

**SCHEDULE 14A INFORMATION**

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

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Filed by the Registrant  x

Filed by a Party other than the Registrant  o

Check the appropriate box:

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

**ASSEMBLY BIOSCIENCES, INC.**

(Name of Registrant as Specified In Its Charter)

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assembly  
biosciences

**ASSEMBLY BIOSCIENCES, INC.**  
**101 Sixth Avenue, Ninth Floor**  
**New York, New York 10013**

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**NOTICE OF ANNUAL MEETING OF STOCKHOLDERS**  
**To Be Held Thursday, June 2, 2016**

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**Dear Stockholders:**

You are cordially invited to attend the Annual Meeting of Stockholders (the Annual Meeting) of Assembly Biosciences, Inc., a Delaware corporation (we, us, Assembly or the Company). The Annual Meeting will be held at our offices at 11711 N. Meridian Street, Suite 310, Carmel, Indiana 46032, on Thursday, June 2, 2016, at 9:00 a.m. (EDT) for the following purposes:

- To elect each of our seven nominees for the Board of Directors to serve until the 2017 annual meeting of stockholders and until his successor is duly elected and qualified or until his earlier death, resignation or removal;
- To approve the amendment and restatement of the Company's 2014 Stock Incentive Plan (the "Amended and Restated 2014 Stock Incentive Plan"), to among other things, (i) increase the aggregate number of shares of common stock authorized for issuance under the 2014 Stock Incentive Plan from 2,560,000 (post reverse stock split basis) to 4,160,000, (ii) impose minimum vesting requirements for awards granted to employees and directors, and (iii) change the name of the plan to reflect the name change of the Company;
- To approve a non-binding advisory resolution approving the compensation of the Company's named executive officers;
- To ratify the appointment of Ernst & Young LLP as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2016; and
- To transact such other business as may properly come before the meeting and any adjournments or postponements thereof.

These matters are more fully described in the proxy statement accompanying this notice.

The Board of Directors has fixed the close of business on April 7, 2016 as the record date for the determination of stockholders entitled to notice of and to vote at the Annual Meeting or any adjournment thereof. Please see the attached proxy statement for information on how to obtain directions to be able to attend the Annual Meeting and vote in person.

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In order to ensure your representation at the Annual Meeting, you are requested to submit your proxy card as instructed in the Important Notice Regarding the Availability of Proxy Materials that you will receive in the mail. You may also request a paper proxy card at any time on or before May 19, 2016 to submit your vote by mail. If you attend the Annual Meeting and file with the Secretary of the Company an instrument revoking your proxy or a duly executed proxy bearing a later date, your proxy will not be used.

**Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting to be held on Thursday, June 2, 2016 at 9:00 a.m. (EDT) at Assembly's offices located at 11711 N. Meridian Street, Suite 310, Carmel, IN 46032.**

**The Proxy Statement and the annual report to stockholders on Form 10-K are available at: [www.proxyvote.com](http://www.proxyvote.com).**

We hope that you will attend the meeting in person on June 2, 2016, and we very much appreciate your continuing interest in Assembly.

By Order of the Board of Directors



Derek A. Small  
President and Chief Executive Officer

April 22, 2016

**You are cordially invited to attend the meeting in person. Whether or not you expect to attend the meeting, please complete, date, sign and return the proxy card mailed to you, or vote over the telephone or the Internet as instructed in the Important Notice Regarding the Availability of Proxy Materials that you will receive in the mail, or vote by mail by requesting a printed copy of the proxy card, as promptly as possible in order to ensure your representation at the meeting. Even if you have voted by proxy, you may still vote in person if you attend the meeting. Please note, however, that if your shares are held of record by a broker, bank or other nominee and you wish to vote at the meeting, you must obtain a proxy issued in your name from that record holder.**



assembly  
biosciences

**ASSEMBLY BIOSCIENCES, INC.**  
**101 Sixth Avenue, Ninth Floor**  
**New York, New York 10013**

**PROXY STATEMENT  
FOR THE 2016 ANNUAL MEETING OF STOCKHOLDERS**

**JUNE 2, 2016**

**INFORMATION CONCERNING SOLICITATION AND VOTING**

The Board of Directors (the Board) of Assembly Biosciences, Inc., a Delaware corporation (we, us, Assembly or the Company) is soliciting your proxy to vote at the 2016 Annual Meeting of Stockholders (the Annual Meeting) to be held at our offices at 11711 N. Meridian Street, Suite 310, Carmel, Indiana 46032, at 9:00 a.m. (EDT) on Thursday, June 2, 2016, including any adjournments or postponements of the meeting. You are invited to attend the Annual Meeting to vote on the proposals described in this proxy statement. However, you do not need to attend the meeting to vote your shares. Instead you may follow the instructions in the Proxy Availability Notice described below to submit your proxy over the telephone or through the Internet, or you may vote by mail by using the proxy card provided or requesting a printed copy of the proxy card.

We mailed an Important Notice Regarding the Availability of Proxy Materials (the Proxy Availability Notice) on or about April 22, 2016 to our stockholders of record and beneficial owners as of April 7, 2016, the record date for the meeting. The proxy materials, including this proxy statement, proxy card or voting instruction card and our 2015 Annual Report on Form 10-K are being distributed and made available on or about April 22, 2016. This proxy statement contains important information for you to consider when deciding how to vote on the matters brought before the Annual Meeting. Please read it carefully.

This proxy statement and the Proxy Availability Notice contain instructions for accessing and reviewing our proxy materials on the Internet and for voting by proxy over the Internet, by phone or by mail. The Proxy Availability Notice and the proxy card will also provide instructions on how you can elect to receive future proxy materials electronically or in printed form by mail. If you choose to receive future proxy materials electronically, you will receive an email next year with instructions containing a link to the proxy materials and a link to the proxy voting site. Your election to receive proxy materials electronically or in printed form by mail will remain in effect until you terminate such election. You will need to obtain your own Internet access if you choose to access the proxy materials and/or vote over the Internet. If you prefer to receive printed copies of our proxy materials, the Proxy Availability Notice contains instructions on how to request the materials by mail. For stockholders who have elected to receive proxy materials electronically, you will not receive printed copies of the proxy materials unless you request them. If you elect to receive the materials by mail, you may also vote by proxy on the proxy card or voter instruction card that you will receive in response to your request.

Choosing to receive future proxy materials electronically will allow us to more rapidly provide you with the information you need, will save us the cost of printing and mailing documents to you and will conserve natural resources.

**Delivery of Documents to Stockholders Sharing an Address**

The Securities and Exchange Commission (SEC) has adopted rules that permit companies to deliver a single Proxy Availability Notice or a single copy of proxy materials to multiple stockholders sharing an address unless a company has received contrary instructions from one or more of the stockholders at that address. Upon request, we will promptly deliver a separate Proxy Availability Notice or separate copy of proxy materials to one or more stockholders at a shared address to which a single Proxy Availability Notice or a single copy of proxy materials was delivered. Stockholders may request a separate Proxy Availability Notice or separate copy of proxy materials by contacting our Corporate Secretary either by calling 1-317-975-2699 or by mailing a request to 11711 N. Meridian Street, Suite 310, Carmel, IN 46032. Stockholders at a shared address who receive multiple Proxy Availability Notice or multiple copies of proxy materials may request to receive a single Proxy Availability Notice or a single copy of proxy materials in the future in the same manner as described above.

## QUESTIONS AND ANSWERS ABOUT THESE PROXY MATERIALS AND VOTING

### **Why did I receive the Important Notice Regarding the Availability of Proxy Materials instead of a full set of proxy materials?**

In accordance with the rules and regulations adopted by the U.S. Securities and Exchange Commission, or SEC, we have elected to provide access to our proxy materials over the Internet instead of mailing a printed copy of our proxy materials to each stockholder. Accordingly, we intend to mail an Important Notice Regarding Availability of Proxy Materials (the Proxy Availability Notice) on or about April 22, 2016 to most stockholders of record entitled to vote at the Annual Meeting. Stockholders will have the ability to access the proxy materials on a website referred to in the Proxy Availability Notice commencing on or about April 22, 2016 or request a printed set of the proxy materials be sent to them by following the instructions in the Proxy Availability Notice.

### **Why did I receive a full set of proxy materials and the Important Notice Regarding the Availability of Proxy Materials?**

We are providing paper copies of the proxy materials to stockholders who have previously requested to receive them in paper or for whom an election to receive proxy materials electronically via email or the Internet are not on file in writing. If you would like to reduce the environmental impact and the costs incurred by us in mailing proxy materials, you may elect to receive all future proxy materials electronically via email or the Internet. To sign up for electronic delivery, please follow the instructions provided with your proxy materials and on your proxy card or voting instruction card, to vote using the Internet and, when prompted, indicate that you agree to receive or access future stockholder communications electronically. Alternatively, you can go to [www.proxyvote.com](http://www.proxyvote.com) and enroll for online delivery of Annual Meeting and proxy voting materials.

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

If you receive more than one Proxy Availability Notice, your shares may be registered in more than one name or in different accounts. Please follow the voting instructions on each Proxy Availability Notice to ensure that all of your shares are voted. All of your shares may be voted at [www.proxyvote.com](http://www.proxyvote.com) regardless of which account they are registered or held in.

### **How do I attend the Annual Meeting?**

Admission to the meeting will be limited to our stockholders of record, persons holding proxies from our stockholders of record and beneficial owners of our common stock. If you wish to attend and vote at the Annual Meeting, you must bring: (1) valid photo identification, such as a driver's license or passport; and (2) evidence of stock ownership as of the Record Date, such as an account statement, proxy card or voting information form. If your shares are held through a broker, bank or other nominee, you must bring proof of your ownership of the shares. This could consist of, for example, a bank or brokerage firm account statement or a letter from your bank or broker confirming your ownership as of the record date. Cameras, recording devices, and other electronic devices will not be permitted at the Annual Meeting. For directions to the Annual Meeting, please contact Elizabeth H. Lacy at [elizabeth@assemblybio.com](mailto:elizabeth@assemblybio.com) or 1-317-975-2699.

### **Who can vote at the Annual Meeting?**

Only stockholders of record at the close of business on April 7, 2016 (the Record Date), will be entitled to vote at the Annual Meeting. On this Record Date, there were 17,225,662 shares of common stock outstanding and entitled to vote.

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

If on April 7, 2016 your shares were registered directly in your name with Assembly's transfer agent, VStock Transfer, LLC, then you are a stockholder of record. As a stockholder of record, you may vote in person at the meeting or vote by proxy. Whether or not you plan to attend the meeting, we urge you to fill out and return your proxy card or vote by proxy over the telephone or on the Internet as instructed below to ensure your vote is counted.

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

If on April 7, 2016 your shares were held, not in your name, but rather in an account at a brokerage firm, bank, dealer or other similar organization, then you are the beneficial owner of shares held in "street name"

and the Proxy Availability Notice is being forwarded to you by that organization. The organization holding your account is considered to be the stockholder of record for purposes of voting at the Annual Meeting. As a beneficial owner, you have the right to direct your broker or other agent regarding how to vote the shares in your account. You are also invited to attend the Annual Meeting. However, since you are not the stockholder of record, you may not vote your shares in person at the meeting unless you request and obtain a valid proxy from your broker or other agent.

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

There are four matters scheduled for a vote:

1. Election of seven directors;
2. Approval of the Company's Amended and Restated 2014 Stock Incentive Plan, to among other things, (i) increase the aggregate number of shares of common stock authorize for issuance under the Amended and Restated 2014 Stock Incentive Plan from 2,560,000 (post reverse stock split basis) to 4,160,000, (ii) impose minimum vesting requirements for awards granted to employees and directors, and (iii) change the name of the plan to reflect the name change of the Company;
3. Non-binding advisory approval of the compensation of the Company's named executive officers, as disclosed in this proxy statement in accordance with the SEC rules; and
4. Ratification of the appointment by the Audit Committee of the Board of Ernst & Young, LLP as the independent registered public accountant for the Company for its fiscal year ending December 31, 2016.

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

The 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 those matters in accordance with their best judgment.

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

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

The procedures for voting depend upon whether your shares are registered in your name or are held by a bank, broker or other nominee:

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

If you are a stockholder of record, you may vote in person at the Annual Meeting, vote by proxy using a proxy card that we have provided or that you may request or that we may elect to deliver at a later time, vote by proxy over the telephone or vote by proxy through the Internet. Whether or not you plan to attend the meeting, we urge you to vote by proxy to ensure your vote is counted. You may still attend the meeting and vote in person even if you have already voted by proxy.

- To vote in person, come to the Annual Meeting and we will give you a ballot when you arrive.
- To vote using a proxy card, simply complete, sign and date the proxy card and return it pursuant to the instructions provided. Your vote must be received by June 1, 2016 to be counted.
- To vote over the telephone, dial toll-free 1-800-690-6903 using a touch-tone phone and follow the recorded instructions. You will be asked to provide the company control number from the proxy card or Proxy Availability Notice. Your vote must be received by 11:59 p.m. EDT on June 1, 2016 to be counted.
- To vote through the Internet, go to [www.proxyvote.com](http://www.proxyvote.com) to complete an electronic proxy card. You will be asked to provide the company control number from the proxy card. Your vote must be received by 11:59 p.m. EDT on June 1, 2016 to be counted.

### *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 nominee, you should have received a Proxy Availability Notice containing a voting instruction form from that organization rather than from Assembly. Simply complete and mail the voting instruction provided with the Proxy Availability Notice to ensure that your vote is counted. To vote in person at the Annual Meeting, you must obtain a valid proxy from your broker, bank or other nominee.

- To vote in person at the Annual Meeting, contact your broker, bank or other agent to obtain a valid proxy from that institution.
- To vote using the voting instruction form accompanying the Proxy Availability Notice, simply complete, sign and date the voting instruction form and return it pursuant to the instructions provided. Your vote must be received by June 1, 2016 to be counted.
- To vote over the telephone, dial toll-free 1-800-690-6903 using a touch-tone phone and follow the recorded instructions. You will be asked to provide the company number and control number from the voting instruction form or Proxy Availability Notice. Your vote must be received by 11:59 p.m. EDT on June 1, 2016 to be counted.
- To vote through the Internet, go to [www.proxyvote.com](http://www.proxyvote.com) to complete an electronic proxy. You will be asked to provide the company control number from the voting instruction form. Your vote must be received by 11:59 p.m. EDT on June 1, 2016 to be counted.

