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

SCHEDULE 14A

Proxy Statement Pursuant to Section 14(a) of
the Securities Exchange Act of 1934 (Amendment No.)

Filed by the Registrant

Filed by a Party other than the Registrant

Check the appropriate box:

- Preliminary Proxy Statement
- Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))**
- Definitive Proxy Statement
- Definitive Additional Materials
- Soliciting Material under §240.14a-12

IDERA PHARMACEUTICALS, INC.

(Name of Registrant as Specified In Its Charter)

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

Payment of Filing Fee (Check the appropriate box):

- No fee required.
- Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.
 - (1) Title of each class of securities to which transaction applies:

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

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

 - (4) Proposed maximum aggregate value of transaction:

 - (5) Total fee paid:

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

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

 - (3) Filing Party:

 - (4) Date Filed:

IDERA PHARMACEUTICALS, INC.

505 Eagleview Blvd., Suite 212
Exton, PA 19341

NOTICE OF 2020 ANNUAL MEETING OF STOCKHOLDERS

Date and Time: Tuesday, May 12, 2020 at 9:00 a.m., local time

Place: Idera Pharmaceuticals, Inc.
505 Eagleview Boulevard
Suite 212
Exton, Pennsylvania 19341

- Items of Business:**
- Elect three Class I directors to our board of directors for terms to expire at the 2023 annual meeting of stockholders;
 - Approve, by non-binding vote, the compensation of the Company's named executive officers for 2019;
 - Approve an amendment to our Restated Certificate of Incorporation to increase the authorized number of shares of common stock;
 - Ratify the selection of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2020; and
 - Transact any other business as may properly come before the 2020 annual meeting or any postponement or adjournment of the 2020 annual meeting.

The board of directors has no knowledge of any other business to be transacted at the 2020 annual meeting.

Record Date: You may vote at the 2020 annual meeting if you were a stockholder of record at the close of business on March 24, 2020.

Proxy Voting It is important that your shares be represented and voted at the 2020 annual meeting. Whether or not you plan to attend the 2020 annual meeting, please mark, sign, date and promptly mail your proxy card in the enclosed postage-paid envelope or follow the instructions on the proxy card to vote by telephone or over the internet. You may revoke your proxy at any time before its exercise at the 2020 annual meeting.

By order of the board of directors,

/s/ BRYANT D. LIM

Bryant D. Lim
*Senior Vice President, General Counsel
and Corporate Secretary*
Exton, Pennsylvania
[April 6], 2020

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IDERA PHARMACEUTICALS, INC.

505 Eagleview Blvd., Suite 212
Exton, PA 19341

PROXY STATEMENT

For our Annual Meeting of Stockholders to be held on May 12, 2020

Idera Pharmaceuticals, Inc., a Delaware corporation, which is referred to as "we," "us," the "Company" or "Idera" in this proxy statement, is sending you this proxy statement and the enclosed proxy card because our board of directors is soliciting your proxy to vote at our 2020 annual meeting of stockholders, or the 2020 annual meeting. The 2020 annual meeting will be held on Tuesday, May 12, 2020, at 9:00 a.m., local time, at our office located at 505 Eagleview Boulevard, Suite 212, Exton, Pennsylvania 19341. If the 2020 annual meeting is adjourned for any reason, then proxies submitted may be used at any adjournment of the 2020 annual meeting.

This proxy statement summarizes information about the proposals to be considered at the 2020 annual meeting and other information you may find useful in determining how to vote. The proxy card is one means by which you may authorize another person to vote your shares in accordance with your instructions.

We are mailing this proxy statement and the enclosed proxy card to stockholders on or about [April 6], 2020.

In this mailing, we are also including copies of our annual report to stockholders for the year ended December 31, 2019, or 2019 Annual Report. Our 2019 Annual Report consists of our annual report on Form 10-K for the year ended December 31, 2019, as filed with the Securities and Exchange Commission, or the SEC, on March 12, 2020, including our audited financial statements, which annual report on Form 10-K is available free of charge on our website, www.iderapharma.com, where it can be accessed by clicking "Investors" and then "SEC Filings," or through the SEC's electronic data system at www.sec.gov.

To obtain directions to be able to attend the 2020 annual meeting and vote in person, write to Investor Relations, Idera Pharmaceuticals, Inc., 505 Eagleview Blvd., Suite 212, Exton, PA 19341, call our toll-free number (877) 888-6550, or email Investor Relations at ir@iderapharma.com.

**Important Notice Regarding the Availability of
Proxy Materials for the 2020 Annual Meeting
to Be Held on May 12, 2020:**

The Notice of Annual Meeting, Proxy Statement and 2019 Annual Report are available at <http://ir.iderapharma.com/shareholder-services/annual-meeting>.

INFORMATION ABOUT THE 2020 ANNUAL MEETING

Who may vote?

Holders of record of our common stock at the close of business on March 24, 2020, the record date for the 2020 annual meeting, are entitled to vote on each matter properly brought before the 2020 annual meeting. Holders of our common stock will be entitled to one vote for each share of common stock held as of the record date. As of the close of business on March 24, 2020, the record date for the 2020 annual meeting, we had 30,607,326 shares of common stock outstanding.

How do I vote my shares if I am a stockholder of record?

If you are a stockholder of record (meaning that you hold shares in your name in the records of our transfer agent, Computershare Trust Company, N.A., and that your shares are not held in "street name" by a bank or brokerage firm), you may vote your shares in any one of the following ways:

- *You may vote by mail.* To vote by mail, you need to complete, date and sign the proxy card that accompanies this proxy statement and promptly mail it in the enclosed postage-prepaid envelope. You do not need to put a stamp on the enclosed envelope if you mail it from within the United States.
- *You may vote by telephone.* To vote by telephone through services provided by Computershare Trust Company, N.A., call 1-800-652-VOTE (8683), and follow the instructions provided on the proxy card that accompanies this proxy statement. If you vote by telephone, you do not need to complete and mail your proxy card.
- *You may vote over the internet.* To vote over the internet through services provided by Computershare Trust Company, N.A., please go to the following website: <http://www.investorvote.com/IDRA> and follow the instructions at that site for submitting your proxy. If you vote over the internet, you do not need to complete and mail your proxy card.
- *You may vote in person.* If you attend the 2020 annual meeting, you may vote by delivering your completed proxy card in person or you may vote by completing a ballot at the 2020 annual meeting. Ballots will be available at the 2020 annual meeting.

Your proxy will only be valid if you complete and return the proxy card, vote by telephone or vote over the internet at or before the 2020 annual meeting. The persons named in the proxy card will vote the shares you own in accordance with your instructions on your proxy card, in your vote by telephone or in your vote over the internet. If you return the proxy card, vote by telephone or vote over the internet, but do not give any instructions on a particular matter described in this proxy statement, the persons named in the proxy card will vote the shares you own in accordance with the recommendations of our board of directors.

How do I vote my shares if I hold them in "street name"?

If the shares you own are held in "street name" by a bank or brokerage firm, your bank or brokerage firm, as the record holder of your shares, is required to vote your shares according to your instructions. In order to vote your shares, you will need to follow the directions that your bank or brokerage firm provides to you. Many banks and brokerage firms solicit voting instructions over the internet or by telephone. Even if your shares are held in street name, you are welcome to attend the 2020 annual meeting. If your shares are held in street name, you may not vote your shares in person at the 2020 annual meeting unless you obtain a proxy, executed in your favor, from the holder of record (i.e., your bank or brokerage firm). If you hold your shares in street name and wish to vote in person, please contact your bank or brokerage firm before the 2020 annual meeting to obtain the necessary proxy from the holder of record.

If the beneficial owner does not provide voting instructions, banks and brokerage firms cannot vote the shares with respect to "non-routine" matters, but can vote the shares with respect to "routine" matters. "Broker non-votes" occur when a beneficial owner of shares held in street name fails to provide instructions to the bank or brokerage firm holding the shares as to how to vote on matters deemed "non-routine." We believe Proposal Three (the approval of an amendment to Restated Certificate of Incorporation to increase the authorized number of shares of common stock) and Proposal Four (the ratification of the selection of our independent registered public accounting firm) are "routine" matters and, as a result, we do not expect there to be any broker non-votes. Proposal One (the election of directors) and Proposal Two (the approval of, by non-binding vote, the compensation of the Company's named executive officers for 2019) are "non-routine" matters, and banks and brokerage firms cannot vote your shares on such proposals if you have not given voting instructions.

As long as one of the matters is deemed to be a "routine" matter, proxies reflecting broker non-votes (if any) will be counted towards the quorum requirement.

Whether a matter is "routine" or not is ultimately up to the New York Stock Exchange, and the New York Stock Exchange may make a determination that is different from what we believe to be the case. If that occurs, brokers may be able to vote your shares on matters we believe to be not routine, or not vote your shares on matters that we believe to be routine. Accordingly, we strongly encourage you to submit your proxy and exercise your right to vote as a stockholder to ensure that your shares are voted in the manner in which you want them to be voted.

How may I change or revoke my vote?

If you are a stockholder of record, even if you complete and return a proxy card or vote by telephone or over the internet, you may change or revoke your vote at any time before your proxy is exercised by taking one of the following actions:

- send written notice to our Secretary, Bryant Lim, at our address above, stating that you wish to revoke your vote;
- deliver to us another signed proxy card with a later date or vote by telephone or over the internet at a later date; or
- attend the 2020 annual meeting, notify our Secretary that you are present and then vote by ballot.

If you own shares in street name, your bank or brokerage firm should provide you with instructions for changing or revoking your vote.

What constitutes a quorum?

In order for business to be conducted at the 2020 annual meeting, a quorum must be present. A quorum consists of the holders of a majority of the shares of our common stock issued, outstanding and entitled to vote at the 2020 annual meeting.

Shares of common stock present in person or represented by proxy (including broker non-votes and shares that are abstained or withheld or with respect to which no voting instructions are provided for one or more of the matters to be voted upon) will be counted for the purpose of determining whether a quorum exists.

If a quorum is not present, the 2020 annual meeting will be adjourned until a quorum is obtained.

What vote is required to approve each matter and how will votes be counted?

The table below sets forth the vote required for each matter being submitted to our stockholders at the 2020 annual meeting to be approved and the effect that abstentions, withheld votes and broker:

<u>Proposal</u>	<u>Affirmative Vote Required</u>	<u>Abstentions/Withholds</u>	<u>Broker Non-Votes</u>
Election of Directors (<i>Proposal One</i>)	Plurality of votes cast by holders of common stock entitled to vote	No effect(1)	No effect
Advisory Vote on Named Executive Officer 2019 Compensation (<i>Proposal Two</i>)	Majority of common stock present or represented and voting on the matter	No effect	No effect
Approval of Amendment to Restated Certificate of Incorporation (<i>Proposal Three</i>)	Majority of outstanding shares	Has the same effect as a vote AGAINST	N/A
Ratification of Selection of Ernst & Young LLP (<i>Proposal Four</i>)	Majority of common stock present or represented and voting on the matter	No effect	N/A

- (1) You may vote FOR all of the director nominees, WITHHOLD your vote from all of the director nominees or WITHHOLD your vote from any of the director nominees.

Each share of common stock will be counted as one vote.

How does the board of directors recommend that I vote?

Our board of directors recommends that you vote as follows:

- FOR each of the director nominees to our board of directors (Proposal One); and
- FOR Proposal Two, Proposal Three, and Proposal Four.

Under the Securities Exchange Act of 1934, as amended, or the Exchange Act, and related SEC regulations, the vote on executive compensation, as described in greater detail in Proposal Two, set forth elsewhere in this proxy statement, is an advisory vote, meaning it is non-binding. The vote on the ratification of the selection of Ernst & Young LLP as our independent registered public accounting firm, as described in greater detail in Proposal Four, is also advisory. Our board will carefully consider the outcome of each of these votes.

Will any other business be conducted at the 2020 annual meeting of stockholders?

Our board of directors does not know of any other business to be conducted or matters to be voted upon at the 2020 annual meeting. If any other matter properly comes before the 2020 annual meeting, the persons named in the proxy card that accompanies this proxy statement will exercise their judgment in deciding how to vote or otherwise act with respect to that matter at the 2020 annual meeting.

Who is making and paying for the solicitation of proxies and how is it made?

We are making the solicitation and will bear the costs of soliciting proxies. In addition to solicitations by mail, our directors, officers and employees, without additional remuneration, may solicit

proxies by telephone, facsimile, email, personal interviews and other means. We have engaged MacKenzie Partners, Inc. to serve as our proxy solicitor to distribute our proxy materials and solicit proxies, and the estimated fee for these services is \$14,000. We have requested that brokerage houses, custodians, nominees and fiduciaries forward copies of the proxy materials to the persons for whom they hold shares and request instructions for voting the proxies. We will reimburse the brokerage houses and other persons for their reasonable out-of-pocket expenses in connection with this distribution.

How and when may I submit a proposal for the 2021 annual meeting of stockholders?

If you are interested in submitting a proposal for inclusion in the proxy statement and proxy card for our 2021 annual meeting of stockholders, or the 2021 annual meeting, you need to follow the procedures outlined in Rule 14a-8 of the Exchange Act. We must receive your proposal intended for inclusion in the proxy statement at our principal executive offices, 505 Eagleview Blvd., Suite 212, Exton, Pennsylvania 19341, Attention: Secretary, no later than December [4], 2020. SEC rules set standards for the types of stockholder proposals and the information that must be provided by the stockholder making the request.

If you wish to present a proposal at the 2021 annual meeting, but do not wish to have the proposal considered for inclusion in the proxy statement and proxy card or have not complied with the requirements for inclusion of such proposal in our proxy statement under SEC rules, you must also give written notice to us at the address noted above. Our bylaws specify the information that must be included in any such notice, including a brief description of the business to be brought before the annual meeting, the name of the stockholder proposing such business and stock ownership information for such stockholder. In accordance with our bylaws, we must receive this notice (or the stockholder director nomination, see "Stockholder Nominees" on page 15) at least 60 days, but not more than 90 days, prior to the date of the 2021 annual meeting and the notice must include specified information regarding the proposal and the stockholder making the proposal.

Notwithstanding the foregoing, if we provide less than 70 days' notice or prior public disclosure of the date of the annual meeting to the stockholders, notice by the stockholders must be received by our Secretary no later than the close of business on the tenth day following the date on which the notice of the annual meeting was mailed or such public disclosure was made, whichever occurs first. If a stockholder who wished to present a proposal fails to notify us by this date, the proxies that management solicits for that meeting will have discretionary authority to vote on the stockholder's proposal if it is otherwise properly brought before that meeting. If a stockholder makes timely notification, the proxies may still exercise discretionary authority to vote on stockholder proposals under circumstances consistent with the SEC's rules.

Are annual meeting materials householded?

Some banks and brokerage firms may be participating in the practice of "householding" proxy statements and annual reports. This means that the banks and brokerage firms send only one copy of this proxy statement and the accompanying 2019 Annual Report to multiple stockholders in the same household. Upon request, we will promptly deliver separate copies of this proxy statement and our annual report to stockholders. To make such a request, please call Investor Relations at (877) 888-6550, write to Investor Relations, 505 Eagleview Blvd., Suite 212, Exton, Pennsylvania 19341 or email Investor Relations at ir@iderapharma.com. To receive separate copies of our annual report to stockholders and proxy statement in the future, or to receive only one copy for the household, please contact us or your bank or brokerage firm.

PROPOSAL ONE
ELECTION OF DIRECTORS

General Information

Our board of directors is divided into three classes and currently consists of three Class I directors: Vincent J. Milano, Cristina Csimma, PharmD, MHP, and Michael R. Dougherty; three Class II directors: Howard Pien, James A. Geraghty and Maxine Gowen, Ph.D.; and two Class III directors: Mark Goldberg, M.D. and Carol A. Schafer. Each member of a class is elected for a three-year term, with the terms staggered so that approximately one-third of our directors stand for election at each annual meeting of stockholders. The Class I, Class II and Class III directors were elected to serve until the annual meeting of stockholders to be held in 2020, 2021 and 2022, respectively, and until their respective successors are elected and qualified.

Our board of directors, on the recommendation of the members of our nominating and corporate governance committee, has nominated Dr. Csimma and Messrs. Dougherty and Milano for election as Class I directors at the 2020 annual meeting. At the 2020 annual meeting, stockholders will be asked to consider the election of Dr. Csimma and Messrs. Dougherty and Milano.

The persons named in the enclosed proxy card will vote to elect Dr. Csimma and Messrs. Dougherty and Milano to our board of directors unless you indicate that you withhold authority to vote for the election of any or all nominees. You may not vote for more than three directors. Each Class I director will be elected to hold office until our 2023 annual meeting of stockholders and until his or her successor is elected and qualified or until his or her earlier resignation, death or removal. Each of the nominees is presently a director and each has indicated a willingness to serve as a director, if elected. If a nominee becomes unable or unwilling to serve, however, the persons acting under the proxy may vote for substitute nominees selected by the board of directors.

Information about our Directors

Set forth below is information about each member of our board of directors, including (a) the year in which each director first became a director, (b) their age as of the 2020 annual meeting, (c) their positions and offices with our Company, (d) their principal occupations and business experience during at least the past five years and (e) the names of other public companies for which they currently serve, or have served within the past five years, as a director. We have also included information about each director's specific experience, qualifications, attributes or skills that led our board of directors to conclude that such individual should serve as one of our directors. We also believe that all of our directors have a reputation for integrity, honesty and adherence to high ethical standards. They each have demonstrated business acumen and an ability to exercise sound judgment, as well as a commitment of service to our Company and our board of directors.

Recommendation of the Board of Directors

Our board of directors unanimously recommends that the stockholders vote FOR the election of Dr. Csimma and Messrs. Dougherty and Milano as Class I directors.

