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## Section 1: DEF 14A (DEF 14A)

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

#### SCHEDULE 14A INFORMATION

##### 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 Pursuant to §240.14a-12

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### Miragen Therapeutics, Inc.

(Name of Registrant as Specified In Its Charter)

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(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:

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MIRAGEN THERAPEUTICS, INC.  
6200 LOOKOUT ROAD  
BOULDER, CO 80301

**NOTICE OF ANNUAL MEETING OF STOCKHOLDERS**

**To Be Held On June 19, 2019**

Please take notice that the 2019 Annual Meeting of the Stockholders (the “annual meeting”) of **MIRAGEN THERAPEUTICS, INC.**, a Delaware corporation (the “company”), will be held at the time and place and for the purposes indicated below. We intend to mail our proxy materials to our stockholders on or around May 3, 2019.

- TIME** 1:30 p.m. Mountain Time on Wednesday, June 19, 2019.
- PLACE** The meeting will be held virtually, via live webcast at [www.virtualshareholdermeeting.com/MGEN2019](http://www.virtualshareholdermeeting.com/MGEN2019).
- ITEMS OF BUSINESS**
1. To elect the Board’s seven nominees, William S. Marshall, Ph.D., Thomas E. Hughes, Ph.D., Kevin Koch, Ph.D., Joseph L. Turner, Arlene M. Morris, Jeffrey S. Hatfield, and Christopher J. Bowden, M.D., to the company’s Board of Directors to serve until the next annual meeting and their successors are duly elected and qualified.
  2. To ratify the selection by the Audit Committee of the Board of Directors of KPMG LLP as the independent registered public accounting firm of the company for its fiscal year ending December 31, 2019.
  3. To conduct any other business properly brought before the meeting.

These items of business are more fully described in the proxy statement accompanying this Notice.

**RECORD DATE** You can vote if you were a stockholder of record at the close of business on April 22, 2019. A complete list of stockholders entitled to vote at the annual meeting shall be open to the examination of any stockholder, for any purpose germane to the annual meeting, during ordinary business hours at our offices at 6200 Lookout Road, Boulder, CO 80301 for at least ten days prior to the annual meeting.

**ANNUAL REPORT** Our annual report on Form 10-K for the fiscal year ended December 31, 2018 accompanies the proxy statement.

**VOTING** You are cordially invited to attend the virtual annual meeting via live webcast by visiting [www.virtualshareholdermeeting.com/MGEN2019](http://www.virtualshareholdermeeting.com/MGEN2019), where you will be able to listen to the meeting live, submit questions, and vote online. Whether or not you expect to attend the meeting, please complete, date, sign, and return the proxy mailed to you, if so requested, or vote over the telephone or the Internet as instructed in these materials, as promptly as possible in order to ensure your representation at the meeting. Even if you have voted by proxy, you may still vote at the meeting if you attend the virtual meeting via live webcast. Please note, however, that if your shares are held of record by a broker, bank, or other nominee and you wish to vote at the meeting, you must obtain a proxy issued in your name from that record holder.

By Order of the Board of Directors,

Jason A. Leverone  
Chief Financial Officer, Secretary, and Treasurer

Boulder, CO  
May 3, 2019

## TABLE OF CONTENTS

|  | <u>Page</u> |
|--|-------------|
| <u>QUESTIONS AND ANSWERS ABOUT THESE PROXY MATERIALS AND VOTING</u>                            | <u>1</u>    |
| <u>PROPOSAL 1 — ELECTION OF DIRECTORS</u>  | <u>8</u>    |
| <u>INFORMATION REGARDING OUR BOARD OF DIRECTORS AND CORPORATE GOVERNANCE</u>                   | <u>12</u>   |
| <u>PROPOSAL 2 — RATIFICATION OF SELECTION OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM</u> | <u>20</u>   |
| <u>SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT</u>                          | <u>22</u>   |
| <u>SECTION 16(A) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE</u>                                 | <u>25</u>   |
| <u>SECURITIES AUTHORIZED FOR ISSUANCE UNDER EQUITY COMPENSATION PLANS</u>                      | <u>26</u>   |
| <u>EXECUTIVE COMPENSATION</u>  | <u>27</u>   |
| <u>TRANSACTIONS WITH RELATED PERSONS AND INDEMNIFICATION</u>                                   | <u>36</u>   |
| <u>HOUSEHOLDING OF PROXY MATERIALS</u>   | <u>39</u>   |
| <u>OTHER MATTERS</u>   | <u>40</u>   |

**MIRAGEN THERAPEUTICS, INC.**

**6200 LOOKOUT ROAD  
BOULDER, CO 80301**

**PROXY STATEMENT  
FOR THE 2019 ANNUAL MEETING OF STOCKHOLDERS  
TO BE HELD ON JUNE 19, 2019**

**QUESTIONS AND ANSWERS ABOUT THESE PROXY MATERIALS AND VOTING**

**Why did I receive a notice regarding the availability of proxy materials on the Internet?**

Pursuant to rules adopted by the Securities and Exchange Commission (the “SEC”), we have elected to provide access to our proxy materials over the Internet. Accordingly, we have sent you a Notice of Internet Availability of Proxy Materials (the “Notice”) because the Board of Directors (the “Board”) of Miragen Therapeutics, Inc. (sometimes referred to as “we,” “us,” “our,” the “company” or “Miragen”) is soliciting your proxy to vote at our 2019 Annual Meeting of Stockholders (the “annual meeting”), including at any adjournments or postponements of the annual meeting. All stockholders will have the ability to access the proxy materials on the website referred to in the Notice or request to receive a printed set of the proxy materials. Instructions on how to access the proxy materials over the Internet or to request a printed copy may be found in the Notice.

We intend to mail the Notice on or about May 3, 2019 to all stockholders of record entitled to vote at the annual meeting.

**Will I receive any other proxy materials by mail?**

We may send you a proxy card, along with a second Notice, on or after May 17, 2019.

**How do I attend the annual meeting?**

We will be hosting the meeting via live webcast only. Any stockholder can attend the meeting live online at [www.virtualshareholdermeeting.com/MGEN2019](http://www.virtualshareholdermeeting.com/MGEN2019). The webcast will start at 1:30 p.m. Mountain Time. Stockholders may vote and submit questions while attending the meeting online. The webcast will open 15 minutes before the start of the meeting. In order to enter the meeting, you will need the control number, which is included in the Notice or on your proxy card if you are a stockholder of record of shares of common stock, or included with your voting instruction card and voting instructions received from your broker, bank, or other agent if you hold shares of common stock in a “street name.” Instructions on how to attend and participate online are also available at [www.virtualshareholdermeeting.com/MGEN2019](http://www.virtualshareholdermeeting.com/MGEN2019). Information on how to vote online at the virtual annual meeting is discussed below.

**Who can vote at the annual meeting?**

Only stockholders of record at the close of business on April 22, 2019 will be entitled to vote at the annual meeting. On this record date, there were 30,926,219 shares of common stock outstanding and entitled to vote.

*Stockholder of Record: Shares Registered in Your Name*

If, on April 22, 2019, your shares were registered directly in your name with our transfer agent, VStock Transfer, LLC, then you are a stockholder of record. As a stockholder of record, you may vote online at the virtual meeting or vote by proxy. Whether or not you plan to attend the meeting, we urge you to fill out and return the proxy card or vote by proxy over the telephone or on the Internet as instructed below to ensure your vote is counted.

## [Table of Contents](#)

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

If, on April 22, 2019, your shares were held, not in your name, but rather in an account at a brokerage firm, bank, or other similar organization, then you are the beneficial owner of shares held in “street name” and the Notice is being forwarded to you by that organization. The organization holding your account is considered to be the stockholder of record for purposes of voting at the annual meeting. As a beneficial owner, you have the right to direct your broker, bank, or other agent regarding how to vote the shares in your account. You are also invited to virtually attend the annual meeting. However, because you are not the stockholder of record, you may not vote your shares at the annual meeting unless you request and obtain a valid proxy from your broker, bank, or other agent.

### **What am I voting on?**

There are two matters scheduled for a vote:

1. Election of seven directors (“Proposal 1 — Election of Directors”); and
2. Ratification of selection by the Audit Committee of the Board (the “Audit Committee”) of KPMG LLP as independent registered public accounting firm of the company for its fiscal year ending December 31, 2019 (“Proposal 2 — Ratification of Selection of Independent Registered Public Accounting Firm”).

### **What if another matter is properly brought before the meeting?**

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

### **How do I vote?**

You may either vote “For” all the nominees to our Board or you may “Withhold” your vote for any nominee you specify. For each of the other matters to be voted on, you may vote “For” or “Against” or abstain from voting.

The procedures for voting are fairly simple:

### *Stockholder of Record: Shares Registered in Your Name*

If your shares are registered in your name, you may vote by one of the following methods:

1. **Vote at the Annual Meeting** — To vote during the annual meeting, attend the annual meeting by visiting [www.virtualshareholdermeeting.com/MGEN2019](http://www.virtualshareholdermeeting.com/MGEN2019), where stockholders may vote and submit questions during the meeting. The meeting starts at 1:30 p.m. Mountain Time. Please have your 16-Digit Control Number to join the annual meeting. Instructions on how to attend and vote online during the annual meeting, including how to demonstrate your stock ownership, are posted [www.virtualshareholdermeeting.com/MGEN2019](http://www.virtualshareholdermeeting.com/MGEN2019).
2. **Vote by Mail** — To vote by mail, simply complete, sign, and date the proxy card and return it promptly by mail in the envelope provided. If you return your completed and signed proxy card to us before the annual meeting, we will vote your shares as you direct.
3. **Voted by Telephone** — To vote by the telephone, call 1-800-690-6903 using a touch-tone phone and follow the recorded instructions. You will be asked to provide the company number and control number from the Notice. Your telephone vote must be received by 11:59 p.m. Eastern Time on June 18, 2019 to be counted.

[Table of Contents](#)

4. **Vote by Internet** — To vote through the internet, go to <http://www.proxyvote.com> to complete an electronic proxy card. You will be asked to provide the company number and control number from the Notice. Your internet vote must be received by 11:59 p.m. Eastern Time on June 18, 2019 to be counted.

Whether or not you plan to virtually attend the meeting, we urge you to vote by proxy to ensure your vote is counted. You may still virtually attend the meeting and vote even if you have already voted by proxy.

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

If you are a beneficial owner of shares registered in the name of your broker, bank, or other agent, you should receive a Notice containing voting instructions from that organization rather than from us. Simply follow the voting instructions in the Notice to ensure that your vote is counted. To vote online at the virtual annual meeting, you must obtain a valid proxy from your broker, bank, or other agent. Follow the instructions from your broker, bank, or other agent included with these proxy materials, or contact that organization to request a proxy form.

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

**How many votes do I have?**

On each matter to be voted upon, you have one vote for each share of our common stock you own as of April 22, 2019.

**How will my shares be voted if I return my proxy?**

| <b>How Your Shares are Held</b> | <b>How Your Shares will be Voted If You Specify How to Vote</b> | <b>How Your Shares will be Voted If You Do Not Specify How to Vote</b>                           |
|---------------------------------|---|--|
| Shares registered in your name  | The named proxies will vote your shares as you direct           | The named proxies will vote <b>FOR</b> all proposals and nominees                                |
| Shares held in street name      | Your broker will vote your shares as you direct                 | Your broker may vote only on routine items in the absence of your instruction how to vote<br>(1) |

- (1) If your shares are held in “street name” and you do not indicate how you wish to vote, under the New York Stock Exchange (“NYSE”) rules, your broker is permitted to exercise its discretion to vote your shares only on certain “routine” matters. Proposal 1 — Election of Directors is a “non-routine” matter. Accordingly, if you do not direct your broker how to vote on those proposals, your broker may not exercise discretionary voting authority and may not vote your shares on these proposals. This is called a “broker non-vote” and although your shares will be considered to be represented by proxy at the annual meeting, they are not considered to be shares “entitled to vote” at the annual meeting and will not be counted as having been voted on the applicable proposal. Proposal 2 — Ratification of Selection of Independent Registered Public Accounting Firm is a “routine” matter and your broker is permitted to exercise discretionary voting authority to vote your shares “FOR” or “AGAINST” the proposal in the absence of your instruction.

**What if I am a stockholder of record and I do not vote?**

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

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

As referenced in the table above, if you are a beneficial owner of shares held in street name and you do not instruct your broker, bank, or other agent how to vote your shares, your broker, bank, or other agent may still be able to vote your shares in its discretion. In this regard, under the rules of the NYSE, brokers, banks, and other securities intermediaries that are subject to NYSE rules may use their discretion to vote your “uninstructed” shares with respect to matters considered to be “routine” under NYSE rules, but not with respect to “non-routine” matters. Proposal 1 — Election of Directors is not a “routine” matter. Accordingly, if you do not direct your broker how to vote on those proposals, your broker may not exercise discretionary voting authority and may not vote your shares on these proposals. This is called a “broker non-vote,” and although your shares will be considered to be represented by proxy at the annual meeting, they are not considered to be shares “entitled to vote” at the annual meeting and will not be counted as having been voted on the applicable proposal. Proposal 2 — Ratification of Selection of Independent Registered Public Accounting Firm is a “routine” matter, and your broker is permitted to exercise discretionary voting authority to vote your shares “For” or “Against” the proposal in the absence of your instruction.

**Who is paying for this proxy solicitation?**

We will pay for the entire cost of soliciting proxies. In addition to these proxy materials, our directors and employees may also solicit proxies in person, by telephone, or by other means of communication. Directors and employees will not be paid any additional compensation for soliciting proxies. We may also reimburse brokerage firms, banks, and other agents for the cost of forwarding proxy materials to beneficial owners.

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

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

**Can I change my vote after submitting my proxy?**

*Stockholder of Record: Shares Registered in Your Name*

Yes. You can revoke your proxy or change your vote at any time before the final vote at the meeting. If your shares are registered in your name, you may revoke your proxy in any one of the following ways:

- You may submit another properly completed proxy card with a later date.
- You may grant a subsequent proxy by telephone or through the Internet.
- You may send a timely written notice that you are revoking your proxy to our Secretary at 6200 Lookout Road, Boulder, CO 80301.
- You may attend the virtual annual meeting and vote online. Simply attending the virtual meeting will not, by itself, revoke your proxy.

