table sets forth certain information concerning our executive officers as of April 29, 2020.

<u>Name</u>	<u>Position(s)</u>	<u>Age</u>
Laurence James Neil Cooper, M.D., Ph.D.	Chief Executive Officer and Director	55
David M. Mauney, M.D.	President	52
Satyavrat Shukla	Chief Financial Officer	48
Robert Hadfield	Executive Vice President, General Counsel, Secretary and Chief Compliance Officer	42
Jill Buck	Executive Vice President, General Manager, Gene Therapy	46
Eleanor de Groot, Ph.D.	Executive Vice President, General Manager, Cell Therapy	51
Kevin G. Lafond	Sr. Vice President Finance, Chief Accounting Officer and Treasurer	64

Laurence James Neil Cooper, M.D., Ph.D. <i>Chief Executive Officer and Director</i>	Dr. Cooper's biography is included above under the section titled "Our Board of Directors"
David M. Mauney, M.D. <i>President</i>	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 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.
Satyavrat Shukla <i>Chief Financial Officer</i>	Mr. Shukla has served as our Chief Financial Officer since July 2019. Prior to joining us, Mr. Shukla served in leadership roles at Vertex Pharmaceuticals from July 2012 until July 2019, most recently as Vice President and Head of Corporate Finance, where he led Vertex's long-range planning, annual budgeting and investor relations analytics processes. Prior to Vertex, Mr. Shukla was a Principal at Cornerstone Research, an economic and financial analysis firm, where he led large, multi-disciplinary teams providing consulting services spanning financial modeling, assessment of product lines and businesses, and evaluation of operating and financial strategy and performance for life science clients. Prior to Cornerstone, he worked for finance consulting firms LECG and Putnam and Hayes & Bartlett. Mr. Shukla earned a BA in Economics from Harvard University and an MBA in Finance and Strategy from Yale University. He also holds the Chartered Financial Analyst designation.
Robert Hadfield, <i>Executive Vice President, General Counsel, Secretary and Chief Compliance Officer</i>	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 Cowen Inc. Mr. Hadfield holds a B.S. degree in Finance from Providence College and a J.D. from the Georgetown University Law Center.
Jill Buck <i>Executive Vice President, General Manager, Gene Therapy</i>	Ms. Buck has served as our Executive Vice President, General Manager Gene Therapy since January 2019 and served as our Senior Vice President of Clinical Operations from January 2017 to January 2019, and as our Vice President of Clinical Operations from September 2015 to January 2017. Previously, Ms. Buck served as Group Vice President of Global Clinical Operations at Synageva Biopharm Corp from January 2014 to September of 2015, and Vice President of Global Clinical Operations from June 2013 to January 2014 where she oversaw the teams responsible for the clinical trials resulting in US, EU and Japanese approvals of sebelipase alfa for LAL Deficiency. Prior to Synageva, Ms. Buck held roles of increasing responsibility in Clinical Operations at the Company, Averion International, Control Delivery Systems and The TIMI Study Group at Brigham and Women's Hospital. Ms. Buck holds a BA degree in English and Communications from Boston College.

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Eleanor de Groot, Ph.D. <i>Executive Vice President, General Manager, Cell Therapy</i>	Dr. de Groot has served as our Executive Vice President, General Manager Cell Therapy since January 2019 and oversees our CAR-T and TCR-T cell therapy platform, including the collaboration with MD Anderson. She initially joined us in July 2015 as our Senior Vice President, Program Management and Business Development. Prior to joining us, Dr. de Groot was Vice President of Technical Operations and Project Planning and Management at Helsinn Therapeutics US, Inc. While at Helsinn and its predecessor companies, Sapphire Therapeutics and Rejuvenon Corporation, Dr. de Groot held multiple roles of increasing responsibility, leading technical operations, in particular chemistry, manufacturing, and controls (CMC) development for its drug candidates from preclinical through Phase III, from April 2002 to July 2015. Prior to Helsinn, Dr. de Groot was a staff engineer at Guilford Pharmaceuticals (now Eisai) and a process engineer at Shell Chemical Company. She earned Ph.D. and M.S. degrees in chemical engineering from Stanford University in 1995 and 1991, respectively, and a B.S. in chemical engineering from Massachusetts Institute of Technology (MIT) in 1990. Dr. de Groot received an M.B.A. degree from Rice University in 2014.
Kevin G. Lafond <i>Sr. Vice President – Finance, Chief Accounting Officer and Treasurer</i>	Mr. Lafond has served as our Sr. Vice President Finance, Chief Accounting Officer and Treasurer since June 2013 and is our principal 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.

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

Our board of directors has undertaken a review of the independence of our directors and considered whether any director has a relationship that, in the opinion of the board of directors, would interfere with the exercise of independent judgment in carrying out the responsibilities of a member of our board. Based upon information requested from and provided by each director concerning such director's background, employment and affiliations, including family relationships, 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). In making these determinations, our board of directors considered the current and prior relationships that each non-employee director has with our company and all other facts and circumstances that our board of directors deemed relevant in determining their independence, including the beneficial ownership of our capital stock by each non-employee director.

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 nine times during 2019, either in person or by teleconference. Each director attended at least 75% of the aggregate number of meetings of the board and of the committees on which he or she served, held during 2019 or the portion thereof that he or she was a director or committee member.

Although we have no formal policy regarding directors' attendance at our annual meetings, we encourage such attendance by members of the board. All of the then-current directors attended our 2019 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 filing.

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The current members of the committees are as follows:

	Audit	Compensation	Nominating
Christopher Bowden, M.D.			■
Scott Braunstein, M.D.		■	
Laurence Cooper, M.D., Ph.D.			
Elan Ezickson	■		■
Heidi Hagen		■	■
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 Chair, Mr. Elan Ezickson and Mr. Scott Tarriff. 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 2019.

Compensation Committee

The current members of the compensation committee are Mr. Scott Tarriff, who serves as the committee's Chair, Dr. Scott Braunstein and Ms. Heidi Hagen. 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 six meetings during 2019.

Corporate Governance and Nominating Committee

The current members of the corporate governance and nominating committee are Ms. Heidi Hagen, who serves as the committee's Chair, Dr. Christopher Bowden and Mr. Elan Ezickson. As set forth in the corporate governance 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 2019.

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.

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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 drug 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 corporate governance policies to reflect the importance our board places on diversity. More specifically, we have updated our policies 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.

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 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.

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.

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In carrying out their risk oversight functions, the board of directors and its committees routinely request and review management updates, reports from the independent auditors and legal and regulatory advice from outside experts, as appropriate, to assist in discerning and managing important risks that may be faced by the Company. The board of directors is committed to continuing to ensure and evolve its risk oversight practices as appropriate given the stage of the Company's evolution as an immuno-oncology company and the fast-paced changes in the biotechnology industry. Regarding the COVID-19 pandemic, our management is meeting frequently to address concerns of our employees and business, as well as updating and communicating with the full board regularly. The full board has oversight and has been engaged concerning the monitoring and identification of risks to the Company, and actions we are taking to mitigate risks related to this pandemic.

Stockholder Communications 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 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 Ms. Heidi Hagen. 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 2019 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 filing.

Corporate Governance Guidelines

The board of directors has adopted Corporate Governance Guidelines to assure that the board of directors will have the necessary authority and practices in place to review and evaluate our business operations as needed and to make decisions that are independent of our management. The guidelines are also intended to align the interests of directors and management with those of our stockholders. The Corporate Governance Guidelines set forth the practices the board of directors intends to follow with respect to, among other things, board composition and selection including diversity, board meetings and involvement of senior management, Chief Executive Officer performance evaluation and succession planning, and board committees and compensation.

Item 11. Executive Compensation

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 material elements of 2019 compensation of our named executive officers.

For 2019, our named executive officers were:

- Dr. Laurence James Neil Cooper, our Chief Executive Officer;
- Dr. David M. Mauney, our President;
- Satyavrat Shukla, our Chief Financial Officer;

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- Robert Hadfield, our Executive Vice President, General Counsel, Secretary and Chief Compliance Officer; and
- Kevin G. Lafond, our Senior Vice President — Finance, Chief Accounting Officer and Treasurer.

Executive Summary

Business Highlights

In 2019, we laid the groundwork to achieve success in each of our clinical programs, as well as created the infrastructure to support our growth and ultimately the manufacturing capacity for our clinical trials.

TCR Program

- The U.S. Food and Drug Administration (“FDA”) cleared the investigational new drug (“IND”) application submitted by the National Cancer Institute (“NCI”) for a Phase II clinical trial evaluating autologous peripheral blood lymphocytes genetically modified with the *Sleeping Beauty* system to express T-cell receptors (“TCRs”) that recognize neoantigens expressed by the patients’ own solid tumor.
- We entered into a patent license agreement with the NCI pursuant to which we now hold an exclusive, worldwide license to certain intellectual property to develop and commercialize patient-derived (autologous), peripheral blood T-cell therapy products engineered by transposon-mediated gene transfer to express TCRs reactive to “hotspot” mutations.
- We entered into a research and development agreement with University of Texas M.D. Anderson Cancer Center (“MD Anderson”) pursuant to which the parties agreed to collaborate with respect to our *Sleeping Beauty* immunotherapy program, which uses non-viral gene transfer to stably express and clinically evaluate neoantigen-specific TCRs.