Class I Directors—Terms to Expire in 2020

Cristina Csimma, PharmD, MHP

Director since 2019

Dr. Csimma, age 61, currently serves as a board director and chair of the Nominating and Corporate Governance Committee of Seneca Biopharma, Inc. (previously, Neuralstem Inc. (CUR)), having been elected to its board of directors in September 2017. She also serves as the chair of the board of directors of Caraway Therapeutics since April of 2019 (executive chair in 2019), and as a board director of T1D Exchange (non-profit-Type 1 Diabetes), a position she has held since December 2018. She also serves on advisory boards including the Muscular Dystrophy Association Venture Philanthropy Scientific Advisory Committee since 2006; the Harvard and Brigham and Women's Hospital MRCT Center External Advisory Board since 2015, and the TREAT-NMD Advisory Committee for Therapeutics (TACT) since 2009. Dr. Csimma previously served as a Director on the boards of Juniper Pharma (from 2010 until its acquisition by Catalent in 2018), Vtesse Pharma (from 2014 until its acquisition by Sucampo in 2017), was the executive chair and a senior advisor of Exonics Therapeutics (from 2016 to 2017), and was President, founding CEO and board director of Cydan Inc. from 2012 to 2014. She also served on the NIH Blueprint Neurotherapeutics Network External Oversight Committee from 2014 to 2018, the Executive Oversight Board to the National Institutes of Health (NIH) NeuroNext Network from 2013 until 2017, was Vice President of Drug Development at Virdante Pharmaceuticals Inc. from 2009 to 2011, Principal at Clarus Ventures LLC (now Blackstone Life Science) and held roles of increasing responsibility in Clinical Development and Translational Research at Wyeth (now Pfizer), Genetics Institute and Dana Farber Cancer Institute. Dr. Csimma holds both a Doctor of Pharmacy and a Bachelor of Science in Pharmacy from the Massachusetts College of Pharmacy and Allied Health Sciences, as well as a Master of Health Professions from Northeastern University. We believe that Dr. Csimma's qualifications to sit on our board of directors include her significant public company management and board experience and knowledge of our industry.

Michael R. Dougherty

Director since 2019

Mr. Dougherty, age 62, was executive chairman of Celator Pharmaceuticals, Inc., a biopharmaceutical company, from August 2015 until its acquisition by Jazz Pharmaceuticals in July 2016; he also served as a director of Celator from July 2013 to July 2016. Mr. Dougherty previously served in a variety of senior positions, including chief executive officer of Kalidex Pharmaceuticals, Inc.; president and chief executive officer of Adolor Corporation; president and chief operating officer of Genomics Collaborative, Inc.; president and chief executive officer of Genaera Corporation, and chief financial officer at Centocor, Inc. He currently serves on the board of directors of Marinus Pharmaceuticals, Inc. and Trevena, Inc., both publicly traded life sciences organizations. Mr. Dougherty has also served on the board of directors of Foundation Medicine, Inc., Aviragen Therapeutics, Inc., Cempira, Inc., and ViroPharma Incorporated. Mr. Dougherty received a B.S. in Accounting from Villanova University. We believe that Mr. Dougherty's qualifications to sit on our board of directors include his significant public company management and board experience and knowledge of our industry.

Vincent J. Milano

Director since 2014

Vincent Milano, age 56, has been our President and Chief Executive Officer, and a member of our board of directors, since December 2014. Prior to joining us, Mr. Milano served as chairman, president and chief executive officer of ViroPharma Incorporated, a pharmaceutical company that was acquired by Shire Plc in January 2014, from March 2008 to January 2014, as its vice president, chief financial

officer and chief operating officer from January 2006 to March 2008 and as its vice president, chief financial officer and treasurer from April 1996 to December 2005. Mr. Milano also served on the board of directors of ViroPharma from March 2008 to January 2014. Prior to joining ViroPharma, Mr. Milano served in increasingly senior roles, most recently senior manager, at KPMG LLP, an independent registered public accounting firm, from July 1985 to March 1996. Mr. Milano currently serves on the board of directors of Aclaris Therapeutics, Inc., a publicly traded company, and privately held VenatoRx Pharmaceuticals, Inc. Mr. Milano previously served as a director of Spark Therapeutics, Inc. and Vanda Pharmaceuticals Inc. from 2014 to 2019 and 2010 to 2019, respectively. Mr. Milano holds a Bachelor of Science degree in Accounting from Rider College. We believe Mr. Milano's qualifications to sit on our board of directors include his knowledge of our company as our President and Chief Executive Officer, knowledge of our industry, including over 20 years of experience serving in a variety of roles of increasing responsibility in the finance department, corporate administration and operations of a multinational biopharmaceutical company, and understanding of pharmaceutical research and development, sales and marketing, strategy, and operations in both the United States and overseas. He also has corporate governance experience through service on other public company boards.

Class II Directors—Terms to Expire in 2021

James A. Geraghty

Director since 2013

Mr. Geraghty, age 65, has served as chairman of our board of directors since July 2013. Mr. Geraghty is an industry leader with over 35 years of strategic and leadership experience, including more than 25 years as a senior member of executive teams at biotechnology companies developing and commercializing innovative therapies. From May 2013 to October 2016, Mr. Geraghty was an Entrepreneur in Residence at Third Rock Ventures, a leading biotech venture fund. From April 2011 to December 2012, he served as a Senior Vice President of Sanofi, a global healthcare company. Prior to that, he served in various senior management roles at Genzyme Corporation, a biotechnology company, from 1992 to April 2011, including as Senior Vice President, International Development and President of Genzyme Europe. Mr. Geraghty currently serves as chairman of the board of Orchard Therapeutics PLC and Pieris Pharmaceuticals, Inc., each a publicly traded company, and as a member of the board of Voyager Therapeutics and Fulcrum Therapeutics, each a publicly traded company. He also previously served as a director of bluebird bio, Inc. and GTC Biotherapeutics, Inc. We believe that Mr. Geraghty's qualifications to sit on our board of directors include his public company board and management experience and his broad and deep knowledge of the industry in which we operate.

Maxine Gowen, Ph.D.

Director since 2016

Dr. Gowen, age 62, has served as the chief executive officer and a board director of TamuroBio Inc., a privately held drug development company, since August 2019. She was the founding President and CEO of Trevena, Inc., a publicly traded biopharmaceutical company, from November 2007 until her retirement in October 2018, and remains a member of its board of directors. Prior to joining Trevena, Dr. Gowen was Senior Vice President for the Center of Excellence for External Drug Discovery at GlaxoSmithKline plc, or GSK, where she held a variety of leadership positions during her tenure of 15 years. Before GSK, Dr. Gowen was Senior Lecturer and Head, Bone Cell Biology Group, Department of Bone and Joint Medicine, of the University of Bath, U.K. Dr. Gowen has served as a director of Akebia Therapeutics, Inc. since July 2014, and Aclaris Therapeutics, Inc. since July 2019, both publicly traded companies. From 2008 until 2012, Dr. Gowen served as a director of Human Genome Sciences, Inc., a publicly traded company. She received her Ph.D. from the University of Sheffield, U.K., an M.B.A. with academic honors from The Wharton School of the University of Pennsylvania, and a B.Sc. with Honors in Biochemistry from the University of Bristol, U.K. We believe

that Dr. Gowen's qualifications to sit on our board of directors include her significant public company management and board experience and knowledge of our industry.

Howard Pien

Director since September 2018

Mr. Pien, age 62, has worked in the pharmaceutical and biotechnology industries for over 30 years. He currently serves as non-executive chairman of Indivior Plc, a publicly traded global pharmaceutical company, since 2014. He was previously non-executive chairman of Juno Therapeutics, Inc., a development stage company focused on immunotherapy aimed to cure cancer, from 2014 until its acquisition by Celgene Corp. in 2018. He was also previously a director of Vanda Pharmaceuticals Inc., a commercial-stage public company specializing in CNS (three years as chairman), from 2007 to 2016; ImmunoGen, Inc., a public biotechnology company, from 2009 to 2018; Sage Therapeutics, Inc., a development stage public company specializing in CNS, from 2014 to 2017; and an advisor to the Life Sciences Practice of Warburg Pincus. From 2007 to 2009, Mr. Pien was the chairman and chief executive officer of Medarex, Inc., a public biotechnology company, until it was acquired by Bristol-Myers Squibb Co. From 2003 to 2006, he was the chairman and chief executive officer of Chiron Corporation, a public biotechnology company, which was acquired by Novartis AG. Mr. Pien's additional prior board directorships include Talon International, Inc., Arresto Biosciences, Inc., Ikaria, Inc., ImmunoGen, Inc. and ViroPharma Incorporated (where he was lead independent director)—all biopharmaceutical companies that were acquired in strategic transactions. Between 1991 and 2003, he held various executive positions at GlaxoSmithKline plc (GSK) and SmithKline Beecham, as Presidents of US, International, and Pharmaceuticals. Prior to GSK, Mr. Pien worked for Abbott Labs for six years and Merck & Co., Inc. for five years. Mr. Pien holds a BS in engineering from MIT and an MBA from Carnegie-Mellon University. We believe that Mr. Pien's qualifications to sit on our board of directors include Mr. Pien's extensive experience as a chief executive officer in the pharmaceutical industry, including an immuno-oncology company, and his expertise in corporate governance matters.

Class III Directors—Terms to Expire in 2022

Mark Goldberg, M.D.

Director since 2014

Dr. Goldberg, age 65, has served as a member of the board of directors of ImmunoGen, Inc. since November 2011, a member of the board of directors of GlycoMimetics, Inc. since July 2014, and as a member of the board of directors of Blueprint Medicines since June 2015. In addition, he is a member of the board of directors of the American Cancer Society, a non-profit organization. Dr. Goldberg previously served on the board of directors of Audentes Therapeutics, Inc. from December 2017 until January 2020 and aTyr Pharma from April 2015 until December 2017. Dr. Goldberg served as advisor and medical and regulatory strategist for Synageva BioPharma Corp., a biopharmaceutical company, from October 2014 until June 2015. Prior to that, he served as the Executive Vice President for Medical and Regulatory Strategy of Synageva from January 2014 to October 2014 and as the Senior Vice President of Medical and Regulatory Affairs of Synageva from September 2011 to January 2014. Dr. Goldberg served in a variety of senior management positions at Genzyme Corporation from 1996 to July 2011, including most recently as Senior Vice President for Clinical Development and Therapeutic Group Head for Oncology and Personalized Genetic Health from 2009 to July 2011. Prior to working at Genzyme Corporation, he was a full-time staff physician at Brigham and Women's Hospital and Dana Farber Cancer Institute, where he still holds appointments. He has also been an Associate Professor of Medicine at Harvard Medical School since 1996. Dr. Goldberg is a board-certified medical oncologist and hematologist and has more than 50 published papers. Dr. Goldberg holds an A.B. from Harvard College and an M.D. from Harvard Medical School. We believe that

Dr. Goldberg's qualifications to sit on our board of directors include his extensive scientific and medical background, public company board experience and extensive experience in the management and operations of pharmaceutical companies.

Carol A. Schafer

Director since December 2018

Ms. Schafer, age 56, has served on the board of directors, where she serves on the audit committee and nominating and corporate governance committee of Five Prime Therapeutics, Inc., a publicly traded company, since May 2019. Additionally, Ms. Schafer has served on the board of directors and audit committee of Repare Therapeutics, Inc., a private biotechnology company, and as a non-fiduciary board member of OneGoal NY, a non-profit entity, since March 2019. She also currently serves as managing partner at Hyphen Advisors, LLC, a firm that provides advisory, consulting and board services to public and private companies and boards of directors on topics such as financing strategy and execution, financial planning and analysis, investor access and messaging, and strategic initiatives. Ms. Schafer has more than 25 years of experience in investment banking and equity capital markets, as well as in corporate finance and business development in the biopharmaceutical sector, with substantial experience financing and facilitating investor access for public and private healthcare companies. Ms. Schafer most recently served as Vice Chair, Equity Capital Markets at Wells Fargo Securities. Prior to Wells Fargo, Ms. Schafer served as Vice President of Finance and Business Development at Lexicon Pharmaceuticals. Earlier in her career, Ms. Schafer served as an Equity Capital Markets Sector Head in her role as Managing Director at J.P. Morgan. Ms. Schafer received a B.A. from Boston College and an M.B.A from New York University. We believe that Ms. Schafer's qualifications to sit on our board of directors include her extensive financial background and her many years of experience providing investment banking, equity capital markets and strategic support to companies within the healthcare sector.

DIRECTOR COMPENSATION

We use a combination of cash and equity-based compensation to attract and retain candidates to serve on our board of directors. We do not compensate directors who are also our employees for their service on our board of directors. As a result, Mr. Milano does not receive any compensation for his service on our board of directors.

We generally review our director compensation program every two years with the advice of an independent compensation consultant. In November 2018, we modified our director compensation program, effective January 1, 2019, to increase the cash compensation for service on the board of directors from \$35,000 to \$40,000. On June 4, 2019, we modified our Scientific Advisory Committee chairperson compensation to \$8,000. With the exception of the foregoing cash compensation increase, no other changes were made to our director compensation program.

Under our director compensation program, we pay our non-employee directors retainers in cash. Each director receives a cash retainer for service on the board of directors and for service on each committee on which the director is a member. The chairperson of each committee receives higher retainers for such service. These fees are paid quarterly in arrears. The fees paid to non-employee directors for service on the board of directors and for service on each committee of the board of directors on which the director was a member during 2019 were as follows:

	<u>Member Annual Fee</u>	<u>Chairperson Annual Fee</u>
Board of Directors	\$ 40,000	\$ 70,000
Audit Committee	\$ 7,500	\$ 15,000
Compensation Committee	\$ 6,250	\$ 12,500
Nominating and Corporate Governance Committee	\$ 4,000	\$ 8,000
Scientific Advisory Committee	\$ 4,000	\$ 8,000

Our director compensation program includes a stock-for-fees policy, under which directors have the right to elect to receive common stock in lieu of cash fees. These shares of common stock are issued under our 2013 Stock Incentive Plan. The number of shares issued to participating directors is determined on a quarterly basis by dividing the cash fees to be paid through the issuance of common stock by the fair market value of our common stock, which is the closing price of our common stock, on the first business day of the quarter following the quarter in which the fees are earned. In 2019, several of our directors elected to receive shares of our common stock in lieu of cash fees as set forth in the footnotes to the Director Compensation table below.

Under our director compensation program, we also reimburse our directors for travel and other related expenses for attendance at meetings.

Under our current director compensation program, upon their initial election to the board of directors, new non-employee directors receive an initial option grant to purchase 23,000 shares of our common stock, and all non-employee directors, other than the chairperson, receive an annual option grant to purchase 11,500 shares of our common stock. The chairperson receives an annual option grant for 14,500 shares of our common stock. The annual grants are made on the date of our annual meeting of stockholders and fully vest one year from that date of grant. The initial options granted to our non-employee directors vest with respect to one-third of the underlying shares on the first anniversary of the date of grant and the balance of the underlying shares vest in eight equal quarterly installments following the first anniversary of the date of grant, subject to continued service as a director, and are granted under our 2013 Stock Incentive Plan. These options are granted with exercise prices equal to the fair market value of our common stock, which is the closing price of our common stock, on the date of grant and will become immediately exercisable in full if there is a change in control of our Company.

Under our retirement policy for non-employee members of the board, if a non-employee director is deemed to retire, then:

- all outstanding options held by such director will automatically accelerate and vest in full; and
- the period during which such director may exercise the options will be extended to the expiration of the option under the plan.

Under the policy, a non-employee director will be deemed to have retired if:

- the director resigns from the board or determines not to stand for re-election or is not nominated for re-election at a meeting of our stockholders and has served as a director for more than 10 years; or
- the director does not stand for re-election or is not nominated for re-election due to the fact that he or she is or will be older than 75 at the end of such director's term.

The following table sets forth a summary of the compensation we paid to our non-employee directors who served on our board in 2019.

DIRECTOR COMPENSATION FOR 2019

<u>Name</u>	<u>Fees Earned or Paid in Cash (\$)</u>	<u>Option Awards (\$)(1)</u>	<u>Total (\$)</u>
Cristina Csimma(2)	35,006	64,214	99,220
Michael Dougherty(3)	33,438(4)	64,214	97,652
James A. Geraghty	84,362	26,281	110,643
Mark Goldberg	53,797	20,844	74,641
Maxine Gowen	58,283	20,844	79,127
Kelvin M. Neu(5)	18,739(6)	—	18,739
Howard Pien	48,551(7)	20,844	69,395
William S. Reardon(8)	11,309	—	11,309
Carol A. Schafer	54,880(9)	20,844	75,724

- (1) These amounts represent the aggregate grant date fair value of option awards made to each listed director in 2019 as computed in accordance with Financial Accounting Standards Board Accounting Standards Codification Topic 718, "Stock Compensation," or ASC 718. These amounts do not represent the actual amounts paid to or realized by the directors during 2019. See Note 12 to the financial statements included in our annual report on Form 10-K for the year ended December 31, 2019 regarding assumptions we made in determining the fair value of option awards. As of December 31, 2019, our non-employee directors, or former director in the case of Mr. Neu, held options to purchase shares of our common stock as follows: Dr. Csimma: 34,500; Mr. Dougherty: 34,500; Mr. Geraghty: 111,186; Dr. Goldberg: 45,875; Dr. Gowen: 37,125; Dr. Neu: 0; Mr. Pien: 34,500; Mr. Reardon: 39,375; and Ms. Schafer: 34,500.
- (2) Dr. Csimma was appointed to our board of directors on April 8, 2019.
- (3) Mr. Dougherty was appointed to our board of directors on April 8, 2019.
- (4) Includes cash meeting fees of \$24,016 in lieu of which Mr. Dougherty elected to receive 11,156 shares of our common stock.
- (5) Mr. Neu resigned from our board of directors on June 4, 2019.

- (6) Includes cash meeting fees of \$18,739 in lieu of which Mr. Neu elected to receive 7,125 shares of our common stock.
- (7) Consists of cash meeting fees of \$48,551 in lieu of which Mr. Pien elected to receive 20,261 shares of our common stock.
- (8) Mr. Reardon resigned from our board of directors on March 10, 2019.
- (9) Includes cash meeting fees of \$41,124 in lieu of which Ms. Schafer elected to receive 15,442 shares of our common stock.