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

### **How many votes do I have?**

On each matter to be voted upon, you have one vote for each share of common stock you own as of April 7, 2016.

### **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 nominees for their reasonable out-of-pocket expenses for forwarding proxy materials to beneficial owners and seeking instruction with respect thereto.

### **Can I vote my shares by filling out and returning the Proxy Availability Notice?**

No. The Proxy Availability Notice will, however, provide instructions on how to vote by Internet, telephone, mail (by requesting a paper proxy card or voting instruction card), and in person at the meeting.

If you receive a proxy statement and a paper proxy card together with the Proxy Availability Notice, the paper proxy card may be used to vote your shares.

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

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

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

- You may submit another properly completed proxy card with a later date.
- You may grant a subsequent proxy by telephone or through the Internet.
- You may send a timely written notice that you are revoking your proxy to Elizabeth H. Lacy, our Corporate Secretary, at 11711 N. Meridian Street, Suite 310, Carmel, IN 46032.



- You may attend the Annual Meeting and vote in person. Simply attending the meeting will not, by itself, revoke your proxy. Your most current vote (prior to the deadline) by proxy card or telephone or Internet proxy is the one that is counted.

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

Yes. You can revoke your voting instruction form at any time before the deadline to vote. If your shares are held by your broker or bank as a nominee or agent, you should follow the instructions provided by your broker, bank or other nominee. Note however, you may also revoke your proxy in any one of the following ways:

- You may grant a subsequent voting instruction by telephone or through the Internet.
- You may attend the Annual Meeting and vote in person provided you request and obtain a valid proxy from your broker, bank or other nominee. Simply attending the meeting will not, by itself, revoke your voting instruction form.

Your most current vote (prior to the deadline) by voting instruction form or telephone or Internet proxy is the one that is counted.

**When are stockholder proposals due for next year's annual meeting?**

Any stockholder who meets the requirements of the proxy rules under the Securities Exchange Act of 1934, as amended (the Exchange Act) may submit proposals to the Board to be presented at the 2017 Annual Meeting. Such proposals must comply with the requirements of Rule 14a-8 under the Exchange Act. To be considered for inclusion in next year's proxy materials, your proposal must be submitted in writing by December 23, 2016, to our Corporate Secretary at 11711 N. Meridian Street, Suite 310, Carmel, IN 46032; provided, however, that if our 2017 Annual Meeting of Stockholders is held before May 3, 2017 or after July 3, 2017, then the deadline is a reasonable amount of time prior to the date we begin to print and mail our proxy statement for the 2017 Annual Meeting of Stockholders.

Subject to compliance with applicable requirements of state law and the Exchange Act, our amended and restated bylaws also provide for separate notice procedures to propose business to be considered by stockholders at a meeting, provided that such proposal would not be included in next year's proxy materials. Such proposals must comply with the requirements, including without limitation, the separate notice procedures, of our amended and restated bylaws. If you wish to submit such a proposal, written notice must be received by the Secretary no later than the close of business not more than 90 days before or less than 60 days before the date of the meeting, in the case of the 2017 Annual Meeting or any other annual meeting, or by the 10<sup>th</sup> business day following the day on which public announcement of the date of the meeting is first made, in the case of a special meeting.

Our amended and restated bylaws also provide for separate notice procedures to recommend a person for nomination as a director. Such proposals must comply with the requirements, including without limitation, the separate notice procedures, of our amended and restated bylaws. If you wish to nominate a director, written notice must be received by the Secretary no later than the close of business not more than 90 days before or less than 60 days before the date of the meeting, in the case of the 2017 Annual Meeting or any other annual meeting, or not later than the 10<sup>th</sup> business day following the day on which public announcement of the date of the meeting is first made, in the case of a special meeting.

**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, with respect to other proposals, votes "For" and "Against," abstentions and, if applicable, broker non-votes. "WITHHELD" votes will have no effect and will not be counted towards the election of directors. With respect to other proposals, abstentions will be counted towards the vote total for each proposal, and will have the same effect as "Against" votes. Broker non-votes have no effect and will not be counted towards the vote total for any proposal.

**What if I return a proxy card or otherwise vote but do not make specific choices?**

If you return a signed and dated proxy card or otherwise vote without marking voting selections, your shares will be voted:

- (1) FOR the election of the seven director nominees identified in this proxy statement;
- (2) FOR approval of an amendment and restatement of the Company's 2014 Stock Incentive Plan, to among other things, (i) increase the aggregate number of shares of common stock authorized for issuance under the Amended and Restated 2014 Incentive Plan from 2,560,000 (on a post reverse stock split basis) to 4,160,000, (ii) impose minimum vesting requirements for awards granted to employees and directors, and (iii) change the name of the plan to reflect the name change of the Company;
- (3) FOR the approval of a non-binding advisory resolution approving the compensation of the Company's named executive officers;
- (4) FOR ratification of the appointment of Ernst & Young LLP as the Company's registered independent public accountant for the fiscal year ending December 31, 2016; and
- (5) To transact such other business as may properly come before the Annual Meeting and any adjournments or postponements thereof as determined in the discretion of your proxyholder.

**What are "broker non-votes"?**

Broker non-votes occur when a beneficial owner of shares held in "street name" does not give voting instructions to the broker, bank or other nominee holding the shares as to how to vote on matters deemed "non-routine." Generally, if shares are held in street name, the beneficial owner of the shares is entitled to give voting instructions to the broker, bank or nominee holding the shares. If the beneficial owner does not provide voting instructions, the broker, bank or other nominee can still vote the shares with respect to matters that are considered to be "routine," but not with respect to "non-routine" matters. Under the rules and interpretations of NASDAQ, "non-routine" matters are matters that may substantially affect the rights or privileges of stockholders, such as mergers, stockholder proposals, elections of directors (even if not contested) and executive compensation, including the advisory stockholder votes on executive compensation and on the frequency of stockholder votes on executive compensation. Accordingly, the "non-routine" matters on the agenda for the Annual Meeting include Proposal No. 1 — Election of Directors, Proposal No. 2 — Amendment and Restatement of the 2014 Stock Incentive Plan, and Proposal No. 3 — Advisory Vote on Named Executive Officer Compensation.

Broker non-votes will be counted for the purpose of determining whether a quorum is present at the Annual Meeting. However, because broker non-votes are not considered under Delaware law to be entitled to vote at the Annual Meeting, they will have no effect on the outcome of the vote on Proposal No. 1 — Election of Directors, Proposal No. 2 — Amendment and Restatement of the 2014 Stock Incentive Plan, and Proposal No. 3 — Advisory Vote on Named Executive Officer Compensation. As a result, if you hold your shares in street name and you do not instruct your broker, bank or other nominee how to vote your shares in the election of directors, the amendment and restatement of the 2014 Stock Incentive Plan or the advisory vote related to the approval of named executive officers' compensation, no votes will be cast on your behalf on these proposals. Therefore, it is critical that you indicate your vote on these proposals if you want your vote to be counted.

**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 meeting in person or represented by proxy. On the record date, there were 17,225,662 shares of common stock outstanding and entitled to vote. Thus, the holders of 8,612,832 shares must be present in person or represented by proxy at the 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) by June 1, 2016 or if you vote in person at the meeting.

Abstentions and broker non-votes will be counted towards the quorum requirement. If there is no quorum, the holders of a majority of shares present at the meeting in person or represented by proxy may adjourn the meeting to another date.

Once a share is represented for any purpose at the Annual Meeting, it is deemed present for quorum purposes for the remainder of the meeting and any adjournment thereof unless a new record date is set for the adjournment.

**How many votes are needed to approve each proposal?**

Assuming the presence of a quorum at the Annual Meeting, the following sets forth the votes necessary for each of the proposals being submitted to the stockholders:

<u>Proposal</u>	<u>Description</u>	<u>Vote Required</u>	<u>Discretionary Voting Allowed</u>
No. 1	Election of Seven Directors	Plurality	No
No. 2	Amendment and Restatement of the 2014 Stock Incentive Plan	Majority Present & Entitled to Vote	No
No. 3	Non-Binding Advisory Vote on Named Executive Officer Compensation	Majority Present & Entitled to Vote	No
No. 4	Ratification of Independent Registered Public Accounting Firm, Ernst & Young, LLP	Majority Present & Entitled to Vote	Yes

The election of directors will be determined by a plurality of the votes cast at the Annual Meeting. This means that the seven nominees receiving the highest number of “FOR” votes will be elected as directors. Withheld votes and broker non-votes, if any, are not treated as votes cast, and therefore will have no effect on the proposal to elect directors.

With regard to the amendment and restatement of the 2014 Stock Incentive Plan, the advisory vote on named executive officer compensation and the ratification of our independent registered public accounting firm, a “Majority Present & Entitled to Vote” standard means the affirmative vote of the holders of a majority of the shares of common stock present in person or represented by proxy at the Annual Meeting and entitled to vote on such matter is required for proposal to pass. For purposes of determining whether the proposal has passed, abstentions will be treated as votes cast against the proposal, but broker non-votes will have no impact on the outcome of the proposal.

Accordingly, assuming a quorum is present:

- Proposal No.1: For the election of directors, the seven nominees receiving the highest number of “FOR” votes from the holders of shares present in person or represented by proxy at the Annual Meeting and entitled to vote on Proposal No. 1 will be elected. Only votes “FOR” will affect the outcome. “WITHHELD” votes and broker non-votes will have no effect on the outcome of the election of directors.
- Proposal No. 2: To be approved, a majority of the shares of common stock held by holders present in person or represented by proxy at the Annual Meeting and entitled to vote on Proposal No. 2 must be voted “FOR” the proposed amendment and restatement of the 2014 Stock Incentive Plan. Abstentions will be deemed a vote against Proposal No. 2. Broker non-votes will not be considered towards vote totals on Proposal No. 2.
- Proposal No. 3: To be approved, a majority of the shares of common stock held by holders present in person or represented by proxy at the Annual Meeting and entitled to vote on Proposal No. 3 must be voted “FOR” the non-binding advisory approval of the compensation of Assembly’s named executive officers. Abstentions will be deemed a vote against Proposal No. 3. Broker non-votes will not be considered towards vote totals on Proposal No. 3.

- Proposal No. 4: To be approved, a majority of the shares of common stock held by holders present in person or represented by proxy at the Annual Meeting and entitled to vote on Proposal No. 4 must be voted “FOR” the ratification of the appointment of Ernst & Young LLP as the Company’s independent registered public accountant for the fiscal year ending December 31, 2016. Abstentions will be deemed a vote against Proposal No. 4. Broker non-votes will not be considered towards vote totals on Proposal No. 4; however, the ratification of the appointment of Ernst & Young LLP is a matter on which a broker, bank or other nominees has discretionary voting authority, and thus, we do not expect any broker non-votes with respect to Proposal No. 4.

**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 reported 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 report preliminary results and, within four business days after the final results are known to us, file an additional Form 8-K to report the final results.

**What proxy materials are available on the Internet?**

The proxy statement and our Annual Report on Form 10-K for the fiscal year ended December 31, 2015 are available free of charge at [www.proxyvote.com](http://www.proxyvote.com). You can request a copy of our Annual Report on Form 10-K free of charge by calling 1-317-975-2699 or sending an e-mail to [elizabeth@assemblybio.com](mailto:elizabeth@assemblybio.com). Please include your contact information with the request.

Our Form 10-K for the fiscal year ended December 31, 2015 as filed with the SEC, is accessible free of charge on our website. It contains audited financial statements covering our fiscal years ended December 31, 2015 and 2014. The Form 10-K, without exhibits, is included in the 2015 Annual Report to Stockholders that is available with this proxy statement.

## **SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS**

This proxy statement contains forward-looking statements. These statements relate to future events or our future financial performance and involve known and unknown risks, uncertainties and other factors that could cause our actual results, levels of activity, performance or achievement to differ materially from those expressed or implied by these forward-looking statements.

Forward-looking statements include all statements that are not historical facts. In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “could,” “would,” “expects,” “plans,” “anticipates,” “believes,” “estimates,” “projects,” “predicts,” “potential,” or the negative of those terms, and similar expressions and comparable terminology intended to identify forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties, including those outlined in our Annual Report on Form 10-K for the year ended December 31, 2015. Given these uncertainties, you should not place undue reliance on these forward-looking statements. These forward-looking statements represent our estimates and assumptions only as of the date of this proxy statement and, except as required by law, we undertake no obligation to update or revise publicly any forward-looking statements, whether as a result of new information, future events or otherwise after the date of this proxy statement.

## **EXPLANATORY NOTE**

The Company meets the “accelerated filer” requirements as of the end of its 2015 fiscal year pursuant to Rule 12b-2 of the Exchange Act. However, pursuant to Rule 12b-2 and SEC Release No. 33-8876, the Company (as a smaller reporting company transitioning to the larger reporting company system based on its public float as of June 30, 2015) is not required to satisfy the larger reporting company requirements until its first quarterly report on Form 10-Q for the 2016 fiscal year and thus remains eligible to use the scaled disclosure requirements applicable to smaller reporting companies under Regulation S-K under the Securities Act of 1933, as amended.

## PROPOSAL NO. 1 — ELECTION OF DIRECTORS

Our bylaws provide that the number of our directors is to be within a range of three to nine, with the exact number set by the Board. Our Board has set the number of directors at seven. In the future, the Board might decide to increase the number of directors, within the range, if suitable candidates with desired experience and expertise are found.

Our Board currently consists of seven directors. There are seven nominees for election to the Board this year. Each director to be elected and qualified will hold office until the next annual meeting of the stockholders and until his successor is duly elected and qualified, or, if sooner, until the director's death, resignation or removal. Each of the nominees listed below is currently a director of the Company. With the exception of Dr. Alan J. Lewis, who joined the Board in December 2015 to fill a then existing vacancy, each of the director nominees was previously elected by the stockholders. Directors are elected by a plurality of the votes of the holders of shares present in person or represented by proxy and entitled to vote on the election of directors. The seven nominees receiving the highest number of affirmative votes will be elected.