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



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

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

**When are stockholder proposals and director nominations due for next year’s annual meeting?**

To be considered for inclusion in next year’s proxy materials, your proposal must be submitted in writing by January 6, 2020, to our Secretary at 6200 Lookout Road, Boulder, CO 80301. If you wish to submit a proposal (including a director nomination) at the meeting that is not to be included in next year’s proxy materials, you must do so by no earlier than March 20, 2020, and no later than April 20, 2020. Any nominations for director or any proposal submission must comply with the requirements of our Bylaws. You are also advised to review our Bylaws, which contain additional requirements about advance notice of stockholder proposals and director nominations.

**How are votes counted?**

Votes will be counted by the inspector of election appointed for the meeting, who will separately count, for the proposal to elect directors, votes “For,” “Withhold,” and broker non-votes and, for the other proposals, votes “For” and “Against,” abstentions and, if applicable, broker non-votes. Broker non-votes on Proposal 1 — Election of Directors will have no effect and will not be counted toward the vote total for Proposal 1 — Election of Directors. Abstentions will be counted towards the vote total for Proposal 2 — Ratification of Selection of Independent Registered Public Accounting Firm and will have the same effect as “Against” votes.

**Who will count the votes?**

Broadridge Financial Solutions, Inc. has been engaged to tabulate stockholder votes and act as an independent inspector of elections for the annual meeting.

**What are “broker non-votes”?**

As discussed above, when a beneficial owner of shares held in “street name” does not give instructions to his or her broker, bank, or other securities intermediary holding his or her shares as to how to vote on matters deemed to be “non-routine” under NYSE Rules, the broker, bank, or other such agent cannot vote the shares. These un-voted shares are counted as “broker non-votes.” Proposal 1 — Election of Directors is considered to be “non-routine” under NYSE rules, and we therefore expect broker non-votes to exist in connection with Proposal 1 — Election of Directors.

**How does the Board recommend that I vote and how many votes are needed to approve each proposal?**

The following table summarizes the minimum vote needed to approve each proposal and the effect of abstentions and broker non-votes.

| <b>Proposal Number</b> | <b>Proposal Description</b>   | <b>Board Recommendation</b>   | <b>Vote Required for Approval</b>  | <b>Effect of Withhold and Abstentions</b>   | <b>Effect of Broker Non-Votes</b> |
|------------------------|---|-------------------------------|--|---|-----------------------------------|
| 1                      | Election of Directors   | <b>FOR</b> all seven nominees | Nominees receiving the most “For” votes  | Under plurality voting, there are no abstentions. Withheld votes will have no effect. | None                              |
| 2                      | Ratification of the selection of KPMG LLP as the company’s independent registered public accounting firm for the fiscal year ending December 31, 2019 | FOR                           | “For” votes from the holders of a majority of shares present at the virtual meeting or represented by proxy and entitled to vote on the matter | Against   | Not applicable (1)                |

(1) This proposal is considered to be a “routine” matter under NYSE rules. Accordingly, if you hold your shares in street name and do not provide voting instructions to your broker, bank, or other agent that holds your shares, your broker, bank, or other agent has discretionary authority under NYSE rules to vote your shares on this proposal.

**What is the quorum requirement?**

A quorum of stockholders is necessary to hold a valid meeting. A quorum will be present if stockholders holding at least a majority of the outstanding shares entitled to vote are present at the virtual annual meeting or represented by proxy. On the record date, there were 30,926,219 shares outstanding and entitled to vote. Thus, the holders of 15,463,110 shares must be present or represented by proxy at the virtual meeting to have a quorum.

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

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

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

**Why do you discuss a merger in this Proxy Statement?**

On February 13, 2017, we completed our merger with privately held Miragen Therapeutics, Inc. (“Private Miragen”) in accordance with the terms of the Agreement and Plan of Merger and Reorganization, dated October 31, 2016 (the “Merger Agreement”), whereby one of our wholly-owned subsidiaries merged with and into Private Miragen, with Private Miragen surviving as our wholly-owned subsidiary (the “Merger”). Immediately following the merger, Private Miragen merged with and into the company, with the company as the surviving corporation (the “Short-Form Merger”). In connection with the Short-Form Merger, we changed our name from Signal Genetics, Inc. to Miragen Therapeutics, Inc. In connection with the closing of the Merger, our common stock began trading on The Nasdaq Capital Market under the ticker symbol “MGEN.”

Pursuant to the terms of the Merger Agreement, our former executive officers and members of our Board resigned, and our current executive officers and certain members of our Board were appointed to their applicable offices, concurrent with the closing of the Merger. In addition, effective as of March 24, 2017, we dismissed our independent registered public accounting firm, BDO USA LLP, and appointed the independent registered public accounting firm of Private Miragen, KPMG LLP, as our independent auditor for the fiscal year ending December 31, 2017.

## **PROPOSAL 1**

### **ELECTION OF DIRECTORS**

Our Board consists of seven directors, all of whom are director nominees for director this year. Each director to be elected and qualified will hold office until the next annual meeting of stockholders and until his or her successor is elected, or, if sooner, until the director's death, resignation, or removal. Of the nominees listed below, seven are currently directors of the company who were previously elected by the stockholders.

It is our policy to encourage its directors and any nominees for director to attend the annual meeting. Five of our then-serving directors attended the 2018 Annual Meeting of Stockholders.

Directors are elected by a plurality of the votes of the holders of shares present or represented by proxy and entitled to vote on the election of directors. Accordingly, the seven nominees receiving the highest number of affirmative votes will be elected. Shares represented by executed proxies will be voted, if authority to do so is not withheld, for the election of the seven nominees named below. If any nominee becomes unavailable for election as a result of an unexpected occurrence, your shares will be voted for the election of a substitute nominee proposed by us. Each person nominated for election has agreed to serve if elected. Our management has no reason to believe that any nominee will be unable to serve.

### **NOMINEES**

The following is a brief biography of each nominee for director and a discussion of the specific experience, qualifications, attributes, or skills of each nominee that led our Nominating and Corporate Governance Committee of the Board (the "Nominating and Corporate Governance Committee") to recommend that person as a nominee for director, as of the date of this proxy statement.

Our Nominating and Corporate Governance Committee seeks to assemble a board that, as a whole, possesses the appropriate balance of professional and industry knowledge, financial expertise, and high-level management experience necessary to oversee and direct our business. To that end, our Nominating and Corporate Governance Committee has identified and evaluated nominees in the broader context of the overall composition of our Board with the goal of recruiting members who complement and strengthen the skills of other members and who also exhibit integrity, collegiality, sound business judgment, and other qualities that our Nominating and Corporate Governance Committee views as critical to effective functioning of our Board. The brief biographies below include information, as of the date of this proxy statement, regarding the specific and particular experience, qualifications, attributes, or skills of each director or nominee that led our Nominating and Corporate Governance Committee to believe that that nominee should continue to serve on our Board. However, each of the members of our Nominating and Corporate Governance Committee may have a variety of reasons why he or she believes a particular person would be an appropriate nominee for our Board, and these views may differ from the views of other members.

## [Table of Contents](#)

The following table lists the names, ages, and positions as of May 3, 2019, of the individuals who are currently serving as our directors:

| <b>Name</b>                 | <b>Age</b> | <b>Position(s)</b>                               |
|-----------------------------|------------|--|
| William S. Marshall, Ph.D.  | 55         | President, Chief Executive Officer, and Director |
| Thomas E. Hughes, Ph.D.     | 59         | Director   |
| Kevin Koch, Ph.D.           | 59         | Director   |
| Joseph L. Turner            | 67         | Director   |
| Arlene M. Morris            | 67         | Director   |
| Jeffrey S. Hatfield         | 61         | Director   |
| Christopher J. Bowden, M.D. | 58         | Director   |

**William S. Marshall, Ph.D.** Dr. Marshall has served as our president and chief executive officer and as a member of our Board since February 2017. Prior to joining us, Dr. Marshall was the president, chief executive, and a director of Private Miragen since the company was founded in September 2007. Prior to founding Private Miragen, Dr. Marshall was vice president of technology and business development for bioscience at Thermo Fisher Scientific Inc., a serving science company, from April 2005 to July 2007. Dr. Marshall was one of the scientific founders of Dharmacon, Inc., a biotechnology company, which was acquired by Fisher Scientific International Inc. in April 2004, and he served as the executive vice president for research and operations and general manager of Dharmacon from August 2002 to April 2005. Prior to joining Dharmacon, Dr. Marshall served in multiple positions at Amgen, Inc., a biotechnology company, most recently as associate director of research, site head for research and head of the nucleic acid and peptide technology department. Dr. Marshall earned a B.S. in Biochemistry from the University of Wisconsin-Madison and his Ph.D. in Chemistry at the University of Colorado at Boulder.

We believe that Dr. Marshall's role as our chief executive officer, prior board of director service, and extensive experience and innovations in the field of biotechnology enable him to bring a unique perspective to our Board. In addition, Dr. Marshall's academic expertise and accomplishments provide the Board with in-depth product and field knowledge.

**Thomas E. Hughes, Ph.D.** Dr. Hughes has served as a member of our Board since February 2017 and, prior to joining our Board, he served as a member of Private Miragen's board of directors since September 2009. Dr. Hughes serves as chief executive officer and as a director of Navitor Pharmaceuticals, Inc., a privately-held biopharmaceutical company, having joined the company in September 2018. Prior to that, Dr. Hughes served in varying capacities at Zafgen, Inc., a publicly-traded biopharmaceutical company, as the chief executive officer and as a director from October 2008 through October 2017, as president from October 2008 until June 2014, and as chief scientific officer and president from October 2017 through August 2018. From 1987 to 2008, Dr. Hughes held several positions at Novartis AG (formerly Sandoz Pharmaceuticals), including vice president and global head of the cardiovascular and metabolic diseases therapeutic area at the Novartis Institutes for BioMedical Research in Cambridge, MA. Dr. Hughes also serves as a member of the strategic advisory board for Broadview Ventures, an early-stage investment company. Dr. Hughes earned a Ph.D. in nutritional biochemistry from Tufts University, an M.S. in Zoology from Virginia Polytechnic Institute and State University, and a B.A. in biology from Franklin and Marshall College.

We believe Dr. Hughes is qualified to serve on our Board due to his years of experience in the biotechnology industry and service on both public and private boards of directors of biopharmaceutical companies, which enable him to contribute important strategic insight to our Board.

**Kevin Koch, Ph.D.** Dr. Koch has served as a member of our Board since February 2017 and, prior to joining our Board, he served as a member of Private Miragen's board of directors since July 2016. Dr. Koch has served as

## [Table of Contents](#)

the president and chief executive officer of Edgewise Therapeutics since July 2017 and has served as a venture partner at OrbiMed Advisors, LLC since May 2016. Prior to joining OrbiMed, Dr. Koch acted as a consultant in the biotech industry from September 2015 to May 2016. Prior to acting as a consultant, Dr. Koch served as the senior vice president, drug discovery, chemical and molecular therapeutics, at Biogen, Inc. from December 2013 to September 2015. Prior to joining Biogen, Dr. Koch founded Array BioPharma Inc., a publicly-traded biopharmaceutical company, and served as its president, chief scientific officer, and a member of its board of directors from May 1998 to November 2013. Prior to forming Array BioPharma Inc., Dr. Koch was an associate director of medicinal chemistry and project leader for the protease inhibitor and new technologies group for Amgen Inc. from 1995 to 1998. From 1988 until 1995, Dr. Koch held various research positions within the Central Research Division of Pfizer, Inc., including senior research investigator and senior research scientist. Dr. Koch earned a B.S. in chemistry and in biochemistry from the State University of New York at Stony Brook and a Ph.D. in synthetic organic chemistry from the University of Rochester.

We believe Dr. Koch is qualified to serve on our Board due to his years of experience in the biotechnology industry and service on both public and private boards of biopharmaceutical companies, which enable him to contribute important strategic insight to our Board.

**Joseph L. Turner.** Mr. Turner has served as a member of our Board since February 2017. Mr. Turner currently serves on the board of directors of Rainier Therapeutics, Inc. Prior to joining our Board, Mr. Turner served on the boards of directors and was the chair of the audit committees of Corcept Therapeutics, Inc., a publicly-traded pharmaceutical company, from 2012 to May 2016, Kythera Biopharmaceuticals, Inc., a publicly-traded pharmaceutical company, from 2008 until Kythera's acquisition by Allergan Inc. October 2015, and Sophiris Bio, a publicly-traded pharmaceutical company from 2013 to May 2016. From July 2010 until its acquisition by Grupo Ferrer Internacional, S.A. in June 2016, Mr. Turner served on the board of directors and as a chair of the audit committee of Alexza Pharmaceuticals, Inc., a publicly-traded pharmaceutical company. In 2012, Mr. Turner served on the board of directors and as chair of the audit committee of Allos Therapeutics, Inc., a publicly-traded pharmaceutical company, until its acquisition by Spectrum Pharmaceuticals Inc. in September 2012. From 2010 through 2012, he served on the board of directors and as a member of the audit committee of QLT Inc., a publicly-traded biotechnology company. In 2008, Mr. Turner served as a director and member of the audit committee of SGX Pharmaceuticals Inc., a publicly-traded pharmaceutical company. Mr. Turner served as chief financial officer at Myogen, Inc., a publicly-traded biopharmaceutical company, from 1999 until it was acquired by Gilead Sciences in 2006. Previously, Mr. Turner was the chief financial officer at Centaur Pharmaceuticals, Inc. and served as chief financial officer and vice president, finance and administration at Cortech, Inc. Since 2009, Mr. Turner has also served on the board of managers of Swarthmore College where at various times he has served on its executive committee, finance committee, audit committee, academic affairs committee, student affairs committee, and property committee. In 2013 until 2015, Mr. Turner served on the board of directors of the Linda Crnic Institute for Down Syndrome at the University of Colorado Medical School. Mr. Turner has an M.B.A. from the University of North Carolina at Chapel Hill, an M.A. in molecular biology from the University of Colorado, and a B.A. in chemistry from Swarthmore College.