CORPORATE GOVERNANCE INFORMATION

Board of Directors

Our board of directors is responsible for establishing our broad corporate policies and overseeing the management of our Company. Our chief executive officer and our other executive officers are responsible for our day-to-day operations. Our board evaluates our corporate performance and approves, among other things, our corporate strategies and objectives, operating plans, major commitments of corporate resources and significant policies. Our board also evaluates and appoints our executive officers.

Our board of directors met four times during 2019, including regular, special and telephonic meetings. Each director who served as a director during 2019 attended at least 75% of the total number of board meetings and committee meetings for the committees on which he or she served during 2019.

While we do not have a formal policy regarding director attendance, we strongly encourage and expect our directors to attend our annual meetings of stockholders. All of our directors attended the 2019 annual meeting of stockholders in person.

Board Leadership Structure

Our board of directors does not have a policy on whether the offices of chairperson of the board of directors and chief executive officer should be separate and, if they are to be separate, whether the chairperson of the board of directors should be selected from among the independent directors or should be an employee of our Company. Our board of directors believes that it should have the flexibility to make these determinations at any given point in time in the way that it believes best to provide appropriate leadership for our Company at that time. Currently, Mr. Geraghty serves as chairman of our board of directors and Mr. Milano serves as chief executive officer. Our board of directors believes that this separation allows our chief executive officer to focus on our day-to-day business, while allowing the chairperson of the board of directors to lead the board of directors in its fundamental role of providing advice to and independent oversight of management.

Our board of directors recognizes that no single leadership model is right for all companies and at all times and that depending on the circumstances, other leadership models, such as a combined chairperson and chief executive officer, might be appropriate. Accordingly, the board of directors periodically reviews its leadership structure. Pursuant to our corporate governance guidelines, if the chairperson is not an independent director, the board of directors may elect a lead director from its independent directors. In such case, the chairperson and chief executive officer would consult periodically with the lead director on board of directors matters and on issues facing our Company. In addition, the lead director would serve as the principal liaison between the chairperson of the board of directors and the independent directors and would preside at any executive session of independent directors.

Board of Directors' Role in Risk Oversight

Our board of directors, as a whole, has responsibility for risk oversight, with reviews of certain areas being conducted by relevant committees that report directly to the board of directors. The oversight responsibility of the board of directors and its committees is enabled by management reporting processes that are designed to provide visibility to the board of directors about the identification, assessment and management of critical risks and management's risk mitigation strategies. These areas of focus include competitive, economic, operational, financial (accounting, credit, liquidity and tax), legal, regulatory, compliance, health, safety, environmental, political and reputational risks. Our board of directors regularly reviews information regarding our strategy, operations, credit and

liquidity, as well as the risks associated with each. Our compensation committee is responsible for overseeing risks relating to our executive compensation plans and arrangements. Our audit committee is responsible for overseeing financial risks and risks associated with related party transactions. Our nominating and corporate governance committee is responsible for overseeing risks associated with the independence of the board of directors. While each committee is responsible for evaluating certain risks and overseeing the management of such risks, our entire board of directors is regularly informed through committee reports about such risks.

Board Committees

Our board of directors has established three standing committees: audit, compensation and nominating and corporate governance. Each of our audit, compensation and nominating and corporate governance committees operates under a charter that has been approved by our board of directors. Our board of directors has also adopted corporate governance guidelines to assist our board of directors in the exercise of its duties and responsibilities. Current copies of the charters for the audit, compensation and nominating and corporate governance committees and the corporate governance guidelines are posted on our website, www.iderapharma.com, and can be accessed by clicking "Investors" and "Corporate Governance."

Audit Committee

Our audit committee's purpose is to assist the board of directors' oversight of our accounting and financial reporting processes and the audits of our financial statements. Our audit committee's responsibilities include:

- appointing, approving the compensation of, and assessing the independence of our independent registered public accounting firm;
- overseeing the work of our independent registered public accounting firm, including through the receipt and consideration of certain reports from such accounting firm;
- reviewing and discussing with management and our independent registered public accounting firm our annual and quarterly financial statements and related disclosures;
- monitoring our internal control over financial reporting, disclosure controls and procedures and code of business conduct and ethics;
- discussing with management and our independent auditor about significant risks or exposures;
- establishing procedures for the receipt and retention of accounting related complaints and concerns;
- reviewing and approving related party transactions;
- meeting independently with our independent registered public accounting firm and management; and
- preparing the audit committee report required by SEC rules.

The current members of our audit committee are Ms. Schafer (Chair), Mr. Dougherty and Dr. Goldberg. Our board of directors has determined that Ms. Schafer is an "audit committee financial expert" within the meaning of SEC rules and regulations. Each member of the audit committee is independent as defined under applicable rules of the Nasdaq, including the independence requirements contemplated by Rule 10A-3 under the Exchange Act. During 2019, our audit committee held four meetings in person or by teleconference.

Compensation Committee

Our compensation committee's purpose is to oversee the discharge of the responsibilities of the board of directors relating to compensation of the Company's executive officers, employees, and board members. Our compensation committee's responsibilities include:

- approving the Company's long-term strategy of compensation, including the consideration of base compensation, short-term incentive and long-term incentive targets,
- reviewing and approving the compensation of the Company's chief executive officer and the other executive officers;
- overseeing and administering our cash and equity incentive plans;
- reviewing and making recommendations to the board of directors with respect to director compensation;
- overseeing the evaluation of the Company's senior executives;
- reviewing and discussing annually with management the compensation discussion and analysis required by the SEC rules and included in this proxy statement; and
- preparing the compensation committee report required by SEC rules.

The current members of our compensation committee are Dr. Gowen (Chair), Dr. Csimma, and Mr. Pien. During 2019, the compensation committee held six meetings in person or by teleconference. The compensation committee may delegate to one or more executive officers of the Company the power to grant operations or stock awards to employees of the Company or its subsidiaries who are not directors or executive officers of the Company. The compensation committee may also form and delegate authority to one or more subcommittees as it deems appropriate.

The processes and procedures followed by our compensation committee in considering and determining executive compensation are described below under the heading "Executive Compensation."

Nominating and Corporate Governance Committee

Our nominating and corporate governance committee's purpose is to identify and recommend to the board of directors persons to be nominated for election as directors, develop and recommend corporate governance principals, and oversee the evaluation of the board of directors. Our nominating and corporate governance committee's responsibilities include:

- reviewing with the board of directors the requisite skills and criteria for new board members, as well as the composition of the board as a whole;
- adopting and periodically reviewing procedures regarding director candidates proposed by stockholders;
- recommending to the board the directors to be appointed to each committee of the board;
- reviewing and assessing the adequacy of the corporate governance guidelines;
- determining the nature of the self-evaluation of the board, supervising the conduct of the evaluation, and preparing the assessment of the board's performance; and
- overseeing the Company's succession planning, which includes transitional leadership in the event of an unplanned vacancy.

The current members of our nominating and corporate governance committee are Messrs. Geraghty (Chair), Pien, and Dougherty. During 2019, the nominating and corporate governance committee held two meetings in person or by teleconference.

The processes and procedures followed by our nominating and corporate governance committee in identifying and evaluating director candidates are described below under the heading "Director Nomination Process."

Director Independence

Our securities are listed on the Nasdaq Capital Market and we use the standards of "independence" prescribed by rules set forth by Nasdaq. Under Nasdaq rules, a majority of a listed company's board of directors must be comprised of independent directors. In addition, Nasdaq rules require that, subject to specified exceptions, each member of a listed company's audit committee and compensation committee be independent and satisfy additional independence criteria set forth in Rules 10A-3 and 10C-1, respectively, under the Exchange Act. Under the applicable Nasdaq rules, a director will only qualify as an "independent director" if, in the opinion of our board of directors, that person does not have a relationship which would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. Our board of directors has determined that Dr. Csimma, Mr. Dougherty, Mr. Geraghty, Dr. Goldberg, Dr. Gowen, Mr. Pien and Ms. Schafer and all of the members of each of the audit, compensation and nominating and corporate governance committees are independent as defined under applicable rules of the Nasdaq, and, in the case of all members of the audit and compensation committees, the independence requirements contemplated by Rule 10A-3 and Rule 10C-1 under the Exchange Act.

Director Nomination Process

The process followed by our nominating and corporate governance committee to identify and evaluate director candidates includes requests to members of our board of directors and others for recommendations, meetings from time to time to evaluate biographical information and background material relating to potential candidates and interviews of selected candidates by members of our nominating and corporate governance committee and our board of directors. The nominating and corporate governance committee has from time to time used a third-party recruiting firm to identify and interview potential candidates.

In considering whether to recommend any particular candidate for inclusion in the board of director's slate of recommended director nominees, the nominating and corporate governance committee will apply the criteria set forth in our corporate governance guidelines. These criteria include the candidate's:

- business acumen;
- knowledge of our business and industry;
- age;
- experience;
- diligence;
- conflicts of interest;
- ability to act in the interests of all stockholders; and
- in the case of the renomination of existing directors, performance on our board of directors and on any committee of which the director was a member.

Our corporate governance guidelines also provide that candidates should not be discriminated against on the basis of race, religion, national origin, sex, sexual orientation, disability or any other basis proscribed by law and that our nominating and corporate governance committee should consider the value of diversity of the board of directors when evaluating particular candidates. The committee

has not adopted any formal or informal diversity policy and treats diversity as one of the criteria to be considered by the committee. The committee does not assign specific weights to particular criteria that the committee reviews and no particular criterion is a prerequisite for the consideration of any prospective nominee. We believe that the backgrounds and qualifications of our directors, considered as a group, should provide a composite and diverse mix of experience, knowledge and abilities that will allow the board of directors to fulfill its responsibilities.

Stockholder Nominees

Stockholders may recommend individuals to the nominating and corporate governance committee for consideration as potential director candidates by submitting the individuals' name, together with appropriate biographical information and background materials and a statement as to whether the stockholder or group of stockholders making the recommendation has beneficially owned more than 5% of our common stock for at least one year as of the date such recommendation is made, to the Nominating and Corporate Governance Committee, c/o Secretary, Idera Pharmaceuticals, Inc., 505 Eagleview Blvd., Suite 212, Exton, PA 19341. Assuming that appropriate biographical and background material has been provided on a timely basis, the nominating and corporate governance committee will evaluate stockholder-recommended candidates by following substantially the same process, and applying substantially the same criteria, as it follows for candidates submitted by others. If the board of directors determines to nominate a stockholder-recommended candidate and recommends his or her election, then his or her name will be included in our proxy card for the next annual meeting.

Stockholders also have the right under our bylaws to nominate director candidates directly, without any action or recommendation on the part of the nominating and corporate governance committee or the board of directors, by following the procedures set forth in our bylaws, including advance notice requirements. Candidates nominated by stockholders in accordance with the procedures set forth in our bylaws will not be included in our proxy card for the next annual meeting. See "Information about the 2020 annual meeting—How and when may I submit a proposal for the 2021 annual meeting of stockholders?" for more information about these procedures and the deadline for submitting director nominations.

Communicating with our Board of Directors

Shareholders and other interested parties may communicate directly with the board of directors (and with independent directors, individually or as a group). Our board of directors will give appropriate attention to written communications that are submitted by stockholders and will respond if and as appropriate. The chairperson of the board of directors (if an independent director) or the lead independent director, if any, is primarily responsible for monitoring communications from stockholders and for providing copies or summaries to the other directors, as he or she considers appropriate.

Communications are forwarded to all directors if they relate to important substantive matters and include suggestions or comments that the chairperson of the board of directors or lead independent director, as the case may be, considers to be important for the directors to know. In general, communications relating to corporate governance and long-term corporate strategy are more likely to be forwarded than communications relating to ordinary business affairs, personal grievances and matters that involve repetitive or duplicative communications.

Stockholders who wish to send communications on any topic to the board of directors should address such communications to Board of Directors, c/o Secretary, Idera Pharmaceuticals, Inc., 505 Eagleview Blvd., Suite 212, Exton, PA 19341.

Each communication from a stockholder should include the following information in order to permit stockholder status to be confirmed and to provide an address to forward a response if deemed appropriate:

- the name, mailing address and telephone number of the stockholder sending the communication;
- the number of shares held by the stockholder; and
- if the stockholder is not a record owner of our securities, the name of the record owner of our securities beneficially owned by the stockholder.

Code of Business Conduct and Ethics

We have adopted a written code of business conduct and ethics that applies to our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions. We have posted a current copy of the Code of Business Conduct and Ethics in the "Investors—Corporate Governance" section of our website, which is located at www.iderapharma.com. We intend to satisfy the disclosure requirements under Item 5.05 of Form 8-K regarding an amendment to, or waiver from, a provision of our code of business conduct and ethics by posting such information on our website at www.iderapharma.com.

Compensation Committee Interlocks and Insider Participation

Our compensation committee currently consists of Drs. Gowen and Csimma and Mr. Pien, each of whom have served as members of our compensation committee for all or a portion of 2019. No member of our compensation committee was at any time during 2019, or was formerly, an officer or employee of ours. No member of our compensation committee engaged in any related person transaction involving our Company during 2019. None of our executive officers has served as a director or member of the compensation committee (or other committee serving the same function as the compensation committee) of any other entity, while an executive officer of that other entity served as a director or member of our compensation committee.

Hedging Policy

Our insider trading policy prohibits our directors and employees (including our executive officers) from hedging or entering into other similar arrangements with respect to the Company's securities, including, without limitation, short sales of Company securities, including short sales "against the box," or purchases or sales of puts or calls or other derivative securities based on the Company's securities.

EXECUTIVE OFFICERS

Information about our Executive Officers

Our currently-serving executive officers and their respective ages and positions are described below. Our executive officers serve until they resign or the board terminates their position.

Name	Age	Position
Vincent J. Milano*	56	President and Chief Executive Officer
John J. Kirby	48	Senior Vice President, Chief Financial Officer
R. Clayton Fletcher	57	Senior Vice President, Business Development and Strategy
Bryant D. Lim	49	Senior Vice President, General Counsel and Corporate Secretary
Elizabeth Tarka	53	Senior Vice President, Chief Medical Officer

* Mr. Milano is a member of our board of directors. See "Information about our Directors" above for more information about Mr. Milano.

John J. Kirby joined the Company in 2015 as the Company's Vice President of Corporate Accounting and has served as Vice President of Finance from July 2018 to July 2019 and as Senior Vice President and Chief Financial Officer since July 2019 (principal financial officer and principal accounting officer since October 2018). Prior to joining us, Mr. Kirby served as Assistant Controller at Endo Pharmaceuticals, Inc. from November 2014 to October 2015. From August 2012 to July 2014, Mr. Kirby served as Vice President, Chief Accounting Officer and Corporate Controller at ViroPharma Incorporated, which was acquired by Shire Plc in January 2014. Mr. Kirby began his career at KPMG, LLP in their Healthcare and Life Science Practice and served as a Regional Audit Director at AstraZeneca Pharmaceuticals L.P. prior to joining ViroPharma Incorporated. Mr. Kirby received his B.S. in Accountancy from Villanova University and is a licensed certified public accountant in the Commonwealth of Pennsylvania.

R. Clayton Fletcher has been our Senior Vice President, Business Development and Strategic Planning since January 2015. Prior to joining us, Mr. Fletcher served in increasingly senior positions at ViroPharma Incorporated, which was acquired by Shire Plc in January 2014, from April 2001 until January 2014, including as Vice President, Business Development and Project Management from 2005 until January 2014. Mr. Fletcher served as Senior Project Manager at SmithKline Beecham plc, a pharmaceutical company, which was purchased by Glaxo Wellcome plc in December 2000, from 1997 until 2001. Prior to working at SmithKline Beecham plc, he served as Project Scientist, at Becton, Dickinson and Company, a medical devices company and as Principal Scientist at Intracel Corporation, a biopharmaceutical company. Prior to working at Intracel Corporation, he served as Senior Associate Scientist at Centocor Biotech, Inc., a biotechnology company from 1991 until 1993. Mr. Fletcher holds a B.S. and a M.S. in biology from Wake Forest University.

Bryant D. Lim has been our Senior Vice President, General Counsel and Secretary since September 2018. Prior to joining us, Mr. Lim served as Vice President, Assistant General Counsel and, prior to that, Global Chief Compliance Officer at Incyte Corporation from March 2014 to September 2018. Prior to Incyte Corporation, Mr. Lim held roles of increasing responsibility at ViroPharma Incorporated from January 2009 until its acquisition by Shire Plc in January 2014. Mr. Lim served as Assistant Counsel at Merck & Co., Inc. and also was associated with Morgan, Lewis & Bockius, LLP. Mr. Lim began his legal career as a law clerk for a federal judge. Mr. Lim received his J.D. from Villanova University School of Law, where he currently serves on its adjunct faculty where he teaches about the Law of Drugs and Biologics. Mr. Lim received his B.A. from the University of Rochester. Mr. Lim also serves on the board of directors of Life Sciences of Pennsylvania.

Elizabeth Tarka, M.D., FACC, joined our Company as Senior Vice President, Chief Medical Officer in July 2019. Prior to joining us, Dr. Tarka served as Vice President, Clinical Development at

Complexa, Inc. from September 2017 to July 2019 where she was responsible for the clinical development of a novel asset in rare diseases. Prior to Complexa, Inc., Dr. Tarka served as Clinical Program Lead, Clinical Development at Janssen Pharmaceuticals, Inc. from September 2015 to September 2017, where she was the Clinical Program Leader for Xarelto® (rivaroxaban) and was responsible for the design, implementation and medical oversight for large multinational trials. Dr. Tarka held roles of increasing responsibility in late state clinical development of cardiovascular medications at GlaxoSmithKline from May 2003 to May 2015 and held the role of Senior Director, Clinical Development at the time of her transition to Janssen. Dr. Tarka earned her B.A. in Biochemistry and an M.D. from the University of Pennsylvania where she also completed her Internal Medicine residency and Cardiovascular fellowship training. She was also an Assistant Professor of Medicine in the Cardiovascular Division at the University of Pennsylvania where she had numerous major teaching and clinical responsibilities.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth, as of March 24, 2020, information we know about the beneficial ownership of our common stock by:

- each person or entity, including any "group" as that term is used in Section 13(d)(3) of the Exchange Act, who is known by us to own beneficially more than 5% of the issued and outstanding shares of our common stock;
- each of our current directors;
- each of our named executive officers, as set forth in the Summary Compensation Table set forth in this proxy; and
- all of our current directors and executive officers as a group.