### Nominees for Director

The Nominating and Governance Committee has recommended, and the Board has approved, the nomination of each of Anthony E. Altig, Mark Auerbach, Richard DiMarchi, PhD, Myron Z. Holubiak, Alan J. Lewis, PhD, Derek Small and William Ringo as a director of Assembly. The Board has determined that all of these directors, with the exception of Derek Small, are independent as determined in accordance with the rules of the NASDAQ Stock Market and the SEC. There are no family relationships among any of our directors or executive officers. The respective names, ages, lengths of service with Assembly and brief biographical summaries of our nominees for director are as follows:

<u>Name</u>	<u>Age (as of 03/31/16)</u>	<u>Director Since</u>	<u>Business Experience For Last Five Years</u>
Anthony E. Altig	60	2012	Mr. Altig joined our Board in January 2012. Since 2008, Mr. Altig has been the Chief Financial Officer of Biotix Holdings, Inc., a company that manufactures microbiological consumables. From 2004 to 2007, Mr. Altig served as the Chief Financial Officer of Diversa Corporation (subsequently Verenum Corporation), a public company developing specialized industrial enzymes. Prior to joining Diversa, Mr. Altig served as the Chief Financial Officer of Maxim Pharmaceuticals, Inc., a public biopharmaceutical company. In addition, Mr. Altig serves as a director and chairman of the audit committee for TearLab Corporation (formerly OccuLogix, Inc.), a publicly traded eyecare technology company. He formerly served as a director of MultiCell Technologies, Inc. and Optimer Pharmaceuticals, Inc., a pharmaceutical company, which was a public company until its acquisition by Cubist Pharmaceuticals, Inc. in October 2013. Mr. Altig received his BBA in business from the University of Hawaii at Manoa and is a Certified Public Accountant. Among other experience, qualifications, attributes and skills, Mr. Altig's extensive management experience and financial expertise, as well as his experience serving on the boards of directors of several public pharmaceutical and healthcare companies, led to the conclusion of our Board that he should serve as a director of the Company in light of our business and structure.

<u>Name</u>	<u>Age (as of 03/31/16)</u>	<u>Director Since</u>	<u>Business Experience For Last Five Years</u>
Mark Auerbach	77	2010	Mr. Auerbach was elected to our Board in November 2010. Mr. Auerbach is the non-executive chairman of the board of directors and chairman of the audit committee of RCS Capital Corporation (NYSE: RCAP), a publicly traded financial services company. Mr. Auerbach previously served as a director and chairman of the audit committee of Optimer Pharmaceuticals, Inc., a public company, from 2005 until its acquisition by Cubist Pharmaceuticals, Inc. in October 2013. From January 2006 through March 2010, Mr. Auerbach served as the chairman of the board of directors for Neuro Hitech, Inc., an early stage pharmaceutical company specializing in brain degenerative diseases. Over the last 20 years, Mr. Auerbach also has served as a director for several other companies, including Par Pharmaceutical Companies, Inc., a publicly traded manufacturer and marketer of generic pharmaceuticals and the parent of Par Pharmaceutical, Inc., Collexis Holdings, Inc., a public company which develops knowledge management and discovery software, and RxElite Holdings, Inc., a company which develops, manufactures, and markets generic prescription drug products in specialty generic markets. From 1993 to 2005, Mr. Auerbach served as chief financial officer of Central Lewmar LLC, a national fine paper distributor. Mr. Auerbach received his B.S. degree in accounting from Rider University. Among other experience, qualifications, attributes and skills, Mr. Auerbach's extensive financial experience, his accounting degree and his experience as a director of several public companies, including his service as the chair of the audit committee of one of those public companies, led to the conclusion of our Board that he should serve as a director of the Company in light of our business and structure.

<u>Name</u>	<u>Age (as of 03/31/16)</u>	<u>Director Since</u>	<u>Business Experience For Last Five Years</u>
Richard DiMarchi, Ph.D.	63	2014	Dr. DiMarchi became a director upon the closing of the Assembly Pharmaceuticals, Inc. acquisition in July 2014 through a merger with a wholly owned subsidiary of Assembly (the "Merger"). Dr. DiMarchi is a co-founder of Assembly Pharmaceuticals, Inc. and has served on its board since inception in 2012. Dr. DiMarchi currently holds the Cox Distinguished Professor of Biochemistry and Gill Chair in Biomolecular Sciences at Indiana University and serves as Vice President of Research at Novo Nordisk Research Labs. Dr. DiMarchi was a co-founder and board member of biotechnology companies Ambrx, Inc. and Marcadia Biotech Inc., current founder of Assembly and Calibrium LLC, and advisor to venture firms 5AM Ventures, Twilight Ventures, and others. Dr. DiMarchi retired as Group Vice President at Eli Lilly & Company, where he provided leadership for more than two decades in biotechnology, endocrine research, and product development. Dr. DiMarchi previously served as a board member of the biotechnology trade group BIO, Isis Pharmaceuticals, Inc. and Millennium BioTherapeutics, Inc. His current research is focused on developing macromolecules with enhanced therapeutic properties through biochemical and chemical optimization, an approach he has termed chemical biotechnology. Dr. DiMarchi contributed significantly to the discovery of Humalog® and to the commercial development of pharmaceutical products Humulin®, Humatrope®, Glucagon®, Xigris®, Forteo®, and Evista®. Dr. DiMarchi is the recipient of numerous prestigious awards and in 2014 was inducted to the National Inventors Hall of Fame. Dr. DiMarchi received his Ph.D. in Biochemistry from Indiana University, and completed his postdoctoral studies at the Rockefeller University. Among other experience, qualifications, attributes and skills, Dr. DiMarchi's scientific training, extensive experience in the pharmaceutical industry, as well as his experience serving on the board of directors of several private pharmaceutical companies, led to the conclusion of our Board that he should serve as a director of the Company in light of our business and structure.



<u>Name</u>	<u>Age (as of 03/31/16)</u>	<u>Director Since</u>	<u>Business Experience For Last Five Years</u>
Myron Z. Holubiak	69	2010	Mr. Holubiak joined our Board in July 2010. Mr. Holubiak currently serves as President and the chief executive officer of Leonard+Meron Biosciences, Inc., a privately held late stage drug development company focused on critical care drug products. Mr. Holubiak is the former President of Roche Laboratories, Inc., USA, a major research-based pharmaceutical company, a position he held from December 1998 to August 2001. Prior to that, he held many sales and marketing positions at Roche Laboratories during his 19 year tenure there. Since September 2002, Mr. Holubiak has served on the board of directors of BioScrip, Inc., a publicly traded company and a leading home infusion provider with nationwide pharmacy and nursing capabilities, and is currently chairman of the board. Mr. Holubiak is a director of 1-800-DOCTORS, Inc., a private physician finder company; he was president of 1-800-DOCTORS from May 2007 to January 2014. Since October 2015, Mr. Holubiak also has been a member of the board of directors of Citius Pharmaceuticals, Inc., a publicly traded specialty pharmaceuticals company. Since July 2015, Mr. Holubiak also has been a member of the board of directors of bioAffinity Technologies, Inc., a cancer screening and diagnostics company. From October 2012 until July 2014, Mr. Holubiak served as a director of Intellicell Biosciences, Inc., a publicly traded regenerative medicine company. Mr. Holubiak is also a trustee of the Academy of Managed Care Pharmacy Foundation. Mr. Holubiak received his B.S. in Molecular Biology and Biophysics from the University of Pittsburgh. Mr. Holubiak has received advanced business training from the Harvard Business School, the London School of Economics and the Centre for Health Economics at the University of York. Among other experience, qualifications, attributes and skills, Mr. Holubiak's extensive experience managing pharmaceutical and healthcare companies led to the conclusion of our Board that he should serve as a director of the Company in light of our business and structure.

<u>Name</u>	<u>Age (as of 03/31/16)</u>	<u>Director Since</u>	<u>Business Experience For Last Five Years</u>
Alan J. Lewis, Ph.D.	70	2015	Dr. Lewis joined our Board in December 2015. Since March 2015, Dr. Lewis has served as Chief Executive Officer and director of DiaVacs, Inc., a biotechnology company that offers dendritic cell therapy for autoimmunity and juvenile diabetes. From October 2012 to March 2014, Dr. Lewis was Chief Executive Officer and a director of Medistem, Inc., a public biotechnology company, and developer of stem cell therapies that was acquired by Intrexon Corporation. From July, 2010 until November 2011, Dr. Lewis was Chairman, President and Chief Executive Officer of cancer drug developer Ambit Biosciences, Inc., which was subsequently acquired by Daiichi Sankyo Company, Limited. From January 2009 until June 2010, Dr. Lewis was President and Chief Executive Officer of the Juvenile Diabetes Research Foundation. From February 2006 until December 2008, Dr. Lewis was President and Chief Executive Officer of stem cell company Novocell, Inc., a privately held regenerative disease biotechnology company. Prior to that, Dr. Lewis served as Chief Executive Officer and a director of Signal Pharmaceuticals until its acquisition by Celgene Corporation. Dr. Lewis was named President of Celgene's Signal Research division in San Diego, where he directed its integrated drug discovery program in oncology and inflammation and served on Celgene's corporate executive committee. Dr. Lewis is on the board of directors for BioMarin Pharmaceuticals, Inc., where he chairs the science and technology committee. Dr. Lewis holds a B.Sc. in Physiology and Biochemistry from Southampton University and a Ph.D. in Pharmacology from the University of Wales, and he completed his postdoctoral training at Yale University. Among other experience, qualifications, attributes and skills, Dr. Lewis' extensive experience in management and the operation of pharmaceutical and healthcare companies and his scientific background, together with his experience serving on the board of directors of a public company and several private biotechnology companies, led to the conclusion of our Board that he should serve as a director of the Company in light of our business and structure.

<u>Name</u>	<u>Age (as of 03/31/16)</u>	<u>Director Since</u>	<u>Business Experience For Last Five Years</u>
William Ringo	70	2014	<p>Mr. Ringo became a director upon the closing of the Merger in July 2014, and became non-executive Chairman of the Board in February 2015. From July 2010 until December 2015, Mr. Ringo was a senior advisor with Barclays Capital, the global investment banking division of Barclays Bank PLC. From July 2010 until December 2015, Mr. Ringo served as a strategic advisor with Sofinnova Ventures, a life sciences focused investment firm. Prior to his advisory roles with Barclays Capital and Sofinnova Ventures, Mr. Ringo served as senior Vice President of Strategy and Business Development for Pfizer Inc., a biopharmaceutical company, from April 2008 until his retirement in April 2010. From 2004 to 2006, Mr. Ringo served as President and Chief Executive Officer of Abgenix, Inc., a private biotechnology company acquired by Amgen, Inc. Mr. Ringo served on the Onyx Pharmaceuticals, Inc. board of directors from February 2011 until the October 2013 acquisition by Amgen, Inc. From 2001 to 2007, he served on various boards of directors, including Encysive Pharmaceuticals, Inc., Inspire Pharmaceuticals, Inc. and InterMune, Inc. where he was the non-executive chairman of the board of directors after serving as interim Chief Executive Officer from June to September 2003. From 1994 to 2002, he served as a director and chairman of the board for Community Health Systems, Inc. His experience in the global pharmaceutical sector also includes nearly 30 years with Eli Lilly and Company (“Lilly”). Over the course of his career with Lilly, Mr. Ringo served in numerous executive roles, including Product Group President for oncology and critical care, President of internal medicine products, President of the infectious diseases business unit, and Vice President of sales and marketing for U.S. pharmaceuticals. He also was a member of Lilly’s operating committee. Mr. Ringo is a director and chairman of the board of Sangamo BioSciences, Inc., and a director of Mirati Therapeutics, Inc., Immune Design Corp., Dermira, Inc. and Five Prime Therapeutics, Inc. He also serves on the board of directors of BioCrossroads, an Indiana initiative and public-private collaboration that focuses on growing, advancing, and investing in the life sciences. Mr. Ringo received a B.S. in business administration and an M.B.A. from the University of Dayton. Among other experience, qualifications, attributes and skills, Mr. Ringo’s extensive management experience in the pharmaceutical industry and experience in the capital markets, as well as his experience serving on the board of directors of a public pharmaceutical company and on the boards of directors of several private pharmaceutical companies, led to the conclusion of our Board that he should serve as a director of the Company in light of our business and structure.</p>

<u>Name</u>	<u>Age (as of 03/31/16)</u>	<u>Director Since</u>	<u>Business Experience For Last Five Years</u>
Derek Small	40	2014	Mr. Small became a director and our President and Chief Operating Officer upon the closing of the Assembly Pharmaceuticals, Inc. acquisition by the Company in July 2014 in the Merger, and became Chief Executive Officer in February 2015. Mr. Small was a co-founder of Assembly Pharmaceuticals, Inc. and served as its Executive Chairman since its inception in 2012 and Chief Executive Officer beginning in January 2014. From March 2008 to January 2014, Mr. Small served as a founding director, President, and Chief Executive Officer of Naurex, Inc., a privately held biotechnology company later acquired by Allergan. At Naurex, Mr. Small spearheaded the development of a rapidly acting new antidepressant drug that has since earned a “breakthrough” designation from the FDA. From January 2009 to April 2012, Mr. Small also served as founding director, President, and Chief Executive Officer of Coferon, Inc., a privately held biotechnology company. Each of these companies was founded as portfolio company of Luson Bioventures, LLC, a biotechnology and biopharmaceutical venture creation firm that Mr. Small founded in 2007. Mr. Small received his BS in Business from Franklin College, including participation in the Harlaxton College affiliate program in England. Among other experience, qualifications, attributes and skills, Mr. Small’s extensive management experience in the pharmaceutical industry, as well as his experience serving on the board of directors of several private pharmaceutical companies, led to the conclusion of our Board that he should serve as a director of the Company in light of our business and structure.

**Required Vote**

Assuming a quorum is present, the seven nominees receiving the highest number of “FOR” votes from the holders of shares present in person or represented by proxy at the Annual Meeting and entitled to vote on Proposal No.1 shall be elected as directors to serve until the 2017 Annual Meeting of Stockholders or until their successors have been duly elected and qualified. Only votes “FOR” will affect the outcome. “WITHHELD” votes and broker non-votes will have no effect on the outcome of the election of directors.