We believe Mr. Turner is qualified to serve on our Board due to his years of service on both public and private boards of directors of pharmaceutical companies, including service on audit committees and extensive finance experience, which enable him to contribute important strategic insight to our Board.

**Arlene M. Morris.** Ms. Morris has served as a member of our Board since January 2018. Ms. Morris has served as chief executive officer at Willow Advisors, LLC, a consultancy advising biotech companies on financing, strategy, and business development, since May 2015. From April 2012 until May 2015, Ms. Morris served as the chief executive officer of Syndax Pharmaceuticals, Inc., a privately-held oncology company focused on the development and commercialization of therapies for treatment-resistant cancers. She also served as a member of the Syndax Pharmaceuticals board of directors from June 2011 until May 2015. From 2003 to January 2011, Ms. Morris served as the president, chief executive officer, and a member of the board of directors of Affymax, Inc., a publicly-traded biotechnology company. Ms. Morris also held various management and executive

## Table of Contents

positions at Clearview Projects, Inc., a corporate advisory firm; Coulter Pharmaceutical, Inc., a publicly-traded pharmaceutical company; Scios Inc., a publicly-traded biopharmaceutical company; and Johnson & Johnson, a publicly-traded healthcare company. She is currently a member of the board of directors of Viveve Medical, Inc., a publicly-traded medical device company; Palatin Technologies, a publicly-traded biotechnology company; and Neovacs, SA, a French publicly-traded biotechnology company. She was a director of Biodel Inc., a publicly-traded specialty pharmaceutical company, from 2015 until its merger with Albireo Limited in 2016; and Dimension Therapeutics, a publicly-traded gene therapy company, until it was acquired by Ultragenyx in 2017. She currently serves as a board chair for the Foundation for Research and Development at the Medical University of South Carolina and as a trustee of Carlow University. Ms. Morris received a B.A. in biology and chemistry from Carlow College.

We believe Ms. Morris is qualified to serve on our Board due to her relevant industry experience and a breadth of expertise from past and continued service on the boards of directors of publicly traded biotechnology companies, which enable her to contribute important strategic insight to our Board.

**Jeffrey S. Hatfield.** Mr. Hatfield has served as a member of our Board since August 2017. Mr. Hatfield is a veteran biotechnology and pharmaceutical industry leader, with over three decades of experience. Mr. Hatfield is currently the chief executive officer of Zafgen, Inc. Previously, he served as president and chief executive officer of Vitae Pharmaceuticals, Inc., until its acquisition by Allergan in 2016. Prior to working at Vitae Pharmaceuticals, Inc., Mr. Hatfield served in numerous executive capacities at Bristol-Myers Squibb Company (“BMS”) including senior vice president of BMS’s Immunology and Virology divisions, president of BMS Canada, and head of U.S. market access. Mr. Hatfield currently serves as a director on the boards of publicly traded biotechnology companies aTyr Pharma, Inc. and Zafgen, Inc., and has previously served as a director of Ambit Biosciences Corporation, prior to its acquisition by Daiichi Sankyo Company, Ltd., and InVivo Therapeutics, Inc. He is an adjunct professor and a dean’s advisory board member for Purdue University’s College of Pharmacy. He earned a B.S. degree in pharmacy from Purdue University’s College of Pharmacy and an M.B.A. degree from The Wharton School at the University of Pennsylvania.

We believe Mr. Hatfield is qualified to serve on our Board due to his relevant industry experience in the biotechnology industry and experience in serving on public, biopharmaceutical company boards of directors, which enable him to contribute important strategic insight to our Board.

**Christopher Bowden, M.D.** Dr. Bowden has served as a member of our Board since August 2017. Currently he is the chief medical officer at Agios Pharmaceuticals, Inc., and he has been in this role since 2014. Prior to joining Agios Pharmaceuticals, Inc., he served as vice president, product development oncology, franchise lead (Signaling Group) at Genentech, Inc., a member of the Roche Group. Dr. Bowden received his M.D. from Hahnemann University School of Medicine in Philadelphia followed by internal medicine training at Roger Williams Medical Center and Providence VA Medical Center, Rhode Island. He completed his medical oncology fellowship at the National Cancer Institute Medicine Branch and is board certified in internal medicine and medical oncology.

We believe Dr. Bowden is qualified to serve on our Board due to his years of experience in the biotechnology industry and substantial experience in clinical drug development, which enable him to contribute important strategic insight to our Board.

**THE BOARD OF DIRECTORS RECOMMENDS  
A VOTE IN FAVOR OF EACH NAMED NOMINEE.**

**INFORMATION REGARDING OUR BOARD OF DIRECTORS AND CORPORATE GOVERNANCE****INFORMATION REGARDING THE BOARD OF DIRECTORS AND COMMITTEE MEMBERSHIP**

Our Board has three committees: our Audit Committee, the Compensation Committee of our Board (the “Compensation Committee”), and our Nominating and Corporate Governance Committee. Our Board committees consist of the following members:

| Name (1) (2)                | Audit | Compensation | Nominating and<br>Corporate<br>Governance |
|-----------------------------|-------|--------------|---|
| William S. Marshall, Ph.D.  |       |              |   |
| Thomas E. Hughes, Ph.D.     |       | X *          | X   |
| Kevin Koch, Ph.D.           |       | X            | X *                                       |
| Joseph L. Turner            | X *   |              |   |
| Arlene M. Morris            | X     |              | X   |
| Jeffrey S. Hatfield         | X     |              |   |
| Christopher J. Bowden, M.D. |       | X            |   |

(1) Dr. Bruce Booth resigned from the Board and the Audit Committee in December 2018.

(2) Ms. Morris joined our Board in January 2018 and was appointed to the Nominating and Corporate Governance Committee in March 2018 and to the Audit Committee in December 2018.

\* Committee chairperson

In December 2018, Bruce L. Booth, Ph.D. resigned from our Board and all committees of our Board of which he was a member immediately before such resignation. On December 4, 2018, our Board unanimously voted to appoint Mr. Hatfield as the chairperson of the Board and Ms. Morris as a member of our Audit Committee, effective immediately, to fill the vacancies created by Dr. Booth’s resignation. On December 4, 2018, our Board unanimously voted to decrease the size of our Board from eight to seven members.

Changes in membership of our Board’s committees are discussed in more detail below.

**INDEPENDENCE OF OUR BOARD OF DIRECTORS**

As required under the Nasdaq Stock Market (“Nasdaq”) listing standards, a majority of the members of a listed company’s board of directors must qualify as “independent,” as affirmatively determined by our Board. Our Board consults with the company’s counsel to ensure that our Board’s determinations are consistent with relevant securities and other laws and regulations regarding the definition of “independent,” including those set forth in pertinent listing standards of Nasdaq, as in effect from time to time.

Consistent with these considerations, after review of all relevant identified transactions or relationships between each director, or any of his or her family members, and the company, our senior management, and our independent auditors, our Board has affirmatively determined that the following six directors are independent directors within the meaning of the applicable Nasdaq listing standards: Dr. Bowden, Mr. Hatfield, Dr. Hughes, Dr. Koch, Ms. Morris, and Mr. Turner. In making this determination, our Board found that none of these directors or nominees for director had a material or other disqualifying relationship with the company. Dr. Marshall is not an independent director under the applicable Nasdaq listing standards due to his position as our president and chief executive officer. In 2018, Dr. Booth also served as a member of our Board until his resignation in December 2018. Our Board previously determined that Dr. Booth qualified as an independent director within the meaning of the applicable Nasdaq listing standards.



## [Table of Contents](#)

In making those independence determinations, our Board took into account certain relationships and transactions that occurred in the ordinary course of business between the company and entities with which some of our directors are or have been affiliated. Our Board considered the following relationships and transactions that occurred during any 12-month period within the last three fiscal years and determined that they were not relationships that would interfere with each director's exercise of his or her independent judgment in carrying out his or her responsibilities as a director:

### *Current Directors*

- Dr. Hughes has previously participated in meetings of our scientific advisory board.

### *Prior Directors*

- Dr. Booth was affiliated with Atlas Venture VII, L.P., one of our largest stockholders.

As provided in our Related-Person Transactions Policy, our Board considered that the aggregate dollar amount of the transactions during any 12-month period within the last three fiscal years did not exceed the greater of \$1 million or 2% of the other company's consolidated gross revenues and, therefore, was not regarded as compromising the directors' independence. Based on this review, our Board affirmatively determined that all of the directors nominated for election at the annual meeting (other than Dr. Marshall, who is not considered independent because he is president and chief executive officer of the company), are independent under the standards set forth in the applicable Nasdaq rules.

## **BOARD LEADERSHIP STRUCTURE**

Mr. Hatfield was appointed as the independent chairperson of our Board in December 2018. As the independent chairperson, Mr. Hatfield has the authority, among other things, to call and preside over Board meetings, including meetings of the independent directors, to set meeting agendas and to determine materials to be distributed to our Board. Accordingly, our Board chairperson has substantial ability to shape the work of our Board. We believe that separation of the positions of Board chairperson and chief executive officer reinforces the independence of our Board in its oversight of the business and affairs of the company. In addition, we believe that having an independent Board chairperson creates an environment that is more conducive to objective evaluation and oversight of management's performance, increasing management accountability and improving the ability of our Board to monitor whether management's actions are in the best interests of the company and its stockholders. As a result, we believe that having an independent Board chairperson can enhance the effectiveness of our Board as a whole. Prior to Mr. Hatfield's appointment, Dr. Booth served as our independent chairperson.

## **ROLE OF THE BOARD IN RISK OVERSIGHT**

One of our Board's key functions is informed oversight of our risk management process. Our Board does not have a standing risk management committee, but rather administers this oversight function directly through our Board as a whole, as well as through various Board standing committees that address risks inherent in their respective areas of oversight. In particular, our Board is responsible for monitoring and assessing strategic risk exposure, including a determination of the nature and level of risk appropriate for the company. Our Audit Committee has the responsibility to consider and discuss our major financial risk exposures and the steps our management has taken to monitor and control these exposures, including guidelines and policies to govern the process by which risk assessment and management is undertaken. Our Audit Committee also monitors compliance with legal and regulatory requirements, in addition to oversight of the performance of our internal audit function. Our Nominating and Corporate Governance Committee monitors the effectiveness of our corporate governance guidelines, including whether they are successful in preventing illegal or improper liability-creating conduct. Our Compensation Committee assesses and monitors whether any of our compensation policies and programs has the potential to encourage excessive risk-taking. Typically, the entire Board meets with our chief financial officer, our executive officer responsible for our risk management, at least

## [Table of Contents](#)

annually, and the applicable Board committees meet at least annually with the employees responsible for risk management in the committees' respective areas of oversight. Both our Board as a whole and the various standing committees receive periodic reports from our chief financial officer, as well as incidental reports as matters may arise. It is the responsibility of the committee chairs to report findings regarding material risk exposures to our Board as quickly as possible.

### **MEETINGS OF THE BOARD OF DIRECTORS**

Our Board met four times during the last fiscal year. Each director who served as a member of our Board in 2018 attended at least 75% of the aggregate number of meetings of the Board and of the committees on which he or she served, held during the portion of the last fiscal year for which he or she was a director or committee member, respectively. Arlene M. Morris was appointed to our Board in January 2018, and Dr. Bruce Booth resigned from our Board in December 2018.

As required under applicable Nasdaq listing standards, in the fiscal year ended December 31, 2018, our independent directors met four times in regularly scheduled executive sessions at which only independent directors were present.

### **INFORMATION REGARDING COMMITTEES OF THE BOARD OF DIRECTORS**

As noted above, our Board has three committees: our Audit Committee, our Compensation Committee, and our Nominating and Corporate Governance Committee. Below is a description of each committee of our Board.

Each of the committees has authority to engage legal counsel or other experts or consultants, as it deems appropriate to carry out its responsibilities. Our Board has determined that each member of each committee meets the applicable SEC and Nasdaq rules and regulations regarding "independence" and each member is free of any relationship that would impair his or her individual exercise of independent judgment with regard to the company.

#### **Audit Committee**

Our Audit Committee was established by our Board in accordance with Section 3(a)(58)(A) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), to oversee our corporate accounting and financial reporting processes and audits of our financial statements. For this purpose, our Audit Committee performs several functions. Our Audit Committee evaluates the performance of and assesses the qualifications of the independent auditors; determines and approves the engagement of the independent auditors; determines whether to retain or terminate the existing independent auditors or to appoint and engage new independent auditors; reviews and approves the retention of the independent auditors to perform any proposed permissible non-audit services; monitors the rotation of partners of the independent auditors on the company's audit engagement team as required by law; reviews and approves or rejects transactions between the company and any related persons; confers with management and the independent auditors regarding the effectiveness of internal control over financial reporting; establishes procedures, as required under applicable law, for the receipt, retention, and treatment of complaints received by the company regarding accounting, internal accounting controls or auditing matters, and the confidential and anonymous submission by employees of concerns regarding questionable accounting or auditing matters; and meets to review our annual audited financial statements and quarterly financial statements with management and the independent auditor, including a review of our disclosures under the "Management's Discussion and Analysis of Financial Condition and Results of Operations" discussion in our annual reports on Form 10-K and quarterly reports on Form 10-Q.

Our Audit Committee is currently composed of three directors: Mr. Turner, who serves as chairperson, Mr. Hatfield, and Ms. Morris. Ms. Morris was appointed as a member of the Audit Committee in December 2018, upon the resignation of Dr. Booth, who previously served as a member of our Audit Committee. Our Audit

## [Table of Contents](#)

Committee met four times during the fiscal year ended December 31, 2018. Our Board has adopted a written Audit Committee charter that is available to stockholders on the company's website at [www.miragen.com](http://www.miragen.com).

Our Board reviews the Nasdaq listing standards definition of independence for Audit Committee members on an annual basis and has determined that all members of our Audit Committee are independent (as independence is currently defined in Rule 5605(c)(2)(A)(i) and (ii) of the Nasdaq listing standards).