We have determined beneficial ownership in accordance with the rules of the SEC, and the information in the table below is not necessarily indicative of beneficial ownership for any other purpose. The SEC has defined "beneficial" ownership of a security to mean the possession, directly or indirectly, of voting power and/or investment power. In computing the percentage ownership of each person, shares of common stock subject to options, warrants or rights held by that person that are currently exercisable, or exercisable within 60 days of March 24, 2020, are deemed to be outstanding and beneficially owned by that person. These shares, however, are not deemed outstanding for the purpose of computing the percentage ownership of any other person.

To our knowledge and except as indicated in the notes to this table and pursuant to applicable community property laws, each stockholder named in the table has sole voting and investment power with respect to the shares set forth opposite such stockholder's name. The percentage of ownership is

based on 30,607,326 shares of our common stock issued and outstanding on March 24, 2020. All fractional common share amounts have been rounded to the nearest whole number.

Name and Address of Beneficial Owner(1)	Number of Shares Beneficially Owned	Percentage of Outstanding Shares
5% Stockholders		
Affiliates of Baker Brothers Advisors, LLC (collectively, "Baker Bros.") c/o Baker Bros. Advisors LP 860 Washington Street, 3rd Floor New York, NY 10014	4,608,786(2)	15.1%
Pillar Investment Entities (collectively, "Pillar") c/o Pillar Invest Offshore SAL Starco Center, Bloc B, 3rd Floor Omar Daouk Street Beirut, M8 2020-3313, Lebanon	3,254,442(3)	10.6%
Castellina Ventures Ltd. 325 Waterfront Drive Omar Hodge Building, 2nd Floor Road Town, Tortola D8 VG1110	2,248,338(4)	7.3%
Named Executive Officers and Directors		
Vincent J. Milano	472,182(5)	1.5%
John J. Kirby	70,144(6)	*
R. Clayton Fletcher	165,211(7)	*
Bryant D. Lim	70,633(8)	*
Jonathan Yingling	104,421(9)	*
Cristina Csimma	7,590(10)	*
Michael R. Dougherty	11,709(11)	*
James A. Geraghty	162,119(12)	*
Mark Goldberg	44,375(13)	*
Maxine Gowen	26,500(14)	*
Howard Pien	27,842(15)	*
Carol A. Schafer	29,959(16)	*
All current directors and executive officers as a group (12 individuals)	1,088,264(17)	3.5%

* Denotes less than 1% beneficial owner.

(1) Except as otherwise noted, the address for each person listed above is c/o Idera Pharmaceuticals, Inc., 505 Eagleview Boulevard, Suite 212, Exton, PA 19341.

(2) Based on the Schedule 13G filed with the SEC on September 6, 2019 by Baker Bros. Advisors LP, but excluding the options that have since expired.

The number of shares beneficially owned does not include the following: (i) (a) 494,941 shares of common stock issuable upon exercise of warrants to purchase common stock and (b) 196,200 shares of common stock issuable upon conversion of Series B1 preferred stock owned by 667, L.P. ("667"), and (ii) (a) 4,582,271 shares of common stock issuable upon exercise of warrants to purchase common stock and (b) 2,172,200 shares of common stock issuable upon conversion of Series B1 preferred stock owned by Baker Brothers Life Sciences, L.P. ("BBLS" and, together with 667, the "Funds"). Under the terms of the warrants and Series B1 preferred stock issued to the

Funds, the Funds are not permitted to exercise or convert such securities to the extent that such exercise or conversion would result in the beneficial ownership of more than 4.99% of the number of shares of our common stock issued and outstanding immediately after giving effect to the issuance of shares of common stock issuable upon exercise or conversion of such securities. The Funds have the right to increase this beneficial ownership limitation in their discretion on 61 days' prior written notice to us, provided that in no event are the Funds permitted to exercise or convert such securities to the extent that such exercise or conversion would result in the beneficial ownership of more than 19.99%, in the aggregate, of the number of shares of our common stock issued and outstanding or the combined voting power of our securities outstanding immediately after giving effect to the issuance of shares of common stock issuable upon exercise or conversion of the securities.

- (3) Based on Amendment No. 5 to Schedule D filed with the SEC on July 25, 2019 by Pillar Pharmaceuticals I, L.P. ("Pillar I"), a Form 3 filed with the SEC on August 5, 2019 by Pillar, and Form 4's filed with the SEC on November 8, 2019 and February 26, 2020 by Pillar, the reported beneficial ownership amount consists of (i) 36,100 shares of common stock held by Pillar I, (ii) 15,820 shares of common stock held by Pillar Pharmaceuticals II, L.P. ("Pillar II"), (iii) 27,248 shares of common stock held by Pillar Pharmaceuticals III, L.P. ("Pillar III"), (iv) 1,000 shares of common stock held by Pharmaceuticals IV, L.P. ("Pillar IV"), (v) 17,750 shares of common stock held by Pillar Pharmaceuticals V, L.P. ("Pillar V"), (vi) 1,392,259 shares of common stock held by Pillar Pharmaceuticals 6, L.P. ("Pillar 6"), (vii) 1,684,494 shares of commons stock held by Pillar Partners Foundation, L.P. ("Pillar Foundation"), (viii) 39,849 shares of common stock (including exercisable options within 60 days of March 24, 2020) held by Mr. Youssef El Zein, and (ix) 39,922 shares of common stock held by Mr. Abude Umari. Pillar I, Pillar II, Pillar III, Pillar IV, Pillar V, Pillar 6, Pillar Foundation and Pillar Invest Corporation ("Pillar GP") expressly disclaim beneficial ownership of any shares of common stock held directly by Messrs. Umari and El Zein, and Messrs. Umari and El Zein expressly disclaim beneficial ownership of any shares of common stock held directly by Pillar I, Pillar II, Pillar III, Pillar IV, Pillar V, Pillar 6, Pillar Foundation and indirectly by Pillar GP. Pillar has sole dispositive power and sole voting power over all shares beneficially owned.
- (4) Based on Amendment No. 1 to Schedule 13G filed with the SEC on February 2, 2020 by Castellina Ventures Ltd. ("Castellina"). The Ballaison Trust ("Ballaison"), a trust established under the laws of New Zealand whose principal business address and principal office address is 14, rue de la Corratierie, PO Box 5209, CH-1211 Geneva 11, is the sole shareholder of Castellina and may be deemed a beneficial owner. Edward Martin-Du Pan and Yves Bruderlein are the trustees of Ballaison. Castellina reported that it had sole voting power and sole dispositive power over all shares beneficially owned.
- (5) Includes 410,935 shares of common stock subject to outstanding stock options that are exercisable within 60 days after March 24, 2020.
- (6) Includes 61,395 shares of common stock subject to outstanding stock options that are exercisable within 60 days after March 24, 2020.
- (7) Includes of 162,301 shares of common stock subject to outstanding stock options that are exercisable within 60 days after March 24, 2020.
- (8) Includes of 62,968 shares of common stock subject to outstanding stock options that are exercisable within 60 days after March 24, 2020.
- (9) Includes 101,638 shares of common stock subject to outstanding stock options that are exercisable within 60 days after March 24, 2020.

- (10) Consists of 7,590 shares of common stock subject to outstanding stock options that are exercisable within 60 days after March 24, 2020.
- (11) Includes of 7,590 shares of common stock subject to outstanding stock options that are exercisable within 60 days after March 24, 2020.
- (12) Includes of 96,686 shares of common stock subject to outstanding stock options that are exercisable within 60 days after March 24, 2020.
- (13) Includes of 34,375 shares of common stock subject to outstanding stock options that are exercisable within 60 days after March 24, 2020.
- (14) Includes 25,625 shares of common stock subject to outstanding stock options that are exercisable within 60 days after March 24, 2020, and 875 shares of common stock held in the name Brian Macdonald for Maxine Gowen Trust, for which Dr. Gowen is a beneficiary and trustee.
- (15) Includes of 11,442 shares of common stock subject to outstanding stock options that are exercisable within 60 days after March 24, 2020.
- (16) Includes of 9,516 shares of common stock subject to outstanding stock options that are exercisable within 60 days after March 24, 2020.
- (17) Includes 890,423 shares of common stock subject to outstanding stock options held by the directors and executive officers as a group that are exercisable within 60 days after March 24, 2020.

EXECUTIVE COMPENSATION

Compensation Discussion and Analysis

This Compensation Discussion and Analysis ("CD&A") should be read in conjunction with the compensation tables and narratives that immediately follow this section.

Overview

We are a development-stage biotech company focused on the acquisition, development, and ultimate commercialization of drug candidates for both oncology and rare disease indications characterized by small, well-defined patient populations with serious unmet needs. As such, we operate in an environment that is very competitive from a business perspective and for talent. We see that having a competitive compensation program is one element of our employee value proposition that allows us to attract and retain the resources we need to drive our business success.

Purpose

The purpose of this CD&A is to provide our stockholders with an overview and understanding of the philosophy, objectives, process, components, decision making, and additional aspects of our 2019 executive compensation program. This analysis focuses on the compensation paid to our named executive officers ("NEOs"):

- Vincent J. Milano, President and Chief Executive Officer,
- John J. Kirby, Senior Vice President and Chief Financial Officer(1)
- R. Clayton Fletcher, Senior Vice President of Business Development and Strategy
- Bryant D. Lim, Senior Vice President, General Counsel and Corporate Secretary
- Jonathan Yingling, Former Senior Vice President and Chief Scientific Officer(2)

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- (1) Mr. Kirby was named our Senior Vice President and Chief Financial Officer effective July 1, 2019. Previously, Mr. Kirby served as our Vice President of Finance and as our Principal Financial Officer and Principal Accounting Officer. Mr. Kirby acted as and performed the functions of our principal financial officer for the entirety of 2019, irrespective of changes to his officer title.
 - (2) Dr. Yingling served as our Senior Vice President and Chief Scientific Officer for the entirety of fiscal 2019. Effective as of January 31, 2020, Dr. Yingling resigned from such position.

Business Achievements

Our executive compensation program is designed to, among other goals, align executive compensation with the achievement of measurable corporate objectives. In 2019, the Company achieved strong results against its objectives, highlighted by the following:

- Continued progress of tilsotolimod toward its first potential registration in anti-PD-1 refractory melanoma;
- Expanding the potential of tilsotolimod beyond melanoma; and
- Enhancing our financial position.

Further detail regarding our performance against 2019 goals can be found in the section "Annual Cash Performance Bonus."

Key Compensation Decisions and Actions

Our compensation committee took several actions in 2019, considering our compensation philosophy and objectives, the needs and performance of our Company, individual performance, and other factors such as market data and industry best practices.

- **Base Salary.** The compensation committee reviewed base salaries of our NEOs in January 2019. No adjustments were made to the salaries of Mr. Fletcher, Mr. Milano, and Dr. Yingling, as they were determined to be market competitive during our benchmark analysis. Mr. Lim received a salary adjustment to maintain reasonable positioning relative to our peer companies. Mr. Kirby received no salary increase in January 2019, since his salary had been adjusted in October 2018 to reflect his assumption of additional responsibilities. Mr. Kirby's salary was adjusted, in alignment with benchmark data from our peer companies, when he was promoted to Chief Financial Officer in July 2019. Further detail regarding our salary review and decision-making process is provided in the section "Base Salary."
- **Annual Cash Performance Bonus.** In January 2019, the compensation committee approved corporate goals as part of our 2019 bonus program. The corporate goals consisted of three primary corporate objectives, each with its own weighting to reflect their importance to our business. To the extent goals are partially met or exceeded, the compensation committee may ascribe a partial achievement or overachievement percentage to each goal, as applicable. The compensation committee also reviews individual performance to determine whether the potential bonus should be increased or decreased. In January 2020, the compensation committee reviewed our achievements against our 2019 corporate objectives and agreed to attribute a corporate performance score of 105%. Further detail relating to this program is provided in the section "Annual Cash Performance Bonus."
- **Long-term Equity Incentive Awards.** In January 2019, the compensation committee approved the grant of the 1st tranche of the biannual option awards and an award of restricted stock units to our NEOs. Additionally, in July 2019, the compensation committee approved the grant of the 2nd tranche of biannual option awards. Further detail relating to our stock incentive program is provided in the section "Long Term Equity Compensation."

The compensation committee again reviewed base salaries of our NEOs in January 2020. No adjustments were made to the salaries of any of our NEOs as they were determined to be market competitive during our benchmark analysis.

As it relates to Mr. Milano's 2020 base salary, the Company entered into an amendment to Mr. Milano's employment agreement in January 2020. This amendment was recommended by Mr. Milano as a way for the Company to conserve cash during 2020 and subsequently approved by the board. Pursuant to this amendment, Mr. Milano's annual base salary of \$600,000 shall be payable as follows: (i) for the period from January 1, 2020 to the January 10, 2020, \$18,182 was payable in cash; and (ii) for the period immediately following the January 10, 2020 to December 31, 2020, an additional \$6,600 shall be payable in cash and the balance of his 2020 salary, approximately \$575,218, shall be payable in the form of a restricted stock unit grant to be granted to Mr. Milano on December 18, 2020.

Compensation Philosophy and Objectives

Our general executive compensation philosophy has been established by our compensation committee, which acts pursuant to authority delegated to it by our board and as set forth its charter. Our compensation committee is comprised solely of independent directors as defined by applicable rules and regulations of Nasdaq and the SEC. See page 13 for further detail regarding the composition,

independence, and responsibilities of our compensation committee. Our executive compensation program is designed to achieve the following broad goals:

- attract, retain and motivate the best possible executive talent;
- ensure executive compensation is aligned with our corporate strategies and business objectives, including our short-term operating goals and longer-term strategic objectives;
- promote the achievement of key strategic and financial performance measures by linking short- and long-term cash and equity incentives to the achievement of measurable corporate and individual performance goals; and
- align executives' incentives with the creation of stockholder value.

To achieve these objectives, the compensation committee:

- sets short- and long-term compensation at levels the compensation committee believes are competitive with those of other companies in our industry and our region that compete with us for executive talent;
- conditions a substantial portion of each executive officer's overall cash compensation on the achievement of key strategic, financial, research, and operational goals such as clinical trial and regulatory progress, intellectual property portfolio development, establishment and maintenance of key strategic relationships, and exploration of business development opportunities, as well as our financial and operational performance; and
- provides a portion of our executive compensation in the form of equity awards that vest over time from the date of grant of the option awards and from the time of achievement of performance milestones when applicable, which we believe helps to retain our executives and align their interests with those of our stockholders by allowing them to participate in the longer term success of our Company as reflected in stock price appreciation.

Advisory Vote on Executive Compensation

We conducted an advisory vote on executive compensation, commonly referred to as a "say-on-pay" proposal, at our 2019 Annual Meeting of Stockholders. While this vote was not binding on us, we value the opinions of our stockholders and, to the extent there is any significant vote against the compensation of our named executive officers in the future, we will consider our stockholders' concerns and our board and compensation committee will evaluate whether any actions are necessary to address those concerns.

At our 2019 Annual Meeting of Stockholders, approximately 95% of the votes cast on the advisory vote on executive compensation approved the compensation paid to our named executive officers as disclosed in the proxy statement for that meeting. The board of directors and compensation committee considered the results of this advisory vote, together with the other factors and data, in determining executive compensation decisions and will continue to consider the outcome of our say-on-pay votes when making future compensation decisions for our NEOs.

Executive Compensation Process

Role of Our Compensation Committee and Our Chief Executive Officer

In order to accomplish its objectives consistent with its philosophy for executive compensation and determine compensation for our named executive officers, our compensation committee reviews competitive information on executive compensation practices from peer companies as well as an

assessment of overall corporate performance and individual performance. In connection therewith, our compensation committee typically takes the following actions annually:

- reviews chief executive officer performance;
- seeks input from our chief executive officer on the performance of other NEOs;
- reviews all components of our executive compensation program, including base salary, cash bonus targets and awards, equity compensation, and the estimated payout obligations under severance and change in control scenarios;
- considers historic compensation and amounts realizable from prior awards;
- consults with its independent compensation consultant;
- holds executive sessions (without our management present);
- reviews information regarding the performance and executive compensation of its peer companies; and
- reviews the outcomes from the foregoing with the board of directors.

Our chief executive officer does not submit an assessment of his own performance and does not participate in the portion of the meeting where his compensation is determined. Our compensation committee reviews and approves, or recommends for approval by the board, the compensation of our NEOs, including our chief executive officer.

Under our annual performance review program, annual performance goals are determined for our Company as a whole and for each individual NEO.

- **Annual corporate goals** are proposed by management and approved by the board of directors. These corporate goals target the achievement of specific research, clinical, operational, and financial milestones. The compensation committee determines how the components of our annual corporate goals will contribute to the overall performance evaluation.
- **Annual individual goals** focus on contributions that facilitate the achievement of our corporate goals. Individual goals are proposed at the start of each year by each NEO and approved by the chief executive officer and, as appropriate, the compensation committee. Typically, the compensation committee sets the chief executive officer's goals and reviews and discusses with the chief executive officer the goals for the other NEOs. The individual performance goals of each NEO consist primarily of the key objectives and goals from our annual business plan that relate to the functional area for which such NEO is responsible. The individual performance goals for the chief executive officer are largely coextensive with the corporate goals.

At the end of each year, the compensation committee evaluates corporate and individual performance.

In assessing corporate performance, the compensation committee evaluates corporate performance relative to the approved corporate goals for the applicable year, as well as other aspects of corporate performance, including progress and achievement of milestones outside of the corporate goals.