**Recommendation of the Board of Directors**

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

## INFORMATION REGARDING THE BOARD OF DIRECTORS AND CORPORATE GOVERNANCE

This section describes key corporate governance guidelines and practices that we have adopted. Complete copies of our charters of the committees of the Board and our Code of Conduct and Code of Ethics described below may be found in the Investor Relations section of our website [www.asssemblybio.com](http://www.asssemblybio.com). Alternatively, you can request a copy of any of these documents free of charge by writing to Elizabeth H. Lacy, General Counsel, Vice President of Legal Operations and Corporate Secretary, c/o Assembly Biosciences, Inc. 11711 N. Meridian Street, Suite 310, Carmel, IN 46032. Information on our website is not incorporated by reference in this proxy statement.

### Independence of Directors

Because our common stock is listed on the NASDAQ Capital Market, our Board applies the NASDAQ Capital Market's test for director independence to all of our directors. Using that test, the Board has determined that current directors Mark Auerbach, Myron Z. Holubiak, Anthony E. Altig, Richard DiMarchi, PhD, Alan J. Lewis, PhD, and William Ringo are independent under the NASDAQ Marketplace Rules. Derek Small is not independent because he is our current President and Chief Executive Officer. As part of such determination of independence, our Board considered the relationships that each non-employee director has with us and all other facts and circumstances that the Board deemed relevant in determining independence, including the beneficial ownership of our capital stock by each non-employee director, and the association of certain of our directors with third parties, including Indiana University, with whom we have contractual relationships. After considering these factors, our Board has affirmatively determined that each of Mr. Auerbach, Mr. Holubiak, Mr. Altig, Dr. DiMarchi, Dr. Lewis and Mr. Ringo does not have a relationship with our company that would interfere with the exercise of independent judgment in carrying out his responsibilities as a director.

### Board Leadership Structure

Our Board does not have a policy regarding the separation of the roles of the Chairman of the Board and the Chief Executive Officer and believes it is in the best interests of the Company and its stockholders to make that determination based on the position and direction of the Company and the membership of the Board. Mr. Ringo currently serves as the Chairman of our Board of Directors and Mr. Small currently serves as the Chief Executive Officer. At this time, the Board does not believe that combining the positions of Chief Executive Officer and Chairman of the Board is in the best interest of Assembly and its stockholders. The Board reviews its leadership structure periodically as part of its annual self-assessment process.

### Risk Oversight

The Board is actively involved in the oversight of risks that could affect us. This oversight is conducted primarily through committees of the Board, particularly the Audit Committee, but the full Board has retained responsibility for general oversight of risks. The Board satisfies this responsibility through regular reports by each committee chair regarding the committee's considerations and actions, as well as through regular reports directly from officers responsible for oversight of particular risks.

### Compensation Risk Assessment

We believe that our executive compensation policies and programs do not encourage excessive or unnecessary risk taking. This is primarily due to the fact that our compensation programs are designed to encourage our executive officers and other employees to remain focused on both short-term and long-term strategic goals, in particular in connection with our pay-for-performance compensation philosophy. As a result, we do not believe that our compensation programs are reasonably likely to have a material adverse effect on the Company.

### Board of Director Meetings

The business of our Company is under the general oversight of the Board as provided by the laws of Delaware and our bylaws. During the fiscal year ended December 31, 2015, the Board held six meetings and also conducted business by written consent, the Audit Committee held five meetings, the Compensation Committee held seven meetings and also conducted business by written consent and the Nominating and

Governance Committee held three meetings. Each person who was a director during 2015 attended 75% or more of the aggregate meetings of the Board and of the committees, on which he served, held during the period for which he was a director or committee member. Applicable NASDAQ listing standards require that independent directors meet from time to time in executive session. In fiscal 2015, our independent directors met in regularly scheduled executive sessions at which only independent directors were present.

We strongly encourage all of our directors to attend our annual meetings of stockholders. All of our directors who had been nominated in 2015 attended last year's Annual Meeting.

## INFORMATION REGARDING COMMITTEES OF THE BOARD OF DIRECTORS

The Board has a number of committees that perform certain functions for the Board. The current committees of the Board are the Audit Committee, the Compensation Committee, the Nominating and Governance Committee and, as of February 2016, the Science and Technology Committee. Below is a description of each committee of the 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. The Board has determined that each member of each committee meets the applicable NASDAQ listing standards and relevant securities and other laws, rules and regulations regarding “independence” and that each member is free of any relationship that would impair his individual exercise of independent judgment with regard to our Company.

### **Audit Committee**

The Board has a separately designated standing Audit Committee established in accordance with Section 3(a)(58)(A) of the Exchange Act. The Audit Committee was established by the Board to oversee and appraise our accounting and financial reporting processes, the audit process, our process for monitoring compliance with laws, regulations and our codes of conduct and ethics, and the quality and integrity of our financial statements and reports. In addition, the Audit Committee oversees the qualification, selection, independence and performance of our independent registered public accounting firm and recommends to the Board the appointment of our independent registered public accounting firm. Additionally, our Audit Committee is responsible for reviewing and approving all related person transactions, including transactions with executive officers and directors, for potential conflicts of interests or other improprieties.

The Audit Committee is governed by a written charter adopted by the Board, which was last amended on October 2, 2015. The Audit Committee charter can be found in the Corporate Governance section of the Investor Relations section of our website at [www.assemblybio.com](http://www.assemblybio.com). Information on our website is not incorporated by reference in this proxy statement. At the direction of the Nominating and Governance Committee, the Audit Committee will perform an annual performance evaluation of the Audit Committee and report to the Board on the results of such evaluation.

Our Audit Committee consists of Mr. Auerbach (Chair), Mr. Altig and Mr. Ringo. The Board annually reviews the NASDAQ listing standards’ definition of independence for Audit Committee members and has determined that all members of our Audit Committee are independent (as independence is currently defined in NASDAQ Listing Rules 5605(c)(2)(A)(i) and (ii)). The Board has determined that each of Mr. Altig and Mr. Auerbach qualifies as an “audit committee financial expert” as that term is defined in Item 407(d) of Regulation S-K promulgated by the SEC. The Board made a qualitative assessment of Mr. Altig’s level of knowledge and experience based on a number of factors, including his experience as the Chief Financial Officer of several public companies and being a certified public accountant. The Board made a qualitative assessment of Mr. Auerbach’s level of knowledge and experience based on a number of factors, including his extensive financial experience, his accounting degree and his experience as a director of several public companies, including his service as the chair of the audit committee of one of those public companies. In making that determination, the Board relied on the past business experience of Mr. Altig and Mr. Auerbach. Please see the description of the business experience for Mr. Altig and Mr. Auerbach under the heading “Nominees for Director.”

The Board has determined that all of the members of the Audit Committee are independent as defined in Nasdaq Marketplace Rule 5605(a)(2) and within the meaning of Rule 10A3(b)(1) of the Exchange Act.

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

The Audit Committee reviews the Company’s financial reporting process on behalf of the Board. Management has the primary responsibility for the preparation and integrity of the consolidated financial statements and the reporting process, including establishing and monitoring the system of internal financial

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<sup>1</sup> The material in this report is not deemed “soliciting material,” is not deemed “filed” with the SEC, is not subject to Regulation 14A or 14C or to the liabilities of Section 18 of the Exchange Act, and is not to be incorporated by reference into any filing of Assembly under the Securities Act of 1933, as amended (the Securities Act), or the Exchange Act, whether made before or after the date hereof and irrespective of any general incorporation language in any such filing.

controls. In this context, the Audit Committee has reviewed and discussed our consolidated audited financial statements for the year ended December 31, 2015 with management of the Company. The Audit Committee has discussed with Ernst & Young, LLP, the independent registered public accounting firm, the matters required to be discussed by Auditing Standard No. 16, Communications with Audit Committee, as adopted by the Public Company Accounting Oversight Board, or PCAOB. The Audit Committee has also received the written disclosures and the letter from Ernst & Young, LLP required by applicable requirements of the PCAOB regarding the independent accountants' communications with the Audit Committee concerning independence and has discussed with Ernst & Young, LLP its independence. Based on the review and discussions described above, among other things, the Audit Committee has recommended to the Board that the consolidated audited financial statements be included in our Annual Report on Form 10-K for fiscal year ending December 31, 2015. The Audit Committee and the Board also have recommended the selection of Ernst & Young, LLP as the Company's independent registered public accounting firm for the year ending December 31, 2016.

Submitted by: The Audit Committee  
Mark Auerbach, Chairman  
Anthony Altig  
William Ringo

### **Compensation Committee**

The charter for our Compensation Committee requires the committee to have not less than three members. Our Compensation Committee currently consists of Mr. Holubiak (Chair), Mr. Auerbach and Mr. Ringo. Our Board has determined that Messrs. Holubiak, Auerbach and Ringo are independent under The NASDAQ Stock Market listing standards, each is a "non-employee director" as defined in Rule 16b-3 promulgated under the Exchange Act and each is an "outside director" as that term is defined in Section 162(m) of the Internal Revenue Code of 1986, as amended (Section 162(m)).

The primary purpose of our Compensation Committee is to discharge our Board's responsibilities relating to compensation of our executive officers and employees and to administer our equity compensation and other benefit plans. In carrying out these responsibilities, our Compensation Committee reviews all components of executive officer and employee compensation for consistency with our Compensation Committee's compensation philosophy, as in effect from time to time. Among other things, the Compensation Committee will:

- review and approve the annual goals and objectives of the Company's principal executive officer and other executive officers;
- evaluate the executives' performance in light of approved goals and objectives;
- determine the compensation of the principal executive officer and other executive officers based on this evaluation;
- review and approve the compensation of other employees of the Company that the Committee may specify from time to time, and delegate authority to specified executive officer(s) to review and approve the compensation of other non-executive officer employees;
- review with the principal executive officer and any other appropriate officers the material criteria used by the principal executive officer and management in evaluating employee performance throughout the Company and in establishing appropriate compensation, retention, incentive, severance and benefit policies and programs;
- review the compensation of the Company's directors and recommend changes to the compensation of the Board;
- oversee the administration of, and periodically review and make changes to, the incentive compensation plans, equity-based compensation plans, and any material employee benefit, bonus, retirement, severance and other compensation plans of the Company; and



- to the extent required, prepare the Compensation Committee Report and any analysis or report on executive compensation required to be included in the Company's proxy statement, annual report on Form 10-K and periodic reports pursuant to applicable federal securities rules and regulations, and recommend the inclusion of such analysis or report in the Company's proxy statement and periodic reports.

Under the Compensation Committee charter, the Compensation Committee may, in its discretion, delegate its duties to a subcommittee consisting of one or more of its members. At the direction of the Nominating and Governance Committee, the Compensation Committee shall perform an annual performance evaluation and report to the Board on its results.

The Compensation Committee has adopted a written charter, which was last amended on October 2, 2015. The Compensation Committee charter can be found in the Corporate Governance section of the Investor Relations section of our website at [www.assemblybio.com](http://www.assemblybio.com). Information on our website is not incorporated by reference in this proxy statement.

#### **Compensation Committee Interlocks and Insider Participation**

No member of our Compensation Committee has ever been an executive officer or employee of us or any of our subsidiaries. None of our executive officers currently serves, or has served during the last completed fiscal year, on the compensation committee or board of directors of any other entity that has one or more executive officers serving as a member of the Board or Compensation Committee. During 2015, no members of our Compensation Committee had any relationships requiring disclosure by us under the SEC's rules requiring disclosure of certain relationships and related party transactions.

#### **Compensation Committee Processes and Procedures**

The implementation of our compensation philosophy is carried out under the supervision of the Compensation Committee. The Compensation Committee charter requires that the Compensation Committee meet at least twice per year. The agenda for each meeting is usually developed by the Chair of the Compensation Committee, in consultation with our Chief Executive Officer and the Chief Financial Officer and Chief Operating Officer. The Compensation Committee meets regularly in executive session. However, Mr. Small, our Chief Executive Officer and Mr. Barrett, our Chief Financial Officer and Chief Operating Officer, in addition to representatives of Setren Smallberg & Associates, an organizational and executive compensation consulting firm, representatives of Radford, an Aon Hewitt Company and outside compensation consultants (Compensation Consultant), and representatives of our outside legal counsel, regularly attend portions of the Compensation Committee meetings for the purpose of providing analysis and information to assist management with their recommendations on various human resources and compensation matters. These officers generally do not participate in the executive sessions of the Compensation Committee. The Chief Executive Officer may not participate in, or be present during, any deliberation or determination of the Compensation Committee regarding his compensation.

The charter of the Compensation Committee grants the Compensation Committee full access to all of our books, records, facilities and personnel, as well as authority to obtain, at our expense, advice and assistance from compensation consulting firms, legal counsel and other advisors as it deems appropriate to assist it in the evaluation of the compensation of directors, the principal executive officer or the other executive and non-executive officers of the Company, and the fulfillment of its other duties.

In September 2015, the Compensation Committee engaged the Compensation Consultant as an independent adviser to the Compensation Committee. The Compensation Consultant was retained to conduct an analysis for the 2016 compensation cycle, and provide advice on, among other things, the appropriate peer group, executive compensation for our Chief Executive Officer (CEO) and other executive officers, equity compensation, and compensation trends in the biopharmaceutical and biotechnology industry. The Compensation Consultant reports directly to the Compensation Committee, which retains sole authority to direct the work of and engage the Compensation Consultant. As part of its analysis, the Compensation Consultant collects and analyzes compensation information from a comparative group of biopharmaceutical and biotechnology companies or "peer group" approved by the Compensation Committee. The Compensation Committee will evaluate the criteria used in establishing the peer group at least annually, to ensure that it

appropriately represents the companies competing with us to attract and retain talent. The Compensation Committee seeks input from management in addition to the Compensation Consultant to ensure the peer group is consistent with our current business model.