Our Board has also determined that Mr. Turner qualifies as an "audit committee financial expert," as defined in the applicable SEC rules. Our Board made a qualitative assessment of Mr. Turner's level of knowledge and experience based on a number of factors, including his formal education and prior experience as a chief financial officer and member of audit committees for public reporting companies.

### *Report of our Audit Committee of the Board of Directors<sup>1</sup>*

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

Joseph L. Turner  
Jeffrey S. Hatfield  
Arlene M. Morris

### **Compensation Committee**

Our Compensation Committee is currently composed of three directors: Dr. Hughes, who serves as chairperson, Mr. Bowden, and Mr. Koch. All members of our Compensation Committee are independent (as independence is currently defined in Rule 5605(d)(2) of the Nasdaq listing standards). Our Compensation Committee met four times during the fiscal year ended December 31, 2018. Our Board has adopted a written Compensation Committee charter that is available to stockholders on the company's website at [www.miragen.com](http://www.miragen.com).

Our Compensation Committee acts on behalf of our Board to review, adopt, or if it deems appropriate, make recommendations to be adopted by our Board, and oversees our compensation strategy, policies, plans, and programs, including:

- establishment of corporate and individual performance objectives relevant to the compensation of our executive officers, directors, and other senior management and evaluation of performance in light of these stated objectives;
- review and approval of the compensation and other terms of employment or service, including severance and change-in-control arrangements, of our chief executive officer, the other executive officers, and directors; and

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<sup>1</sup>The material in this report is not "soliciting material," is not deemed "filed" with the SEC and is not to be incorporated by reference in any filing of the company under the Securities Act of 1933, as amended, or the Exchange Act, whether made before or after the date hereof and irrespective of any general incorporation language in any such filing.

## Table of Contents

- administration of our equity compensation plans, pension and profit-sharing plans, deferred compensation plans, and other similar plan and programs.

### *Compensation Committee Processes and Procedures*

Typically, our Compensation Committee meets as its members deem necessary or appropriate, but in no event less than annually, and with greater frequency if necessary. The agenda for each meeting is usually developed by the chairperson of our Compensation Committee in consultation with management. Our Compensation Committee meets regularly in executive session. However, from time to time, various members of management and other employees as well as outside advisors or consultants may be invited by our Compensation Committee to make presentations, to provide financial or other background information or advice, or to otherwise participate in Compensation Committee meetings. The chief executive officer may not participate in, or be present during, any deliberations or determinations of our Compensation Committee regarding his compensation or individual performance objectives. The charter of our Compensation Committee grants our Compensation Committee full access to all books, records, facilities, and personnel of the company. In addition, under its charter, our Compensation Committee has the authority to obtain, at the expense of the company, advice and assistance from compensation consultants and internal and external legal, accounting, or other advisors and other external resources that our Compensation Committee considers necessary or appropriate in the performance of its duties. Our Compensation Committee has direct responsibility for the oversight of the work of any consultants or advisers engaged for the purpose of advising the Committee. In particular, our Compensation Committee has the sole authority to retain, in its sole discretion, compensation consultants to assist in its evaluation of executive and director compensation, including the authority to approve the consultant's reasonable fees and other retention terms. Under its charter, our Compensation Committee may select, or receive advice from, a compensation consultant, legal counsel, or other adviser to our Compensation Committee, other than in-house legal counsel and certain other types of advisers, only after taking into consideration six factors, prescribed by the SEC and Nasdaq, that bear upon the adviser's independence; however, there is no requirement that any adviser be independent.

In 2016, after taking into consideration the six factors prescribed by the SEC and Nasdaq described above, our Compensation Committee engaged Radford, an Aon Hewitt company ("Radford"), as a compensation consultant because of its reputation and previous experience advising similarly situated companies. We requested that Radford:

- evaluate the efficacy of our existing compensation strategy and practices in supporting and reinforcing our long-term strategic goals; and
- assist in refining our compensation strategy and in developing and implementing an executive compensation program to execute that strategy.

As part of its engagement, Radford developed a comparative group of companies and to perform analyses of competitive performance and compensation levels for that group. Radford conducted individual interviews with certain members of senior management and certain members of the Compensation Committee to better understand the company's historical pay practices, executive pay philosophy, and key business objectives which drive performance-based elements of the compensation program. Radford ultimately developed recommendations that were presented to the Compensation Committee for its consideration. Following an active dialogue with Radford, the Compensation Committee approved the recommendations of Radford for our executive officers in 2018. These discussions and analyses are performed annually and were a consideration by the Compensation Committee for our executive officers in 2019.

Under its charter, our Compensation Committee may form, and delegate authority to, subcommittees as appropriate. In 2017, our Compensation Committee formed a single member non-officer stock option subcommittee, currently composed of Dr. Marshall, to which it delegated authority to grant, without any further action required by our Compensation Committee, stock options to employees who are not officers of the company. The purpose of this delegation of authority is to enhance the flexibility of option administration

within the company and to facilitate the timely grant of options to non-management employees, particularly new employees, within specified limits approved by our Compensation Committee. In particular, the subcommittee may not grant options to acquire more than 50,000 shares per employee and such grants shall vest over four years, with 25% of the shares vesting on the first anniversary of the applicable subcommittee member is also required, as part of our Compensation Committee's oversight function, to provide our Compensation Committee with a list of the grants made by the subcommittee at the first meeting of our Compensation Committee following the approval of such grants. In the fiscal year ended December 31, 2018, the subcommittee granted options to purchase an aggregate of 206,300 shares to non-officer employees.

Historically, our Compensation Committee has made most of the significant adjustments to annual compensation, determined bonus and equity awards and established new performance objectives at one or more meetings held during the first quarter of the year. However, our Compensation Committee also considers matters related to individual compensation, such as compensation for new executive hires, as well as high-level strategic issues, such as the efficacy of the company's compensation strategy, potential modifications to that strategy and new trends, plans, or approaches to compensation, at various meetings throughout the year. Generally, our Compensation Committee's process comprises two related elements: the determination of compensation levels and the establishment of performance objectives for the current year. For executives other than the chief executive officer, our Compensation Committee solicits and considers evaluations and recommendations submitted to our Compensation Committee by the chief executive officer. In the case of our chief executive officer, the evaluation of his performance is conducted by our Compensation Committee, which determines any adjustments to his compensation as well as awards to be granted. For all executives and directors as part of its deliberations, our Compensation Committee may review and consider, as appropriate, materials such as financial reports and projections, operational data, tax and accounting information, tally sheets that set forth the total compensation that may become payable to executives in various hypothetical scenarios, executive and director stock ownership information, company stock performance data, analyses of historical executive compensation levels, and current company-wide compensation levels and recommendations of our Compensation Committee's compensation consultant, including analyses of executive and director compensation paid at other companies identified by the consultant.

#### **Nominating and Corporate Governance Committee**

Our Nominating and Corporate Governance Committee is responsible for identifying, reviewing and evaluating candidates to serve as directors of the company (consistent with criteria approved by our Board), reviewing and evaluating incumbent directors, recommending to our Board the selection of candidates for election to our Board, making recommendations to our Board regarding the membership of the committees of our Board, assessing the performance of our Board and developing a set of corporate governance principles for the company.

Our Nominating and Corporate Governance Committee is currently comprised of three directors: Dr. Koch, who serves as chairperson, Dr. Hughes, and Ms. Morris. Ms. Morris was appointed to our Nominating and Corporate Governance Committee in March 2018. All members of our Nominating and Corporate Governance Committee are independent (as independence is currently defined in Rule 5605(a)(2) of the Nasdaq listing standards). Our Nominating and Corporate Governance Committee met twice during the fiscal year ended December 31, 2018. Our Board has adopted a written Nominating and Corporate Governance Committee charter that is available to stockholders on the company's website and [www.miragen.com](http://www.miragen.com).

Our Nominating and Corporate Governance Committee appreciates the value of thoughtful Board refreshment, and regularly identifies and considers qualities, skills, and other director attributes that would enhance the composition of the Board. Our Nominating and Corporate Governance Committee believes that candidates for director should have certain minimum qualifications, including the ability to read and understand basic financial statements, being over 21 years of age, and having the highest personal integrity and ethics. Our Nominating and Corporate Governance Committee also intends to consider such factors as possessing relevant expertise

## Table of Contents

upon which to be able to offer advice and guidance to management, having sufficient time to devote to the affairs of the company, demonstrated excellence in his or her field, having the ability to exercise sound business judgment, and having the commitment to rigorously represent the long-term interests of our stockholders. However, our Nominating and Corporate Governance Committee retains the right to modify these qualifications from time to time. Candidates for director nominee are reviewed in the context of the current composition of our Board, the operating requirements of the company, and the long-term interests of our stockholders. In conducting this assessment, our Nominating and Corporate Governance Committee typically considers diversity, age, skills, and such other factors as it deems appropriate, given the current needs of our Board and the company, to maintain a balance of knowledge, experience, and capability.

In the case of incumbent directors whose terms of office are set to expire, our Nominating and Corporate Governance Committee reviews these directors' overall service to the company during their terms, including the number of meetings attended, level of participation, quality of performance, and any other relationships and transactions that might impair the directors' independence. Our Nominating and Corporate Governance Committee also takes into account the results of our Board's self-evaluation, conducted annually on a group and individual basis. In the case of new director candidates, our Nominating and Corporate Governance Committee also determines whether the nominee is independent for Nasdaq purposes, which determination is based upon applicable Nasdaq listing standards, applicable SEC rules and regulations, and the advice of counsel, if necessary. Our Nominating and Corporate Governance Committee then uses its network of contacts to compile a list of potential candidates, but may also engage, if it deems appropriate, a professional search firm. Our Nominating and Corporate Governance Committee conducts any appropriate and necessary inquiries into the backgrounds and qualifications of possible candidates after considering the function and needs of our Board. Our Nominating and Corporate Governance Committee meets to discuss and consider the candidates' qualifications and then selects a nominee for recommendation to our Board by majority vote. During the fiscal year ended December 31, 2018, our Nominating and Corporate Governance Committee did not engage any independent consultant to assist in the process of identifying or evaluating director candidates.

Our Nominating and Corporate Governance Committee will consider director candidates recommended by stockholders. Our Nominating and Corporate Governance Committee does not intend to alter the manner in which it evaluates candidates, including the minimum criteria set forth above, based on whether or not the candidate was recommended by a stockholder. Stockholders who wish to recommend individuals for consideration by our Nominating and Corporate Governance Committee to become nominees for election to our Board may do so by delivering a written recommendation to our Nominating and Corporate Governance Committee at the following address: 6200 Lookout Road, Boulder, Colorado 80301, Attn: Secretary. If a stockholder wishes our Nominating and Corporate Governance Committee to consider a director candidate for nomination at an annual meeting of the company's stockholders, then the recommendation must be provided at least 60 days, but not more than 90 days, prior to the anniversary date of the preceding year's annual meeting of stockholders; provided, however, that in the event that the date of the annual meeting is advanced more than 30 days prior to such anniversary date or delayed more than 60 days after such anniversary date, then to be timely such notice must be received by the company no later than the later of the close of business on the 70th day prior to the date of the meeting or the close of business on the 10th day following the day on which public announcement of the date of the meeting was made. Submissions must include the name and address of the stockholder on whose behalf the submission is made, the number and class of shares of the company that are owned beneficially by such stockholder as of the date of the submission, the full name of the proposed nominee, a description of the proposed nominee's business experience for at least the previous five years, complete biographical information, and a description of the proposed nominee's qualifications as a director. Any such submission must be accompanied by the written consent of the proposed nominee to be named as a nominee and to serve as a director if elected.

## **CODE OF ETHICS**

We have adopted a written code of business conduct and ethics that applies to our directors, officers, and employees, including our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions. A current copy of the code is posted on our website, which is located at [www.miragen.com](http://www.miragen.com). If we make any substantive amendments to, or grant any waivers from, the code of business conduct and ethics for any officer or director, we will promptly disclose the nature of such amendment or waiver on our website or in a current report on Form 8-K.

## **STOCKHOLDER COMMUNICATIONS WITH THE BOARD OF DIRECTORS**

Our Board has adopted a formal process by which stockholders may communicate with our Board or any of its directors. Stockholders who wish to communicate with our Board may do so by sending written communications to our Board or such director c/o Miragen Therapeutics, Inc., 6200 Lookout Road, Boulder, Colorado 80301, Attn: Secretary. Each communication must set forth the name and address of the stockholder on whose behalf the communication is sent, and the number and class of shares of the company that are owned beneficially by such stockholder as of the date of the communication. The Secretary will review each communication and then will forward such communication to our Board or to any individual director to whom the communication is addressed unless the communication contains advertisements or solicitations or is unduly hostile, threatening or similarly inappropriate, in which case the Secretary shall discard the communication.

## PROPOSAL 2

### RATIFICATION OF SELECTION OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Our Audit Committee has selected KPMG LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2019 and has further directed that management submit the selection of its independent registered public accounting firm for ratification by the stockholders at the annual meeting. KPMG LLP has audited the company's financial statements since the fiscal year ended December 31, 2017. A representative of KPMG LLP is expected to be present at the annual meeting. The representative will have an opportunity to make a statement if he or she so desires and will be available to respond to appropriate questions.

Neither our Bylaws nor other governing documents or law require stockholder ratification of the selection of KPMG LLP as our independent registered public accounting firm. However, we are submitting the selection of KPMG LLP to the stockholders for ratification as a matter of good corporate practice. If the stockholders fail to ratify the selection, our Audit Committee will reconsider whether or not to retain that firm. Even if the selection is ratified, our Audit Committee in its discretion may direct the appointment of different independent auditors at any time during the year if they determine that such a change would be in the best interests of the company and its stockholders.

The affirmative vote of the holders of a majority of the shares present or represented by proxy and entitled to vote on the matter at the annual meeting will be required to ratify the selection of KPMG LLP.