The compensation committee evaluates individual performance with respect to the areas that fall within each NEO's responsibility. In doing so, the compensation committee relies on the chief executive officer's evaluation of the other NEOs. The chief executive officer prepares evaluations of the other NEOs, which includes comparing such individual's performance to his or her individual performance goals. The chief executive officer recommends annual executive salary increases, annual stock option awards and bonuses, if any, for the other NEOs; the compensation committee then reviews and approves, as appropriate, the chief executive officer's recommendations. In the case of the chief

executive officer, the compensation committee independently conducts his individual performance evaluation and determines his compensation accordingly.

During this process, the compensation committee consults with its independent compensation consultant. In connection with the compensation committee's annual performance and compensation review in the fourth quarter of each year, the independent compensation consultant provides the compensation committee with a blend of the data from the peer group (identified below for 2018) and relevant compensation survey data from the Radford Global Life Sciences Survey. We refer to this blended data as the "market compensation data."

For all NEOs, annual base salary increases, if any, are awarded during the first quarter following the end of the fiscal year. Annual stock option awards and bonuses, if any, are granted as determined by the compensation committee. Annual bonuses are typically granted in the first quarter of the fiscal year, while annual stock option awards are given in two biannual tranches, typically in the first and third quarters of the fiscal year.

Role of the Compensation Committee's Independent Consultant

In the fourth quarter of 2018, our compensation committee engaged Pearl Meyer & Partners, LLC ("Pearl Meyer") in connection with our 2019 annual compensation assessment to review our executive compensation practices and to provide the compensation committee with an assessment of our compensation program against competitive market data. See "*Use of Market Compensation Data*" below for a discussion of the competitive market compensation data compiled by Pearl Meyer. Based on this assessment, Pearl Meyer made recommendations to our compensation committee regarding the amount and form of executive officer compensation, including the ratio of cash to equity compensation and "at-risk" compensation. Pearl Meyer did not provide any services to our Company during 2019 other than pursuant to their respective engagement by the compensation committee, which was limited to aforementioned assessment of our executive officer compensation program.

Our compensation committee analyzed whether the engagement of Pearl Meyer as our compensation consultant raised any conflict of interest, taking into consideration the following factors: (a) the provision of other services to us by Pearl Meyer; (b) the amount of fees received from us by Pearl Meyer, as a percentage of the total revenue of Pearl Meyer; (c) Pearl Meyer's policies and procedures that are designed to prevent conflicts of interest; (d) any business or personal relationship with Pearl Meyer or the individual advisors employed by Pearl Meyer and a member of the compensation committee or any executive officer; and (e) any shares of our stock owned by Pearl Meyer or the individual advisors employed by Pearl Meyer. Our compensation committee determined, based on its analysis of the above factors, that the work of Pearl Meyer and the individual compensation advisors employed by Pearl Meyer as compensation consultants has not created any conflict of interest. Accordingly, the compensation committee determined that Pearl Meyer is independent. Going forward, the compensation committee intends to assess the independence of any of our compensation advisers by reference to the foregoing factors, consistent with applicable rules and regulations of Nasdaq and the SEC.

Benchmarking: Use of Market Compensation Data

In making compensation decisions, our compensation committee reviewed competitive market compensation data compiled by Pearl Meyer. As part of its engagement, Pearl Meyer worked with the compensation committee in the fourth quarter of 2018 to create a peer group of publicly traded companies to be used in connection with our 2019 compensation decisions, including stock options granted during 2019, fiscal year 2019 salary adjustments and fiscal year 2019 target bonus percentages. In selecting this peer group, the compensation committee and Pearl Meyer generally targeted

mid- to late-development stage companies in the Pharmaceuticals, Biotechnology and Life Sciences sectors that generally met the following screening criteria:

- **Company Size:** revenue less than or equal to \$150M; operating expense less than or equal to four times our operating expense (i.e., less than or equal to \$220M); employees fewer than 200;
- **Business Operations:** companies with Phase 2 or Phase 3 assets focused on cancer/oncology/immune-oncology, and with no or few other areas of research and development; and
- **Other:** exclude subsidiaries; companies with business challenges; companies having market valuations below \$100M; and companies that have recently conducted an initial public offering.

The following table lists the companies included in the 2018 peer group used in connection with our 2019 compensation decisions referred to above:

Aeglea BioTherapeutics, Inc.	GTx, Inc.	Spring Bank Pharmaceuticals, Inc.
Bellicum Pharmaceuticals, Inc.	Inovio Pharmaceuticals, Inc.	Stemline Therapeutics, Inc.
Dynavax Technologies Corp.	NewLink Genetics Corporation	Syndax Pharmaceuticals, Inc.
Endocyte, Inc.	Selecta Biosciences, Inc.	Verastem, Inc.
Galectin Therapeutics, Inc.	Sesen Bio, Inc.	ZIOPHARM Oncology, Inc.

The foregoing peer group companies were recommended by Pearl Meyer and approved by our compensation committee because they have similar business profiles to ours considering number of employees, market value and stage of development. Additionally, while there were no quantitative changes to the screening criteria used for determining the 2018 peer group used for 2019 compensation decisions, as compared to the determination of the 2017 peer group used for 2018 compensation decisions, we did narrow the areas of business focus to only cancer/oncology/immune-oncology to reflect our pipeline focus as of the end of 2018. Certain companies were excluded from or added to the 2018 peer group, primarily due to this factor and/or application of our screening criteria (e.g., quantitative metrics and market capitalization).

Our compensation committee intends that if we achieve our corporate goals and the executive performs at the level expected, the executive should have the opportunity to receive compensation that is competitive with industry norms. Accordingly, our compensation committee generally targets overall compensation for NEOs towards the 50th percentile of the market data. However, the compensation committee does not apply those targets formulaically and allows for NEOs to be positioned at different percentiles based each individual NEO's experience, current and future performance levels, and changes in duties and responsibilities.

Components of Executive Compensation

The primary elements of our executive compensation program are:

- base salary;
- annual cash bonuses;
- long-term equity awards (i.e., stock option and restricted stock awards); and
- severance and change in control benefits.

The value of our variable, performance-based compensation is allocated between short-term compensation in the form of a cash bonus and long-term compensation in the form of equity awards that vest over time from the date of grant of the award or from the time of achievement of performance milestones. The annual cash bonus is intended to provide an incentive to our NEOs to achieve short-term operational objectives, while equity awards are intended to incentivize our NEOs to achieve longer-term strategic business goals, which should ultimately lead to higher stock prices and

increased stockholder value. We do not have any formal or informal policy or target for allocating compensation between long-term and short-term compensation, between cash and non-cash compensation, or among the different forms of non-cash compensation. Instead, the compensation committee, after reviewing industry information, including the compensation practices of our peer companies, and our cash resources, determines subjectively what it believes to be the appropriate level and mix of the various compensation components.

We do not have any defined benefit pension plans or non-qualified deferred compensation plans.

We are party to employment agreements and employment offer letters with each of our NEOs. Employment agreements and employment offer letters with our NEOs are described below under the caption "Employment Agreements with our NEOs."

Base Salary

In establishing base salaries for our named executive officers, our compensation committee typically:

- reviews the market compensation data provided by the independent compensation consultant;
- considers historic salary levels of the NEO and the nature of the NEO's responsibilities;
- compares each NEO's base salary with the salaries of our other NEOs; and
- considers the NEO's experience, performance and contributions.

The compensation committee also typically considers the challenges involved in hiring and retaining executive talent in our industry and region. In assessing the NEO's performance, the compensation committee considers his or her role in the achievement of the annual corporate goals, as well as, in the case of our NEOs other than our chief executive officer, the performance evaluation prepared by our chief executive officer with respect to such NEO. The chief executive officer's evaluation provides the compensation committee insight as to whether each individual NEO's performance was generally consistent with our expectations.

As part of our 2018 annual performance and compensation review, the compensation committee approved annual base salaries for our executive officers for 2019. In setting these annual base salaries, the compensation committee reviewed the 2018 market compensation data presented by Pearl Meyer. Similarly, as part of our December 2019 annual performance and compensation review, the compensation committee reviewed the 2019 market compensation data and approved annual base salaries for our executive officers for 2020. In each of the 2018 and 2019 reviews, after considering each executive's current salary, performance, and experience in the context of the market compensation data as well as relative to one another, the compensation committee approved the following base salaries:

<u>Executive</u>	<u>2018</u>	<u>2019</u>	<u>% Increase</u>	<u>2020</u>	<u>% Increase</u>
	<u>Base Salary</u>	<u>Base Salary</u>		<u>Base Salary</u>	
Mr. Milano (1)	\$ 600,000	\$ 600,000	0.0	\$ 600,000	0.0
Mr. Kirby (2)	\$ 280,000	\$ 336,000	20.0	\$ 336,000	0.0
Mr. Fletcher	\$ 400,000	\$ 400,000	0.0	\$ 400,000	0.0
Mr. Lim	\$ 330,000	\$ 336,000	1.8	\$ 336,000	0.0
Dr. Yingling	\$ 400,000	\$ 400,000	0.0	\$ 400,000	0.0

- (1) See additional information regarding the payment of Mr. Milano's 2020 annual salary below under the caption "Employment Agreements with our NEOs".
- (2) Mr. Kirby was appointed to Senior Vice President and Chief Financial Officer effective July 1, 2019. In connection therewith, Mr. Kirby's annual base salary was increased from \$280,000 to \$336,000.

Annual Cash Performance Bonus

The annual cash performance bonus provides an opportunity for additional income to NEOs if pre-established annual performance goals are attained, which focuses our NEOs on key annual objectives. The compensation committee generally structures cash bonuses by linking them to the achievement of the annual corporate goals, corporate performance outside of the corporate goals (e.g. an unexpected opportunistic business development deal would be factored subjectively as an adjustment to the score that the compensation committee derived from evaluation of the corporate goals), and individual performance. The amount of the bonus paid, if any, varies among the NEOs depending on individual performance and their contribution to the achievement of our annual corporate goals and corporate performance generally. The compensation committee reviews and assesses corporate goals and NEO individual performance and considers the reasons why specific goals were or were not achieved. While achievement of the corporate goals is given substantial weight in connection with the determination of annual bonuses, the compensation committee also factors in an evaluation of each NEO's individual performance in relation to his or her individual performance goals and may exercise discretion in its determinations. Additionally, the compensation committee considers the following subjective criteria:

- leadership;
- management;
- judgment and decision-making skills;
- results orientation; and
- communication.

The annual cash performance bonuses are based on a target percentage of each NEO's salary. In determining the target bonus percentages for each of our NEOs, the compensation committee concluded that the target bonus percentages should be competitive with the 50th percentile of the market compensation data and that the target bonus percentage for each NEO, with the exception of our chief executive officer, be the same. The target bonus was established by the compensation committee for each NEO at the time of hire, with the exception of Mr. Fletcher, whose target bonus was adjusted in December 2015. Each year, the compensation committee reviews the individual bonus target percentages against the market data to ensure its competitiveness.

The following table sets forth the individual bonus target percentages for each of our NEOs for 2019 and 2020.

<u>Executive</u>	<u>Target Cash Bonus (% of Base Salary)</u>	
	<u>2019</u>	<u>2020</u>
Mr. Milano	50%	50%
Mr. Kirby(1)	40%	40%
Mr. Fletcher	40%	40%
Mr. Lim	40%	40%
Dr. Yingling(2)	40%	—

- (1) Mr. Kirby was appointed to Chief Financial Officer effective July 1, 2019. In connection therewith, Mr. Kirby's target cash bonus percentage was increased from 30% or 40%; the 2019 bonus was pro-rated.
- (2) Dr. Yingling resigned from the Company effective January 22, 2020. Accordingly, he is no longer eligible for a cash performance bonus for 2020.

Consistent with our Company-wide annual incentive plan applicable to all employees, including our NEOs, both a corporate performance score and individual performance score factored into the determination of each NEO's cash bonus award for 2019.

Under the terms of our incentive plan, the corporate performance score is based on the degree to which corporate performance objectives have been achieved. This score is determined by the compensation committee and may range from 0-125%. The individual performance score is based on:

- the degree to which individual performance objectives have been achieved;
- the competencies and behaviors demonstrated in achieving results;
- the technical skills required by the position; and
- the completion of the ongoing responsibilities required by the position.

Like the corporate performance score, the individual performance score may range from 0-125% and is approved by the compensation committee. The individual's actual award is then calculated as follows:



In setting corporate goals in the first quarter of 2019, the compensation committee agreed to group the business objectives into one of three primary categories, each of which would contribute toward the overall assessment of our corporate performance. In assessing our achievement of the 2019 corporate goals, and determining the corporate performance score, the compensation committee

considered the extent to which the Company achieved the business objectives in each of the categories, and assigned a score for each category, as summarized in the following table:

Primary Goals	Contribution toward Corporate Performance Score	Compensation Committee's Assessment of Performance (out of 100%)	Highlights of Performance on Key Objectives
Advance Tilsotolimod (IMO-2125) program through Phase 3 and beyond PD-1 refractory melanoma	70%	75%	<ul style="list-style-type: none"> • Exceeded enrollment targets for ILLUMINATE-301 study. • Entered into collaboration with AbbVie for evaluation of tilsotolimod in HNSCC. • Progressed ILLUMINATE-204 study toward database lock. • Completed enrollment in first phase of MSS-CRC cohort for ILLUMINATE-206 study. • Active due diligence on multiple strategic business development options.
Continue business development initiatives through rare disease exploration	15%	15%	<ul style="list-style-type: none"> • On target with respect to financial budget.
Enhance ability to be successful through relevant foundational objectives	15%	15%	<ul style="list-style-type: none"> • Out-licensed IMO-8400. • Established \$35 million financing vehicle with Lincoln Park Capital. • Closed private placement financing for initial \$10 million and potential for up to \$98 million in aggregate.

Based on these achievements and resulting category scores, the compensation committee approved a corporate performance score of 105%.

In assessing each NEO's individual performance score, the compensation committee determined:

- Mr. Milano's, our Chief Executive Officer, overall score was equivalent to the corporate performance score of 105%;
- Mr. Kirby's individual performance score, recognizing his achievement against his personal objectives and taking into consideration his promotion to chief financial officer, as well as his leadership contributions, was 100%. Using the broader corporate score of 105%, as noted above, this resulted in an overall bonus equal to 105% of his bonus target;
- Mr. Fletcher's individual performance score, recognizing his achievement against his personal objectives, including his role in business development along with his leadership contributions, was 100%, resulting in an overall bonus equal to 105% of his bonus target;
- Mr. Lim's individual performance score, recognizing his achievement against his personal objectives, including legal support to the ILLUMINATE program and corporate governance-related matters, along with his leadership contributions, was 110%. Using the broader corporate score of 105% as noted above, this resulted in an overall bonus equal to 116% of his bonus target; and

- Dr. Yingling's individual performance score, recognizing his achievement against his personal objectives, including his contributions to business development, and his leadership contributions, would be 100%, resulting in an overall bonus equal to 105% of his bonus target.

Long-Term Equity Compensation

Our equity award program is the primary vehicle for offering long-term incentives to our executive officers, including our NEOs. We believe that equity awards provide our executives with a strong link to our long-term performance, create an ownership culture and help to align the interests of our NEOs and with those of our stockholders. Equity grants are intended as both a reward for contributing to our long-term success and an incentive for future performance. Additionally, the vesting feature of our equity awards is intended to further our goal of executive retention by providing an incentive to our NEOs to remain in our employ during the vesting period. In determining the size of equity awards to our executives, our compensation committee considers:

- the achievement of our annual corporate goals;
- individual performance;
- the previous awards granted to each executive officer, including the exercise price of such previous awards;
- the recommendations of management;
- the market compensation data presented by the compensation committee's independent compensation consultant; and
- the combined components of the executive officer's compensation.

The compensation committee approves all equity awards to our NEOs. Our equity awards have historically been in the form of stock options. However, under the terms of our 2013 Stock Incentive Plan, as amended, we may grant equity restricted stock awards, stock appreciation rights, and restricted stock units. In January 2019, in connection with our annual equity award issuance, both stock options and restricted stock units were granted to all eligible employees, including our NEOs. This change was made in light of competitive market practices and as an additional means to promote retention in a challenging labor market, as well as in consideration of 2018 corporate performance and the Company's long-term stock price trend.

The compensation committee typically makes initial stock option awards to our NEOs upon commencement of their employment and annual stock option awards thereafter. Stock option awards to our NEOs after the initial stock option awards have typically been granted annually after the annual performance review. For 2019, this review occurred at the regularly scheduled meeting of the compensation committee held in the first quarter of 2019. Beginning in 2019, annual stock option awards for all employees, including our NEOs, are granted in two biannual tranches in order to increase the recognition and retention related aspect of the awards. In general, annual stock option grants vest with respect to 25% of the shares subject to the option on the first anniversary of the date of grant and with respect to the balance of the shares subject to the option, in 12 equal quarterly installments over the three-year period thereafter. The exercise price of stock options equals the fair market value of our common stock on the date of grant, which is typically equal to the closing price of our common stock on Nasdaq on the date of compensation committee approval except in the case of new-hire grants, which are approved in advance by the compensation committee and granted on the first day of employment.

In December 2018, as part of its annual executive compensation and performance review, the compensation committee reviewed the 2018 market compensation data regarding annual stock option grants and special restricted stock unit awards. In January 2019, the compensation committee approved

the grant of the 1st tranche of the biannual option awards and an award of restricted stock units to our NEOs. Additionally, in July 2019, the compensation committee approved the grant of the 2nd tranche of biannual option awards. The following table sets forth the number of options and restricted stock units granted to our NEOs in 2019:

Executive	Option Awards		Restricted Stock Units
	January 2019 (# options)	July 2019 (# options)	January 2019 (# units)
Mr. Milano	84,500	84,500	33,750
Mr. Kirby	25,600	25,600	10,250
Mr. Fletcher	45,500	45,500	18,100
Mr. Lim	45,500	45,500	18,100
Dr. Yingling	45,500	45,500	18,100

Benefits and Other Compensation

Broad-Based Benefits. We maintain broad-based benefits that are provided to all employees, including health and dental insurance, life and disability insurance, and a 401(k) plan. During 2019, we matched 100% of the employee contributions to our 401(k) plan up to a maximum of 5% of the participating employee's annual salary. Our NEOs are eligible to participate in all our employee benefit plans, in each case on the same basis as other employees and subject to any limitations in such plans. Each of our NEOs, except for Mr. Fletcher, contributed to our 401(k) plan and their contributions were matched by us.