Controlled IL-12 Program

- We presented encouraging clinical data for our Controlled IL-12 program for the treatment of recurrent glioblastoma multiforme (“rGBM”) at the 2019 Society for Neuro-Oncology Annual Meeting.
- We commenced enrollment in our phase 2 clinical trial evaluating Controlled IL-12 in combination with Regeneron’s PD-1 antibody Libtayo® (cemiplimab-rwlc) for the treatment of rGBM in adults.
- We completed enrollment of the third and final dose escalation cohort of a phase 1 clinical trial evaluating Controlled IL-12 in combination with Bristol-Myers Squibb Company’s PD-1 inhibitor OPDIVO® (nivolumab) for the treatment of rGBM in adults.
- The FDA granted Fast Track Designation for our Controlled IL-12 program for the treatment of recurrent or progressive glioblastoma multiforme in adults.

CAR[±] T Program

- We closed our joint venture with TriArm Therapeutics Ltd, launching Eden BioCell, Ltd., which will lead clinical development and commercialization of autologous *Sleeping Beauty*-generated CD19-specific rapid personalized manufacturing (“RPM”) CAR⁺ T therapies in Greater China.
- Our IND application for a phase 1 clinical trial in the United States infusing allogenic CD19-specific CAR⁺ T therapies manufactured using our RPM technology to produce and administer T cells in two days or less after gene transfer was cleared by the FDA.

Expanding Resources

- We expanded the size of our board of directors and appointed Heidi Hagen and Christopher Bowden, M.D. as directors.
- In July and September 2019, we raised \$52.5 million, before deducting placement agent fees and other related expenses, in a private placement. In the transaction, existing investors exercised existing warrants with an exercise price of \$3.01 per share and received new warrants that have an exercise price of \$7.00 per share.
- We expanded our team from 49 employees on December 31, 2018 to 70 employees on December 31, 2019, including several key hires such as Satyavrat Shukla, as our Chief Financial Officer, and Drew Deniger, Ph.D. to lead our TCR program in Houston.

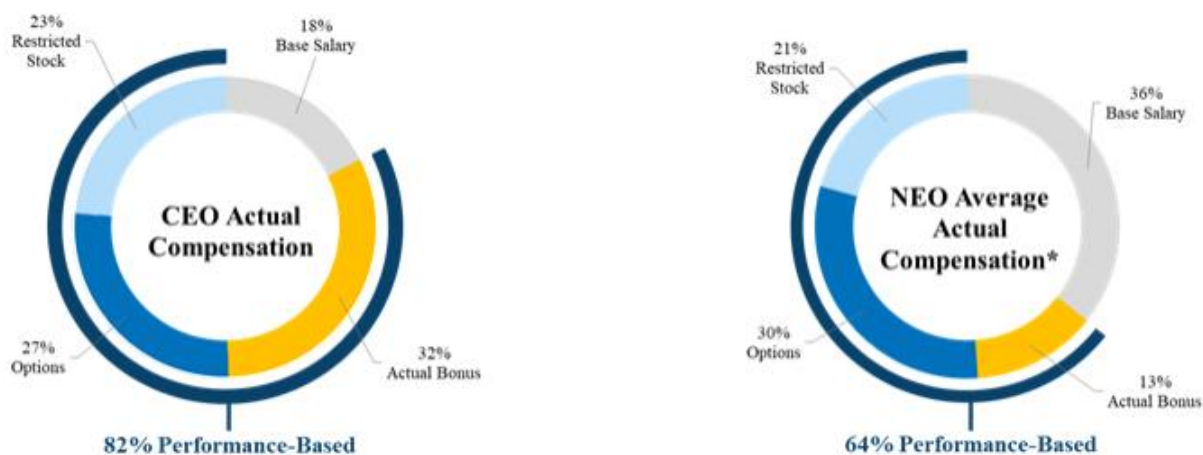
Compensation Highlights

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 2019 total direct compensation of our Chief Executive

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Officer and our other named executive officers that was “at-risk” in that its value is dependent upon our achievement of corporate objectives or stock price performance, consisting of annual performance bonus earned and the accounting value of equity awards granted, as reported in our “Summary Compensation Table”:



*Average excludes Satyavrat Shukla, who was hired in 2019.

- *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 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 engaged Haigh and Company (“Haigh”) which advised the compensation committee on market practices.

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

At our 2019 annual meeting of stockholders, our stockholders approved, on an advisory basis, the compensation of our named executive officers, as disclosed in our 2019 proxy statement. The proposal was supported by approximately 91.7% of the total votes cast, a 42.3% increase over our 2018 “say on pay” vote. We believe this increase of support was, in part, the result of the stockholder outreach that we commenced and changes we made to our executive compensation program over the past two years. Following the 2018 “say on pay” advisory vote, 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.

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

- enhanced the disclosure regarding the performance metrics for our annual performance bonus plan.
- 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.
- 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.
- updated our corporate governance 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.

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 2020 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:

- be tied to overall Company performance;
- reflect each executive's level of responsibility, performance and contributions;
- include a significant equity component to ensure alignment of our executive's interests with our stockholders; and
- 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 meaningful 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:

Compensation Element	Objective	Key Features
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 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 commercial product metrics, such as product sales, revenues and profits are irrelevant 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 factors related to development progress, commercialization progress, and cash/expense management, which are typical pre-commercial drug development metrics:

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

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 2019 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 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 2019 compensation package.

Consultant

The compensation committee engaged Haigh as an independent compensation consultant. Haigh was engaged by and reports directly to the compensation committee.

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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.

During 2019, 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, 2019. Other than providing limited advice to our management and our compensation committee regarding competitive salary data, Haigh did not provide any other services to us in 2019. 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 2019 and how this amount compared to Haigh's 2019 total gross revenues. As a result, the compensation committee concluded that Haigh's services to the compensation committee during 2019 did not raise any conflict of interest.

Peer Group, Survey Sources and Market Data

Peer Group

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 2018 peer group. The selected 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;
- companies with market values between \$200 million to \$1 billion;
- companies with R&D expense between \$30 million and \$100 million annually; and
- companies located in Massachusetts, which is viewed as our talent market, with 13 of the 19 peer group companies located in New England.

The compensation committee determined that the foregoing selection criteria were relevant for selecting the 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 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.
Ardelyx Inc.
ArQule Inc.
Albireo Pharma Inc.
Biocryst Pharmaceuticals, Inc.
Cara Therapeutics Inc.
Calithera Biosciences, Inc.

Concert Pharmaceuticals, Inc.
CytomX Therapeutics, Inc.
Dicerna Pharmaceuticals Inc.
Editas Medicine, Inc.
Epizyme, Inc.
Geron Corporation

Idera Pharmaceuticals, Inc.
Progenics Pharmaceuticals Inc.
Ra Pharmaceuticals, Inc.
Selecta Biosciences, Inc.
Syros Pharmaceuticals, Inc.
Verastem, Inc.

In November 2019, 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 making 2020 executive compensation decisions, which we refer to as the 2019 peer group. The selected 2019 peer group companies were chosen based upon the following selection criteria:

- U.S. public life science companies with clinical pipeline but not fully commercial;
- companies with 20 to 100 employees;
- companies with market values between \$500 million to \$2 billion; and
- companies with R&D expense between \$30 million and \$100 million annually.

The compensation committee determined that the foregoing selection criteria were relevant for selecting the 2019 peer group because at such time we had approximately 65 employees, a market value of approximately \$771.9 million and an R&D trailing expense of approximately \$35.9 million. The following 19 companies were approved by the compensation committee as the 2019 peer group used for purposes of setting 2020 base salary and bonus target levels for our executives:

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AnaptysBio, Inc.
Arqule Inc.
Arvinas, Inc.
Calithera Biosciences, Inc.
Cara Therapeutics, Inc.
Chemocentryx Inc.
Concert Pharmaceuticals, Inc.

CytomX Therapeutics, Inc.
Deciphera Pharmaceuticals, Inc.
Dicerna Pharmaceuticals, Inc.
Editas Medicine, Inc.
Epizyme, Inc.
Fate Therapeutics Inc.

G1 Therapeutics Inc.
Geron Corp.
Kura Oncology, Inc.
Magenta Therapeutics, Inc.
Syros Pharmaceuticals, Inc.
TG Therapeutics, Inc.

Other Survey Sources

In making its 2019 executive compensation decisions, the compensation committee also reviewed drug development survey data as a supplement to peer data.

2019 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. The compensation committee does not target a specific percentile and references market data as context.

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.