### PRINCIPAL ACCOUNTANT FEES AND SERVICES

The following table sets forth the fees for professional services rendered by KPMG LLP, our independent registered public accounting firm, in connection with the audits of our annual financial statements for the years ended December 31, 2018 and 2017 and for other services rendered by KPMG LLP during those periods.

|                        | Year Ended December 31, |               |
|------------------------|-------------------------|---------------|
|                        | 2018                    | 2017          |
|                        | (in thousands)          |               |
| Audit fees (1)         | \$ 287                  | \$ 300        |
| Audit-related fees (2) | —                       | —             |
| Tax fees (3)           | —                       | —             |
| All other fees (4)     | —                       | —             |
| <b>Total fees</b>      | <b>\$ 287</b>           | <b>\$ 300</b> |

- (1) Audit fees consist of fees billed for professional services for audit and quarterly review of our financial statements and review of our registration statement for the Merger, and related services that are normally provided in connection with statutory and regulatory filings or engagements.
- (2) Audit-related fees include services relating to accounting consultations and reviews and due diligence services.
- (3) Tax fees include services relating to tax compliance, tax advice, and tax planning in the United States.
- (4) All other fees include the aggregate of the fees billed for products and services provided by the principal accountant other than the products and services disclosed as audit fees, audit-related fees, and tax fees.

All fees described above were pre-approved by our Audit Committee. We have furnished the foregoing disclosure to KPMG LLP.



## **PRE-APPROVAL POLICIES AND PROCEDURES**

Our Audit Committee considered the independence of KPMG LLP, as applicable, and whether the audit and non-audit services each provided to us are compatible with maintaining that independence. Our Audit Committee has adopted a set of policies governing the provision of non-audit services by our independent registered public accounting firm. Our Audit Committee has adopted procedures by which our Audit Committee must approve in advance all services provided by and fees paid to our independent registered public accounting firm. The advance approval requirement was not waived in any instance during the past two fiscal years.

## **CHANGE IN INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

BDO USA, LLP, (“BDO”), served as the independent registered public accounting firm for the audit of the financial statements for Miragen Therapeutics, Inc. (formerly Signal Genetics, Inc.), for the year ended December 31, 2016 and through the closing of the Merger. On February 13, 2017, following the closing of the Merger, our Audit Committee approved the appointment of KPMG LLP as our independent registered public accounting firm to audit our financial statements for the year ended December 31, 2017, in place of BDO. The decision to change our accounting firm was authorized by our Audit Committee. On March 24, 2017, following completion of our audit for the fiscal year ended December 31, 2016, our Audit Committee approved the dismissal of BDO as our independent registered public accounting firm, effective immediately.

The reports of BDO on the company’s financial statements for each of the years ended December 31, 2016, and December 31, 2015, did not contain an adverse opinion or a disclaimer of opinion, nor were they qualified or modified as to uncertainty, audit scope or accounting principles.

In connection with the audits of our financial statements for the years ended December 31, 2016 and 2015, and the subsequent interim periods through March 24, 2017, there were no (i) “disagreements” (as that term is defined in Item 304(a)(1)(iv) of Regulation S-K and related instructions) between the company and BDO on any matter of accounting principles or practices, financial statement disclosure or auditing scope or procedures which, if not resolved to the satisfaction of BDO, would have caused BDO to make reference to the subject matter of the disagreement in their reports, or (ii) “reportable events” (as that term is defined in Item 304(a)(1)(v) of Regulation S-K). BDO’s letter to the SEC stating its agreement with the statements in this paragraph was filed as an exhibit to the company’s current report on Form 8-K dated March 30, 2017.

During our fiscal year ended December 31, 2016, and the subsequent interim period through March 24, 2017, we nor anyone on our behalf consulted with KPMG regarding either (i) the application of accounting principles to a specific transaction, completed or proposed, or the type of audit opinion that might be rendered on our financial statements, and neither a written report nor oral advice was provided to us that KPMG concluded was an important factor considered by us in reaching a decision as to any accounting, auditing or financial reporting issue or (ii) any matter that was either the subject of a disagreement (as defined in Item 304(a)(1)(iv) of Regulation S-K and the related instructions) or a reportable event (as described in Item 304(a)(1)(v) of Regulation S-K).

We have furnished the foregoing disclosure to BDO and KPMG.

## **THE BOARD OF DIRECTORS RECOMMENDS A VOTE IN FAVOR OF PROPOSAL 2.**

**SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT**

The following table sets forth certain information with respect to the beneficial ownership of our capital stock as of April 22, 2019 (except where otherwise indicated) for:

- each person, or group of affiliated persons, who are known by us to beneficially own more than 5% of the outstanding shares of our capital stock;
- each of our current directors;
- each of our executive officers named in the Summary Compensation Table; and
- all of our current directors and executive officers of as a group.

Applicable percentages are based on 30,926,219 shares outstanding on April 22, 2019, adjusted as required by rules promulgated by the SEC. Beneficial ownership is determined under SEC rules and includes sole or shared power to vote or dispose of shares of our common stock. The number and percentage of shares beneficially owned by a person or entity also include shares of common stock subject to stock options that are currently exercisable or become exercisable within 60 days of April 22, 2019. However, these shares are not deemed to be outstanding for the purpose of computing the percentage of shares beneficially owned of any other person or entity. Except as indicated in footnotes to the table below or, where applicable, to the extent authority is shared by spouses under community property laws, the beneficial owners named in the table have, to our knowledge, sole voting and dispositive power with respect to all shares of common stock shown to be beneficially owned by them based on information provided to us by such stockholders. Unless otherwise indicated, the address for each stockholder listed is: c/o Miragen Therapeutics, Inc., 6200 Lookout Road Boulder, Colorado 80301.

| Name   | Number of Shares<br>Beneficially Owned | Percentage<br>Ownership |
|--|--|-------------------------|
| <b>5% or Greater Stockholders</b>                  |  |                         |
| Atlas Venture Fund VII, L.P.                       | 3,142,580 (1)                          | 10.2%                   |
| FMR, LLC   | 2,888,656 (2)                          | 9.3%                    |
| Remeditex Ventures LLC                             | 2,706,563 (3)                          | 8.8%                    |
| 683 Capital Partners, LP                           | 1,697,038 (4)                          | 5.5%                    |
| <b>Directors and Named Executive Officers</b>      |  |                         |
| William S. Marshall, Ph.D.                         | 845,421 (5)                            | 2.7%                    |
| Adam S. Levy                                       | 223,295 (6)                            | *                       |
| Paul D. Rubin, M.D.                                | 217,674 (7)                            | *                       |
| Christopher J. Bowden, M.D.                        | 26,666 (8)                             | *                       |
| Jeffrey S. Hatfield                                | 26,666 (9)                             | *                       |
| Thomas E. Hughes, Ph.D.                            | 68,909 (10)                            | *                       |
| Kevin Koch, Ph.D.                                  | 50,811 (11)                            | *                       |
| Arlene M. Morris                                   | 23,333 (12)                            | *                       |
| Joseph L. Turner                                   | 42,666 (13)                            | *                       |
| All directors and officers as a group (10 persons) | 1,724,656 (14)                         | 5.3%                    |

\* Represents beneficial ownership of less than 1% of class.

(1) Based solely upon a Schedule 13D filed with the SEC on February 23, 2017. Atlas Venture Associates VII, L.P. is the sole general partner of Atlas Venture Fund VII, L.P., and Atlas Venture Associates VII, Inc. is the

## Table of Contents

sole general partner of Atlas Venture Associates VII, L.P. Atlas Venture Associates VII, L.P., by virtue of its position as the general partner of Atlas Venture Fund VII, L.P., and Atlas Venture Associates VII, Inc., by virtue of its position as the general partner of Atlas Venture Associates VII, L.P., each may be deemed to beneficially own and share voting and dispositive power with respect to the shares of common stock owned by Atlas Venture Fund VII, L.P. The principal business address of Atlas Venture VII, L.P. is 25 First Street, Suite 303, Cambridge, MA 02141.

- (2) Based solely upon a Schedule 13G/A filed with the SEC on November 13, 2018. Abigail P. Johnson is a Director, the Chairman, and the Chief Executive Officer of FMR LLC. Members of the Johnson family, including Abigail P. Johnson, are the predominant owners, directly or through trusts, of Series B voting common shares of FMR LLC, representing 49% of the voting power of FMR LLC. The Johnson family group and all other Series B shareholders have entered into a shareholders' voting agreement under which all Series B voting common shares will be voted in accordance with the majority vote of Series B voting common shares. Accordingly, through their ownership of voting common shares and the execution of the shareholders' voting agreement, members of the Johnson family may be deemed, under the Investment Company Act of 1940, to form a controlling group with respect to FMR LLC. Neither FMR LLC nor Abigail P. Johnson has the sole power to vote or direct the voting of the shares owned directly by the various investment companies registered under the Investment Company Act ("Fidelity Funds") advised by Fidelity Management & Research Company ("FMR Co"), a wholly-owned subsidiary of FMR LLC, which power resides with the Fidelity Funds' Boards of Trustees. FMR Co carries out the voting of the shares under written guidelines established by the Fidelity Funds' Boards of Trustees. The address for FMR, LLC is 245 Summer Street, Boston, MA 02110.
- (3) Based solely upon a Schedule 13G filed with the SEC on February 17, 2017. Remeditex Ventures LLC shares voting and dispositive power over its shares of common stock with Malachite Trust, the majority owner of Remeditex Ventures LLC and Lyda Hill. Ms. Hill is the Trustee of the Malachite Trust. By reason of such relationships, Ms. Hill and the Malachite Trust may be deemed to beneficially own the shares of common stock owned directly by Remeditex Ventures LLC. The principal business address of Remeditex is 2727 N. Harwood Street, Suite 200, Dallas, TX 75201.
- (4) Based solely upon a Schedule 13G filed with the SEC on January 3, 2019. 683 Capital Management, LLC and Ari Zweiman share voting and dispositive power over the shares of common stock owned by 683 Capital Partners, LP, and may be deemed to beneficially own the shares of common stock owned by 683 Capital Partners, LP. The principal business address of 683 Capital Partners, LP is 3 Columbus Circle, Suite 2205, New York, NY 10019.
- (5) Includes 269,396 shares of common stock and 576,025 shares of common stock issuable upon exercise of options to purchase our common stock within 60 days of April 22, 2019.
- (6) Includes 14,290 shares of common stock and 209,005 shares of common stock issuable upon exercise of options to purchase our common stock within 60 days of April 22, 2019.
- (7) Includes 217,674 shares of common stock issuable upon exercise of options to purchase our common stock within 60 days of April 22, 2019.
- (8) Includes 26,666 shares of common stock issuable upon exercise of options to purchase our common stock within 60 days of April 22, 2019.
- (9) Includes 26,666 shares of common stock issuable upon exercise of options to purchase our common stock within 60 days of April 22, 2019.
- (10) Includes 12,827 shares of common stock and 56,082 shares of common stock issuable upon exercise of options to purchase our common stock within 60 days of April 22, 2019.
- (11) Includes 50,811 shares of common stock issuable upon exercise of options to purchase our common stock within 60 days of April 22, 2019.

[Table of Contents](#)

- (12) Includes 23,333 shares of common stock issuable upon exercise of options to purchase our common stock within 60 days of April 22, 2019.
- (13) Includes 42,666 shares of common stock issuable upon exercise of options to purchase our common stock within 60 days of April 22, 2019.
- (14) Includes 329,750 shares of common stock and 1,394,906 shares of common stock issuable upon exercise of options to purchase our common stock within 60 days of April 22, 2019 held by our current directors and executive officers, including William S. Marshall, Ph.D., Jason A. Leverone, Adam S. Levy, Paul D. Rubin, M.D., Christopher J. Bowden, M.D., Jeffrey S. Hatfield, Thomas E. Hughes, Ph.D., Kevin Koch, Ph.D., Arlene M. Morris, and Joseph L. Turner.

## **SECTION 16(A) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE**

Section 16(a) of the Exchange Act requires our directors and executive officers, and persons who own more than 10% of a registered class of our equity securities, to file with the SEC initial reports of ownership within 10 days after he or she becomes a beneficial owner, director, or officer and reports of changes in ownership of our common stock and other equity securities within two business days after the transaction is executed. Our officers, directors and greater than 10% stockholders are required by SEC regulations to furnish us with copies of all Section 16(a) forms they file. To our knowledge, based solely on a review of the copies of such reports furnished to us and written representations that no other reports were required, during the fiscal year ended December 31, 2018, all Section 16(a) filing requirements applicable to our officers, directors, and greater than 10% beneficial owners were in compliance.

**SECURITIES AUTHORIZED FOR ISSUANCE UNDER EQUITY COMPENSATION PLANS**

As of December 31, 2018, we had two equity compensation plans in place under which shares of our common stock were authorized for issuance:

| <b>Plan Category</b>                                       | <b>Number of securities to be issued upon exercise of outstanding options, warrants and rights</b> | <b>Weighted average exercise price of outstanding options, warrants and rights</b> | <b>Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))</b> |
|--|--|--|--|
|  | (a)  | (b)  | (c)  |
| Equity compensation plans approved by security holders (1) | 3,527,413 (2)  | \$ 5.76  | 705,317  |
| Equity compensation plans not approved by security holders | —  | \$ —   | —  |
| <b>Total</b>   | <b>3,527,413</b>   | <b>\$ 5.76</b>   | <b>705,317</b>   |

(1) Our 2016 Equity Incentive Plan includes an “evergreen” feature, which provides that an additional number of shares will automatically be added to the shares reserved for issuance under our 2016 Equity Incentive Plan on January 1st of each year, beginning on January 1, 2018 and ending on (and including) January 1, 2026. The number of shares added each calendar year will equal the lesser of: (i) 4% of the total number of shares of our common stock outstanding on December 31st of the preceding calendar year or (ii) a lesser number of shares determined by the board of directors.

(2) Represents outstanding options or warrants to purchase shares of common stock.