In selecting and retaining the Compensation Consultant, the Compensation Committee considered the following: (i) that the Compensation Consultant provided no other services to Assembly during calendar year 2015, (ii) that the total fees paid to the Compensation Consultant by Assembly represents an insignificant percentage of the Compensation Consultant's revenue, (iii) that the Compensation Consultant had policies and procedures in place to prevent conflicts of interest from arising, (iv) that the Compensation Consultant had no knowledge of any business or personal relationships between the members of the Compensation Consultant's executive compensation team serving Assembly and any member of the Compensation Committee, (v) that no regular members of the Compensation Consultant's executive compensation team serving Assembly owns any stock of Assembly (other than investments in funds that are managed without the member's input), and (vi) that the Compensation Consultant had no knowledge of any business or personal relationships between the Compensation Consultant, or the regular members of the Compensation Consultant's executive compensation team serving Assembly, and any of the Company's named executive officers (NEOs).

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

The charter for the Nominating and Governance Committee provides that this committee shall consist of not less than two directors. We currently have three members on the Nominating and Governance Committee. Our Nominating and Governance Committee consist of Dr. Lewis (Chair), Mr. Altig and Mr. Holubiak. The Board has determined that each of Dr. Lewis, Mr. Altig and Mr. Holubiak are independent under the listing standards of the NASDAQ Stock Market.

The primary purpose of our Nominating and Governance Committee is to select, and recommend to our Board, director nominees for each election of directors and recommend any corporate governance guidelines it deems appropriate.

The Nominating and Governance Committee has adopted a written charter, which was last amended on October 2, 2015. The Nominating and Governance Committee charter can be found in the Corporate Governance section of the Investor Relations section of our website at [www.assemblybio.com](http://www.assemblybio.com). Information on our website is not incorporated by reference in this proxy statement.

The Nominating and Governance Committee will review and assess the adequacy of its charter at least once annually and recommend changes to the Board for approval.

#### **Selection of Board Nominees**

In fulfilling its responsibilities to select, and recommend to our Board, director nominees for each election of directors, our Nominating and Governance Committee will consider the following factors:

- the appropriate size of our Board and its committees;
- the perceived needs of our Board for particular skills, background and business experience;
- the skills, background, reputation, and business experience of nominees compared to the skills, background, reputation, and business experience already possessed by other Board members;
- nominees' independence from management; and
- applicable regulatory and listing requirements, including independence requirements and legal considerations.

The goal of our Nominating and Governance Committee is to assemble a Board that brings to our Company a variety of perspectives and skills derived from high-quality business and professional experience. Directors should possess high personal and professional ethics, integrity and values, and be committed to representing the best interests of our stockholders. They must also have an inquisitive and objective perspective and mature judgment. While it does not have a specific written policy with regard to the consideration of diversity in identifying director nominees, the Committee does consider diversity to be an

additional desirable characteristic in potential nominees. Director candidates, in the judgment of our Nominating and Governance Committee, must also have sufficient time available to perform all Board and committee responsibilities. Board members are expected to prepare for, attend and participate in all Board and applicable committee meetings.

Other than the foregoing, there are no stated minimum criteria for director nominees, although our Nominating and Governance Committee may also consider such other factors as it may deem, from time to time, to be in the best interests of the Company and our stockholders.

Our Nominating and Governance Committee will annually evaluate our Board members who are willing to continue in service against the criteria set forth above in determining whether to recommend these directors for re-election.

Candidates for nomination as director may come to the attention of our Nominating and Governance Committee from time to time through incumbent directors, management, stockholders or third parties. For example, the Company retained the services of Domann Associates, a search firm, in connection with its search to fill a vacancy on the Board resulting from the departure of Russell Ellison from the Board in 2015. Candidates for potential nomination may be considered at meetings of our Nominating and Governance Committee at any point during the year. Such candidates will be evaluated against the criteria set forth above. If our Nominating and Governance Committee believes at any time that it is desirable that our Board consider additional candidates for nomination, the Committee may poll directors and management for suggestions or conduct research to identify possible candidates and may, if our Nominating and Governance Committee believes it is appropriate, engage a third-party search firm to assist in identifying qualified candidates.

Our Nominating and Governance Committee's policy will be to evaluate any recommendation for director nominee proposed by a stockholder and our bylaws also permit stockholders to nominate directors for consideration at an annual meeting, subject to certain conditions. Any recommendation for director nominee must be submitted in writing to the Corporate Secretary at the following address: Assembly Biosciences, Inc., Attention: Corporate Secretary, 11711 N. Meridian Street, Suite 310, Carmel, IN 46032.

Our bylaws require that any director nomination made by a stockholder for consideration at an annual meeting must be received in writing not more than 90 days nor less than 60 days in advance of the meeting, and at a special meeting called for the purpose of the election of directors not later than the close of business on the tenth business day following the date on which notice of such meeting is first given to our stockholders. Each written notice containing a stockholder nomination of a director at an annual or special meeting must include:

- the name and address of the stockholder who intends to make the nomination and any stockholder associated with such stockholder, and the name and residence address of the person or persons to be nominated;
- the class and number of shares that are beneficially owned by the stockholder and any associated stockholder;
- the nominee holder for, and number of, shares owned beneficially but not of record by such stockholder and any associated stockholder;
- a representation that the stockholder is a holder of record of stock entitled to vote at the meeting and intends to appear in person or by proxy at the meeting to nominate the person or persons specified in the notice;
- a description of all arrangements or understandings between the stockholder and any associated stockholder and each nominee and any other person or persons (naming such person or persons) pursuant to which the nomination or nominations are to be made by the stockholder;

- such other information regarding each nominee proposed by such stockholder as would be required to be disclosed in solicitations of proxies for election of directors, or as would otherwise be required, in each case pursuant to Regulation 14A under the Exchange Act including any information that would be required to be included in a proxy statement filed pursuant to Regulation 14A had the nominee been nominated by the board of directors;
- the written consent of each nominee to be named in a proxy statement and to serve as director of the corporation if so elected;
- whether and the extent to which any hedging or other transaction or series of transactions has been entered into by or on behalf of, or any other agreement, arrangement or understanding (including any short position or any borrowing or lending of shares) has been made, the effect or intent of which is to mitigate loss to or manage risk or benefit of share price changes for, or to increase or decrease the voting power of, such stockholder or any associated stockholder with respect to any share of our common stock; and
- to the extent known by the stockholder giving the notice, the name and address of any other stockholder supporting the nominee for election or reelection as a director or the proposal of other business on the date of such stockholder's notice.

Once director candidates are identified, the Nominating and Governance Committee conducts a review and evaluation of the qualifications of any proposed director candidate as it deems appropriate. There is no difference in the evaluation process of a candidate recommended by a stockholder as compared to the evaluation process of a candidate identified by any of the other means described above. While the Nominating and Governance Committee has not established minimum criteria for a candidate, it has established important factors to consider in evaluating a candidate. These factors include: strength of character, mature judgment, business understanding, experience with the pharmaceutical and/or biotechnology industries, availability and level of interest, capacity to devote time to Board activities, career specialization, relevant technical skills, diversity, independence and the extent to which the candidate would fill a present need on the Board.

If the Nominating and Governance Committee determines that a candidate should be nominated as a candidate for election to the Board, the candidate's nomination is then recommended to the Board, and the directors may in turn conduct their own review to the extent they deem appropriate. When the Board has agreed upon a candidate, such candidate is recommended to the stockholders for election at an annual meeting of stockholders or appointed as a director by a vote of the Board as appropriate.

All of the current directors have been recommended by the Nominating and Governance Committee to the Board for re-election as our directors at the Annual Meeting, and the Board has approved such recommendations.

#### **Science & Technology Committee**

In February 2016, the Board created the Science and Technology Committee. Our Science and Technology Committee consists of Dr. DiMarchi (Chair) and Dr. Lewis. The primary purpose of our Science and Technology Committee is to assist the Board's oversight of the Company's research and development activities and to advise the Board with respect to certain scientific matters.

The Board is presently reviewing a charter of the Science and Technology Committee, but has not adopted a charter for the Science and Technology Committee.

## STOCKHOLDER COMMUNICATIONS

Stockholders and other interested parties may communicate with the Board by writing to Derek Small, our President and Chief Executive Officer, at Assembly Biosciences, Inc., 101 Sixth Avenue, Ninth Floor, New York, New York 10013. Mr. Small received no such communications in 2015. Upon receipt of a stockholder communication indicating a desire to communicate with the Board, Mr. Small will review the communication and determine whether the communication should be directed to the Board or any individual director. All communications will be forwarded in this manner; provided, however, that Mr. Small reserves the right not to forward to the Board or any individual director any materials that he deems in his reasonable discretion to be unduly frivolous, hostile, threatening or similarly inappropriate for communication to the Board or any individual director.

## CODE OF ETHICS

Our Board has adopted a Code of Ethics for our principal executive officer and all senior financial officers and a Code of Conduct applicable to all of our employees and our directors. Both Codes are available under the Investor Relations — Corporate Governance section of our website at [www.assemblybio.com](http://www.assemblybio.com). If we make any substantive amendments to, or grant any waivers from, the Code of Ethics for our principal executive officer, principal financial officer, principal accounting officer, controller or persons performing similar functions, or any officer or director, we will disclose the nature of such amendment or waiver on our website or in a current report on Form 8-K.

## DIRECTOR COMPENSATION

Our directors play a critical role in guiding our strategic direction and overseeing the management of Assembly. The many responsibilities and risks and the substantial time commitment of being a director require that we provide adequate compensation commensurate with our directors' workload and opportunity costs. Non-employee directors receive a combination of annual cash retainers and stock option grants in amounts that correlate to their responsibilities and levels of Board participation, including service on Board committees. Our only employee director, Mr. Small, receives no separate compensation for his service as a director.

The following table sets forth the annual cash compensation payable to our non-employee directors in 2015.

<u>Director Position</u>	<u>Annual Cash Compensation<sup>(1)</sup></u>
Chair of the Board	\$ 30,000
All Non-Employee Directors	\$ 35,000
Audit Committee Chair	\$ 15,000
Audit Committee (Non-Chair members)	\$ 7,500
Compensation Committee Chair	\$ 10,000
Compensation Committee (Non-Chair members)	\$ 5,000
Nominating and Governance Committee Chair	\$ 10,000
Nominating and Governance Committee (Non-Chair members)	\$ 5,000
Science and Technology Committee Chair	\$ 10,000
Science and Technology Committee (Non-Chair members)	\$ 5,000

(1) The annual cash compensation that the Company pays to its Board members, other than Mr. Small is based on their positions on the Board or the committees of the Board, and the Company does not compensate the Board members on a per meeting basis. The amounts reflected in the table above were approved by the Board in 2015 and ratified by the Board in April 2016 and will remain in effect for calendar year 2016.

In 2015, it was established that upon joining the Board, a new director is granted an option to purchase 30,000 shares of common stock of the Company. Option grants issued upon joining the Board vest in equal annual installments over a period of three (3) years and have a term of 10 years. On the date of our annual meeting of stockholders, each re-elected non-employee director is entitled to be granted an option to purchase 10,000 shares of common stock, which vests in equal quarterly installments over one year, which vesting

schedule will change, effective on the date of the Annual Meeting with respect to the annual grants to be made to our continuing non-employee directors on such date, to vesting of all 10,000 shares underlying the grant upon the earlier of the first anniversary of the grant date and the next annual meeting of the stockholders if the Amended and Restated 2014 Stock Incentive Plan is approved by the stockholders at the Annual Meeting. The exercise price per share of each of these options is 100% of the fair market value of a share of our common stock on the date of the grant of the option. All options have a term of ten (10) years. The annual cash compensation payable to directors in 2016 will be the same cash compensation rates utilized in 2015.

The following table sets forth information regarding cash and non-cash compensation earned by or paid to each of our non-employee directors during 2015.

<b>Name</b>	<b>Fees Earned or Paid in Cash</b>	<b>Stock Awards (\$)</b>	<b>Option Awards (\$)<sup>(1)(2)</sup></b>	<b>Non-equity incentive plan compensation (\$)</b>	<b>Nonqualified deferred compensation earnings (\$)</b>	<b>All Other Compensation</b>	<b>Total (\$)</b>
Anthony E. Altig	47,500	—	\$ 114,462	—	—	—	\$ 161,962
Mark Auerbach	55,000	—	\$ 114,462	—	—	—	\$ 169,462
Richard DiMarchi, PhD	45,000	—	\$ 114,462	—	—	—	\$ 159,462
Myron Z. Holubiak	50,000	—	\$ 114,462	—	—	—	\$ 164,462
Alan J. Lewis, PhD <sup>(3)</sup>	1,458	—	\$ 176,862	—	—	—	\$ 178,320
William Ringo	77,500	—	\$ 114,462	—	—	—	\$ 191,962

(1) As of December 31, 2015, our non-employee directors held the following options to purchase shares of our common stock: Mr. Altig, 74,000 shares; Mr. Auerbach, 74,000 shares; Dr. DiMarchi, 74,000 shares; Mr. Holubiak, 74,000 shares; Dr. Lewis, 30,000 shares and Mr. Ringo, 74,000 shares.

(2) The reported amount in the table above of the stock option grants made in 2015 represents the aggregate grant date fair value of the options computed in accordance with FASB ASC Topic 718. Assumptions used in the calculation of these amounts are included in Note 8 of the financial statements included in the Form 10-K.

(3) Dr. Lewis became a director on December 18, 2015. Accordingly, his cash compensation is pro-rated to reflect his service as a director for a portion of 2015. Dr. Lewis also received an initial option award to purchase 30,000 shares of common stock.