When determining Drs. Cooper and Mauney's 2019 base salaries, the compensation committee considered 2018 performance, that Dr. Cooper's base salary had not increased since he joined the Company in 2015 and that Dr. Mauney had been recently promoted to President. These factors played a role in the compensation committee's determination to increase Drs. Cooper's and Mauney's salaries by 14.6% and 10.0%, respectively. The compensation committee determined to increase the base salaries of Messrs. Hadfield and Lafond by 5.7% and 2.4%, respectively, to position their salaries near the middle of market data.

<u>Named Executive Officer</u>	<u>2018 Base Salary (\$)</u>	<u>2019 Base Salary (\$)</u>	<u>Percentage Increase from 2018</u>
Laurence James Neil Cooper	500,000	573,000	14.6
David M. Mauney	400,000	440,000	10.0
Satyavrat Shukla	—	390,000(1)	—
Robert Hadfield	350,000(2)	370,000	5.7
Kevin G. Lafond	283,250	290,000	2.4

(1) Represents Mr. Shukla's annual base salary rate for 2019. Mr. Shukla's actual 2019 base salary was pro-rated based on his July 22, 2019 hire date.

(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.

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.

The compensation committee generally places a significant amount 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 2019 target bonus amounts for Dr. Cooper is specified in his employment agreement with the Company and is the same percentage of his salary as it was in 2018. The compensation committee increased Dr. Mauney's target bonus percentage from 40% to 45% as a result of his promotion to President and increased Mr. Hadfield's target bonus percentage from 30% to 40% as a result of Mr. Hadfield's increased responsibility within the Company and in order to align Mr. Hadfield's target bonus percentage with other executives within the Company. The 2019 target bonus amounts for Mr. Lafond remained unchanged from 2018 levels as a percentage of base salary as the compensation committee determined that such levels continued to provide adequate performance incentives and were competitive and reflective of his level of responsibility for attaining our corporate performance objectives.

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2019 Annual Performance Objectives

In the first quarter of each year, the compensation committee, in consultation with management, establishes Company goals that are used to assess management's performance during the year. The Company goals are directed toward the advancement of our Controlled IL-12 and Cell Therapy platforms and other corporate or business development activities and financial objectives. Our board of directors had the discretion under the 2019 annual cash incentive program to adjust upward or downward any cash incentive award and/or the bonus pool as it deemed appropriate, including for qualitative factors such as degree of success, timing of achievement, and developments and achievements not contemplated at the time the performance goals were established.

The table below describes the objectives established for 2019, along with the compensation committee's and board of directors' assessment of our achievement of these objectives:

Program	Objectives	Board of Directors' Assessment
<i>Controlled IL-12 Platform</i>	<ul style="list-style-type: none"> • Generate key rGBM clinical data to strengthen the position of the asset, including as a monotherapy and in combination with immune checkpoint inhibitors • Progress our manufacturing capabilities to prepare for later stage clinical trials 	<p>The board of directors determined almost all of the goals supporting our Controlled IL-12 objectives had been achieved, which included:</p> <ul style="list-style-type: none"> • Achieving the enrollment goals within the pre-specified timelines for the clinical trials of our Controlled IL-12 platform as both a monotherapy and in combination with PD-1 antibodies OPDIVO® (nivolumab) and Libtayo® (cemiplimab-rwlc) • Advancing our manufacturing capabilities, as determined by the established objective goals, in order to support the timeline for the Controlled IL-12 Program
<i>Cell Therapy Platform</i>	<ul style="list-style-type: none"> • Advance our CAR⁺ T program to establish feasibility of manufacturing approach and clinical treatment • Advance clinical TCR⁺ T programs to enable treatment of patients at the NCI and MD Anderson • Improve our infrastructure to enable us to become leader in cell therapy 	<p>The board of directors determined that we had achieved several of the objectives established for our Cell Therapy program, which included:</p> <ul style="list-style-type: none"> • Establishing the infrastructure to independently advance our TCR program and becoming a leader in the TCR field • In-licensing core TCR technology from the NCI • Supporting our joint venture, Eden BioCell, so that it could begin development of an autologous CAR⁺ T program <p>The board of directors concluded that our clinical trial enrollment goals for TCR and CAR⁺ T were not achieved but that the advancements in each of the programs were impressive in other areas:</p> <ul style="list-style-type: none"> • MD Anderson had filed IND application, cleared by the FDA, for our allogeneic CAR⁺T study • The NCI's IND had been cleared for its Phase 2 clinical trial utilizing our <i>Sleeping Beauty</i> technology
<i>Additional Objectives</i>	<ul style="list-style-type: none"> • Maintain a specified cash position and execute on business development objectives 	<p>The board of directors determined we had achieved our finance goal by closing the warrant exercise transactions completed during the third quarter. We also signed our research and development agreement with MD Anderson that will support our TCR program.</p>

In light of the accomplishments described above and our overall progress throughout the year, the board of directors determined that 90% of the corporate objectives had been achieved and that a payout level of 90% of the targeted cash bonus was appropriate for Dr. Cooper.

Under our 2019 annual cash incentive program, 20% of the target bonus for Dr. Mauney and Messrs. Shukla and Hadfield were allocated to the individual objectives established for the executive. Mr. Lafond was no longer a member of the executive leadership team following Mr. Shukla's joining the Company and, therefore, 80% of Mr. Lafond's target bonus was allocated to his individual objectives. The following table includes the individual objectives established for each executive officer.

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Name	Individual Objectives
David M. Mauney	Objectives relating to financial planning, maintaining balance sheet security, investor relations, buy and sell side outreach, business development activities and recruiting
Satyavrat Shukla	Objectives relating to strengthening our financial processes, including the annual budget, expanding outreach to Wall Street analysts, leading our long-term financial planning and serving as a member of our leadership team
Robert Hadfield	Objectives relating to supporting business development and licensing initiatives, overseeing our intellectual property, leading certain efforts relating to our public reporting obligations and participating as a member of our leadership team
Kevin G. Lafond	Objectives relating to the Company's annual filings and compliance requirements and policies

The board of directors determined that each executive achieved 100% of his individual goals. When factoring in the board's determination that we had achieved 90% of the corporate goals, the resulting payout awarded to Dr. Mauney and Messrs. Shukla and Hadfield was 92% of targeted cash bonus, and the resulting payout awarded to Mr. Lafond was 98% of targeted cash bonus. Mr. Shukla's bonus payout was adjusted as a result of his partial year of employment with us.

The target short-term incentive compensation amounts for 2019, expressed as a percentage of 2019 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 2019 performance:

Name	2019 Target Bonus		2019 Actual Bonus		Percentage of Target Bonus Paid Out
	Percentage of Base Salary	Amount (\$)	Percentage of Base Salary	Amount (\$)	
Laurence James Neil Cooper	200.0	1,146,000	180.0	1,031,400	90.0
David M. Mauney	45.0	198,000	41.4	182,160	92.0
Satyavrat Shukla	40.0	156,000	25.6	100,000	64.1
Robert Hadfield	40.0	148,000	36.8	136,160	92.0
Kevin G. Lafond	35.0	101,500	34.3	99,470	98.0

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 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 responsibilities for our success.

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 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 the intended mix roughly 50% in options and 50% in restricted stock to provide both an immediate retention incentive and to reward stock price growth through options. The compensation committee determined this mix of options and restricted stock provided the appropriate balance to retain and incentivize our named executive officers and align the named executive officers' interests with those of our stockholders. 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 and the executive remains with us over the multi-year vesting period. The grant date values for the stock options and restricted stock are not equivalent as a result of changes in our stock price and accounting assumptions required to report such values under SEC rules.

In January 2019, after referencing the 2018 peer group data, the compensation committee granted the following equity awards that it believed to be competitive with the 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:

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<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

(1) Amounts reflect the grant date fair values, as calculated in accordance with ASC Topic 718.

Upon Mr. Shukla joining the Company in July 2019, Mr. Lafond ceased to be a member of our leadership team and, consistent with our historical practice for non-executive officers, Mr. Lafond received his 2020 equity incentive award, reflected below, in December 2019 rather than in January 2020 when our executive officers received their 2020 equity incentive awards. As a result of Mr. Lafond's status change from executive officer to non-executive officer during 2019 and the difference in grant timing for our executive and non-executive equity awards, the Summary Compensation Table reflects equity awards for both 2019 and 2020 for Mr. Lafond.

<u>Name</u>	<u>Stock Options</u>	<u>Total Equity Value(1)</u>
Kevin G. Lafond	48,000	\$ 144,533

(1) Amounts reflect the grant date fair values, as calculated in accordance with ASC Topic 718.

Each of the restricted stock and stock options described above that were 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.

Our practice is to grant new employees stock options, rather than restricted stock, that vest over four years. As part of our negotiations with Mr. Shukla, and as an inducement to have him join the Company in July 2019, we granted him a stock option to purchase 400,000 shares of our common stock.

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 of directors 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.

As of December 31, 2019, each of our named executive officers were in compliance with the ownership guidelines due to the compliance period, with Dr. Cooper having beneficial ownership, as determined under the ownership guidelines, of our equity with a value equal to 12.0 times his 2019 annual base salary, based on our stock price as of December 31, 2019.