## EXECUTIVE COMPENSATION

### EXECUTIVE OFFICERS

The following table lists the names and ages as of May 3, 2019 and positions of the individuals who are currently serving as our executive officers.

| Name                       | Age | Position(s)  |
|----------------------------|-----|--|
| William S. Marshall, Ph.D. | 55  | President, Chief Executive Officer, and Director   |
| Jason A. Leverone          | 45  | Chief Financial Officer, Secretary, and Treasurer  |
| Adam S. Levy               | 41  | Chief Business Officer                             |
| Paul D. Rubin, M.D.        | 65  | Executive Vice President, Research and Development |

**William S. Marshall, Ph.D.** Dr. Marshall's biography is included above under "*Proposal 1 — Election of Directors — Nominees.*"

**Jason A. Leverone.** Mr. Leverone has served as our chief financial officer, secretary, and treasurer since February 2017. Prior to joining us, Mr. Leverone joined Private Miragen in November 2008 as its senior director of finance and operations and was appointed vice president, finance in March 2010. Mr. Leverone was appointed as Private Miragen's chief financial officer in February 2012. Prior to joining Private Miragen, Mr. Leverone was senior director of finance and controller for Replidyne, Inc., a publicly-traded biotechnology company, from November 2005 to November 2008. Prior to joining Replidyne, Mr. Leverone was the corporate controller for CreekPath System, Inc., an international software development company, from September 2002 to October 2005. He commenced his professional career with the accounting firm of Ernst and Young LLP, where he last served as a senior accountant, and then Arthur Andersen LLP, where he last served as an audit manager. Mr. Leverone is a Certified Public Accountant and earned a B.S. in Business Administration from Bryant University.

**Adam S. Levy.** Mr. Levy has served as our chief business officer since February 2017. Prior to joining us, Mr. Levy served as Private Miragen's chief business officer since May 2016. Prior to joining Private Miragen, Mr. Levy served as a senior vice president of healthcare investment banking at Wedbush Securities Inc. from September 2013 to May 2016. From May 2011 to August 2012, Mr. Levy was employed by Merrill Lynch, Pierce, Fenner & Smith, Incorporated as vice president of healthcare investment banking. Prior to joining Merrill Lynch, Mr. Levy served as vice president of healthcare investment banking at Wedbush from October 2009 through April 2011. Between 2000 through 2009, Mr. Levy held multiple investment banking positions at Merrill Lynch, Pierce, Fenner & Smith, and Jefferies Group. Mr. Levy earned a B.S. in Applied Economics from Cornell University.

**Paul D. Rubin, M.D.** Dr. Rubin has served as our executive vice president, research and development since February 2017. Prior to joining us, Dr. Rubin served as Private Miragen's executive vice president, research and development since November 2016. Prior to joining Private Miragen, Dr. Rubin served as senior vice president, research and development and chief medical officer of Xoma Corporation, a publicly-traded biotechnology company, from November 2011 to November 2016, having joined Xoma in June 2011 as its vice president, clinical development, and chief medical officer. Prior to joining Xoma, Dr. Rubin was the chief medical officer at Funxional Therapeutics Ltd., a pharmaceutical company from February 2011 to June 2011. He served as chief executive officer of Resolvix Pharmaceuticals, Inc. from 2007 to 2009 and president and chief executive officer of Critical Therapeutics, Inc. from 2002 to 2007. From 1996 to 2002, Dr. Rubin served as senior vice president, development, and later as executive vice president, research and development at Sepracor, Inc. From 1993 to 1996, Dr. Rubin held senior level positions at Glaxo-Wellcome Pharmaceuticals, most recently as vice president of worldwide clinical pharmacology and early clinical development. During his tenure with Abbott Laboratories from 1987 to 1993, Dr. Rubin served as vice president, immunology and endocrinology. Dr. Rubin received a

B.A. from Occidental College and his M.D. from Rush Medical College. He completed his training in internal medicine at the University of Wisconsin.

## NAMED EXECUTIVE OFFICERS

Our named executive officers for the year ended December 31, 2018, which consist of each person who served as our principal executive officer for the year ended December 31, 2018, and our two other most highly compensated executive officers for the year ended December 31, 2018, consisted of the following:

| Officer                    | Title   |
|----------------------------|---|
| William S. Marshall, Ph.D. | Chief Executive Officer and Director<br>(Principal Executive Officer) |
| Adam S. Levy               | Chief Business Officer  |
| Paul D. Rubin, M.D.        | Executive Vice President, Research and Development                    |

## SUMMARY COMPENSATION TABLE

The following table sets forth the information regarding compensation paid to or earned by our named executive officers.

| Name                       | Principal Position                                 | Fiscal Year | Salary     | Bonus      | Stock Award(s)(1) | Option Award(s)(1) | All Other Compensation | Total        |
|----------------------------|--|-------------|------------|------------|-------------------|--------------------|------------------------|--------------|
| William S. Marshall, Ph.D. | Chief Executive Officer and President              | 2018        | \$ 490,000 | \$ 147,000 | \$ —              | \$ 1,350,005       | \$ —                   | \$ 1,987,005 |
|                            |  | 2017        | \$ 400,000 | \$ 180,000 | \$ —              | \$ 1,609,483       | \$ —                   | \$ 2,189,483 |
| Adam S. Levy               | Chief Business Officer                             | 2018        | \$ 345,000 | \$ 82,800  | \$ —              | \$ 440,818         | \$ —                   | \$ 868,618   |
|                            |  | 2017        | \$ 300,000 | \$ 108,000 | \$ —              | \$ 704,149         | \$ —                   | \$ 1,112,149 |
| Paul D. Rubin, M.D.        | Executive Vice President, Research and Development | 2018        | \$ 410,000 | \$ 98,400  | \$ —              | \$ 468,369         | \$ —                   | \$ 976,769   |
|                            |  | 2017        | \$ 395,000 | \$ 142,200 | \$ —              | \$ 704,149         | \$ —                   | \$ 1,241,349 |

(1) Amounts shown in this column consist of the aggregate grant date fair value of stock awards or options to purchase shares of common stock that were granted during the applicable fiscal year, computed in accordance with FASB ASC Topic 718, “Stock Compensation”. Our methodology, including our underlying estimates and assumptions used in calculating these values, is set forth in *Note 11 — Share-Based Compensation* to our audited financial statements included in our annual report on Form 10-K for the fiscal year ended December 31, 2018.

Executive compensation, including annual compensation, bonus, and equity awards, is determined, monitored, and approved by the Compensation Committee. Generally, our Compensation Committee’s process comprises two related elements: the determination of compensation levels and the establishment of performance objectives for the current year. For executives other than the chief executive officer, our Compensation Committee solicits and considers evaluations and recommendations submitted to our Compensation Committee by the chief executive officer. In the case of our chief executive officer, the evaluation of his performance is conducted by our Compensation Committee, which determines any adjustments to his compensation as well as awards to be granted. For all executives, as part of its deliberations, our Compensation Committee may review and consider, as appropriate, materials such as financial reports and projections, operational data, tax and accounting information, tally sheets that set forth the total compensation that may become payable to executives in various



## [Table of Contents](#)

hypothetical scenarios, executive and director stock ownership information, company stock performance data, analyses of historical executive compensation levels, and current company-wide compensation levels, and recommendations of our Compensation Committee's compensation consultant, including analyses of executive and director compensation paid at other companies identified by the consultant. In 2018 and 2019, the Compensation Committee heavily considered the analyses and recommendations provided by Radford in determining compensation of our executive officers.

### **Named Executive Officer Employment Agreements**

#### ***Marshall Employment Agreement***

In December 2016, Private Miragen entered into an employment agreement with Dr. Marshall to be effective, and which we assumed, upon the closing of the Merger. Under this employment agreement, Dr. Marshall is entitled to an annual base salary (subject to periodic review and adjustment by our Board or Compensation Committee) of \$490,000 and a discretionary annual cash bonus equal to 50% of Dr. Marshall's then effective base salary (subject to review and adjustment in the sole discretion of the Board or our Compensation Committee). Dr. Marshall is also eligible to participate in, subject to applicable eligibility requirements, all of our benefits plans and fringe benefits and programs that may be provided to our senior executives of from time to time. During 2018, Dr. Marshall was awarded the following additional compensation, which is also summarized in the compensation table above:

- cash bonuses totaling \$147,000, and
- options to purchase 245,000 shares of common stock at an exercise price of \$7.50, exercisable over a term of four years, of which 6.25% of the shares vested on April 30, 2018, and the remaining 93.75% of the shares vest thereafter in 45 monthly installments.

In 2019, Dr. Marshall's annual base salary is \$521,000, and his discretionary annual cash bonus target is 50% of such salary.

The employment agreement provides that either party may terminate the agreement at-will. In addition, the agreement provides that if we terminate Dr. Marshall's employment without cause or Dr. Marshall resigns for good reason, Dr. Marshall will be eligible to receive the following severance benefits: (i) an amount equal to 12 months of his annual base salary, less applicable deductions, payable in accordance with our normal payroll schedule; (ii) the vesting of the equivalent of 12 months on all of Dr. Marshall's stock options or other equity awards that were outstanding as of the effective date of Dr. Marshall's employment agreement; and (iii) 12 months of continued health coverage. Although, if such termination or resignation occurs within one month prior to or 12 months following a change of control, Dr. Marshall will be eligible to receive the following severance benefits: (i) an amount equal to 24 months of his annual base salary, less applicable deductions, payable in accordance with our normal payroll schedule; (ii) the vesting in full of all of his then outstanding stock options or other equity awards then outstanding and subject to time-based vesting; and (iii) 12 months of continued health coverage.

The following definitions have been adopted in Dr. Marshall's employment agreement:

- "cause" means (i) Dr. Marshall's commission of any felony or any crime involving fraud, dishonesty or moral turpitude under the laws of the United States or any state thereof; (ii) Dr. Marshall's attempted commission of, or participation in, a fraud or act of dishonesty against us; (iii) Dr. Marshall's intentional, material violation of any contract or agreement between Dr. Marshall and us or any statutory duty Dr. Marshall owes to us, in each case, which remains uncured for 30 days after we provide written notice of such action or conduct to Dr. Marshall; (iv) Dr. Marshall's unauthorized use or disclosure of our confidential information or trade secrets; or (v) Dr. Marshall's gross misconduct

## Table of Contents

which remains uncured for 30 days after we provide written notice of such action or conduct to Dr. Marshall.

- “good reason” means the occurrence, without Dr. Marshall’s consent, of any one or more of the following: (i) a material reduction in his base salary of 10% or more (unless such reduction is pursuant to a salary reduction program applicable generally to our similarly situated executives); (ii) a material reduction in Dr. Marshall’s authority, duties or responsibilities; (iii) a relocation of Dr. Marshall’s principal place of employment to a place that increases Dr. Marshall’s one-way commute by more than 25 miles; or (iv) material breach by us of any material provision of Dr. Marshall’s employment agreement.

All severance benefits payable to Dr. Marshall under his employment agreement are subject to him signing, not revoking, and complying with a release of claims.

### ***Levy Employment Agreement***

In December 2016, Private Miragen entered into an employment agreement with Mr. Levy to be effective, and which we assumed, upon the closing of the Merger. Under this employment agreement, Mr. Levy is entitled to an annual base salary (subject to periodic review and adjustment by our Board or Compensation Committee) of \$345,000 and a discretionary annual cash bonus equal to 40% of Mr. Levy’s then effective base salary (subject to review and adjustment in the sole discretion of the Board or our Compensation Committee). Mr. Levy is also eligible to participate in, subject to applicable eligibility requirements, all of our benefits plans and fringe benefits and programs that may be provided to our senior executives of from time to time. During 2018, Mr. Levy was awarded the following additional compensation, which is also summarized in the compensation table above:

- cash bonuses totaling \$82,800, and
- options to purchase 80,000 shares of common stock at an exercise price of \$7.50, exercisable over a term of four years, of which 6.25% of the shares vested on April 30, 2018, and the remaining 93.75% of the shares vest thereafter in 45 monthly installments.

In 2019, Mr. Levy’s annual base salary is \$345,000, and his discretionary annual cash bonus target is 40% of such salary.

The employment agreement provides that either party may terminate the agreement at-will. In addition, the agreement provides that if we terminate Mr. Levy’s employment without cause or Mr. Levy resigns for good reason, Mr. Levy will be eligible to receive the following severance benefits: (i) an amount equal to 12 months of his annual base salary, less applicable deductions, payable in accordance with our normal payroll schedule; (ii) the vesting of the equivalent of 12 months on all of Mr. Levy’s stock options or other equity awards that were outstanding as of the effective date of Mr. Levy’s employment agreement; and (iii) 12 months of continued health coverage. Although, if such termination or resignation occurs within one month prior to or 12 months following a change of control, Mr. Levy will be eligible to receive the following severance benefits: (i) an amount equal to 12 months of his annual base salary, less applicable deductions, payable in accordance with our normal payroll schedule; (ii) the vesting in full of all of Mr. Levy’s then outstanding stock options or other equity awards subject to time-based vesting; and (iii) twelve months of continued health coverage.

## Table of Contents

The following definitions have been adopted Mr. Levy's employment agreement:

- "cause" means (i) Mr. Levy's commission of any felony or any crime involving fraud, dishonesty or moral turpitude under the laws of the United States or any state thereof; (ii) Mr. Levy's attempted commission of, or participation in, a fraud or act of dishonesty against us; (iii) Mr. Levy's intentional, material violation of any contract or agreement between Mr. Levy and us or any statutory duty Mr. Levy owes to us, in each case, which remains uncured for 30 days after we provide written notice of such action or conduct to Mr. Levy; (iv) Mr. Levy's unauthorized use or disclosure of our confidential information or trade secrets; or (v) Mr. Levy's gross misconduct which remains uncured for 30 days after we provide written notice of such action or conduct to Mr. Levy.
- "good reason" means the occurrence, without Mr. Levy's consent, of any one or more of the following: (i) a material reduction in his base salary of 10% or more (unless such reduction is pursuant to a salary reduction program applicable generally to our similarly situated executives); (ii) a material reduction in Mr. Levy's authority, duties or responsibilities; (iii) a relocation of Mr. Levy's principal place of employment to a place that increases Mr. Levy's one-way commute by more than 25 miles; or (iv) material breach by us of any material provision of Mr. Levy's employment agreement.