**PROPOSAL NO. 2 — APPROVAL OF AMENDMENT AND RESTATEMENT OF  
ASSEMBLY BIOSCIENCES, INC. 2014 STOCK INCENTIVE PLAN**

**Background and Purpose of Proposal**

The Ventrus Pharmaceuticals Inc. 2014 Stock Incentive Plan (the Initial Plan) was adopted by the Board in May 2014 and approved by our stockholders in July 2014. In February 2016, the Board, upon recommendation of the Compensation Committee, and subject to the approval of our stockholders at the Annual Meeting, approved an amendment of the Initial Plan to increase the number of shares of common stock available for issuance under the 2014 Stock Incentive Plan by 150,000 shares of Common Stock. In April 2016, the Board, upon recommendation of the Compensation Committee and subject to the approval of our stockholders at the Annual Meeting, approved the Amended and Restated 2014 Stock Incentive Plan, which, among other things:

- increases the aggregate number of shares of common stock authorized for issuance under the Amended and Restated 2014 Stock Incentive Plan by 1,600,000 shares (representing less than 9.3% of the 17,225,662 shares of our common stock outstanding as of March 30, 2016), from 2,560,000 shares (post reverse stock split basis) to 4,160,000 shares;
- changes the name of the plan from “Ventrus Biosciences, Inc. 2014 Stock Incentive Plan” to “Assembly Biosciences, Inc. Amended and Restated 2014 Stock Incentive Plan” and other changes to reflect the name change of the Company;
- imposes a minimum one-year vesting requirement on time-based awards granted to employees, other than in the case of death, disability or a Corporate Transaction, and a minimum of at least the earlier of (i) one year vesting from the date of grant, and (ii) the next annual meeting of the stockholders with respect to time-based awards granted to directors, except in the case of death, disability or a Corporate Transaction;
- allows shares of common stock forfeited from awards granted under the Company’s 2010 Equity Incentive Plan to be added to the reserved shares available for grant under the Amended and Restated 2014 Stock Incentive Plan;
- expands the performance criteria for “performance-based compensation” to include initial or completion of clinical trials, results of clinical trials, regulatory approval, regulatory submissions, drug development or commercialization milestones, collaboration milestones or strategic partnerships;
- limits awards (other than options or stock appreciation rights) that can be granted to any one individual for any performance cycle to no more than 500,000 shares of common stock;
- adds unrestricted stock as a type of award that can be granted under the Amended and Restated 2014 Stock Incentive Plan; and
- makes certain minor clarifying changes.

If this Proposal No. 2 is approved by our stockholders, the Amended and Restated 2014 Stock Incentive Plan will become effective on the day of the Annual Meeting.

The Amended and Restated 2014 Stock Incentive Plan is designed to provide an incentive to eligible employees, directors and consultants of the Company and its affiliates, to encourage proprietary interest in the Company by such persons, to encourage such persons to remain in the service of the Company and its affiliates and to attract new employees, directors and consultants with outstanding qualifications.

## Why the Board of Directors Believes You Should Support the Amended and Restated 2014 Stock Incentive Plan

- *Background.* We are requesting that stockholders approve the Amended and Restated 2014 Stock Incentive Plan. The Company's current equity incentive plans are depleted; accordingly, it is imperative that the reservation of additional shares for issuance is approved for the reasons outlined below. We are requesting a share increase that we believe is modest yet sufficient to meet the Company's hiring and retention needs for at least two years and will underpin the Company's core philosophy towards compensation, namely to offset lower cash compensation and drive focus on shared success.
- Upon retaining outside consultants to evaluate our historical grant practices, plan features and costs, and future equity plans, the Company found that the proposed plan may not meet certain proxy advisory firms' benchmark standards for equity compensation packages. Our average burn rate (total shares used for equity compensation awards each year divided by weighted average outstanding shares for the year) for 2013, 2014, and 2015 was 3.70%, 39.30% and 3.19%, respectively. The three-year average of 15.40% is above the industry benchmark for companies in Global Industry Classification Standard (GICS) 3520 (Pharmaceuticals, Biotechnology & Life Sciences) in the Russell 3000 of 6.77%. However, the 2014 burn rate was an anomaly and was due to the option awards issued to retain key executives and options assumed by the Company in connection with the acquisition of Assembly Pharmaceuticals, Inc. If the 2014 data point is removed, the Company's burn rate over 2013 and 2015 was 3.45% and well under the aforementioned benchmark. It should also be noted that following the Merger the Company issued 10 million additional shares through a public offering that were not taken into account in the 2014 calculation. If these additional shares had been included in the calculation, the burn rate would have been significantly lower in 2014.
- The Company believes you should vote for the Amended and Restated 2014 Stock Incentive Plan for the following reasons:
  1. *The Company is committed to sound equity compensation practices.* We recognize that equity compensation awards dilute stockholder equity and hence must be used judiciously. Indeed, although our employee headcount is rapidly increasing as the business grows, we have aligned the Company's compensation practices with industry norms among the Company's peer group described in this proxy statement under "Executive Officers — Executive Compensation — Compensation Adjustments and Peer Group Process." We believe our use of equity has been responsible and mindful of stockholder interests.
  2. *The 2014 Stock Incentive Plan has been amended to further protect shareholder interests.* The Company's Amended and Restated 2014 Stock Incentive Plan contains features that we believe further align the interests of our employees and directors with those of our stockholders, including, a minimum vesting requirement of one year for all awards subject to vesting that are made to employees and a minimum vesting requirement of the earlier of (i) one year and (ii) at the next annual meeting of the stockholders for awards subject to vesting that are made to directors, in each case subject to death, disability or a Corporate Transaction; and continues to have no automatic acceleration of vesting provisions upon a corporate transaction. In 2015, awards to directors and employees constituted approximately 97% of all awards issued and in 2016 are anticipated to continue to represent a significant proportion of all awards.
  3. *Continued access to broad-based equity compensation will help enable rapid growth.* To align our new hires with our stockholders, our practice is to provide most new hires with meaningful initial equity awards upon hiring. Of the 500,300 shares of common stock subject to equity awards made in 2015, 81% were options issued to new hires, none were equity awards issued as retention awards to existing employees and 16% were equity awards issued to non-employee directors. Since the Merger in 2014, our employee headcount has increased from seven to forty-seven at the end of 2015. In 2016, we anticipate hiring additional employees to continue with our research and development efforts and to advance our product candidates into clinical development. In connection with these new hires, we will continue our practice of providing



meaningful initial equity awards. Additionally, in 2016 and 2017 we anticipate making more retention awards to existing employees to ensure continued alignment with stockholders. We believe that our stockholders' long-term interests are best served by equity compensation awards designed to achieve these goals.

4. *Equity compensation helps us to attract and retain talent.* A talented, motivated and effective management team and workforce are essential to the Company's continued progress. Equity compensation is an important component of total compensation at the Company because we believe it will incentivize managers and employees to think and act like owners. The Company's employees are our most valuable asset and the awards permitted under the Amended and Restated 2014 Stock Incentive Plan are vital to our ability to attract and retain outstanding and highly skilled individuals. Without an increase in the number of shares reserved for issuance under the Amended and Restated 2014 Stock Incentive Plan, hiring and retaining the best talent will be increasingly difficult
5. *The current equity-pay mix aligns employee incentives with stockholder gains.* Our employee compensation consists of base salary payable in cash, annual performance bonuses payable in cash or at the discretion of the Compensation Committee and election of employee shares of common stock, and long-term incentives payable in the form of equity awards under our stock option plans. Historically, all long-term incentive equity awards have consisted of options to purchase shares of common stock; however, the Compensation Committee may consider other equity awards under the Amended and Restated 2014 Stock Incentive Plan, including restricted stock, restricted stock units, stock appreciation rights and dividend equivalent rights. Our target composition philosophy is to target base salary and annual performance bonuses at approximately the 50<sup>th</sup> percentile of our peer group and long-term incentives between the 50<sup>th</sup> and 75<sup>th</sup> percentile of our peer group. As employees only realize value from equity awards if the shares of common stock appreciate, equity awards provide useful incentives to our employees to increase the company stock price. If we are unable to offer equity awards to new and existing employees, we will need to increase the cash component of our compensation. This would divert the Company's cash reserves away from our research and development activities and anticipated clinical trials. This could negatively impact the progress of product candidates which in turn could impair stockholder value.
6. *Equity compensation helps us avoid business disruption due to compensation programs.* If the Amended and Restated 2014 Stock Incentive Plan is not approved, we will have to restructure existing compensation programs for reasons not directly related to the achievement of our business objectives. Currently, we have options to purchase 40,263 shares of common stock approved by our Compensation Committee, but subject to forfeiture if the stockholders do not approve an increase in the number of shares reserved under our existing stock option plans by December 31, 2016. Additionally, we have other employment offers that contemplate stock option grants but which are subject to expanding our existing stock option plans. If the Amended and Restated 2014 Stock Incentive Plan is not approved, it will be necessary to replace components of compensation previously awarded or to be awarded in equity with cash, or with other instruments that may not necessarily align employee interests with those of stockholders as effectively. We believe that such actions would be disruptive to the Company and its employees.
7. *Although overhang is large, outstanding awards create deep, long-term incentives for insiders.* The Company's "overhang" (shares subject to equity compensation awards outstanding at fiscal year-end or available to be used for equity compensation, divided by fully diluted shares outstanding) at the end of fiscal year 2015 was estimated to be approximately 18.73%. Based on the closing market price for our common stock of \$5.02 as reported on NASDAQ on March 31, 2016, all of our previously granted option awards are "out of the money." The Company believes that our employees' and other plan participants' holding of these options is positive for our stockholders as it represents a long term interest of our employees and other plan participants in the value of our common stock.

8. *Stockholders will be able to re-evaluate our equity compensation program in two years.* The Board estimates that by adopting the Amended and Restated 2014 Stock Incentive Plan we will have a sufficient number of shares of common stock to cover equity awards for approximately two years, at which time the effects of the 2014 events should no longer factor into the analyses of proxy advisor firms, and stockholders can vote on a more sustained, long-term view of our equity compensation programs.

#### **Summary of Material Features of the Amended and Restated 2014 Stock Incentive Plan**

The material features of the Amended and Restated 2014 Stock Incentive Plan are:

- The maximum number of shares of common stock to be issued under the Amended and Restated 2014 Stock Incentive Plan is increased from 2,560,000 shares (post reverse stock split basis) to 4,160,000 shares, an addition of 1,600,000 shares of common stock (representing less than 9.3% of the 17,225,662 shares of our common stock outstanding as of March 31, 2016);
- Shares tendered or held back for taxes will not be added back to the reserved pool under the Amended and Restated 2014 Stock Incentive Plan. Upon the exercise of a stock appreciation right, the full number of shares underlying the Award will be charged to the reserved pool. Additionally, shares reacquired by the Company on the open market or otherwise using cash proceeds of option exercises will not be added to the reserved pool;
- The award of stock options (both incentive and non-qualified options), stock appreciation rights, restricted stock and restricted stock units, unrestricted stock, performance shares, dividend equivalent rights and cash-based awards is permitted;
- One-year minimum vesting period is required for time-based awards granted to employees other than in the case of death, disability or a Corporate Transaction; and awards granted to directors that are subject to time-based vesting shall not vest and become exercisable until at least the earlier of (i) one year after the date of grant or (ii) the next annual meeting of the stockholders, other than in the case of death, disability or a Corporate Transaction;
- Except in connection with certain corporate adjustment events, without stockholder approval, the exercise price of stock options and stock appreciation rights will not be reduced and stock options and stock appreciation rights will not be otherwise repriced through cancellation in exchange for cash, other awards or stock options or stock appreciation rights with a lower exercise price;
- Any material amendment to the Amended and Restated 2014 Stock Incentive Plan is subject to approval by our stockholders; and
- The Amended and Restated 2014 Stock Incentive Plan will expire on June 2, 2026, but no incentive stock options may be granted after April 7, 2026.

The following is a brief summary of the other principal provisions of the Amended and Restated 2014 Stock Incentive Plan and its operation. A copy of the Amended and Restated 2014 Stock Incentive Plan is set forth in full in Appendix A to this proxy statement, and the following description of the Amended and Restated 2014 Stock Incentive Plan does not purport to be complete and is qualified in its entirety by reference to Appendix A. Capitalized terms used in this summary and not otherwise defined will have the meanings ascribed to such terms in the Amended and Restated 2014 Stock Incentive Plan.

*Purpose of the Amended and Restated 2014 Stock Incentive Plan.* The purpose of the Amended and Restated 2014 Stock Incentive Plan is to encourage ownership in the Company by employees, directors and consultants of the Company and its affiliates whose long-term employment by or involvement with the Company is considered essential to the Company's continued progress and, thereby, aligning the interests of the award recipients and stockholders and permitting the award recipients to share in the Company's success. The Amended and Restated 2014 Stock Incentive Plan provides an essential component of the total compensation package offered to the Company's employees and other plan participants. It reflects the importance placed by the Company on motivating employees and other plan participants to achieve superior results over the long-term and paying employees and other plan participants based on that kind of achievement. The Company strongly believes that its equity compensation programs and emphasis on

employee and non-employee director stock ownership have been integral to the Company's progress and that a continuation of and emphasis on those programs is necessary for the Company to achieve superior performance in the future. All of the Company's full time employees and directors of the Company and its affiliates are eligible to participate in the Amended and Restated 2014 Stock Incentive Plan.

*Types of Awards.* The Amended and Restated 2014 Stock Incentive Plan provides for the grant of non-qualified and incentive stock options (Options), stock appreciation rights (SAR), dividend equivalent rights, unrestricted stock, restricted stock, restricted stock units or other rights or benefits under the Amended and Restated 2014 Stock Incentive Plan (collectively "Awards").

*Shares Subject to the Amended and Restated 2014 Stock Incentive Plan.* No more than 4,160,000 shares of common stock may be issued pursuant to Awards under the Amended and Restated 2014 Stock Incentive Plan. The number of shares available for Awards, as well as the terms of outstanding Awards, are subject to adjustment as provided in the Amended and Restated 2014 Stock Incentive Plan for stock splits, stock dividends, recapitalizations and other similar events and for shares rolled over from the 2010 Equity Incentive Plan. The Amended and Restated 2014 Stock Incentive Plan imposes a cap of 1,000,000 on the aggregate number of shares that may be subject to Options or stock appreciation rights granted to any one participant within a single calendar year, a cap of 500,000 on the aggregate number of shares that may be subject to other awards for any performance cycle, as such numbers may be proportionately adjusted in connection stock splits, combinations and other recapitalization and reorganization events.