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, pledging transactions, hedging transactions or other inherently speculative transactions with respect to our stock. Any violation of the policies may result in disciplinary action, including dismissal for cause.

Severance and Change in Control Benefits

We have agreements with each of our named executive officers providing them with severance benefits, including double trigger cash and equity severance for termination in connection with a change-in-control, 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.

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 (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 \$19,000 in 2019, 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 2019, 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.

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 (“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 (“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 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, 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 filing. 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 filing.

COMPENSATION COMMITTEE

Scott Tarriff, Chair
Scott Braunstein, M.D.
Heidi Hagen

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.

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Stock Awards (\$)(1)	Option Awards (\$)(1)	All Other Compensation (\$)	Total (\$)
Laurence James Neil Cooper, M.D., Ph.D. <i>Chief Executive Officer</i>	2019	573,000	1,031,400	755,476	862,707	94,991(2)	3,317,574
	2018	500,000	1,000,000(3)	—	—	89,239	1,589,239
	2017	500,000	875,000	1,140,720	—	78,524	2,894,244
David M. Mauney, M.D. <i>President</i>	2019	440,000	182,160	356,182	406,739	63,850(4)	1,448,931
	2018	400,000	197,000	—	—	11,756	608,756
	2017	103,077	36,158	—	2,156,550	2,189	2,297,974
Satyavrat Shukla(5) <i>Chief Financial Officer</i>	2019	174,500	100,000	—	1,545,520	2,198(6)	1,822,218
Robert Hadfield <i>Executive Vice President, General Counsel and Secretary</i>	2019	370,000	136,160	263,361	300,741	11,560(7)	1,081,822
	2018	254,647	113,000	—	459,390	9,054	836,091
Kevin G. Lafond <i>Sr. Vice President – Finance, Chief Accounting Officer and Treasurer</i>	2019	290,000	99,470	83,153	239,490	13,101(8)	843,123
	2018	283,250	104,138	—	—	11,610	398,998
	2017	275,000	84,219	219,420	—	2,585	581,224

- (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 14 to the financial statements included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, filed with the SEC on March 2, 2020. 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) Of such amount, (i) \$1,548 represents the dollar value of group term life insurance premiums we paid for the benefit of Dr. Cooper during 2019, (ii) \$82,243 represents taxable perquisites, including \$75,580 for housing expenses and \$6,663 for commuting expenses, and (iii) \$11,200 represents the amount we contributed to Dr. Cooper's 401(k) plan account pursuant to our matching program.
- (3) 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.
- (4) Of such amount, (i) \$828 represents the dollar value of group term life insurance premiums we paid for the benefit of Dr. Mauney during 2019, (ii) \$51,823 represents taxable perquisites for housing expenses, and (ii) \$11,200 represents the amount we contributed to Dr. Mauney's 401(k) plan account pursuant to our matching program.
- (5) Mr. Shukla joined us as Chief Financial Officer in July 2019.
- (6) Of such amount, (i) \$248 represents the dollar value of group term life insurance premiums we paid for the benefit of Mr. Shukla during 2019 and (ii) \$1,950 represents the amount we contributed to Mr. Shukla's 401(k) plan account pursuant to our matching program.
- (7) Of such amount, (i) \$360 represents the dollar value of group term life insurance premiums we paid for the benefit of Mr. Hadfield during 2019 and (ii) \$11,200 represents the amount we contributed to Mr. Hadfield's 401(k) plan account pursuant to our matching program.
- (8) Of such amount, (i) \$1,901 represents the dollar value of group term life insurance premiums we paid for the benefit of Mr. Lafond during 2019 and (ii) \$11,200 represents the amount we contributed to Mr. Lafond's 401(k) plan account pursuant to our matching program.

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Grants of Plan-Based Awards for Fiscal 2019

The following table sets forth information regarding grants of compensation in the form of plan-based awards made during 2019 to our named executive officers. The equity awards granted in 2019 identified in the table below are also reported in the table titled “Outstanding Equity Awards at 2019 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		—	1,146,000	—			—	
	1/6/19				337,266		755,476	
	1/6/19					531,813	2.24	862,707
David M. Mauney, M.D.		—	198,000	—			—	
	1/6/19				159,010		356,182	
	1/6/19					250,733	2.24	406,739
Satyavrat Shukla			156,000				—	
	7/22/19	—	—	—	—	400,000	5.60	1,545,520
Robert Hadfield		—	148,000	—			—	
	1/6/19				117,572		263,361	
	1/6/19					185,391	2.24	300,741
Kevin G. Lafond		—	101,500	—			—	
	1/6/19				37,122		83,153	
	1/6/19					58,536	2.24	94,957
	12/31/19					48,000	4.72	144,533

- (1) Reflects performance-based cash bonuses that our named executive officers were eligible to earn in 2019 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 2019 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 14 to the financial statements included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019 filed with the SEC on March 2, 2020. 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.

Outstanding Equity Awards at 2019 Fiscal Year-End

The following table sets forth information regarding option awards and restricted stock awards held as of December 31, 2019 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.	—	—	—	—	116,000(3)	547,520
	—	—	—	—	224,844(4)	1,061,263
	132,629	354,542(5)	2.24	1/6/29		
David M. Mauney, M.D.	333,333	166,667(6)	6.19	9/28/27	—	—
	83,578	167,155(7)	2.24	1/6/29		
					106,007(8)	500,353
Satyavrat Shukla		400,000(9)	5.60	7/22/29		
Robert Hadfield	50,000	100,000(10)	4.32	4/25/28		
	61,797	123,594(11)	2.24	1/6/29		
					78,381(12)	

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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)
Kevin G. Lafond	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	—	—
	19,512	39,024(13)	2.24	1/6/29	—	—
	0	48,000(14)	4.72	12/31/29	—	—
	—	—	—	—	17,667(15)	83,388
	—	—	—	—	24,748(16)	116,811

- (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, 2019, which was \$4.72 per share.
- (3) Such shares are subject to transfer and forfeiture restrictions that lapse with respect to 116,000 shares on December 29, 2020.
- (4) Such shares are subject to transfer and forfeiture restrictions that lapse with respect to 112,422 shares on each of December 31, 2020 and December 31, 2021.
- (5) Vests with respect to 177,271 shares on each of December 31, 2020 and December 31, 2021.
- (6) Vests with respect to 166,667 shares on September 28, 2020.
- (7) Vests with respect to 83,577 shares on December 31, 2020 and with respect to 83,578 shares on December 31, 2021.
- (8) Such shares are subject to transfer and forfeiture restrictions that lapse with respect to 53,004 shares on December 31, 2020 and with respect to 53,003 shares on December 31, 2021.
- (9) Vests with respect to 133,333 shares on July 22, 2020, with respect to 133,334 shares on July 22, 2021 and with respect to 133,333 shares on July 22, 2022.
- (10) Vests with respect to 50,000 shares on each of April 25, 2020 and April 25, 2021.
- (11) Vests with respect to 61,797 shares on each of December 31, 2020 and December 31, 2021.
- (12) Such shares are subject to transfer and forfeiture restrictions that lapse with respect to 39,190 shares on December 31, 2020 and with respect to 39,191 shares on December 31, 2021.
- (13) Vests with respect to 19,512 shares on each of December 31, 2020 and December 31, 2021.
- (14) Vests with respect to 16,000 shares on each of December 31, 2020, December 31, 2021 and December 31, 2022.
- (15) Such shares are subject to transfer and forfeiture restrictions that lapse with respect to 17,667 shares on December 29, 2020.
- (16) Such shares are subject to transfer and forfeiture restrictions that lapse with respect to 12,374 shares on each of December 31, 2020, and on December 31, 2021.

Option Exercises and Stock Awards Vested during Fiscal 2019

The following table provides certain information regarding option awards that were exercised and restricted stock that vested during the fiscal year ended December 31, 2019 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(#)	Value Realized on Vesting(\$)(2)
Laurence James Neil Cooper, M.D., Ph.D.	44,642	129,908	299,172	1,466,924
David M. Mauney, M.D.	—	—	53,003	250,174
Satyavrat Shukla	—	—	—	—
Robert Hadfield	—	—	39,191	184,982
Kevin G. Lafond	11,667	29,168	43,140	212,134

- (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) Value realized is calculated by multiplying the number of shares vested on the applicable date during 2019 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.

Employment and Change in Control Agreements

We have the following employment agreements in place with our 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 2019, Dr. Cooper received a base salary of \$573,000. Under his employment agreement, his base salary is subject to review by the board of directors or the compensation committee at least annually.

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.

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. 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 employment 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.

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 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.

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 2019, Dr. Mauney received a base salary of \$440,000. 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 employment agreement, Dr. Mauney 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 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 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

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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 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 Satyavrat Shukla

Mr. Shukla has served as our Chief Financial Officer since July 2019 pursuant to an employment agreement with Mr. Shukla entered into in June 2019. Mr. Shukla has an at-will employment relationship with us.