All severance benefits payable to Mr. Levy under his employment agreement are subject to him signing, not revoking, and complying with a release of claims.

### ***Rubin Employment Agreement***

In December 2016, Private Miragen entered into an employment agreement with Dr. Rubin to be effective, and which we assumed, upon the closing of the Merger. Under this employment agreement, Dr. Rubin is entitled to an annual base salary (subject to periodic review and adjustment by our Board or Compensation Committee) of \$410,000 and a discretionary annual cash bonus equal to 40% of Dr. Rubin's then effective base salary (subject to review and adjustment in the sole discretion of the Board or our Compensation Committee). Dr. Rubin is also eligible to participate in, subject to applicable eligibility requirements, all of our benefits plans and fringe benefits and programs that may be provided to our senior executives of from time to time. During 2018, Dr. Rubin was awarded the following additional compensation, which is also summarized in the compensation table above:

- cash bonuses totaling \$98,400, and
- options to purchase 85,000 shares of common stock at an exercise price of \$7.50, exercisable over a term of four years, of which 6.25% of the shares vested on April 30, 2018, and the remaining 93.75% of the shares vest thereafter in 45 monthly installments.

In 2019, Mr. Rubin's annual base salary is \$426,000, and his discretionary annual cash bonus target is 40% of such salary.

The employment agreement provides that either party may terminate the agreement at-will. In addition, the agreement provides that if we terminate Dr. Rubin's employment without cause or Dr. Rubin resigns for good reason, Dr. Rubin will be eligible to receive the following severance benefits: (i) an amount equal to 12 months of his annual base salary, less applicable deductions, payable in accordance with our normal payroll schedule; (ii) the vesting of the equivalent of 12 months on all of Dr. Rubin's stock options or other equity awards that were outstanding as of the effective date of Dr. Rubin's employment agreement; and (iii) 12 months of continued health coverage. Although, if such termination or resignation occurs within one month prior to or 12 months following a change of control, Dr. Rubin will be eligible to receive the following severance benefits: (i) an amount equal to 12 months of his annual base salary, less applicable deductions, payable in accordance with our normal payroll schedule; (ii) the vesting in full of all of Dr. Rubin's then outstanding stock options or other equity awards subject to time-based vesting; and (iii) twelve months of continued health coverage.

## [Table of Contents](#)

The following definitions have been adopted in Dr. Rubin's employment agreement:

- "cause" means (i) Dr. Rubin's commission of any felony or any crime involving fraud, dishonesty or moral turpitude under the laws of the United States or any state thereof; (ii) Dr. Rubin's attempted commission of, or participation in, a fraud or act of dishonesty against us; (iii) Dr. Rubin's intentional, material violation of any contract or agreement between Dr. Rubin and us or any statutory duty Dr. Rubin owes to us, in each case, which remains uncured for 30 days after we provide written notice of such action or conduct to Dr. Rubin; (iv) Dr. Rubin's unauthorized use or disclosure of our confidential information or trade secrets; or (v) Dr. Rubin's gross misconduct which remains uncured for 30 days after we provide written notice of such action or conduct to Dr. Rubin.
- "good reason" means the occurrence, without Dr. Rubin's consent, of any one or more of the following: (i) a material reduction in his base salary of 10% or more (unless such reduction is pursuant to a salary reduction program applicable generally to our similarly situated executives); (ii) a material reduction in Dr. Rubin's authority, duties or responsibilities; (iii) a relocation of Dr. Rubin's principal place of employment to a place that increases Dr. Rubin's one-way commute by more than 25 miles; or (iv) material breach by us of any material provision of Dr. Rubin's employment agreement.

All severance benefits payable to Dr. Rubin under his employment agreement are subject to him signing, not revoking, and complying with a release of claims.

### OUTSTANDING EQUITY AWARDS AT DECEMBER 31, 2018

The following table provides information about the number of outstanding equity awards held by our named executive officers at December 31, 2018.

| Name                       | Grant Date | Vesting Commencement Date |     | Number of securities underlying unexercised options exercisable | Number of securities underlying unexercised options unexercisable | Option exercise price | Option Expiration Date |
|----------------------------|------------|---------------------------|-----|---|---|-----------------------|------------------------|
| William S. Marshall, Ph.D. | 6/15/2012  | 6/15/2012                 | (1) | 230,968   | —   | \$1.22                | 6/13/2022              |
|                            | 2/22/2016  | 2/22/2016                 | (1) | 111,060   | 45,731  | \$1.05                | 2/19/2026              |
|                            | 2/16/2017  | 2/16/2017                 | (1) | 91,666  | 108,334   | \$11.01               | 2/16/2027              |
|                            | 1/31/2018  | 1/31/2018                 | (2) | 56,145  | 188,855   | \$7.50                | 1/30/2028              |
| Adam S. Levy               | 6/15/2016  | 5/16/2016                 | (3) | 104,839   | 57,494  | \$1.05                | 6/13/2026              |
|                            | 2/16/2017  | 2/16/2017                 | (1) | 40,104  | 47,396  | \$11.01               | 2/16/2027              |
|                            | 1/31/2018  | 1/31/2018                 | (2) | 18,333  | 61,667  | \$7.50                | 1/30/2028              |
| Paul D. Rubin, M.D.        | 11/30/2016 | 11/16/2016                | (3) | 105,685   | 97,232  | \$5.69                | 11/30/2026             |
|                            | 2/16/2017  | 2/16/2017                 | (1) | 40,104  | 47,396  | \$11.01               | 2/16/2027              |
|                            | 1/31/2018  | 1/31/2018                 | (2) | 19,479  | 65,521  | \$7.50                | 1/30/2028              |

(1) The option vests as to 1/48 of the shares in monthly installments measured from vesting commencement date.

(2) 6.25% of the shares vested on April 30, 2018, and the remaining 93.75% of the shares vest thereafter in 45 monthly installments.

(3) Twenty-five percent of the shares subject to the option vest on the first anniversary of the vesting commencement date, and the remainder vest thereafter in 36 monthly installments.

## PAYMENTS DUE UPON TERMINATION OF EMPLOYMENT OR A CHANGE IN CONTROL

We have entered into employment agreements with Drs. Marshall and Rubin and Mr. Levy pursuant to which we have agreed to certain payments to our executive officers upon their termination or a change of control of the company. These obligations are discussed above under the heading “*Named Executive Officer Employment Agreements.*”

## EMPLOYEE BENEFIT PLANS

Our named executive officers are eligible to participate in all of our employee benefit plans, such as medical, dental, vision, group life, and disability insurance, in each case on the same basis as our other employees.

We also maintain a defined contribution employee retirement plan for our employees, including our named executive officers. Our 401(k) plan is intended to qualify as a tax-qualified plan under Section 401 of the Internal Revenue Code so that contributions to our 401(k) plan, and income earned on such contributions, are not taxable to participants until withdrawn or distributed from the 401(k) plan. Our 401(k) plan provides that each participant may contribute a portion of his or her pre-tax compensation, up to a statutory limit, which was \$18,500 for 2018 and \$19,000 for 2019. Participants who are at least 50 years old can also make “catch-up” contributions, which for 2018 and 2019 can be up to an additional \$6,000. Under our 401(k) plan, each employee is fully vested in his or her deferred salary contributions. Employee contributions are held and invested by the plan’s trustee, subject to participants’ ability to give investment directions by following specified procedures. In 2018, we provided matching contributions of up to 50% of the first 4% of each employee’s eligible contributions to the 401(k) plan.

We do not provide perquisites or personal benefits to our named executive officers. We do, however, pay the premiums for term life insurance for all of our employees, including our named executive officers.

None of our named executive officers participate in or have account balances in non-qualified defined contribution plans or other non-qualified deferred compensation plans maintained by us. Our Board or Compensation Committee may elect to provide our officers and other employees with non-qualified defined contribution or other non-qualified deferred compensation benefits in the future if it determines that doing so is in our best interests.

## DIRECTOR COMPENSATION

Effective upon the closing of the Merger, we assumed a non-employee director cash and equity compensation policy. During the twelve-month period following the date of each annual meeting, each non-employee director will be paid an annual cash retainer of \$35,000 for his or her service on our Board; provided that the non-employee chairperson of the Board will be paid an additional annual cash retainer of \$30,000.

In addition to the annual retainer described above, each non-employee director who serves as a chair or member of our Audit Committee, Compensation Committee, and Nominating and Corporate Governance Committee is paid an annual fee during the twelve-month period following the date of each annual meeting of our stockholders as follows:

|   | Member Annual<br>Fee (1) | Chairperson<br>Annual Fee |
|---|--------------------------|---------------------------|
| Audit Committee                               | \$ 7,500                 | \$ 15,000                 |
| Compensation Committee                        | 5,000                    | 10,000                    |
| Nominating and Corporate Governance Committee | 3,750                    | 7,500                     |

## [Table of Contents](#)

- (1) Annual fee paid to each non-employee director (other than the chairperson) who serves as a member of the corresponding committee of the Board.

Each non-employee director and committee member has the right to elect to receive all or a portion of annual compensation described above in the form of either cash, quarterly restricted common stock based on the closing price of our common stock on The Nasdaq Capital Market on the date of grant, or stock options to purchase shares of common stock based on the Black-Scholes option-pricing model as of the date of grant. Any such election will be made before the start of the fiscal year or within thirty days of first becoming eligible to receive compensation under this policy and with any such stock options or restricted common stock elected by the directors to vest on a quarterly basis in arrears, with stock options to expire ten years from the date of grant.

### *Equity Awards*

In addition to the compensation described above, each member of our Board will receive an automatic option grant to purchase 12,000 shares of our common stock (subject to adjustment for stock splits and similar matters) at each annual meeting once re-elected with an exercise price equal to the fair market value of a share of our common stock on such date. Each equity grant will vest in full on the earlier of the one-year anniversary of the date of grant or our next annual meeting.

Each new director elected or appointed to our Board will receive an initial equity grant of options to purchase 24,000 shares of our common stock (subject to adjustment for stock splits and similar matters) upon appointment or election with an exercise price equal to the fair market value of a share of our common stock on such date. Each option grant will vest in 36 equal monthly installments.

### *2018 Director Compensation*

The table below sets forth the compensation of our non-employee directors for the fiscal year ended December 31, 2018.

| Name (1)                    | Fees Earned or Paid in Cash | Stock Awards (2) | Option Awards (2) (3) | All Other Compensation | Total      |
|-----------------------------|-----------------------------|------------------|-----------------------|------------------------|------------|
| Bruce L. Booth, Ph.D.       | \$ —                        | \$ —             | \$ 54,381 (4)         | \$ —                   | \$ 54,381  |
| Christopher J. Bowden, M.D. | \$ 40,000                   | \$ —             | \$ 57,277 (5)         | \$ —                   | \$ 97,277  |
| Jeffrey S. Hatfield         | \$ 44,801                   | \$ —             | \$ 57,277 (5)         | \$ —                   | \$ 102,078 |
| Thomas E. Hughes, Ph.D.     | \$ 24,375                   | \$ —             | \$ 81,653 (5)(6)      | \$ —                   | \$ 106,028 |
| Kevin Koch, Ph.D.           | \$ 47,500                   | \$ —             | \$ 57,277 (5)         | \$ —                   | \$ 104,777 |
| Arlene M. Morris            | \$ 38,311                   | \$ —             | \$ 228,034 (5)(7)     | \$ —                   | \$ 266,345 |
| Joseph L. Turner            | \$ 50,000                   | \$ —             | \$ 57,277 (5)         | \$ —                   | \$ 107,277 |

- (1) Dr. Marshall, our current president and chief executive officer, also served as a member of our Board in the fiscal year ended December 31, 2018. Dr. Marshall's compensation for serving as our president and chief executive officer in 2018 is reported in the Summary Compensation Table and other compensation tables set forth under "*Executive Compensation*." Dr. Marshall did not receive any additional compensation for his service on our Board.

- (2) The values set forth in this column are based on the aggregate grant date fair value of the awards computed in accordance with FASB ASC Topic 718.

## Table of Contents

- (3) Including these stock options, as of December 31, 2018, each person serving in 2018 as a non-employee director held the following number of stock options: Dr. Booth, 26,370; Dr. Bowden, 36,000; Mr. Hatfield, 36,000; Dr. Hughes, 53,556; Dr. Koch, 53,248; Ms. Morris, 36,000; and Mr. Turner, 48,000.
- (4) On January 3, 2018, this non-employee director was granted stock options to purchases 10,191 shares of common stock at an exercise price of \$9.72, which was equal to the closing price of our common stock on The Nasdaq Capital Market on the date of grant. The stock options vested in quarterly installments, fully vesting on December 31, 2018. Dr. Booth served as a member of our Board through December 4, 2018, as of which date 7,643 option awards granted in 2018 had previously vested and 2,548 option awards were forfeited.
- (5) On June 27, 2018, each non-employee director was granted stock options to purchases 12,000 shares of common stock at an exercise price of \$6.46, which was equal to the closing price of our common stock on The Nasdaq Capital Market on the date of grant. The stock options will vest in full on June 19, 2019.
- (6) On January 3, 2018, this non-employee director was granted stock options to purchases 3,426 shares of common stock at an exercise price of \$9.72, which was equal to the closing price of our common stock on The Nasdaq Capital Market on the date of grant. The stock options vested in quarterly installments and were fully vested on December 31, 2018.
- (7) On January 3, 2018, this non-employee director was granted stock options to purchases 24,000 shares of common stock at an exercise price of \$9.72, which was equal to the closing price of our common stock on The Nasdaq Capital Market on the date of grant. The stock options vest in 36 monthly installments beginning on January 3, 2018.

## TRANSACTIONS WITH RELATED PERSONS AND INDEMNIFICATION

### RELATED-PERSON TRANSACTIONS POLICY AND PROCEDURES

In February 2017, we adopted a related-person transaction policy that sets forth our procedures for the identification, review, consideration and approval or ratification of related-person transactions. For purposes of our policy only, a related-person transaction is a transaction, arrangement or relationship, or any series of similar transactions, arrangements, or relationships, in which we and any related person are, were, or will be participants in which the amount involved exceeds the lesser of (x) \$120,000 or (y) 1% of the average of our total assets at year end for the last two completed fiscal years. Transactions involving compensation for services provided to us as an employee or director are not covered by this policy. A related person is any executive officer, director, or beneficial owner of more than 5% of any class of our voting securities, including any of their immediate family members and any entity owned or controlled by such persons.