Each share of common stock subject to an Award granted pursuant to the Amended and Restated 2014 Stock Incentive Plan will reduce the aggregate number of shares available under the Amended and Restated 2014 Stock Incentive Plan by one share of common stock. Any shares of common stock that again become available for issuance under the Amended and Restated 2014 Stock Incentive Plan or the Company's 2010 Equity Incentive Plan due to a forfeiture, expiration or cancellation of an Award (or if the Award otherwise becomes unexercisable) will generally be added back to the aggregate plan limit of the Amended and Restated 2014 Stock Incentive Plan in this same manner and such shares will again be available for subsequent Awards, except as prohibited by law. In the event any Option or other Award granted under the Plan or the Company's 2010 Equity Incentive Plan is exercised through the tendering of shares of common stock (either actually or through attestation), or in the event tax withholding obligations are satisfied by tendering or withholding shares of common stock, any shares of common stock so tendered or withheld shall not again be available for awards under the Amended and Restated 2014 Stock Incentive Plan. Shares of Common Stock subject to an SAR granted pursuant to Section 6(l) of the Amended and Restated 2014 Stock Incentive Plan that are not issued in connection with cash or stock settlement of the exercise of the SAR shall not again be available for award under the Amended and Restated 2014 Stock Incentive Plan. Shares of common stock reacquired by the Company on the open market or otherwise using cash proceeds from the exercise of Options shall not be available for awards under the Amended and Restated 2014 Stock Incentive Plan.

*Administration.* The Amended and Restated 2014 Stock Incentive Plan will be administered by the Board or a Committee designated by the Board, which Committee shall be constituted in such a manner as to satisfy the applicable laws and to permit such grants and related transactions under the Amended and Restated 2014 Stock Incentive Plan to be exempt from Section 16(b) of the Exchange Act in accordance with Rule 16b-3. Once appointed, such Committee shall continue to serve in its designated capacity until otherwise directed by the Board. Currently, the Compensation Committee will serve as the Committee specified in the Amended and Restated 2014 Stock Incentive Plan and act as the Administrator thereunder.

Subject to the terms of the Amended and Restated 2014 Stock Incentive Plan, the Administrator has express authority to determine the employees, directors or consultants who will receive Awards, the number of shares of common stock or other consideration to be covered by each Award, and the terms and conditions of Awards. The Administrator has broad discretion to prescribe, amend and rescind rules relating to the Amended and Restated 2014 Stock Incentive Plan and its administration, to interpret and construe the Amended and Restated 2014 Stock Incentive Plan and the terms of all Award agreements, and to take all actions necessary or advisable to administer the Amended and Restated 2014 Stock Incentive Plan or to effectuate its purposes.

Subject to the terms of the Amended and Restated 2014 Stock Incentive Plan, the Administrator may accelerate the vesting of any Award, allow the exercise of unvested Awards, and may modify, replace, cancel or renew any Award.

The Company will indemnify and defend members of the Committee and their delegates to the extent permitted by law on an after-tax basis against all reasonable expenses, including attorneys' fees, actually and necessarily incurred in connection with the defense of any claim, investigation, action, suit or proceeding, or in connection with any appeal therein, to which they or any of them may be a party by reason of any action taken or failure to act under or in connection with the Plan, or any Award granted hereunder, and against all amounts paid by them in settlement thereof (provided such settlement is approved by the Company) or paid by them in satisfaction of a judgment in any such claim, investigation, action, suit or proceeding, except in relation to matters as to which it shall be adjudged in such claim, investigation, action, suit or proceeding that such person is liable for gross negligence, bad faith or intentional misconduct; provided, however, that within thirty (30) days after the institution of such claim, investigation, action, suit or proceeding, such person shall offer to the Company, in writing, the opportunity at the Company's expense to defend the same.

Timed-based awards granted to employees under the Amended and Restated 2014 Stock Incentive Plan are subject to a one-year minimum vesting requirement other than in the case of death, disability or a Corporate Transaction. Timed-based awards granted to directors under the Amended and Restated 2014 Stock Incentive Plan are subject to a minimum vesting requirement of at least the earlier of one year from grant date and the next annual meeting of the stockholders, other than in the case of death, disability or a Corporate Transaction.

*Eligibility.* The Administrator may grant options that are intended to qualify as incentive stock options (ISOs) only to employees of the Company or an affiliate that is a "parent corporation" or "subsidiary corporation" within the meaning of Section 424 of the Code, and may grant all other Awards to any employee director or consultant. The Amended and Restated 2014 Stock Incentive Plan and the discussion below use the term "Grantee" to refer to the holder of an Award, or the shares of common stock issuable or issued upon exercise of an Award, under the Amended and Restated 2014 Stock Incentive Plan.

*Options.* Options granted under the Amended and Restated 2014 Stock Incentive Plan provide Grantees with the right to purchase shares of common stock at a predetermined exercise price. The Administrator may grant options that are intended to qualify as ISOs or options that are not intended to so qualify (Non-Qualified Stock Options). The Amended and Restated 2014 Stock Incentive Plan also provides that ISO treatment may not be available for options designated as ISOs that become first exercisable by a Grantee in any calendar year to the extent the value of the shares of common stock that are subject to the Grantee's ISOs (including ISOs granted under any other plan of the Company or an affiliate) that first become exercisable in such calendar year exceed \$100,000 (based upon the fair market value of the shares of common stock on the option grant date).

*Exercise Price of Options.* The exercise price of ISOs granted to Grantees who own more than ten percent of the common stock of the Company or an affiliate on the grant date of the ISO may not be less than 110% of the fair market value of the shares of common stock subject to the ISO on the grant date. The exercise price of all other options may not be less than 100% of the fair market value of the shares of common stock subject to the option on the grant date.

*Exercise of Options.* To the extent exercisable in accordance with the applicable Award agreement, each option may be exercised in whole or in part, and from time to time during its term, subject to earlier termination relating to a Grantee's termination of continuous service. With respect to options, the Administrator has the discretion to accept payment of the exercise price by any of the following methods (or any combination of them): cash or check in U.S. dollars, promissory note with such recourse, interest, security and redemption provisions as the Administrator determines, certain shares of common stock and cashless exercise under a program approved by the Administrator.

*Prohibition on Repricing.* Except in connection with certain corporate adjustment events, the Company may not, without stockholder approval, amend an Award granted under the Amended and Restated 2014 Stock Incentive Plan to reduce the Award's exercise price per share, cancel and regrant new Awards with lower

prices per share than the original prices per share of the cancelled Awards, or cancel any Awards in exchange for cash or the grant of replacement Awards with an exercise price that is less than the exercise price of the original Awards, essentially having the effect of a repricing.

*Restricted Stock and Restricted Stock Units.* The Administrator may grant (i) shares of restricted stock that are forfeitable until certain vesting requirements are met, and (ii) restricted stock units which represent the right to receive an Award upon the passage of time or the attainment of performance criteria as established by the Administrator and which may be settled for cash, shares of common stock or other securities or a combination. The Administrator has discretion to determine the terms and conditions under which a Grantee's interests in restricted stock and restricted stock units become vested and non-forfeitable.

*Unrestricted Stock.* The Administrator may grant unrestricted stock in lieu of paying cash compensation.

*Dividend Equivalent Rights.* The Administrator may grant awards of dividend equivalent rights which entitle the Grantee to compensation measured by dividends paid with respect to shares of common stock.

*Performance Awards.* The Amended and Restated 2014 Stock Incentive Plan authorizes the Administrator to designate the Awards as "performance-based compensation" that are intended to be exempt from Code Section 162(m) limitations. Awards that are not exempt from Code Section 162(m) shall not be effective until any required stockholder approval has been obtained. The maximum Award intended to be "performance-based compensation" (other than an Option or an SAR) granted to a "Covered Employee" for any performance period is 500,000 shares of common stock. Awards subject to performance criteria vest and become payable based upon the achievement, within the specified period of time (known as the performance period), of performance objectives applicable to the Company or any affiliate or business unit. The Administrator decides the length of performance periods. Partial achievement of the specified criteria may result in a payment or vesting corresponding to the degree of achievement as specified in the Award Agreement.

*Income Tax Withholding.* As a condition for the issuance of shares of common stock pursuant to Awards, the Amended and Restated 2014 Stock Incentive Plan requires the Grantee to make arrangements as the Company may require for satisfaction of any applicable federal, state, local or foreign withholding tax obligations that may arise in connection with the Award or the issuance of shares of common stock.

*Transferability.* Unless the Administrator provides otherwise, in its sole discretion, no Award may be sold, pledged, assigned, hypothecated, transferred, or disposed of in any manner other than by will or by the laws of descent or distribution and may be exercised, during the lifetime of the Grantee, only by the Grantee. Notwithstanding the foregoing, the Grantee may designate one or more beneficiaries of the Grantee's Award in the event of the Grantee's death on a beneficiary designation form provided by the Administrator.

*Certain Corporate Transactions.*

Effective upon the consummation of a Corporate Transaction, all outstanding Awards under the Plan shall terminate unless they are assumed in connection with the Corporate Transaction.

The Administrator shall have the authority, exercisable either in advance of any actual or anticipated Corporate Transaction or at the time of an actual Corporate Transaction and exercisable at the time of the grant of an Award under the Plan or any time while an Award remains outstanding, to provide for the full or partial automatic vesting and exercisability of one or more outstanding unvested Awards under the Plan and the release from restrictions on transfer and repurchase or forfeiture rights of such Awards in connection with a Corporate Transaction on such terms and conditions as the Administrator may specify. The Administrator also shall have the authority to condition any such Award vesting and exercisability or release from such limitations upon the subsequent termination of the Continuous Service of the Grantee within a specified period following the effective date of the Corporate Transaction. The Administrator may provide that any Awards so vested or released from such limitations in connection with a Corporate Transaction shall remain fully exercisable until the expiration or sooner termination of the Award. Any Incentive Stock Option accelerated in connection with a Corporate Transaction shall remain exercisable as an Incentive Stock Option under the Code only to the extent the \$100,000 dollar limitation of Section 422(d) of the Code is not exceeded.

“Corporate Transaction” means any of the following transactions, provided, however, that the Administrator shall determine under parts (iv) and (v) whether multiple transactions are related, and its determination shall be final, binding and conclusive: (i) a merger or consolidation in which the Company is not the surviving entity, except for a transaction the principal purpose of which is to change the state in which the Company is incorporated; (ii) the sale, transfer or other disposition of all or substantially all of the assets of the Company; (iii) the complete liquidation or dissolution of the Company; (iv) any reverse merger or series of related transactions culminating in a reverse merger (including, but not limited to, a tender offer followed by a reverse merger) in which the Company is the surviving entity but (A) the shares of Common Stock outstanding immediately prior to such merger are converted or exchanged by virtue of the merger into other property, whether in the form of securities, cash or otherwise, or (B) in which securities possessing more than fifty percent (50%) of the total combined voting power of the Company’s outstanding securities are transferred to a person or persons different from those who held such securities immediately prior to such merger or the initial transaction culminating in such merger; or (v) acquisition in a single or series of related transactions by any person or related group of persons (other than the Company or by a Company-sponsored employee benefit plan) of beneficial ownership (within the meaning of Rule 13d-3 of the Exchange Act) of securities possessing more than fifty percent (50%) of the total combined voting power of the Company’s outstanding securities.

*Term of the Amended and Restated 2014 Stock Incentive Plan; Amendments and Termination.* The term of the Amended and Restated 2014 Stock Incentive Plan is ten years from the date of its approval by the Company’s stockholders or June 2, 2026, except that no incentive stock options may be granted after April 7, 2026. The Board of Directors may, from time to time, amend, alter, suspend, discontinue or terminate the Amended and Restated 2014 Stock Incentive Plan; provided, that any amendment to increase the number of shares of common stock available for Awards under the Amended and Restated 2014 Stock Incentive Plan and certain other amendments will be subject to stockholder approval. Additionally, no amendment, suspension or termination of the Amended and Restated 2014 Stock Incentive Plan shall materially and adversely affect Awards already granted unless it relates to an adjustment pursuant to certain transactions that change the Company’s capitalization or it is otherwise mutually agreed between the Grantee and the Administrator.

Notwithstanding the foregoing, the Administrator may adopt such amendments to the Amended and Restated 2014 Stock Incentive Plan and the applicable Award Agreement or adopt other policies and procedures (including amendments, policies and procedures with retroactive effect), or take any other actions, that the Administrator determines are necessary or appropriate to (1) exempt the Award from Section 409A of the Code and/or preserve the intended tax treatment of the benefits provided with respect to the Award, or (2) comply with the requirements of Section 409A of the Code and related Department of Treasury guidance.

*Expected U.S. Federal Income Tax Consequences.* The following is a brief summary of certain tax consequences of certain transactions under the Amended and Restated 2014 Stock Incentive Plan. This summary is not intended to be complete and does not describe state or local tax consequences. Grantees in the Amended and Restated 2014 Stock Incentive Plan should review the current tax treatment with their individual tax advisors at the time of grant, exercise or any other transaction relating to an Award or the underlying shares.

Under the Code, the Company will generally be entitled to a deduction for federal income tax purposes at the same time and in the same amount as the ordinary income that Grantees recognize pursuant to Awards (subject to the Grantee’s overall compensation being reasonable, and to the discussion below with respect to Code Section 162(m)). For Grantees, the expected U.S. federal income tax consequences of Awards are as follows:

- *Non-Qualified Stock Options.* A Grantee will not recognize income at the time a Non-Qualified Stock Option is granted. At the time a Non-Qualified Stock Option is exercised, the Grantee will recognize ordinary income in an amount equal to the excess of (a) the fair market value of the shares of common stock issued to the Grantee on the exercise date over (b) the exercise price paid

for the shares. At the time of sale of shares acquired pursuant to the exercise of a Non-Qualified Stock Option, the appreciation (or depreciation) in value of the shares after the date of exercise will be treated either as short-term or long-term capital gain (or loss) depending on how long the shares have been held.