Base Salary. Mr. Shukla’s annual base salary in 2019 was \$390,000, pro rated based on the number of days worked. Under his employment agreement, Mr. Shukla’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 employment agreement, Mr. Shukla 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 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 Chief Financial Officer and pursuant to his employment agreement, effective as of July 22, 2019, the board granted to Mr. Shukla an option to purchase 400,000 shares of our common stock, which option has an exercise price of \$5.60 per share. Mr. Shukla is also eligible to receive equity awards as determined by the board in its sole discretion from time to time. 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 of Control” (as that term is defined in his employment agreement), or within 18 months after the occurrence of a “Change of Control,” all unvested stock options and unvested awards of restricted stock held by Mr. Shukla 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. Shukla for a reason other than death, disability or “Cause” (as that term is defined in his employment agreement), or (ii) Mr. Shukla resigns for “Good Reason” (as that term is defined in his employment agreement), Mr. Shukla 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. Shukla’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 of Control” (as that term is defined in his employment agreement), or within 18 months after the occurrence of a “Change of Control,” then, in addition to the foregoing severance provisions, all unvested stock options and unvested awards of restricted stock held by Mr. Shukla at the time that such termination occurs will be accelerated and deemed to have vested as of his employment termination date, and Mr. Shukla 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. Mr. Shukla 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 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. In 2019, Mr. Hadfield received a base salary of \$370,000. 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 employment agreement, Mr. Hadfield 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 40% of his base salary, with the actual amount to be received determined by the board or the compensation committee.

Equity Incentive Grants. Mr. Hadfield is eligible to receive equity awards as determined by the board in its sole discretion from time to time. 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.

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 2019, Mr. Lafond received an annual base salary of \$290,000, which is subject to review by the board or the compensation committee at least annually.

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.

Equity Incentive Grants. Mr. Lafond is eligible to receive equity awards as determined by the board in its sole discretion from time to time. 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.

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, 2019.

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Name and Principal Position	Cash Payment \$(1)	Accelerated Vesting of Stock Options \$(2)	Accelerated Vesting of Restricted Stock Awards \$(3)	Welfare Benefits \$(4)	Total (\$)
Laurence James Neil Cooper, M.D., Ph.D.					
Termination without cause or with good reason prior to change in control	1,719,000	989,976	1,061,264	27,381	4,345,141
Change in control only	—	—	—	—	—
Change in control with termination without cause or good reason	1,719,000	989,976	1,608,784	27,381	3,797,621
David M. Mauney, M.D.					
Termination without cause or with good reason prior to change in control	638,000	—	—	27,381	665,381
Change in control only	—	—	—	—	—
Change in control with termination without cause or good reason	638,000	414,545	500,353	27,381	1,580,279
Satyavrat Shukla					
Termination without cause or with good reason prior to change in control	409,500	—	—	20,536	430,036
Change in control only	—	—	—	—	—
Change in control with termination without cause or good reason	409,500	—	—	20,536	430,036
Robert Hadfield					
Termination without cause or with good reason prior to change in control	388,500	—	—	20,536	409,036
Change in control only	—	—	—	—	—
Change in control with termination without cause or good reason	388,500	346,513	369,958	20,536	1,132,352
Kevin G. Lafond					
Termination without cause or with good reason prior to change in control	145,000	—	—	9,621	154,621
Change in control only	—	—	—	—	—
Change in control with termination without cause or good reason	145,000	95,893	200,199	9,621	450,713

- (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 \$4.72, which was the closing price of our common stock on the Nasdaq Capital Market on December 31, 2019.
- (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, 2019.
- (4) Amounts shown represent the estimated cost of providing employment-related benefits during the agreement period.

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, 2019 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, 2019. Total direct compensation included 2019 base salary, actual annual bonus paid for 2019 performance (paid in December) and the fair value of stock options and/or restricted stock awards granted during 2019 (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, 2019.
- Using this approach to identify the median employee, we then calculated the annual total compensation of this median employee for 2019 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, 2019, the annual total compensation of our median employee was \$217,803 and the annual total compensation of our Chief Executive Officer, as reported in the Summary Compensation Table included in this filing, was \$3,317,574. Based on this information, the ratio of the annual total compensation of our Chief Executive Officer to our median employee was 15.2 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.

DIRECTOR COMPENSATION

Non-Employee Director Compensation Policy

Under our director compensation policy, each non-employee director was entitled to the following in 2019:

- 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>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 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 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.

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.

Director Compensation Table

The following table sets forth information regarding the compensation earned for service on our Board by our non-employee directors during the year ended December 31, 2019. Dr. Cooper serves as our Chief Executive Officer in addition to being a director but does not receive any additional compensation for his service as a director and accordingly, he is not included in the table. We reimburse members of our board of directors for reasonable travel and out-of-pocket expenses incurred in connection with attending board of directors and committee meetings.

<u>Name</u>	<u>Fees Earned or Paid in Cash (\$)</u>	<u>Option Awards⁽¹⁾ (\$)</u>	<u>Stock Awards⁽¹⁾ (\$)</u>	<u>Total (\$)</u>
Christopher Bowden, M.D. ⁽²⁾	11,413	401,718	—	413,131
Scott Braunstein, M.D.	67,054	—	150,002	217,056
James A. Cannon ⁽³⁾	32,184	—	—	32,184
Elan Ezickson	62,560	—	150,002	212,562
Heidi Hagen ⁽⁴⁾	32,395	312,300	150,002	494,697
Douglas Pagán	70,000	74,999	75,001	220,000
Scott Tarriff	100,533	149,997	—	250,530

(1) The amounts shown represent compensation expense recognized for financial statement purposes under ASC Topic 718. For Dr. Bowden, such amount consists of (i) an option award granted on October 8, 2019 with a grant date fair value of \$251,721 and (ii) an option award granted on December 31, 2019 with a grant date fair value of \$149,997. For Dr. Braunstein, such amount consists of a stock award granted on December 31, 2019 with a grant date fair value of \$150,002. For Mr. Ezickson, such amount consists of a stock award granted on December 31, 2019 with a grant date fair value of \$150,002. For Ms. Hagen, such amount consists of (i) an option award granted on June 13, 2019 with a grant date fair value of \$312,300 and (ii) a stock award granted on December 31, 2019 with a grant date fair value of \$150,002. For Mr. Pagán, such amount consists of (i) an option award granted on December 31, 2019 with a grant date fair value of \$74,999 and (ii) a stock award granted on December 31, 2019 with a grant date fair value of \$75,001. For Mr. Tarriff, such amount consists of (i) an option award granted on December 31, 2019 with a grant date fair value of \$149,997. 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 14 to the financial statements included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019 filed with the SEC on March 2, 2020. 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, 2019:

- Dr. Bowden held options to purchase 144,593 shares at a weighted average exercise price of \$4.42 per share, of which no shares had vested.
- Dr. Braunstein held options to purchase 176,700 shares at a weighted average exercise price of \$2.19 per share, of which 151,700 shares had vested. In addition, Dr. Braunstein held 31,780 shares of restricted stock, of which no 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 25,000 shares had vested. In addition, Mr. Ezickson held 71,887 shares of restricted stock, of which 40,107 shares have had transfer and forfeiture restrictions lapse.
- Ms. Hagen held options to purchase 93,992 shares at a weighted average exercise price of \$5.22 per share, of which no shares had vested. In addition, Ms. Hagen held 31,780 shares of restricted stock, of which no shares have had transfer and forfeiture restrictions lapse.
- Mr. Pagán held options to purchase 138,631 shares at a weighted average exercise price of \$2.80 per share, of which 88,350 shares had vested. In addition, Mr. Pagán held 35,943 shares of restricted stock, of which 20,053 shares have had transfer and forfeiture restrictions lapse.
- Mr. Tarriff held options to purchase 267,262 shares at a weighted average exercise price of \$3.91 per share, of which 216,700 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.

(2) Dr. Bowden was appointed to our board effective October 8, 2019.

(3) Mr. Cannon's term on our board expired on June 13, 2019.

(4) Ms. Hagen was appointed to our board effective June 13, 2019.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters**Securities Authorized for Issuance under Equity Compensation Plans**

The following table provides certain information with respect to all of our equity compensation plans in effect as of December 31, 2019.

<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	185,000	\$ 4.80	0
2012 Equity Plan	5,657,879	\$ 3.90	2,503,508
Total:	5,842,879	\$ 3.93	2,503,508
Equity compensation plans not approved by stockholders:			
Inducement awards	1,030,000 ⁽¹⁾	\$ 5.80	0
Total:	1,030,000	\$ 5.80	0

- (1) Represents shares of our common stock underlying stock option awards which were issued outside of our equity incentive plans to certain employees as an inducement material the employee's acceptance of employment with us in accordance with Nasdaq Listing Rule 5635(c)(4).