Under the policy, if a transaction has been identified as a related-person transaction, including any transaction that was not a related-person transaction when originally consummated or any transaction that was not initially identified as a related-person transaction prior to consummation, our management must present information regarding the related-person transaction to our Audit Committee, or, if Audit Committee approval would be inappropriate, to another independent body of our Board, for review, consideration, and approval or ratification. The presentation must include a description of, among other things, the material facts, the interests, direct and indirect, of the related persons, the benefits to us of the transaction, and whether the transaction is on terms that are comparable to the terms available to or from, as the case may be, an unrelated third party or to or from employees generally. Under the policy, we will collect information that we deem reasonably necessary from each director, executive officer and, to the extent feasible, significant stockholder to enable us to identify any existing or potential related-person transactions and to effectuate the terms of the policy. In addition, under our code of business conduct and ethics, our employees and directors will have an affirmative responsibility to disclose any transaction or relationship that reasonably could be expected to give rise to a conflict of interest. In considering related-person transactions, our Audit Committee, or other independent body of our Board, will take into account the relevant available facts and circumstances including, but not limited to:

- the risks, costs, and benefits to us;
- the impact on a director's independence in the event that the related person is a director, immediate family member of a director or an entity with which a director is affiliated;
- the availability of other sources for comparable services or products; and
- the terms available to or from, as the case may be, unrelated third parties or to or from employees generally.

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

### CERTAIN RELATED-PERSON TRANSACTIONS

Described below are the transactions and series of similar transactions since January 1, 2017 in which:

- the amounts involved exceeded or will exceed the lesser of (x) \$120,000 or (y) 1% of the average of our total assets at year end for the last two completed fiscal years; and



## [Table of Contents](#)

- any of the directors, nominee for director, executive officers, holders of more than 5% of our capital stock (sometimes refer to as 5% stockholders below) or any member of their immediate family had or will have a direct or indirect material interest.

### ***Public Offering of Common Stock***

In February 2018, we entered into an underwriting agreement (the “Underwriting Agreement”) with Jefferies LLC, Evercore Group L.L.C., and Deutsche Bank Securities Inc., as representatives (the “Representatives”), of the several underwriters (collectively with the Representatives, the “Underwriters”), relating to the public offering of our common stock (the “Public Offering”). Pursuant to the Underwriting Agreement, in February 2018 we sold 7,414,996 shares of common stock at a price of \$5.50 per share, which resulted in net proceeds of approximately \$37.9 million after deducting underwriting commissions and discounts and other offering expenses payable by us.

The table below sets forth the number of shares of our common stock purchased by and the purchase price for the shares of common stock for each purchaser that is a director, executive officer or 5% stockholder, and their affiliates.

| <b>Name of Purchaser</b>       | <b>Shares of<br/>Common Stock</b> | <b>Purchase Price</b> |
|--------------------------------|-----------------------------------|-----------------------|
| Atlas Venture Fund X, L.P. (1) | 545,454                           | \$ 2,999,997          |
| Adam Levy                      | 9,090                             | \$ 49,995             |

- (1) The Atlas Venture Funds, together, hold more than 5% of our outstanding capital stock. Dr. Booth was a member of our Board and a director of Atlas Venture Associates VII, Inc. and Atlas Venture Associates X, Inc., which are affiliated with the Atlas Venture Fund X, L.P.

### ***Amendment to the Bennet S. Lebow Promissory Note***

In connection with our initial public offering in 2014, Bennett S. LeBow advanced \$1,000,000 to us to pay for certain offering expenses. Following the offering, this amount, along with an additional \$45,000, which was advanced to pay for certain additional offering expenses, was reclassified as amounts due to related party on our consolidated balance sheet. This aggregate amount was non-interest bearing and due on demand.

On March 6, 2015, we issued a promissory note to Mr. Lebow (the “Note”), who was then a member of our Board and our largest stockholder. When issued, the terms of the Note provided: (i) for a principal amount of \$1,105,009, which accrued interest computed on the basis of the actual number of days elapsed in a 360-day year, at a rate per annum of 8%; (ii) that at any time on or after June 30, 2015, Mr. LeBow may demand payment of the entire outstanding principal of the Note and all unpaid interest accrued thereon; and (iii) that upon the occurrence and during the continuance of any event of default by us under the Note, the principal balance of the Note shall accrue interest at a rate of 11%.

On October 31, 2016, prior to the execution of the Merger Agreement, we entered into an amendment to the Note (the “Note Amendment”) with Mr. LeBow. The Note Amendment (i) made the outstanding principal balance and all accrued interest on the Note, plus a premium of 11% on the outstanding balance, automatically convertible into shares our common stock immediately prior to the effective time of the Merger at a conversion price of \$5.39 per share, which was the closing price of our common stock on the effective date of the Note Amendment, and (ii) modified the principal amount of the Note to \$1,045,000, the original amount advanced to us as of June 17, 2014, and the interest of the Note to a rate per annum of 11% commencing on June 17, 2014, with interest computed on the basis of the actual number of days in a 360-day year. The terms of the Note Amendment were approved by our stockholders on February 10, 2017. Upon the closing of the Merger, the Note converted into 279,067 shares of our common stock.

***Director and Officer Indemnification and Insurance***

We have entered into indemnification agreements with each of our executive officers and directors and purchased directors' and officers' liability insurance. Our indemnification agreements and Bylaws require us to indemnify our directors and officers to the fullest extent permitted under Delaware law.

## HOUSEHOLDING OF PROXY MATERIALS

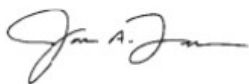
The SEC has adopted rules that permit companies and intermediaries (e.g., brokers) to satisfy the delivery requirements for Notices or other annual meeting materials with respect to two or more stockholders sharing the same address by delivering a single Notice or other annual meeting materials addressed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

This year, a number of brokers with account holders who are our stockholders will be “householding” our proxy materials. A single Notice will be delivered to multiple stockholders sharing an address unless contrary instructions have been received from the affected stockholders. Once you have received notice from your broker that it will be “householding” communications to your address, “householding” will continue until you are notified otherwise or until you revoke your consent. If, at any time, you no longer wish to participate in “householding” and would prefer to receive a separate Notice, please notify us or your broker. Direct your written request to our Secretary at 6200 Lookout Road, Boulder, CO 80301 or contact our Secretary at (720) 643-5200. Stockholders who currently receive multiple copies of the Notice at their addresses and would like to request “householding” of their communications should contact their brokers.

**OTHER MATTERS**

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

By Order of the Board of Directors



Jason A. Leverone  
Chief Financial Officer, Secretary, and Treasurer

Boulder, CO  
May 3, 2019

**Copies of the company's annual report on Form 10-K for the fiscal year ended December 31, 2018 is available without charge upon written request to: Secretary, Miragen Therapeutics, Inc., 6200 Lookout Road, Boulder, CO 80301.**

**MIRAGEN THERAPEUTICS, INC. C/O  
PROXY SERVICES  
P.O. BOX 9142  
FARMINGDALE, NY 11735**

**VOTE BY INTERNET**

*Before The Meeting* - Go to [www.proxyvote.com](http://www.proxyvote.com)

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

*During The Meeting* - Go to [www.virtualshareholdermeeting.com/MGEN2019](http://www.virtualshareholdermeeting.com/MGEN2019)

You may attend the meeting via the Internet and vote during the meeting. Have the information that is printed in the box marked by the arrow available and follow the instructions.

**VOTE BY PHONE - 1-800-690-6903**

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

**VOTE BY MAIL**

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

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

E75062-P18357

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

THIS PROXY CARD IS VALID ONLY WHEN SIGNED AND DATED.

|   |  |                          |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
|---|--|--------------------------|-----------------------------|-------------------------|--------------------------|---------------------------------|--------------------------|--|---|------------|-----------------|----------------|-----|-----|--------|---|
| <p>MIRAGEN THERAPEUTICS, INC.</p> <p><b>The Board of Directors recommends you vote FOR all nominees listed and FOR Proposal 2.</b></p> <p>1. Election of Directors<br/><b>Nominees:</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">01) William S. Marshall, Ph.D.</td> <td style="width: 50%;">05) Arlene M. Morris</td> </tr> <tr> <td>02) Thomas E. Hughes, Ph.D.</td> <td>06) Jeffrey S. Hatfield</td> </tr> <tr> <td>03) Kevin Koch, Ph.D.</td> <td>07) Christopher J. Bowden, M.D.</td> </tr> <tr> <td>04) Joseph L. Turner</td> <td></td> </tr> </table> | 01) William S. Marshall, Ph.D.   | 05) Arlene M. Morris     | 02) Thomas E. Hughes, Ph.D. | 06) Jeffrey S. Hatfield | 03) Kevin Koch, Ph.D.    | 07) Christopher J. Bowden, M.D. | 04) Joseph L. Turner     |  | <table style="border: none;"> <tr> <td style="border: none;"><b>For</b></td> <td style="border: none;"><b>Withhold</b></td> <td style="border: none;"><b>For All</b></td> </tr> <tr> <td style="border: none;">All</td> <td style="border: none;">All</td> <td style="border: none;">Except</td> </tr> </table> | <b>For</b> | <b>Withhold</b> | <b>For All</b> | All | All | Except | <p>To withhold authority to vote for any individual nominee(s), mark "For All Except" and write the number(s) of the nominee(s) on the line below.</p> <p style="text-align: center;"> <input type="checkbox"/>    <input type="checkbox"/>    <input type="checkbox"/>    _____         </p> |
| 01) William S. Marshall, Ph.D.  | 05) Arlene M. Morris   |                          |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
| 02) Thomas E. Hughes, Ph.D.   | 06) Jeffrey S. Hatfield  |                          |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
| 03) Kevin Koch, Ph.D.   | 07) Christopher J. Bowden, M.D.  |                          |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
| 04) Joseph L. Turner  |  |                          |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
| <b>For</b>  | <b>Withhold</b>  | <b>For All</b>           |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
| All   | All  | Except                   |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
| <p>2. To ratify the selection by the Audit Committee of the Board of Directors of KPMG LLP as the independent registered public accounting firm of the company for its fiscal year ending December 31, 2019.</p>  | <table style="border: none;"> <tr> <td style="border: none;"><b>For</b></td> <td style="border: none;"><b>Against</b></td> <td style="border: none;"><b>Abstain</b></td> </tr> <tr> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"><input type="checkbox"/></td> </tr> </table> | <b>For</b>               | <b>Against</b>              | <b>Abstain</b>          | <input type="checkbox"/> | <input type="checkbox"/>        | <input type="checkbox"/> |  |   |            |                 |                |     |     |        |   |
| <b>For</b>  | <b>Against</b>   | <b>Abstain</b>           |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
| <input type="checkbox"/>  | <input type="checkbox"/>   | <input type="checkbox"/> |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
| <p><b>NOTE:</b> In their discretion, the proxyholders are authorized to vote upon such other matters that may properly come before the meeting or any adjournment or adjournments thereof.</p>  |  |                          |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
| <p>The shares represented by this proxy, when properly executed, will be voted in the manner directed herein by the undersigned Stockholder. <b>If no direction is made, this proxy will be voted FOR all nominees and FOR Proposal 2.</b> If any other matters properly come before the meeting, the person named in this proxy will vote in their discretion.</p>   |  |                          |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
| <p>For address changes and/or comments, please check this box and write them on the back where indicated. <input type="checkbox"/></p>  |  |                          |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
| <p>Please sign your name exactly as it appears hereon. When signing as attorney, executor, administrator, trustee or guardian, please add your title as such. When signing as joint tenants, all parties in the joint tenancy must sign. If a signer is a corporation, please sign in full corporate name by duly authorized officer.</p>   |  |                          |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
|   |  |                          |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
| Signature [PLEASE SIGN WITHIN BOX]  | Date   | Signature (Joint Owners) |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
|   |  |                          |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |
| Signature (Joint Owners)  | Date   |                          |                             |                         |                          |                                 |                          |  |   |            |                 |                |     |     |        |   |

**Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting:**  
The Notice and Proxy Statement and Form 10-K are available at [www.proxyvote.com](http://www.proxyvote.com).

E75063-P18357

**MIRAGEN THERAPEUTICS, INC.**  
**THIS PROXY IS SOLICITED ON BEHALF OF THE BOARD OF DIRECTORS ANNUAL**  
**MEETING OF STOCKHOLDERS**  
**JUNE 19, 2019 1:30 PM MOUNTAIN TIME**

The stockholder(s) hereby appoint(s) William S. Marshall and Jason A. Leverone, or either of them, as proxies, each with the power to appoint his substitute, and hereby authorize(s) them to represent and to vote, as designated on the reverse side of this ballot, all of the shares of Common Stock of Miragen Therapeutics, Inc. that the stockholder(s) is/are entitled to vote at the Annual Meeting of Stockholders to be held at 1:30 p.m. Mountain Time on June 19, 2019, via the Internet at [www.virtualshareholdermeeting.com/MGEN2019](http://www.virtualshareholdermeeting.com/MGEN2019), and any adjournment or postponement thereof.

**THIS PROXY, WHEN PROPERLY EXECUTED, WILL BE VOTED AS DIRECTED BY THE STOCKHOLDER(S). IF NO SUCH DIRECTIONS ARE MADE, THIS PROXY WILL BE VOTED FOR THE ELECTION OF THE NOMINEES LISTED ON THE REVERSE SIDE FOR THE BOARD OF DIRECTORS AND FOR PROPOSAL 2.**

**PLEASE MARK, SIGN, DATE AND RETURN THIS PROXY CARD PROMPTLY USING THE ENCLOSED REPLY ENVELOPE**

Address Changes/Comments: \_\_\_\_\_  
\_\_\_\_\_

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

**CONTINUED AND TO BE SIGNED ON REVERSE SIDE**