Retirement Policy Regarding the Treatment of Equity Awards. Our board of directors has adopted a retirement policy to address the treatment of options in the event of an employee's retirement that applies to all employees, including all officers. For purposes of this policy, an employee will be deemed to have retired if (i) the employee terminates his or her employment with us, (ii) has been an employee of ours for more than 10 years and (iii) is older than 65 upon termination of employment. Under the policy, if an employee retires, then:

- all outstanding equity awards held by the employee will automatically vest in full; and
- the period during which the employee may exercise the options will be extended to the expiration of the term of the option under the applicable option agreement.

Our board adopted this policy for our employees in recognition of the importance of stock options to the compensation of employees and in order to provide each of our employees with the opportunity to get the full benefit of the options held by the employee in the event of his or her retirement after making 10 years of contributions to our Company.

Relocation Expenses. We occasionally pay relocation expenses for newly-hired executive officers who we require to relocate as a condition to their employment offer. We also occasionally pay local housing expenses and travel costs for executive officers who maintain a primary residence outside of a reasonable daily commuting range to our headquarters. We believe that these are typical benefits offered by comparable companies to executive officers who are asked to relocate and that we would be at a competitive disadvantage in trying to attract executive officers who would need to relocate in order to work for us if we did not offer such assistance. We did not provide any relocation benefits to any of our NEOs in 2019.

ESPP. Our NEOs may also participate in our employee stock purchase plan (the "ESPP"), which is generally available to all employees who work over 20 hours per week, so long as they own less than 5% of our common stock, including for this purpose vested and unvested stock options. Mr. Kirby participated in the ESPP in 2019.

Perquisites. Apart from the discussed benefits, we do not provide our NEOs with perquisites.

Severance and Change in Control Benefits and Agreements with NEOs

We believe providing severance and/or change in control benefits as a component of our compensation structure can help us compete for executive talent and attract and retain highly talented executive officers whose contributions are critical to our long-term success. In that regard, we periodically review our severance and/or change in control practices. In 2017, after reviewing the practices of companies in general industry surveys published by Aon Reward Solutions and consultation with Pearl Meyer, we revised our severance and change in control benefits. Accordingly, on March 7, 2017, the board of directors approved a form of Severance and Change of Control Agreement (the "Form Severance/CIC Agreement"), which subsequently the Company entered into with each of our NEOs. The severance benefits terms contained in the Form Severance/CIC Agreements entered into with each of our NEOs are controlling and superseded the severance and change of control terms provided for under any NEO's pre-existing employment agreement or employment offer letter. We believe that our severance and change in control benefits are appropriate.

Severance and Change in Control Agreements

As discussed above, we have entered into the Form Severance/CIC Agreement with each of Messrs. Milano, Kirby, Fletcher and Lim, and Dr. Yingling.

The Form Severance/CIC Agreement provide that if we consummate a change of control (as defined in therein), we will employ the executive for a period of 24 months from the date of the consummation of the change of control. Pursuant to the Form Severance/CIC Agreement, during such period:

- (i) the executive's position and duties for the Company will be commensurate with the most significant of the duties and positions held by the executive during the 90-day period preceding the date of the consummation of the change of control;
- (ii) the executive's annual base salary will equal at least 12 times the highest monthly base salary paid to the executive during the 12 months prior to the date of the change of control;
- (iii) the executive will be entitled to an annual bonus equal to at least the greatest of (a) the average bonus paid to the executive in respect of the three years immediately preceding the year in which the change of control occurs, (b) the annual bonus paid for the year immediately preceding the year in which the change of control occurs and (c) 100% of the target bonus for (1) the year immediately preceding the year in which the change of control occurs, (2) the year in which the change of control occurs or (3) any year following the year in which the change of control occurs and prior to the then-current year, whichever is highest; and
- (iv) the executive will be entitled to certain other benefits as are consistent with the benefits paid to the executive during the year prior to the change of control.

The Form Severance/CIC Agreements also provide that if an executive is terminated without "cause" or resigns for "good reason" (as such terms are defined therein) in either case, within 24 months following a change of control, subject to the executive's timely execution and non-revocation of a general release of claims in a form provided by us and the executive's continued compliance with the invention, non-disclosure and non-competition agreement previously entered into in connection with the commencement of executive's employment, executives would receive a lump sum cash payment payable within 30 days after the date of termination equal to:

- (i) the executive's target bonus for the year of termination prorated for the portion of the year worked;

- (ii) 150% of the sum of (a) such executive's annual base salary for the year immediately preceding the year of termination and (b) the greatest of (1) the average bonus paid or earned and accrued, but unpaid to the executive in respect of the three years immediately preceding the year of termination, (2) the annual bonus paid for the year immediately preceding the year of termination and (3) the target bonus for the year of termination; and
- (iii) 150% of the Company's share of the annual premium for group medical and/or dental insurance coverage that was in place for the executive immediately prior to the date of termination.

In addition, all unvested options, restricted stock, restricted stock units, or stock appreciation rights held by the executive as of the date of termination will be immediately and automatically vested and/or exercisable in full as of the date of termination, and the executive will have the right to exercise any such options or stock appreciation rights for the longer of (A) the period of time provided for in the applicable equity award agreement or plan, or (B) the shorter of one year after the date of termination or the remaining term of the applicable equity award.

If the executive is terminated without "cause" or resigns for "good reason," prior to the date of a change of control, such executive will be entitled to the following under the Form Severance/CIC Agreement, subject to the executive's timely execution and non-revocation of a general release of claims in a form provided by us and the executive's continued compliance with the invention, non-disclosure and non-competition agreement previously entered into in connection with the commencement of executive's employment:

- (i) a lump sum cash payment payable within 30 days after the date of termination in an amount equal to the greater of (x) the average bonus paid or earned and accrued, but unpaid to the executive in respect of the three years immediately preceding the year of termination, and (y) the annual bonus paid for the year immediately preceding the year of termination prorated for the portion of the year worked;
- (ii) continued payment of the executive's base salary payable in accordance with our standard payroll practices over the one-year period following termination; and
- (iii) if the executive elects to continue receiving group medical and/or dental insurance under COBRA (to the extent the executive previously participated in such group insurance plans immediately prior to the date of termination), payment by us of our share of the premium for such coverage that we pay for active and similarly-situated employees who receive the same type of coverage for the one-year period following termination.

Employment Agreements with our NEOs

We have entered into employment agreements with our NEOs, all of which are at-will employees.

Vincent J. Milano

We are a party to an Employment Agreement, dated as of December 1, 2014, with Mr. Milano, our President and Chief Executive Officer (the "Milano Employment Agreement"). Under the Milano Employment Agreement, Mr. Milano is entitled to receive an annual base salary of \$600,000 or such higher amount as our compensation committee or our board of directors may determine. In addition, pursuant to the Milano Employment Agreement, Mr. Milano is eligible to receive an annual bonus of 50% of his base salary, subject to adjustment, based on the achievement of both individual and Company performance objectives as developed and determined by our board of directors.

Mr. Milano's severance and change in control benefits are governed by the Form Severance/CIC Agreement.

On January 10, 2020, as a means suggested by Mr. Milano to help conserve cash for the Company, we entered into an Amendment to Employment Agreement with Mr. Milano (the "Milano Employment Amendment" and, together with the Milano Employment Agreement, the "Milano Agreement"), amending the Milano Employment Agreement to specify the manner in which Mr. Milano will be paid his annual base salary for the 2020 fiscal year and to make other corresponding changes. Pursuant to the Milano Employment Amendment, Mr. Milano's annual base salary of \$600,000 shall be payable as follows: (i) for the period from January 1, 2020 to the January 10, 2020, \$18,182 was payable in cash; and (ii) for the period immediately following the January 10, 2020 to December 31, 2020, an additional \$6,600 (the "Cash Value") shall be payable in cash and \$575,218 (the "RSU Value" and together with the Cash Value, the "Post-Amendment Compensation") shall be payable in the form of a restricted stock unit grant to be granted to Mr. Milano on December 18, 2020, pursuant to our 2013 Stock Incentive Plan, as amended, and in accordance with the terms and conditions set forth in a restricted stock unit agreement to be entered into between Mr. Milano and us at the time of the grant.

John J. Kirby

We are a party to an Employment Offer Letter, dated October 15, 2015, with Mr. Kirby, our current Senior Vice President and Chief Financial Officer Finance (the "Kirby Employment Agreement"). Under the terms of the Kirby Employment Agreement, Mr. Kirby is entitled to receive an annual base salary of \$225,000 or such higher amount as our compensation committee or our board of directors may determine. In addition, under the Kirby Employment Agreement, Mr. Kirby is eligible to receive an annual bonus of 30% of his base salary, subject to adjustment, based on the achievement of both individual and Company performance objectives as established by our board of directors.

Mr. Kirby's severance and change in control benefits are governed by the Form Severance/CIC Agreement.

R. Clayton Fletcher

We are a party to an Employment Offer Letter, dated as of January 26, 2015, with Mr. Fletcher, our Senior Vice President of Business Development and Strategic Planning (the "Fletcher Employment Agreement"). Under the terms of the Fletcher Employment Agreement, Mr. Fletcher is entitled to receive an annual base salary of \$360,000 or such higher amount as our compensation committee or our board of directors may determine. In addition, under the employment letter, Mr. Fletcher is eligible to receive an annual bonus of 35% of his base salary, subject to adjustment, based on the achievement of both individual and Company performance objectives as established by our board of directors.

Mr. Fletcher's severance and change in control benefits are governed by the Form Severance/CIC Agreement.

Bryant D. Lim

We are a party to an Employment Offer Letter, dated as of August 20, 2018, with Mr. Lim, our Senior Vice President, General Counsel and Secretary (the "Lim Employment Agreement"). Under the terms of the Lim Employment Agreement, Mr. Lim is entitled to receive an annual base salary of \$330,000 or such higher amount as our compensation committee or our board of directors may determine. In addition, under the Lim Employment Agreement, Mr. Lim is eligible to receive an annual bonus of 40% of his base salary, subject to adjustment, based on the achievement of both individual and Company performance objectives as established by our board of directors.

Mr. Lim's severance and change in control benefits are governed by the Form Severance/CIC Agreement.

Jonathan Yingling, Ph.D.

Prior to his resignation on January 22, 2020, the terms of Dr. Yingling's, our former Chief Scientific Officer, were set forth in an Employment Offer Letter, dated February 2, 2017. The terms of Dr. Yingling's severance and change in control benefits were governed by the Form Severance/CIC Agreement. In connection with the Dr. Yingling's resignation, we entered into an Amendment to Severance and Change in Control Agreement with Dr. Yingling, dated as of January 27, 2020, amending the Form Severance/CIC Agreement (the "Yingling Amendment"). Under the Yingling Amendment, Dr. Yingling will provide certain consulting services to us for the one-year period following the termination of his employment and in exchange for such consulting services, (i) Dr. Yingling will be entitled to certain compensation and other benefits as set forth in the Form Severance/CIC Agreement, (ii) Dr. Yingling's equity awards issued under our 2013 Stock Incentive Plan, as amended, will continue to vest during the consulting period, and (iii) if a change of control occurs during the later of (A) the consulting period or (B) January 29, 2021, Dr. Yingling will be entitled to certain benefits as set forth in the Form Severance/CIC Agreement relating to immediate and automatic vesting and exercisability of equity awards and exercise period.

Indemnification Agreements

On March 7, 2017, the board of directors approved a form of Indemnification Agreement to be entered into between the Company and each of our directors and officers. Each of Messrs. Milano, Kirby, Fletcher and Lim and Dr. Yingling entered into an Indemnification Agreement with the Company. In general, the Indemnification Agreements provide that the Company will indemnify the director or officer to the fullest extent permitted by law for claims arising in his or her capacity as a director or officer of the Company or in connection with their service at our request for another corporation or entity. The Indemnification Agreements also provide for procedures that will apply in the event that a director or officer makes a claim for indemnification and establish certain presumptions that are favorable to the director or officer.

Formal Clawback Policy

In April 2015, ahead of any such requirement in the Dodd-Frank Wall Street Reform and Consumer Protection Act, our compensation committee adopted a formal clawback policy, which will apply in the event we are required to prepare an accounting restatement due to any material noncompliance with any financial reporting requirement under the U.S. federal securities laws. This policy requires us to use reasonable efforts to recover from any of our current or former executive officers who receive incentive-based compensation (including stock options awarded as compensation) during the three-year period preceding the date on which we are required to prepare an accounting restatement based on erroneous data, the excess of what would have been paid to such executive officer under the accounting restatement.

Compensation Committee Report

The compensation committee has reviewed and discussed the Compensation Discussion and Analysis required by Item 402(b) of Regulation S-K with our management. Based on this review and discussion, the compensation committee recommended to our board of directors that the Compensation Discussion and Analysis be included in this proxy statement.

By the compensation committee of the board of directors,

Maxine Gowen, Chair
Cristina Csimma
Howard Pien

Summary Compensation Table

The table below summarizes compensation paid to or earned by our named executive officers for 2019, 2018, and 2017.

Summary Compensation Table

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Stock Awards (\$)(1)	Option Awards (\$)(2)	Non-Equity Incentive Plan Compensation (\$)	All Other Compensation (\$)(3)	Total (\$)
Vincent J. Milano President and Chief Executive Officer	2019	600,000	—	105,975	279,160	315,000	37,082	1,337,217
	2018	600,000	—	—	998,081	150,000	33,863	1,781,944
	2017	600,000	—	—	296,634	270,000	31,106	1,197,740
John J. Kirby Senior Vice President, Chief Financial Officer(4)	2019	308,000	—	32,185	113,955	114,660	36,849	605,649
	2018	249,888	—	—	206,479	64,771	32,735	553,873
	2017	231,750	—	—	98,878	62,573	28,676	421,877
R. Clayton Fletcher Senior Vice President, Business Development and Strategy	2019	400,000	—	56,834	150,317	168,000	23,082	798,233
	2018	400,000	—	—	461,837	92,000	23,613	977,450
	2017	386,300	—	—	182,924	145,908	22,988	738,120
Bryant D. Lim Senior Vice President, General Counsel and Corporate Secretary(5)	2019	336,000	—	56,834	150,317	155,232	33,412	731,795
	2018	103,125	—	—	639,969	25,160	6,924	775,178
Jonathan Yingling Former Senior Vice President, Chief Scientific Officer(6)	2019	400,000	—	56,834	150,317	168,000	37,082	812,233
	2018	400,000	—	—	461,837	80,000	33,926	975,763
	2017	348,542	—	—	577,782	144,296	31,277	1,101,897

- (1) Represents the aggregate grant date fair value of time-based restricted stock units ("RSUs") granted to each of the named executive officers as computed in accordance with ASC 718. The grant date fair value of RSUs is determined using the fair value of our common stock on the date of grant. The equity incentive awards included in this column were all awarded under the Company's 2013 Equity Incentive, as amended and restated.
- (2) Represents the aggregate grant date fair value of options granted to each of the named executive officers as computed in accordance with ASC 718. These amounts do not represent the actual amounts paid to or realized by the named executive officers. See Note 12 to the financial statements included in our annual report on Form 10-K for the year ended December 31, 2019 regarding assumptions we made in determining the fair value of option awards. The equity incentive awards included in this column were all awarded under the Company's 2013 Equity Incentive, as amended and restated.
- (3) "All Other Compensation" for 2019 for each of the named executive officers includes the following:

	Premiums paid by us for all insurance plans (\$)	Company match on 401(k) (\$)	Severance (\$)	Total (\$)
Mr. Milano	23,082	14,000	—	37,082
Mr. Kirby	22,849	14,000	—	36,849
Mr. Fletcher	23,082	—	—	23,082
Mr. Lim	22,912	10,500	—	33,412
Dr. Yingling	23,082	14,000	—	37,082

- (4) Upon Mr. Kirby's appointment as our principal financial officer and principal accounting officer effective October 31, 2018, Mr. Kirby's annual base salary was increased from \$239,850 to \$280,000. Upon Mr. Kirby's appointment as our Chief Financial Officer effective July 1, 2019, Mr. Kirby's annual base salary was increased from \$280,000 to \$336,000.
- (5) Mr. Lim joined our Company as Senior Vice President, General Counsel and Secretary effective September 10, 2018.

- (6) Dr. Yingling joined our Company as Senior Vice President, Early Development effective as of February 6, 2017 and has served as our Chief Scientific Officer since January 1, 2018 until his resignation in January 2020.

Grants of Plan-Based Awards

The following table sets forth information regarding grants of plan-based awards to our named executive officers during 2019.