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth certain information with respect to the beneficial ownership of common stock as of April 24, 2020 for:

- each person, or group of affiliated persons, who is known by us to be the beneficial owner of greater than five percent of our outstanding common stock;
- each of our directors and director nominees;
- each of our named executive officers named in the Summary Compensation Table above; and
- all of our 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 24, 2020 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 214,286,337 shares outstanding as of April 24, 2020. 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 of Beneficial Owner</u>	<u>Number of Shares Beneficially Owned</u>	<u>Percentage of Common Stock Beneficially Owned(%)</u>
5% Stockholders:		
MSD Credit Opportunity Master Fund, L.P.(1)	22,101,509	9.99
Miller Value Partners, LLC(2)	16,522,144	7.6
White Rock Capital Partners(3)	13,085,758	6.0
The Vanguard Group, Inc. (4)	12,595,011	5.9
BlackRock, Inc.(5)	12,491,719	5.8
Directors, Director Nominees and Named Executive Officers:		
Chris Bowden, M.D.	—	—
Scott Braunstein(6)	183,480	*
Elan Z. Ezickson(7)	96,887	*
Heidi Hagen(8)	31,780	*
Douglas W. Pagán(9)	124,293	*
Scott Tarriff(10)	220,886	*
Laurence James Neil Cooper, M.D., Ph.D.(11)	2,103,937	*
David M. Mauney, M.D.(12)	723,908	*
Satyavrat Shukla(13)	90,825	*
Robert Hadfield(14)	344,632	*
Kevin G. Lafond(15)	320,375	*
All of our current directors and executive officers as a group (13 persons)(16)	5,054,016	2.3

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* Less than one percent.

- (1) Based in part on a Schedule 13G/A filed with the SEC on February 14, 2020 by MSD Partners, L.P. (“MSD Partners”). 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 22,101,509 shares includes 6,949,993 out of the 7,575,758 shares of common stock issuable upon the full exercise of a warrant, which is the number of shares issuable upon exercise as limited by the Beneficial Ownership Limitation (as defined below) as of April 24, 2020. Such warrant is only exercisable to the extent that the holder thereof, together with its affiliates, would beneficially own no more than 9.99% of the outstanding shares of our common stock after giving effect to such exercise (the “Beneficial Ownership Limitation”). As a result of the Beneficial Ownership Limitation, the number of shares that may be issued to the holder upon exercise of the warrant may change depending upon changes in the outstanding shares of our common stock. Upon 61 days’ prior notice to the Company, the holder may increase, decrease or terminate the Beneficial Ownership Limitation. 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.
- (2) Based in part on a Schedule 13G filed with the SEC on February 14, 2020 by Miller Value Partners, LLC (“Miller Value”). Miller Value, an investment adviser, is the beneficial owner of 16,522,144 shares and has shared voting power and shared dispositive power with respect to all such 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. Aggregate beneficial ownership reported by Miller Value includes beneficial ownership of Miller Opportunity Trust, a registered investment company. The 16,522,144 shares includes 3,787,879 shares of common stock issuable upon the exercise of a warrant. Such warrant is only exercisable to the extent that the holder thereof, together with its affiliates, would beneficially own no more than the Beneficial Ownership Limitation. As a result of the Beneficial Ownership Limitation, the number of shares that may be issued to the holder upon exercise of the warrant may change depending upon changes in the outstanding shares of our common stock. Upon 61 days’ prior notice to the Company, the holder may increase, decrease or terminate the Beneficial Ownership Limitation. The address of Miller Value is One South Street, Suite 2550, Baltimore, MD 21202.
- (3) Based in part on a Schedule 13G/A filed with the SEC on January 30, 2020 by White Rock Capital Management, L.P. (“White Rock Management”). 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 13,085,758 shares includes 3,787,879 shares of common stock issuable upon the exercise of a warrant. Such warrant is only exercisable to the extent that the holder thereof, together with its affiliates, would beneficially own no more than the Beneficial Ownership Limitation. As a result of the Beneficial Ownership Limitation, the number of shares that may be issued to the holder upon exercise of the warrant may change depending upon changes in the outstanding shares of our common stock. Upon 61 days’ prior notice to the Company, the holder may increase, decrease or terminate the Beneficial Ownership Limitation. The address of White Rock Partners is 3131 Turtle Creek Boulevard, Suite 800, Dallas, Texas 75219.
- (4) Based solely on a Schedule 13G/A filed with the SEC on February 11, 2020 by The Vanguard Group, Inc. (“Vanguard”). Vanguard is the beneficial owner of 12,595,011 shares and has sole voting power with respect to 340,479 shares and sole dispositive power with respect to 12,269,028 shares, and shared voting power with respect to 9,851 shares and shared dispositive power with respect to 325,983 shares. Aggregate beneficial ownership reported by Vanguard includes beneficial ownership of its subsidiaries, Vanguard Fiduciary Trust Company and Vanguard Investments Australia, Ltd. The address of Vanguard is 100 Vanguard Blvd., Malvern, PA 19355.
- (5) Based solely on a Schedule 13G/A filed with the SEC on February 6, 2020 by Blackrock, Inc. BlackRock, Inc., as a parent holding company, is the beneficial owner of 12,491,719 shares and has sole voting power with respect to 12,249,430 shares and sole dispositive power with respect to 12,491,719 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.
- (6) Consists of (i) 31,780 shares of common stock held by Mr. Braunstein and (ii) 151,700 shares of common stock issuable upon the exercise of options exercisable within 60 days of April 24, 2020.
- (7) Consists of (i) 71,887 shares of common stock held by Mr. Ezickson and (ii) 25,000 shares of common stock issuable upon the exercise of options exercisable within 60 days of April 24, 2020.
- (8) Consists of 31,780 shares of common stock held by Ms. Hagen.
- (9) Consists of (i) 35,943 shares of common stock held by Mr. Pagán and (ii) 88,350 shares of common stock issuable upon the exercise of options exercisable within 60 days of April 24, 2020.
- (10) Consists of (i) 4,186 shares of common stock held by Mr. Tarriff and (ii) 216,700 shares of common stock issuable upon the exercise of options exercisable within 60 days of April 24, 2020.
- (11) Consists of (i) 1,904,974 shares of common stock held by Dr. Cooper and (ii) 198,963 shares of common stock issuable upon the exercise of options exercisable within 60 days of April 24, 2020.
- (12) Consists of (i) 275,778 shares of common stock held by Dr. Mauney and (ii) 448,130 shares of common stock issuable upon the exercise of options exercisable within 60 days of April 24, 2020.
- (13) Consists of (i) 80,500 shares of common stock held by Mr. Shukla and (ii) 10,325 shares of common stock issuable upon the exercise of options exercisable within 60 days of April 24, 2020.
- (14) Consists of (i) 159,819 shares of common stock held by Mr. Hadfield and (ii) 184,813 shares of common stock issuable upon the exercise of options exercisable within 60 days of April 24, 2020.
- (15) Consists of (i) 81,985 shares of common stock held by Mr. Lafond and (ii) 238,390 shares of common stock issuable upon the exercise of options exercisable within 60 days of April 24, 2020.
- (16) Consists of (i) 3,133,985 shares of common stock and (ii) 1,920,031 shares of common stock issuable upon the exercise of options exercisable within 60 days of April 24, 2020.

Item 13. Certain Relationships and Related Transactions, and Director Independence

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

We have a related person transaction policy that sets forth our procedures for the identification, review, consideration and approval or ratification of related person transactions. For purposes of our policy only, a related person transaction is a transaction, arrangement or relationship, or any series of similar transactions, arrangements or relationships, in which we and any related person are, were or will be participants in which the amount involved exceeds \$120,000. Transactions involving compensation for services provided to us as an employee or director are not covered by this policy. A related person is any executive officer, director or beneficial owner of more than 5% of any class of our voting securities, including any of their immediate family members and any entity owned or controlled by such persons.

Under the policy, if a transaction has been identified as a related person transaction, including any transaction that was not a related person transaction when originally consummated or any transaction that was not initially identified as a related person transaction prior to consummation, our management must present information regarding the related person transaction to our audit committee, or, if audit committee approval would be inappropriate, to another independent body of our board of directors, for review, consideration and approval or ratification. The presentation must include a description of, among other things, the material facts, the interests, direct and indirect, of the related persons, the benefits to us of the transaction and whether the transaction is on terms that are comparable to the terms available to or from, as the case may be, an unrelated third party or to or from employees generally. Under the policy, we will collect information that we deem reasonably necessary from each director, executive officer and, to the extent feasible, significant stockholder to enable us to identify any existing or potential related person transactions and to effectuate the terms of the policy.

In considering related person transactions, our audit committee, or other independent body of our board of directors, will take into account the relevant available facts and circumstances including, but not limited to: the risks, costs and benefits to us; the impact on a director’s independence in the event that the related person is a director, immediate family member of a director or an entity with which a director is affiliated; the availability of other sources for comparable services or products; and the terms available to or from, as the case may be, unrelated third parties or to or from employees generally.

The policy requires that, in determining whether to approve, ratify or reject a related person transaction, our audit committee, or other independent body of our board of directors, must consider, in light of known circumstances, whether the transaction is in, or is not inconsistent with, our best interests and those of our stockholders, as our audit committee, or other independent body of our board of directors, determines in the good faith exercise of its discretion.

Certain Related-Party Transactions

Except as described below, there have been no transactions since January 1, 2019 in which we have been a participant in which the amount involved exceeded or will exceed \$120,000, and in which any of our directors, executive officers or holders of more than 5% of our common stock, or any members of their immediate family, had or will have a direct or indirect material interest, other than compensation arrangements which are described elsewhere in this filing under “Executive Compensation” and “Director Compensation.”

July and September 2019 Offerings

On July 26, 2019 and September 12, 2019, we entered into agreements with existing investors, including MSD Credit Opportunity Master Fund, L.P., White Rock Capital Partners L.P. and Miller Opportunity Trust, each of which was a holder of more than 5% of our common stock, for the exercise of previously issued warrants to purchase common stock in a private placement. Pursuant to the terms of the agreements, the investors exercised their 2018 warrants for an aggregate of 17,803,031 shares of common stock, at an exercise price of \$3.01 per share. The 2018 warrants exercised were originally issued by us in a private placement that closed in November 2018. Proceeds from the warrant exercise, after deducting placement agent fees and other related expenses of \$1.1 million were approximately \$52.5 million. We issued the participating investors new warrants to purchase up to 17,803,031 additional shares of common stock as an inducement for the warrant holders to exercise their 2018 warrants early. The 2019 warrants became exercisable six months following the date of issuance, will expire on the fifth anniversary of the initial exercise date, and have an exercise price of \$7.00 per share.

Indemnification Agreements

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.

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Item 14. Principal Accountant Fees and Services

Principal Accountant Fees and Services

The audit committee has selected RSM US LLP as our independent registered public accounting firm for the years ended December 31, 2019 and 2018. The following table presents the aggregate fees billed by RSM US LLP for the years ended December 31, 2019 and 2018.

<u>Fee Category</u>	<u>2019</u>	<u>2018</u>
Audit Fees ⁽¹⁾	\$350,050	\$204,250
All Other Fees	49,009 ⁽²⁾	110,561 ⁽³⁾
Total Fees	\$399,059	\$314,811

- (1) Represents fees billed for professional services provided to us in connection with the annual audit of our consolidated financial statements, the review of our quarterly condensed consolidated financial statements, the audit of the effectiveness of our internal controls over financial reporting pursuant to Section 404 of the Sarbanes-Oxley Act of 2002, as well as audit services that are normally provided by an independent registered public accounting firm in connection with statutory and regulatory filings or engagements for those fiscal years, such as statutory audits.
- (2) Represents fees billed for research and analysis regarding new business strategies as well as administrative fees and out-of-pocket costs.
- (3) Represents fees of billed for special accounting services, as well as fees in the amount of \$21,500, which were incurred in connection with the preparation by Precigen, Inc. of a registration statement and an annual report which incorporated our financial statements, and such fees were subsequently reimbursed by Precigen, Inc.

Other than as discussed above, we did not incur any fees of RSM US LLP for audit-related, tax or other services in 2019 or 2018.

All fees described above were pre-approved by the audit committee.

Pre-Approval Policy and Procedures

The audit committee has adopted a policy and procedures for the pre-approval of audit and non-audit services rendered by our independent registered public accounting firm, RSM US LLP. The policy generally pre-approves specified services in the defined categories of audit services, audit-related services and tax services up to specified amounts. Pre-approval may also be given as part of the audit committee's approval of the scope of the engagement of the independent registered public accounting firm or on an individual, explicit, case-by-case basis before the independent registered public accounting firm is engaged to provide each service. The pre-approval of services may be delegated to one or more of the audit committee's members, but the decision must be reported to the full audit committee at its next scheduled meeting.

PART IV

Item 15. Exhibits, Financial Statement Schedules

Financial Statements and Schedules:

Our consolidated financial statements and notes thereto, and schedules, required to be filed in our Annual Report on Form 10-K are included in the Original Filing.

Exhibits:

<u>Exhibit No.</u>	<u>Description of Document</u>
2.1	Agreement and Plan of Merger among the Registrant (formerly "EasyWeb, Inc."), ZIO Acquisition Corp. and ZIOPHARM, Inc., dated August 3, 2005 (incorporated by reference to Exhibit 10.1 to the Registrant's Form 8-K, SEC File No. 000-32353, filed August 9, 2005).
3.1	Amended and Restated Certificate of Incorporation, as filed with the Delaware Secretary of State on April 26, 2006 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K, SEC File No. 000-32353, filed April 26, 2006).
3.2	Certificate of Merger dated September 13, 2005, relating to the merger of ZIO Acquisition Corp. with and into ZIOPHARM, Inc. (incorporated by reference to Exhibit 3.1 to the Registrant's Form 8-K, SEC File No. 000-32353, filed September 19, 2005).

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<u>Exhibit No.</u>	<u>Description of Document</u>
3.3	<u>Certificate of Ownership of the Registrant (formerly “EasyWeb, Inc.”) dated as of September 14, 2005, relating the merger of ZIOPHARM, Inc. with and into the Registrant, and changing the Registrant’s corporate name from EasyWeb, Inc. to ZIOPHARM Oncology, Inc. (incorporated by reference to Exhibit 3.2 to the Registrant’s Form 8-K, SEC File No. 000-32353, filed September 19, 2005).</u>
3.4	<u>Amended and Restated Certificate of Designation, Preferences and Rights of Series 1 Preferred Stock, as filed with the Delaware Secretary of State on July 1, 2016 (incorporated by reference to Exhibit 3.1 to the Registrant’s Current Report on Form 8-K/A, SEC File No. 001-33038, filed July 1, 2016).</u>
3.5	<u>Bylaws, as amended to date (incorporated by reference to Exhibit 3.3 to the Registrant’s Form 8-K, SEC File No. 000-32353, filed September 19, 2005).</u>
4.1	<u>Specimen common stock certificate (incorporated by reference to Exhibit 4.1 to the Registrant’s Registration Statement on Form SB-2, SEC File No. 333-129020, filed October 14, 2005).</u>
4.2	<u>Form of Option for the Purchase of Shares of common stock dated August 30, 2004 and issued to The University of Texas M. D. Anderson Cancer Center (incorporated by reference to Exhibit 4.6 to the Registrant’s Annual Report on Form 10-KSB, SEC File No. 000-32353, filed March 20, 2006).</u>
4.3	<u>Schedule identifying Material Terms of Options for the Purchase of Shares of Common Stock (incorporated by reference to Exhibit 4.7 to the Registrant’s Annual Report on Form 10-KSB, SEC File No. 000-32353, filed March 20, 2006).</u>
4.4	<u>Form of Warrant to Purchase Common Stock (incorporated by reference to Exhibit 4.1 to the Registrant’s Current Report on Form 8-K SEC File No. 001-33038 filed November 13, 2018).</u>
4.5	<u>Form of Warrant to Purchase Common Stock (incorporated by reference to Exhibit 4.1 to the Registrant’s Current Report on Form 8-K SEC File No. 001-33038 filed September 13, 2019).</u>
4.6	<u>Form of Warrant to Purchase Common Stock (incorporated by reference to Exhibit 4.1 to the Registrant’s Current Report on Form 8-K SEC File No. 001-33038 filed August 1, 2019).</u>
4.7#	<u>Warrant to Purchase Common Stock issued to The University of Texas M. D. Anderson Cancer Center (incorporated by reference to Exhibit 4.7 to the Registrant’s Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).</u>
4.8	<u>Description of Securities Registered Pursuant to Section 12 of the Securities Exchange Act Of 1934, as amended (incorporated by reference to Exhibit 4.8 to the Registrant’s Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).</u>
10.1+	<u>ZIOPHARM Oncology, Inc. Amended and Restated 2003 Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Registrant’s Annual Report on Form 10-K SEC File No. 001-33038 filed March 1, 2011).</u>
10.2+	<u>Form of Incentive Stock Option Agreement granted under the Registrant’s 2003 Stock Option Plan (incorporated by reference to Exhibit 10.8 to the Registrant’s Annual Report on Form 10-KSB, SEC File No. 000-32353, filed March 20, 2006).</u>
10.3+	<u>Form of Restricted Stock Agreement granted under the Registrant’s 2003 Stock Option Plan (incorporated by reference to Exhibit 10.1 to the Registrant’s Current Report on Form 8-K SEC File No. 001-33038 filed December 18, 2007).</u>
10.4+	<u>ZIOPHARM Oncology, Inc. 2012 Equity Incentive Plan (incorporated by reference to Exhibit 10.1 to the Registrant’s Current Report on Form 8-K SEC File No. 001-33038 filed June 26, 2012).</u>
10.5+	<u>Form of Restricted Stock Agreement Granted Under the ZIOPHARM Oncology, Inc. 2012 Equity Incentive Plan (incorporated by reference to Exhibit 10.2 to the Registrant’s Current Report on Form 8-K SEC File No. 001-33038 filed June 26, 2012).</u>
10.6+	<u>Form of Option Agreement Granted Under the ZIOPHARM Oncology, Inc. 2012 Equity Incentive Plan (incorporated by reference to Exhibit 10.3 to the Registrant’s Current Report on Form 8-K SEC File No. 001-33038 filed June 26, 2012).</u>
10.7	<u>Form of Indemnity Agreement for directors and executive officers (incorporated by reference to Exhibit 99.1 to the Registrant’s Current Report on Form 8-K, SEC File No. 001-33038, filed January 31, 2013).</u>
10.8+	<u>Employment Agreement by and between the Registrant and Laurence James Neil Cooper, M.D., Ph.D. dated as of May 5, 2015 (incorporated by reference to Exhibit 10.1 to the Registrant’s Current Report on Form 8-K, SEC File No. 001-33038, filed May 7, 2015).</u>