Grants of Plan-Based Awards for Fiscal Year 2019

Name	Grant Date	Estimated Possible Payouts Under Non-Equity Incentive Plan Awards			All Other Stock Awards: Number of Shares of Stock or Units (#)(1)	All Other Option Awards: Number of Securities Underlying Options (#)(2)	Exercise or Base Securities Underlying Awards (\$/Sh)	Grant Date Fair Value of Awards (\$)(3)
		Threshold (\$)	Target (\$)	Maximum (\$)				
Vincent J. Milano	N/A	—	300,000	468,750	—	—	—	
	1/3/2019(3)				33,750	—	105,975	
	1/3/2019(3)				—	84,500	154,402	
	7/9/2019(3)				—	84,500	124,758	
John J. Kirby(4)	N/A	—	109,200	170,625	—	—	—	
	1/3/2019(3)				10,250	—	32,185	
	1/3/2019(3)				—	25,600	46,777	
	7/9/2019(3)				—	45,500	67,178	
R. Clayton Fletcher	N/A	—	170,000	265,625	—	—	—	
	1/3/2019(3)				18,100	—	56,834	
	1/3/2019(3)				—	45,500	83,139	
	7/9/2019(3)				—	45,500	67,178	
Bryant D. Lim	N/A	—	74,966	117,135	—	—	—	
	1/3/2019(3)				18,100	—	56,834	
	1/3/2019(3)				—	45,500	83,139	
	7/9/2019(3)				—	45,500	67,178	
Jonathan Yingling	N/A	—	160,000	250,000	—	—	—	
	1/3/2019(3)				18,100	—	56,834	
	1/3/2019(3)				—	45,500	83,139	
	7/9/2019(3)				—	45,500	67,178	

- (1) The term of these options is ten years. The vesting of these stock options is time-based. See "Compensation Discussion and Analysis—Components of Executive Compensation—Long-Term Equity Compensation" for a full description of the vesting terms for these options. See "Employment Agreements with our NEOs" for further information about acceleration of vesting of options in the event of the termination of employment and/or a change of control.
- (2) Represents the aggregate grant date fair value of option awards made to the named executive officers in 2017 as computed in accordance with ASC 718. These amounts do not represent the actual amounts paid to or realized by the named executive officers during 2018. See Note 12 to the financial statements included in our annual report on Form 10-K for the year ended December 31, 2019 regarding assumptions we made in determining the fair value of option awards.
- (3) Granted pursuant to our 2013 Stock Incentive Plan.
- (4) The target and maximum amounts reported under "Estimated Possible Payouts Under Non-Equity Incentive Plan Awards" for Mr. Kirby are pro-rated for Mr. Kirby's promotion effective July 1, 2019.

Outstanding Equity Awards at Fiscal Year-End

The following table sets forth information regarding the outstanding stock options held by our named executive officers as of December 31, 2019. None of our named executive officers held shares of unvested restricted stock as of December 31, 2019.

Outstanding Equity Awards at Fiscal Year-End

Name	Option Awards				Stock Awards		
	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price (\$)	Option Expiration Date	Number of Units of Stock That Have Not Vested	Market Value of Shares or Units of Stock That Have Vested (\$)(1)	Stock Grant Date
Vincent J. Milano	250,000	—	24.96	12/1/2024			
	35,155	2,344(2)	23.04	1/6/2026			
	25,781	11,719(3)	12.72	1/4/2027			
	32,812	42,187(4)	17.92	1/3/2028			
	20,312	44,688(5)	7.39	8/13/2028			
	—	84,500(6)	3.14	1/3/2029			
	—	84,500(7)	2.52	7/9/2029			
				33,750	61,425	1/3/2019	
John J. Kirby	18,750	—	24.88	11/2/2025			
	10,546	703(2)	23.04	1/6/2026			
	8,593	3,906(3)	12.72	1/4/2027			
	7,382	9,492(4)	17.92	1/3/2028			
	3,125	6,875(5)	7.39	8/13/2028			
	—	25,600(6)	3.14	1/3/2029			
	—	45,500(7)	2.52	7/9/2029			
				18,100	32,942	1/3/2019	
R. Clayton Fletcher	75,000	—	37.36	1/26/2025			
	21,678	1,446(2)	23.04	1/6/2026			
	15,898	7,226(3)	12.72	1/4/2027			
	14,765	18,984(4)	17.92	1/3/2028			
	10,156	22,344(5)	7.39	8/13/2028			
	—	45,500(6)	3.14	1/3/2029			
	—	45,500(7)	2.52	7/9/2029			
				18,100	32,942	1/3/2019	
Bryant D. Lim	40,625	89,375(8)	9.29	9/10/2028			
	—	45,500(6)	3.14	1/3/2029			
	—	45,500(7)	2.52	7/9/2029			
				18,100	32,942	1/3/2019	
Jonathan Yingling	51,561	23,438(9)	12.40	2/6/2027			
	14,675	18,984(4)	17.92	1/3/2028			
	10,156	22,344(5)	7.39	8/13/2028			
	—	45,500(6)	3.14	1/3/2029			
	—	45,500(7)	2.52	7/9/2029			
				18,100	32,942	1/3/2019	

- (1) Market Value is calculated based on a price per share of \$1.82, which was the closing price of our common stock on December 31, 2019.
- (2) Represents unvested portion of stock option award that vested 25% on January 6, 2017 (first anniversary date following the January 6, 2016 grant date), with the remainder vesting in 12 equal quarterly installments thereafter (until January 6, 2020), provided the named executive officer is still employed with us on each vesting date.
- (3) Represents unvested portion of stock option award that vested 25% on January 4, 2018 (first anniversary date following the January 4, 2017 grant date), with the remainder vesting in 12 equal quarterly installments thereafter (until January 4, 2021), provided the named executive is still employed with us on each vesting date.
- (4) Represents unvested portion of stock option award that will vest 25% on the first anniversary date following the January 3, 2018 grant date, with the remainder vesting in 12 equal quarterly installments thereafter (until January 3, 2022), provided the named executive is still employed with us on each vesting date.

- (5) Represents unvested portion of stock option award that will vest 25% on the first anniversary date following the August 13, 2018 grant date, with the remainder vesting in 12 equal quarterly installments thereafter (until August 13, 2022), provided the named executive is still employed with us on each vesting date.
- (6) Represents unvested portion of stock option award that will vest 25% on the first anniversary date following the January 3, 2019 grant date, with the remainder vesting in 12 equal quarterly installments thereafter (until January 3, 2023), provided the named executive is still employed with us on each vesting date.
- (7) Represents unvested portion of stock option award that will vest 25% on the first anniversary date following the July 9, 2019 grant date, with the remainder vesting in 12 equal quarterly installments thereafter (until July 9, 2023), provided the named executive is still employed with us on each vesting date.
- (8) Represents unvested portion of stock option award that will vest 25% on the first anniversary date following the September 10, 2019 grant date, with the remainder vesting in 12 equal quarterly installments thereafter (until September 10, 2023), provided the named executive is still employed with us on each vesting date.
- (9) Represents unvested portion of stock option award that will vest 25% on the first anniversary date following the February 6, 2017 grant date, with the remainder vesting in 12 equal quarterly installments thereafter (until February 6, 2021), provided the named executive is still employed with us on each vesting date.

CEO Pay Ratio

The following is a reasonable estimate, prepared in accordance with applicable SEC rules, of the ratio of the annual total compensation of our CEO to the median of the annual total compensation of our other employees. We determined our median employee based on annualized 2019 base salary and annualized 2019 bonus awards for each of our 38 employees (excluding the CEO) as of December 31, 2019. The annual total compensation of our median employee (other than the CEO) for 2019 was \$278,816. As disclosed in the Summary Compensation Table included in this CD&A, our CEO's annual total compensation for 2019 was \$1,337,217. Based on the foregoing, the ratio of the 2019 annual total compensation of our CEO to the median of the annual total compensation of all other employees was 5 to 1. Given the different methodologies that various public companies will use to determine an estimate of their pay ratio, the estimated ratio reported above should not be used as a basis for comparison between companies.

Potential Payments Upon Termination or Change in Control

As discussed above, we entered into a Severance and Change of Control Agreement with each of Messrs. Milano, Kirby, Fletcher and Lim, and Dr. Yingling. These agreements are described above under the caption "Severance and Change in Control Benefits and Agreements with NEOs."

Termination of Employment Not In Connection With or Following a Change in Control

The following table sets forth the estimated potential benefits that our named executive officers would be entitled to receive upon their termination of employment with our Company (other than a termination in connection with or following a change in control of our Company) if the named executive officer's employment was terminated on December 31, 2019. This table represents estimates only and does not necessarily reflect the actual amounts that would be paid to our named executive

officers, which would only be known at the time that they become eligible for payment following their termination.

<u>Name</u>	<u>Cash Severance(1)</u> <u>(\$)</u>	<u>Perquisites/ Benefits(2)</u> <u>(\$)</u>	<u>Total</u> <u>(\$)</u>
Vincent J. Milano	915,000	24,497	939,497
John J. Kirby	450,660	24,497	475,157
R. Clayton Fletcher	568,000	24,497	592,497
Bryant D. Lim	491,232	24,497	515,729
Jonathan Yingling	568,000	24,497	592,497

- (1) Cash severance under the Form Severance/CIC Agreements would be payable to Messrs. Milano, Kirby, Fletcher and Lim and Dr. Yingling upon a termination of the executive's employment by the executive for "good reason" or by us without "cause", in either case, subject to the executive's timely execution and non-revocation of a general release of claims in a form provided by the Company and the executive's continued compliance with the invention, non-disclosure and non-competition agreement previously entered into in connection with the commencement of executive's employment. In such an event, executives would receive:
- (i) a lump sum cash payment payable within 30 days after the date of termination equal to the greater of (1) the average bonus paid or earned and accrued, but unpaid to the executive in respect of the three fiscal years immediately preceding the year of termination, and (2) the annual bonus paid for the year immediately preceding the year of termination (\$315,000 for Mr. Milano, \$114,660 for Mr. Kirby, \$168,000 for Mr. Fletcher, \$155,232 for Mr. Lim, and \$168,000 for Dr. Yingling); and
 - (ii) salary continuation payments at the executive's base salary on termination date for a period of 12 months paid in accordance with the Company's normal payroll practices and subject to applicable tax withholding (\$600,000 for Mr. Milano, \$336,000 for Mr. Kirby, \$400,000 for Mr. Fletcher, \$336,000 for Mr. Lim, and \$400,000 for Dr. Yingling).
- (2) Under the Form Severance/CIC Agreements, upon a qualifying termination by Messrs. Milano, Kirby, Fletcher and Lim and Dr. Yingling, to the extent the executives participated in our group medical/dental insurance immediately prior to the termination date, if executives elect to continue receiving group medical and/or dental insurance under the continuation coverage rules known as COBRA, the Company will pay the Company's share of the premium for such coverage that it pays for active and similarly-situated employees who receive the same type of coverage until the end of the period for which the Company is paying the salary continuation payments described within note (1)(ii), above.

The payments described in this column include an estimated value of the employer share of the premiums for our insurance plans as follows:

<u>Name</u>	<u>Medical Insurance</u> <u>Premiums (\$)</u>	<u>Dental Insurance</u> <u>Premiums (\$)</u>	<u>Total (\$)</u>
Vincent J. Milano	22,565	1,932	24,497
John J. Kirby	22,565	1,932	24,497
R. Clayton Fletcher	22,565	1,932	24,497
Bryant D. Lim	22,565	1,932	24,497
Jonathan Yingling	22,565	1,932	24,497

Termination of Employment In Connection With or Following a Change in Control

The following table sets forth the estimated potential benefits that our named executive officers would be entitled to receive upon their termination of employment with our Company in connection with or following a change in control of our Company if the named executive officer's employment was terminated on December 31, 2019. The amounts indicated below are estimates based on the material assumptions described in the notes to the table below, which may or may not actually occur. Some of these assumptions are based on information currently available and, as a result, the actual amounts, if any, that may become payable to a named executive officer may differ in material respects from the amounts set forth below. Furthermore, for purposes of calculating such amounts, we have assumed:

- a change of control date of December 31, 2019;
- each named executive officer's employment is terminated by us without "cause" or by the named executive officer for "good reason", in each case on the date of the change of control; and
- the value of the accelerated vesting of any equity award is calculated assuming a market price per share of our common stock equal to \$1.82 (which equals the closing price of a share of our common stock on the Nasdaq on December 31, 2019).

This table represents estimates only and does not necessarily reflect the actual amounts that would be paid to our named executive officers, which would only be known at the time that they become eligible for payment following their termination.

<u>Name</u>	<u>Cash Severance(1) (\$)</u>	<u>Equity(2) (\$)</u>	<u>Perquisites/ Benefits(3) (\$)</u>	<u>Total (\$)</u>
Vincent J. Milano	1,672,500	—	36,746	1,709,246
John J. Kirby	743,190	—	36,746	779,936
R. Clayton Fletcher	1,012,000	—	36,746	1,048,746
Bryant D. Lim	871,248	—	36,746	907,994
Jonathan Yingling	1,012,000	—	36,746	1,048,746

- (1) Cash severance under the Form Severance/CIC Agreements would be payable to Messrs. Milano, Kirby, Fletcher and Lim and Dr. Yingling upon a termination of the executive's employment by the executive for "good reason" or by us without "cause", in either case, within 24 months following a change of control (i.e., pursuant to a "double trigger" arrangement), subject to the executive's timely execution and non-revocation of a general release of claims in a form provided by the Company and the executive's continued compliance with the invention, non-disclosure and non-competition agreement previously entered into in connection with the commencement of executive's employment. In such an event, executives would receive a lump sum cash payment payable within 30 days after the date of termination equal to:
- (i) the executive's target bonus for the year of termination prorated for the portion of the year worked (\$300,000 for Mr. Milano, \$109,200 for Mr. Kirby, \$160,000 for Mr. Fletcher, \$134,400 for Mr. Lim, and \$160,000 for Dr. Yingling); and
- (ii) 150% of the sum of (a) such executive's annual base salary for the year immediately preceding the year of termination and (b) the greatest of (1) the average bonus paid or earned and accrued, but unpaid to the executive in respect of the three years immediately preceding the year of termination, (2) the annual bonus paid for the year immediately preceding the year of termination and (3) the target bonus for the year in which the termination occurs (\$1,372,500 for Mr. Milano, \$633,990 for Mr. Kirby, \$852,000 for Mr. Fletcher, \$736,848 for Mr. Lim, and \$852,000 for Dr. Yingling).

- (2) Amounts in this column quantify the intrinsic value of the unvested stock options held by the named executive officers that would accelerate upon a qualifying termination of employment in connection with a change in control based on the assumptions described above.

Under the Form Severance/CIC Agreements, upon a qualifying termination by Messrs. Milano, Kirby, Fletcher and Lim and Dr. Yingling within 24 months following a change of control, all outstanding stock options held by the executive as of the date of termination will be automatically vested in full as of the date of termination, and the executive will have the ability to exercise any such options until the three year anniversary of such executive's termination, but in no event past the remaining term of the applicable equity award.

- (3) Under the Form Severance/CIC Agreements, upon a qualifying termination by Messrs. Milano, Kirby, Fletcher and Lim and Dr. Yingling within 24 months following a change of control, the executive will be eligible to receive 150% of the Company's share of the annual premium for group medical and/or dental insurance coverage that was in place for the executive immediately prior to the date of termination, payable in a lump sum cash payment within 30 days after the date of termination.

The payments described in this column include an estimated value of the employer share of the premiums for our insurance plans as follows:

<u>Name</u>	<u>Medical Insurance Premiums (\$)</u>	<u>Dental Insurance Premiums (\$)</u>	<u>Total (\$)</u>
Vincent J. Milano	33,847	2,899	36,746
John J. Kirby	33,847	2,899	36,746
R. Clayton Fletcher	33,847	2,899	36,746
Bryant D. Lim	33,847	2,899	36,746
Jonathan Yingling	33,847	2,899	36,746

PROPOSAL TWO
APPROVAL, BY NON-BINDING VOTE, OF THE NAMED EXECUTIVE OFFICER 2019 COMPENSATION

We are providing our stockholders the opportunity to vote to approve, on an advisory, non-binding basis, the compensation of our named executive officers for 2019 as disclosed in this proxy statement in accordance with the SEC's rules. This proposal, which is commonly referred to as "say on pay," is required by the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, which added Section 14A to the Exchange Act. Consistent with the preference expressed by our stockholders at our 2019 annual meeting of stockholders, we have determined to hold an advisory vote on executive compensation annually.

The compensation committee of our board of directors seeks to achieve the following broad goals in connection with our executive compensation programs and decisions regarding individual compensation:

- attract, retain and motivate the best possible executive talent;
- ensure executive compensation is aligned with our corporate strategies and business objectives, including our short-term operating goals and longer-term strategic objectives;
- promote the achievement of key strategic and financial performance measures by linking short- and long-term cash and equity incentives to the achievement of measurable corporate and individual performance goals; and
- align executives' incentives with the creation of stockholder value.

Our compensation program for our executives generally consists of five elements based upon the foregoing objectives:

- base salary;
- annual cash bonuses;
- stock option awards;
- health care, life insurance and other employee benefits; and
- severance and change in control benefits.

The value of our variable, performance-based compensation is split between short-term compensation in the form of a cash bonus and long-term compensation in the form of stock option awards that vest over time from the date of grant of the option awards and from the time of achievement of performance milestones. The annual cash bonus is intended to provide an incentive to our executives to achieve short-term operational objectives. The stock option awards provide an incentive for our executives to achieve longer-term strategic business goals, which should lead to higher stock prices and increased stockholder value.

The "Executive Compensation" section set forth elsewhere in this proxy statement, including the "Compensation Discussion and Analysis," describes in detail our executive compensation programs and the decisions made by the compensation committee and the board of directors with respect to the fiscal year ended December 31, 2019.

Our board of directors is asking stockholders to approve a non-binding advisory vote on the following resolution:

"RESOLVED, that the compensation paid to the Company's named executive officers, as disclosed pursuant to the compensation disclosure rules of the Securities and Exchange Commission, including

the compensation discussion and analysis, the compensation tables and any related material disclosed in this proxy statement, is hereby approved."

As an advisory vote, this proposal is not binding. The outcome of this advisory vote will not overrule any decision by us or our board of directors (or any committee thereof), create or imply any change to our fiduciary duties or the fiduciary duties of our board of directors (or any committee thereof), or create or imply any additional fiduciary duties on us or our board of directors (or any committee thereof). However, our compensation committee and board of directors value the opinions expressed by our stockholders in their vote on this proposal and will consider the outcome of the vote when making future compensation decisions for named executive officers.

Recommendation of the Board of Directors

Our board of directors unanimously recommends that stockholders vote to approve the compensation of our named executive officers by voting FOR this proposal.

PROPOSAL THREE
APPROVAL OF AN AMENDMENT TO THE COMPANY'S RESTATED CERTIFICATE OF
INCORPORATION TO INCREASE THE NUMBER OF SHARES OF
AUTHORIZED COMMON STOCK

Our board of directors has declared advisable and approved, subject to stockholder approval, an amendment to Article FOURTH of the Restated Certificate of Incorporation of the Company to increase the Company's authorized common stock from 70,000,000 shares to 140,000,000 shares (the "Common Stock Amendment").

If the Common Stock Amendment is approved by the Company's stockholders at the 2020 annual meeting, the Company intends to file the Common Stock Amendment, substantially in the form of Appendix A hereto with the Secretary of State of Delaware as soon as practicable following stockholder approval and the certification of the vote related thereto. The Common Stock Amendment has the effect of increasing our authorized shares of common stock from 70,000,000 shares to 140,000,000 shares.

Purpose of the Amendment

The Company's Restated Certificate of Incorporation currently authorizes the board of directors to issue a maximum of 75,000,000 shares of the Company's capital stock, consisting of 70,000,000 shares of common stock, par value \$0.001 per share and 5,000,000 shares of preferred stock, par value \$0.01 per share.

Of the 70,000,000 shares of common stock currently authorized, as of March 24, 2020, 30,607,326 shares are issued and outstanding and approximately 25.1 million shares, in the aggregate, are reserved for issuance (the "Currently Reserved Shares"). The Currently Reserved Shares consists of approximately 7.0 million shares of common stock reserved for future issuance under our equity compensation plans, approximately 2.4 million shares of common stock reserved for future issuance upon conversion of outstanding Series B1 convertible preferred stock, approximately 5.1 million shares of common stock reserved for future issuance upon exercise of outstanding warrants, approximately 10.1 million shares reserved for future issuance under our common stock purchase agreement with Lincoln Park Capital, and approximately 0.5 million shares of common stock reserved for future issuance under our equity distribution agreement with JMP Securities LLC. The Company, therefore, only has approximately 14.3 million shares of unreserved common stock available for future issuance.

Additionally, in December 2019, the Company conducted a private placement exempt from the registration requirements of the Securities Act of 1933, as amended, pursuant to the securities purchase agreement with institutional investors affiliated with Baker Brothers. In connection with the private placement transaction, the Company agreed to sell to Baker Brothers, at its option and subject to certain conditions including stockholder approval to increase the Company's authorized shares of common stock, shares of Series B2, Series B3 and Series B4 convertible preferred stock and warrants to purchase common stock for aggregate gross proceeds of up to an additional \$87.6 million over a 21-month period after stockholder approval is received (the "Baker Brothers Investment").

If the Common Stock Amendment is approved by stockholders, after filing the Certificate of Amendment with Secretary of State of the State of Delaware, the authorized number of common stock will be 140,000,000 shares, of which 74.5 million shares, in the aggregate, will be reserved. The aggregate number of reserved shares represents the Currently Reserved Shares, as well as approximately 49.4 million shares of common stock reserved for the conversion of the Series B2, Series B3 and Series B4 convertible preferred stock and the exercise of the warrants issued pursuant to the Baker Brothers Investment. Accordingly, after reserving such shares and accounting for the current

number of issued and outstanding shares, the Company will have approximately 34.9 million shares of common stock available for issuance.

The board of directors believes the Common Stock Amendment is advisable in order to maintain our financing and capital raising flexibility in connection with our working capital needs and for general corporate purposes. Other possible business and financial uses for the additional authorized shares of common stock include, without limitation, future stock splits, acquiring other companies, businesses or products in exchange for shares of common stock, attracting and retaining employees by the issuance of additional securities under our equity compensation plans and other transactions and corporate purposes that the board of directors deems to be in the best interest of the Company and its stockholders. The additional authorized shares would enable us to act quickly in response to opportunities that may arise for these types of transactions, in most cases without the necessity of obtaining further stockholder approval and incurring expenses associated with holding a special stockholders' meeting before such issuance(s) could proceed, except as otherwise required under applicable Delaware law or under applicable Nasdaq rules.

The Company reviews and evaluates potential capital raising activities, transactions and other corporate actions on an ongoing basis to determine if such actions would be in the best interests of the Company and its stockholders and, accordingly, the Company reserves the right to issue shares of common stock, from time to time, pursuant to such actions.

Once authorized, the additional shares of common stock may be issued with approval of the board but without further approval of the stockholders unless stockholder approval is required by applicable law, rule or regulation, including, but not limited to, applicable Delaware law and applicable Nasdaq rules. Accordingly, approval of this proposal may facilitate the ability of the Company to issue shares of common stock in connection with financings, acquisitions, benefit plans and other corporate transactions and it is possible that no further stockholder approval will be required in connection with any such transactions.

The Common Stock Amendment would be effective following the filing of the Certificate of Amendment with the Delaware Secretary of State, which will occur as soon as reasonably practicable after stockholder approval at the 2020 annual meeting and the certification of the vote related thereto, and will increase our authorized shares of common stock from 70,000,000 shares to 140,000,000 shares.

Effects of Common Stock Amendment

The proposed additional shares of authorized common stock would become part of the existing class of common stock and, if and when issued, would have the same rights and privileges as the shares of common stock presently issued and outstanding. Adoption of the Common Stock Amendment would not have any immediate dilutive effect on the proportionate voting power of existing stockholders. The increase in the authorized shares of common stock will not itself cause any changes in our capital accounts or have any immediate effect on the rights of existing stockholders. Current stockholders do not have any preemptive or similar rights and, accordingly, current stockholders do not have a prior right to purchase shares of any newly-issued common stock in order to maintain their proportionate ownership thereof.

As is true for shares of common stock presently authorized but unissued, the future issuance of common stock authorized by the Common Stock Amendment may, among other things, decrease existing stockholders' percentage equity ownership, result in the issuance of shares of common stock at prices lower than the prices at which existing stockholders purchased their stock and could be dilutive to the voting rights of existing stockholders. In addition, depending on the price at which they are issued, the issuance of additional shares of common stock may have a negative effect on the market price of the common stock. It is also possible that shares of common stock may be issued at a time and

under circumstances that may increase or decrease earnings per share and increase or decrease the book value per share of shares currently outstanding.

This proposal, if approved, could, under certain circumstances, have an anti-takeover effect. For example, if the Company was to become concerned that it may be a potential target of an unsolicited acquisition attempt, it could try to impede the acquisition by issuing additional shares of common stock or rights or other equity interests related thereto, thereby diluting the voting power of the other outstanding shares and increasing the potential cost to the bidder of the acquisition. The board is not currently aware of any attempt or plan to acquire control of the Company.

Recommendation and Vote

The affirmative vote of a majority of the shares of common stock issued and outstanding as of the record date is required to approve the Common Stock Amendment to increase our authorized shares of common stock from 70,000,000 shares to 140,000,000 shares. Abstentions will have the same effect as votes cast against the proposal. If the proposal is approved, it will become effective upon the filing of the Certificate of Amendment with the Delaware Secretary of State, which will occur as soon as reasonably practicable after approval.

Our board of directors unanimously recommends that the stockholders vote FOR the Common Stock Amendment.

**PROPOSAL FOUR
RATIFICATION OF SELECTION OF INDEPENDENT REGISTERED
PUBLIC ACCOUNTING FIRM**

The audit committee of our board of directors has selected the firm of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2020. Ernst & Young LLP has served as our independent registered public accounting firm since 2002. Although stockholder approval of the audit committee's selection of Ernst & Young LLP is not required by law, our board of directors believes that it is advisable to give stockholders an opportunity to ratify this selection. If this proposal is not approved at the 2020 annual meeting, the audit committee of our board of directors may reconsider its selection.

Representatives of Ernst & Young LLP are expected to be present at the 2020 annual meeting. They will have the opportunity to make a statement if they desire to do so and will also be available to respond to appropriate questions from stockholders.

Recommendation of the Board of Directors

Our board of directors unanimously recommends that you vote FOR the ratification of the selection of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2020.

ACCOUNTING MATTERS

Report of the Audit Committee

The audit committee has reviewed our audited financial statements for the fiscal year ended December 31, 2019 and discussed them with our management and our independent registered public accounting firm.

The audit committee has also received from, and discussed with, our independent registered public accounting firm various communications that our independent registered public accounting firm is required to provide to the audit committee, including the matters required to be discussed by the AS 1301: *Communications with Audit Committees*, as adopted by the Public Company Accounting Oversight Board.

The audit committee has received from Ernst & Young LLP the letter and other written disclosures required by applicable requirements of the Public Company Accounting Oversight Board regarding its communication with the audit committee concerning independence, and has discussed with Ernst & Young LLP its independence from the Company. The audit committee has also considered whether the provision of other non-audit services by Ernst & Young LLP is compatible with maintaining their independence.

Based on the review and discussions referred to above, the audit committee recommended to our board of directors that the audited financial statements be included in our annual report on Form 10-K for the year ended December 31, 2019.

By the audit committee of the board of directors,

Carol Schafer, Chair
Michael R. Dougherty
Mark Goldberg, M.D.

The report of the Audit Committee is not "soliciting material," is not deemed "filed" with the SEC and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933 or the Securities Exchange Act of 1934, both as amended.

Independent Registered Public Accounting Firm Fees

The following table sets forth all fees paid or accrued by us for professional services rendered by Ernst & Young LLP during the years ended December 31, 2019 and 2018:

<u>Fee Category</u>	<u>2019</u>	<u>2018</u>
Audit Fees	\$ 605,387	\$ 581,145
Audit-Related Fees	78,000	230,318
Tax Fees	26,780	26,780
All Other Fees		1,925
Total Fees	\$ 710,167	\$ 840,168

Audit Fees

Audit fees represent the aggregate fees billed for professional services rendered by our independent registered public accounting firm for the audit of our annual financial statements and internal controls over financial reporting, review of financial statements included in our quarterly reports on Form 10-Q and services that are normally provided in connection with statutory and regulatory filings or engagements.

Audit-Related Fees

Audit-related fees represent the aggregate fees billed for assurance and related professional services rendered by our independent registered public accounting firm that are reasonably related to the performance of the audit or review of our financial statements and that are not reported under "Audit Fees" including consultations regarding internal controls, financial accounting and reporting standards; the issuance of consents in connection with registration statement filings with the SEC and comfort letters in connection with securities offerings.

Tax Fees

Tax fees represent the aggregate fees billed for professional services rendered by our independent registered public accounting firm for tax compliance, tax advice and tax planning services. Tax compliance services, which relate to preparation of tax returns, accounted for all of the tax fees billed in 2019 and 2018

All Other Fees

All other fees represent the aggregate fees billed for all other products and services rendered by our independent registered public accounting firm other than the services reported in the other categories. All other fees for all periods presented related to our subscription to Ernst & Young's online accounting research tool.

Our audit committee believes that the non-audit services described above did not compromise Ernst & Young LLP's independence. Our audit committee charter, which you can find by clicking "Investors" and "Corporate Governance" on our website, www.iderapharma.com, requires that all proposals to engage Ernst & Young LLP for services, and all proposed fees for these services, be submitted to the audit committee for approval before Ernst & Young LLP may provide the services.

Pre-Approval Policies and Procedures

Our audit committee has adopted policies and procedures relating to the approval of all audit and non-audit services that are to be performed by our independent registered public accounting firm. This policy generally provides that we will not engage our independent registered public accounting firm to render audit or non-audit services unless the service is specifically approved in advance by the audit committee or the engagement is entered into pursuant to the pre-approval procedures described below.

From time to time, the audit committee may pre-approve specified types of services that are expected to be provided to us by our independent registered public accounting firm during the next 12 months. Any such pre-approval is detailed as to the particular service or type of services to be provided and is also generally subject to a maximum dollar amount. All of the services described above under the headings "Audit Fees," "Audit-Related Fees," "Tax Fees" and "All Other Fees" were pre-approved by our audit committee.

TRANSACTIONS WITH RELATED PERSONS

Since January 1, 2018, we have not entered into or engaged in any related party transactions, as defined by the SEC, with our directors, officers and stockholders who beneficially owned more than 5% of our outstanding common stock, as well as affiliates or immediate family members of those directors, officers and stockholders, except with respect to the 2019 Private Placement. As discussed in further detail in Item 5 of Part II of our annual report on Form 10-K for the year ended December 31, 2019, on December 23, 2019, we entered into the December 2019 Securities Purchase Agreement with Baker Brothers, pursuant to which we issued and sold shares of our Series B1 Convertible Preferred Stock, par value \$0.01 per share and warrants to purchase shares of our common stock, for aggregate gross proceeds of approximately \$3.9 million.

Policies and Procedures for Related Person Transactions

Our board of directors is committed to upholding the highest legal and ethical conduct in fulfilling its responsibilities and recognizes that related party transactions can present a heightened risk of potential or actual conflicts of interest. Accordingly, as a general matter, it is our preference to avoid related party transactions.

In accordance with our audit committee charter, members of the audit committee, all of whom are independent directors, review and approve all related party transactions for which approval is required under applicable laws or regulations, including SEC and the Nasdaq Listing Rules. Current SEC rules define a related party transaction to include any transaction, arrangement or relationship in which we are a participant and the amount involved exceeds \$120,000, and in which any of the following persons has or will have a direct or indirect interest:

- our executive officers, directors or director nominees;
- any person who is known to be the beneficial owner of more than 5% of our common stock;
- any person who is an immediate family member, as defined under Item 404 of Regulation S-K, of any of our executive officers, directors or director nominees or beneficial owners of more than 5% of our common stock; or
- any firm, corporation or other entity in which any of the foregoing persons is employed or is a partner or principal or in a similar position or in which such person, together with any other of the foregoing persons, has a 5% or greater beneficial ownership interest.

Under our code of business conduct and ethics, our directors, officers and employees are expected to avoid any relationship, influence or activity that would cause or even appear to cause a conflict of interest. Under our code of business conduct and ethics, a director is required to promptly disclose to our board of directors any potential or actual conflict of interest involving him or her. In accordance with our code of business conduct and ethics, the board of directors will determine an appropriate resolution on a case-by-case basis. All directors must recuse themselves from any discussion or decision affecting their personal, business or professional interests. In addition, the audit committee is responsible for reviewing with our primary counsel the results of their review of the monitoring of compliance with our code of business conduct and ethics.

**APPENDIX A
CERTIFICATE OF AMENDMENT
TO THE
RESTATED CERTIFICATE OF INCORPORATION
OF
IDERA PHARMACEUTICALS, INC.**

Idera Pharmaceuticals, Inc. (the "Corporation"), organized and existing under and by virtue of the General Corporation Law of the State of Delaware, does hereby certify as follows:

By action of the Board of Directors of the Corporation (the "Board") at a meeting held on February 25, 2020, the Board duly adopted a resolution, pursuant to Section 242 of the General Corporation Law of the State of Delaware, setting forth a proposed amendment to the Restated Certificate of Incorporation of the Corporation, as amended to date (the "Certificate of Incorporation") and declaring said amendment to be advisable. The stockholders of the Corporation duly approved said proposed amendment in accordance with Section 242 of the General Corporation Law of the State of Delaware at a meeting of stockholders held on May 12, 2020. The resolution setting forth the amendment is as follows:

RESOLVED: That the first paragraph of Article FOURTH of the Certificate of Incorporation be and hereby is amended and restated in its entirety so that the same shall read as follows:

"FOURTH. The total number of shares of all classes of stock which the Corporation shall have authority to issue is One Hundred Forty-Five Million (145,000,000) shares, consisting of (i) One Hundred Forty Million (140,000,000) shares of Common Stock, \$.001 par value per share ("Common Stock"), and (ii) Five Million (5,000,000) shares of Preferred Stock, \$.01 par value per share ("Preferred Stock"), which may be issued from time to time in one or more series as set forth in Part B of this Article FOURTH."

IN WITNESS WHEREOF, the Corporation has caused this Certificate of Amendment to be signed by its duly authorized officer this day of May, 2020.

IDERA PHARMACEUTICALS, INC.

By:

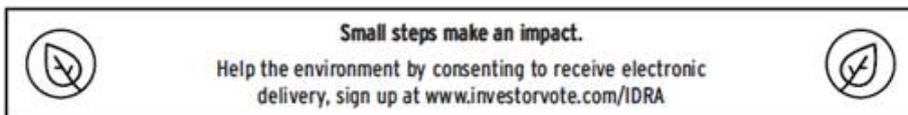
Chief Executive Officer

IDERA PHARMACEUTICALS, INC.

ANNUAL MEETING OF STOCKHOLDERS

Tuesday, May 12, 2020
9:00 a.m.

Idera Pharmaceuticals, Inc.
505 Eagleview Boulevard
Suite 212
Exton, PA 19341



▼ IF VOTING BY MAIL, SIGN, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE. ▼

Proxy – Idera Pharmaceuticals, Inc.



Idera Pharmaceuticals, Inc.
505 Eagleview Boulevard
Suite 212
Exton, PA 19341

This proxy is solicited by the Board of Directors for use at the Annual Meeting of Stockholders on May 12, 2020.

The undersigned hereby appoints Mr. Vincent J. Milano and Mr. John J. Kirby, and each of them, with full power of substitution, to vote, as designated below, all the shares of Idera Pharmaceuticals, Inc. (the "Company") common stock held of record by the undersigned at the close of business on March 24, 2020, at the 2020 annual meeting of stockholders, to be held May 12, 2020, and at any and all adjournments or postponements thereof. The undersigned hereby revokes any and all earlier dated proxies with respect to the annual meeting. This proxy, when properly executed, will be voted in the manner directed herein by the undersigned. If no direction is made, this proxy will be voted FOR each of the nominees for election as a Class I member of the Board of Directors, FOR the approval of the advisory vote on the compensation of the Company's named executive officers for 2019, FOR approval of the amendment to the Company's Restated Certificate of Incorporation to increase the number of shares of authorized common stock, and FOR ratification of the selection of Ernst & Young LLP as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2020.

If any other business is presented at the annual meeting, including matters incidental to the conduct of the meeting or otherwise, this proxy will be voted by those named in this proxy in their best judgment. At the present time, the board of directors knows of no other business to be presented at the meeting.

THIS PROXY WHEN PROPERLY EXECUTED WILL BE VOTED AS DIRECTED OR, IF NO DIRECTION IS GIVEN, WILL BE VOTED AS THE BOARD RECOMMENDS.

See reverse for voting instructions.

C Non-Voting Items

Change of Address – Please print new address below.

Meeting Attendance
Mark box to the right if
you plan to attend the
Annual Meeting.