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<u>Exhibit No.</u>	<u>Description of Document</u>
10.9+	<u>Employment Agreement, dated as of April 23, 2019, by and between the Company and David Mauney, M.D. (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed April 29, 2019).</u>
10.10+	<u>Employment Agreement, dated as of April 23, 2019, by and between the Company and Robert Hadfield (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed April 29, 2019).</u>
10.11+	<u>Employment Agreement, dated as of June 4, 2019, by and between the Company and Sath Shukla (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed July 24, 2019).</u>
10.12	<u>License Agreement by and among the Registrant, Intrexon Corporation and The University of Texas System Board of Regents on behalf of The University of Texas M.D. Anderson Cancer Center dated as of January 13, 2015 (incorporated by reference to Exhibit 10.5 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed January 28, 2015).</u>
10.13†	<u>Exclusive License Agreement by and between the Registrant, Precigen, Inc. and Intrexon Corporation, dated October 5, 2018 (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q, SEC File No. 001-33038, filed November 9, 2018).</u>
10.14†	<u>License and Collaboration Agreement by and among the Registrant, Intrexon Corporation and ARES TRADING S.A. dated as of March 27, 2015 (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed April 2, 2015).</u>
10.15	<u>Research and Development Agreement by and among the Registrant, Intrexon Corporation and The University of Texas M.D. Anderson Cancer Center dated as of August 17, 2015 (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed August 21, 2015).</u>
10.16	<u>Amendment #1 to the Research and Development Agreement by and among the Registrant, Intrexon Corporation and The University of Texas M.D. Anderson Cancer Center dated as of August 30, 2016 (incorporated by reference to Exhibit 10.21 to the Registrant's Annual Report on Form 10-K, SEC File No. 001-33038, filed March 5, 2019).</u>
10.17	<u>Amendment #2 to the Research and Development Agreement by and among the Registrant, Intrexon Corporation and The University of Texas M.D. Anderson Cancer Center dated as of January 17, 2017 (incorporated by reference to Exhibit 10.22 to the Registrant's Annual Report on Form 10-K, SEC File No. 001-33038, filed March 5, 2019).</u>
10.18	<u>Amendment #3 to the Research and Development Agreement by and among the Registrant, Intrexon Corporation and The University of Texas M.D. Anderson Cancer Center dated as of November 14, 2017 (incorporated by reference to Exhibit 10.23 to the Registrant's Annual Report on Form 10-K, SEC File No. 001-33038, filed March 5, 2019).</u>
10.19	<u>Fourth Amendment to Research and Development Agreement, dated September 19, 2019 by and among the Registrant, The University of Texas MD Anderson Cancer Center and Precigen, Inc. (incorporated by reference to Exhibit 10.7 to the Registrant's Quarterly Report on Form 10-Q, SEC File No. 001-33038, filed November 7, 2019).</u>
10.20#	<u>Fifth Amendment to Research and Development Agreement, dated October 22, 2019 by and among the Registrant and The University of Texas MD Anderson Cancer Center (incorporated by reference to Exhibit 10.20 to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).</u>
10.21#	<u>2019 Research and Development Agreement, dated October 22, 2019, by and between the Registrant and The University of Texas MD Anderson Cancer Center (incorporated by reference to Exhibit 10.21 to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).</u>
10.22#	<u>Patent License Agreement, dated as of May 28, 2019, by and between the Company and the National Cancer Institute (incorporated by reference to Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q, SEC File No. 001-33038, filed August 8, 2019).</u>
10.23#	<u>Amendment to Patent License Agreement, dated as of January 8, 2020, by and between the Company and the National Cancer Institute (incorporated by reference to Exhibit 10.23 to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).</u>
10.24#	<u>Cooperative Research and Development Agreement, dated January 9, 2017, by and among the Registrant, the National Cancer Institute, and Intrexon Corporation (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed September 26, 2019).</u>
10.25	<u>Amendment #1 to the Cooperative Research and Development Agreement, dated March 23, 2018, by and among the Registrant, National Cancer Institute, Intrexon Corporation and Precigen, Inc (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed September 26, 2019).</u>

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Exhibit No.	Description of Document
10.26#	Amendment #2 to the Cooperative Research and Development Agreement, dated February 1, 2019, by and among the National Cancer Institute, the Registrant and Precigen, Inc. (incorporated by reference to Exhibit 10.3 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed September 26, 2019).
10.27	Form of Securities Purchase Agreement, dated November 11, 2018, by and between the Registrant and certain investors (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed November 13, 2018).
10.28	Form of Registration Rights Agreement, dated November 11, 2018, by and between the Registrant and certain investors (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed November 13, 2018).
10.29	Form of Securities Purchase Agreement, dated July 26, 2019, by and between the Registrant and certain investors (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed August 1, 2019).
10.30	Form of Registration Rights Agreement, dated July 26, 2019, by and between the Registrant and certain investors (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed August 1, 2019).
10.31	Form of Securities Purchase Agreement, dated September 12, 2019, by and between the Registrant and an investor (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed September 13, 2019).
10.32	Form of Registration Rights Agreement, dated September 12, 2019, by and between the Registrant and an investor (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed September 13, 2019).
21.1	Subsidiaries of the Registrant (incorporated by reference to Exhibit 21.1 to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).
23.1	Consent of Independent Registered Public Accounting Firm (incorporated by reference to Exhibit 23.1 to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).
24.1	Power of Attorney (included on the signature page to Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).
31.1	Certification of Principal Executive Officer pursuant to Exchange Act Rule 13a-14(a) or 15(d)-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (incorporated by reference to Exhibit 31.1 to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).
31.2	Certification of Principal Financial Officer pursuant to Exchange Act Rule 13a-14(a) or 15(d)-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (incorporated by reference to Exhibit 31.2 to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).
31.3*	Certification of Principal Executive Officer pursuant to Exchange Act Rule 13a-14(a) or 15(d)-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.4*	Certification of Principal Financial Officer pursuant to Exchange Act Rule 13a-14(a) or 15(d)-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1**	Certification of Principal Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (incorporated by reference to Exhibit 32.1 to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).
32.2**	Certification of Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (incorporated by reference to Exhibit 32.2 to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).
101.INS	XBRL Instance Document (incorporated by reference to Exhibit 101.INS to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).
101.SCH	XBRL Taxonomy Extension Schema Document (incorporated by reference to Exhibit 101.SCH to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document (incorporated by reference to Exhibit 101.CAL to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document (incorporated by reference to Exhibit 101.DEF to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).
101.LAB	XBRL Taxonomy Extension Label Linkbase Document (incorporated by reference to Exhibit 101.LAB to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document (incorporated by reference to Exhibit 101.PRE to the Registrant's Annual Report on Form 10-K, SEC File No. 000-33038, filed March 2, 2020).
104*	Cover Page Interactive Data File—the cover page interactive data is embedded within the Inline XBRL document or included within the Exhibit 101 attachments

* Filed herewith.

** Previously furnished.

+ Indicates management contract or compensatory plan.

† Confidential treatment has been granted by the Securities and Exchange Commission as to certain portions of this document.

Portions of this document (indicated by “[***]”) have been omitted because they are not material and would likely cause competitive harm to Ziopharm Oncology, Inc. if disclosed.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this Amendment No. 1 to its Annual Report on Form 10-K/A to be signed on its behalf by the undersigned, thereunto duly authorized.

Date: April 29, 2020

ZIOPHARM ONCOLOGY, INC.

By: /s/ Laurence J.N. Cooper
Laurence J.N. Cooper, M.D., Ph.D.
Chief Executive Officer

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER

I, Laurence J.N. Cooper, certify that:

1. I have reviewed this Amendment No. 1 to Annual Report on Form 10-K/A of ZIOPHARM Oncology, Inc.; and
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report.

Date: April 29, 2020

/s/ Laurence J.N. Cooper

Laurence J.N. Cooper, M.D., Ph.D.

Chief Executive Officer

(Principal Executive Officer)

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER

I, Satyavrat Shukla, certify that:

1. I have reviewed this Amendment No. 1 to Annual Report on Form 10-K/A of ZIOPHARM Oncology, Inc.; and
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report.

Date: April 29, 2020

/s/ Satyavrat Shukla

Satyavrat Shukla

Executive Vice President and Chief Financial Officer

(Principal Financial Officer)