- *ISOs.* A Grantee will not recognize income upon the grant of an ISO. There are generally no tax consequences to the Grantee upon exercise of an ISO (except that the amount by which the fair market value of the shares at the time of exercise exceeds the option exercise price is a tax preference item possibly giving rise to an alternative minimum tax). If the shares of common stock are not disposed of within two years from the date the ISO was granted or within one year after the ISO was exercised, any gain realized upon the subsequent disposition of the shares will be characterized as long-term capital gain and any loss will be characterized as long-term capital loss. If either of these holding period requirements are not met, then a “disqualifying disposition” occurs and (a) the Grantee recognizes ordinary income in the amount by which the fair market value of the shares at the time of exercise exceeded the exercise price for the ISO and (b) any remaining amount realized on disposition (except for certain “wash” sales, gifts or sales to related persons) will be characterized as capital gain or loss.
- *Restricted Stock and Restricted Stock Units.* In general, a Grantee will not recognize income at the time of grant of restricted stock or restricted stock units, unless the Grantee elects with respect to restricted shares to accelerate income taxation to the date of the Award by making a Section 83(b) election. If the Grantee makes such an election, such Grantee would recognize ordinary compensation income equal to the excess of the fair market value of the restricted shares over any amount the Grantee pays for them (in which case subsequent gain or loss would be capital in nature). In the absence of an election to accelerate income taxation to the date of an Award, a Grantee must recognize taxable compensation income at the time the Award vests in an amount equal to the excess of the fair market value of any property that the Grantee receives over the amount paid for such property by the Grantee, or, in the case of restricted stock units, upon receipt of cash or shares of common stock.
- *Unrestricted Stock.* In general, a grantee will recognize income at the time of grant of unrestricted stock.
- *Special Tax Provisions.* Under certain circumstances, the accelerated vesting, cash-out or accelerated lapse of restrictions on Awards in connection with a change in control of the Company might be deemed an “excess parachute payment” for purposes of the golden parachute tax provisions of Code Section 280G, and the Grantee may be subject to a 20% excise tax and the Company may be denied a tax deduction. Furthermore, the Company may not be able to deduct the aggregate compensation in excess of \$1,000,000 attributable to Awards that are not “performance-based” within the meaning of Code Section 162(m) in certain circumstances.
- *Income Taxes and Deferred Compensation.* The Amended and Restated 2014 Stock Incentive Plan provides that Grantees are solely responsible and liable for the satisfaction of all taxes and penalties that may arise in connection with Awards (including any taxes arising under Section 409A of the Code), and that the Company will not have any obligation to indemnify or otherwise hold any Grantee harmless from any or all of such taxes. Nevertheless, the Amended and Restated 2014 Stock Incentive Plan permits the Administrator to establish one or more programs under the Amended and Restated 2014 Stock Incentive Plan to permit selected Grantees the opportunity to elect to defer receipt of consideration upon exercise of an Award, satisfaction of performance criteria, or other event that absent the election would entitle the Grantee to payment or receipt of Shares or other consideration under an Award. The Administrator may establish the election procedures, the timing of such elections, the mechanisms for payments of, and accrual of interest or other earnings, if any, on amounts, shares of common stock or other consideration so deferred, and such other terms, conditions, rules and procedures that the Administrator deems advisable for the administration of any such deferral program.

## **Eligibility**

Persons eligible to participate in the Amended and Restated 2014 Stock Incentive Plan are those full or part-time officers, employees, non-employee directors and other key persons (including consultants) of the Company and its subsidiaries as selected from time to time by the Board of the Compensation Committee in its discretion. As of March 31, 2016, not including consultants, approximately 56 individuals are currently eligible to participate in the Amended and Restated 2014 Stock Incentive Plan, which includes six executive officers, 44 full time employees who are not executive officers, and six non-employee directors.

## **Qualified Performance-Based Compensation under Code Section 162(m)**

To ensure that certain awards granted under the Amended and Restated 2014 Stock Incentive Plan to a “Covered Employee” (as defined in the Internal Revenue Code of 1986 (the “Code”)) qualify as “performance-based compensation” under Section 162(m) of the Code, the Amended and Restated 2014 Stock Incentive Plan provides that the Compensation Committee may require that the vesting of such awards be conditioned on the satisfaction of performance criteria that may include any or all of the following: increase in share price, earnings per share, total stockholder return, return on equity, return on assets, return on investment, net operating income, cash flow, revenue, economic value added, initiation or completion of clinical trials, results of clinical trials, regulatory approval, regulatory submissions, drug development or commercialization milestones, collaboration milestones or strategic partnerships. The Compensation Committee will select the particular performance criteria within 90 days following the commencement of a performance cycle. Subject to adjustments for stock splits and similar events, the maximum award granted to any one individual that is intended to qualify as “performance-based compensation” under Section 162(m) of the Code will not exceed 500,000 shares of common stock for any performance cycle and options or stock appreciation rights with respect to no more than 1,000,000 shares of common stock may be granted to any one individual during any calendar year period.

## **Plan Benefits**

The Committee will grant Awards under the Amended and Restated 2014 Stock Incentive Plan at its discretion, and future benefits to be received by a person or group under the Amended and Restated 2014 Stock Incentive Plan will depend on individual and corporate performance and other determinations to be made by the Compensation Committee during fiscal year 2016. Consequently, it is not possible to determine at this time the amount or dollar value of Awards to be provided under the Amended and Restated 2014 Stock Incentive Plan.

However, it should be noted that the Compensation Committee has granted options to purchase 40,263 shares of common stock effective as of February 17, 2016 to Thomas E. Rollins, our Chief Development Officer and Head of Microbiome Program, at an exercise price of \$6.36 per share. This option vests in four equal annual installments over a period of four years from January 11, 2016 (the “Contingent Option Award”). The Contingent Option Award shall terminate if stockholders do not approve an amendment to the 2014 Stock Incentive Plan increasing the number of shares available for issuance by December 31, 2016. Additionally, our non-employee director compensation policy contemplates the grant of an option to purchase 10,000 shares of common stock on the date of the Annual Meeting to each of our continuing non-employee directors, and we have other employment offers that contemplate stock option grants, but such grants are subject to increasing the number of shares available for issuance under our equity incentive plans. If the Amended and Restated 2014 Stock Incentive Plan is not approved, it will be necessary to replace components of compensation previously awarded or to be awarded in equity with cash, or with other instruments that may not necessarily align employee interests with those of stockholders as effectively. We believe that such actions would be disruptive to the Company and its employees and not in the best interest of the stockholders.



The following table provides information concerning the Contingent Option Award and currently anticipated option grants to be made to each of the following persons and groups if the Amended and Restated 2014 Stock Incentive Plan is approved by our stockholders at the Annual Meeting: each named executive officer, all current executive officers, as a group; all current directors who are not executive officers, as a group; and all current employees who are not executive officers, as a group.

<u>Name and Position</u>	<u>Anticipated Option Grants</u>	
	<u>Exercise Price Per Share (\$)</u>	<u>Number of Shares (#)</u>
Derek Small <sup>(1)</sup> <i>President and Chief Executive Officer</i>	N/A	—
David J. Barrett <sup>(1)</sup> <i>Chief Financial Officer and Chief Operating Officer</i>	N/A	—
Lee Arnold, M.D. <sup>(1)</sup> <i>Chief Scientific Officer</i>	N/A	—
All current executive officers, as a group <sup>(1)(2)</sup>	\$ 6.36	40,263
All current directors who are not executive officers, as a group <sup>(3)</sup>	TBD	60,000
All current employees who are not executive officers, as a group <sup>(1)(4)</sup>	TBD	36,000

(1) While the Company has no outstanding agreements, arrangements or other commitments to grant additional equity awards to any executive officer other than Mr. Rollins, the Compensation Committee may, in its discretion, determine to approve such grants subject to the Company's compensation policies and practices described in this proxy statement.

(2) Does not include any awards that may be granted to any employee or executive officer, including named executive officers, other than Mr. Rollins. Includes the Contingent Option Award to Mr. Rollins described above.

(3) Includes options to purchase 10,000 shares of common stock contemplated to be issued to each of our six (6) non-employee directors on the date of the Annual Meeting, assuming each such director is elected to continue for an additional term and the stockholders approve the Amended and Restated 2014 Stock Incentive Plan.

(4) Includes options to purchase an aggregate of 36,000 shares of common stock contemplated under employment offer letters with our current employees who are not executive officers, assuming each grant is approved by the Compensation Committee at the level recommended by the Chief Executive Officer and the stockholders approve the Amended and Restated 2014 Stock Incentive Plan.

## Equity Compensation Plans

The following table sets forth information as of December 31, 2015 regarding shares of common stock that may be issued under our equity compensation plans:

<u>Plan Category</u>	<u>Number of securities to be issued upon exercise of outstanding options, warrants, and rights (a)</u>	<u>Weighted average exercise price of outstanding options, warrants, and rights (b)</u>	<u>Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)</u>
Equity compensation plans approved by our stockholders:			
2014 Stock Incentive Plan	2,479,666	\$ 9.56	8,245
2010 Equity Incentive Plan	266,467	\$ 8.14	488,992
Option assumed in Assembly Pharmaceuticals Merger	621,651	\$ 2.22	—
Equity compensation plans not approved by our stockholders:			
Consultant Warrants	16,909	\$ 30.81	—
<b>Total</b>	<b>3,384,693</b>		<b>497,237</b>

As of March 31, 2016, 13,333 shares remain available for issuance under the 2014 Stock Incentive Plan.

### Required Vote

Assuming a quorum is present, to be approved, a majority of the shares of common stock held by holders present in person or represented by proxy at the Annual Meeting and entitled to vote on Proposal No. 2 must be voted "FOR" the proposed amendment and restatement of the 2014 Stock Incentive Plan. Abstentions will be deemed a vote against Proposal No. 2. Broker non-votes will not be considered towards vote totals on Proposal No. 2.

### Recommendation of the Board of Directors

**THE BOARD OF DIRECTORS  
RECOMMENDS A VOTE IN FAVOR OF PROPOSAL NO. 2.**

### PROPOSAL NO. 3: ADVISORY VOTE ON EXECUTIVE COMPENSATION

Under the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (the Dodd-Frank Act) and Section 14A of the Exchange Act, the Company's stockholders are now entitled to vote to approve, on an advisory basis (non-binding), the compensation of the Company's named executive officers (Named Executive Officer or NEOs) as disclosed in this proxy statement in accordance with the SEC rules (commonly known as the "say-on-pay" vote). This vote is not intended to address any specific item of compensation, but rather the overall compensation of the Company's NEOs and the philosophy, policies and practices described in this proxy statement.

At the 2015 Annual Meeting of Stockholders, in accordance with the Board of Directors' recommendation, holders of 85% of the shares of common stock entitled to vote and present at the 2015 Annual Meeting of the Stockholders, representing the holders of approximately 61.3% of our outstanding stock, voted "For" our Say-on-Pay proposal.

The compensation of the Company's NEOs subject to the vote is disclosed in the Executive Compensation section, the compensation tables and the related narrative disclosure contained in this proxy statement. As discussed in these disclosures, the Company believes that its compensation philosophy is to provide competitive overall compensation that attracts and retains top performers. To achieve these goals, our compensation program is structured to:

- provide total compensation and compensation elements that are competitive with those companies that are competing for available employees;
- provide a mix of compensation that offers (i) a market competitive base compensation, with a potential to earn additional amounts based on achievement of defined corporate goals, which are generally expected to be achieved within 12 months, and (ii) the opportunity to share in the long-term growth of our company through equity compensation; and
- reward exceptional performance by individual employees.

Accordingly, the Board is asking the stockholders to indicate their support for the compensation of the Company's NEOs as described in this proxy statement by casting a non-binding advisory vote "FOR" the following resolution:

"RESOLVED, that the Company's stockholders hereby approve, on an advisory basis, the compensation of the Company's Named Executive Officers, as disclosed in the proxy statement for the 2016 Annual Meeting of Stockholders pursuant to the compensation disclosure rules of the Securities and Exchange Commission, including the Executive Compensation section, the compensation tables and any related material disclosed in the proxy statement for the 2016 Annual Meeting of Stockholders."

The Executive Compensation section of this proxy statement contains more details on the Company's executive compensation and we urge you to read it carefully before casting your vote on this proposal. Because the vote is advisory, it is not binding on the Company, the Board or the Compensation Committee of the Board. Nevertheless, the views expressed by the stockholders, whether through this vote or otherwise, are important to our management, the Board and the Compensation Committee and our management, the Board and Compensation Committee all intend to consider the results of this vote in making determinations in the future regarding executive compensation arrangements and the Company's executive compensation principles, policies and procedures.

The Company's current practice is to submit the compensation of its Named Executive Officers to its stockholders for an advisory vote on an annual basis. Accordingly, the next stockholder advisory vote on the compensation of the Company's named executive officers after the Annual Meeting is expected to take place at the 2017 Annual Meeting of Stockholders.

**Required Vote**

Assuming a quorum is present, to be approved, a majority of the shares of common stock held by holders present in person or represented by proxy at the Annual Meeting and entitled to vote on Proposal No. 3 must be voted "FOR" the approval of the non-binding advisory vote in favor of the compensation of Assembly's named executive officers. Abstentions will be deemed a vote against Proposal No. 3. Broker non-votes will not be considered towards vote totals on Proposal No. 3.

**Recommendation of the Board of Directors**

**THE BOARD OF DIRECTORS  
RECOMMENDS A VOTE IN FAVOR OF PROPOSAL NO. 3.**

**PROPOSAL NO. 4: RATIFICATION OF THE SELECTION OF THE  
INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM FOR ASSEMBLY**

The Board has selected Ernst & Young, LLP, or Ernst & Young, as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2016 and has further directed that management submit the selection of the independent registered public accounting firm for ratification by the stockholders at the Annual Meeting. Ernst & Young has served as our independent registered public accounting firm since May 13, 2015.

Neither the Company's bylaws nor other governing documents or law require stockholder ratification of the selection of Ernst & Young as the Company's independent registered public accounting firm. However, the Board is submitting the selection of Ernst & Young to the stockholders for ratification as a matter of good corporate practice. If the stockholders fail to ratify the selection, the Board will reconsider whether or not to retain Ernst & Young. Even if the selection is ratified, the Board in its discretion may direct the appointment of different independent registered public accounting firm at any time during the year if the Board determines that such a change would be in the best interest of the Company and its stockholders.

For the 2014 calendar year through May 11, 2015, EisnerAmper LLP was our independent registered public accounting firm.

**Independent Registered Public Accounting Firms — Principal Accounting Fees and Services**

*Audit Fees.* Audit fees include fees billed to us by (i) Ernst & Young in connection with its annual audit of our financial statements for fiscal year 2015 and procedures related to our regulatory filings and (ii) EisnerAmper in connection with its annual audit of our financial statements for fiscal year 2014 and procedures related to our regulatory filings including regulatory filings and comfort letters for our 2014 public offering and our 2015 and 2014 at the market sales program. The aggregate fees billed to us by Ernst & Young, LLP for its audit services rendered for the fiscal years ended December 31, 2015 were approximately \$300,000 in fees and \$2,586 in expenses. The aggregate fees billed to us by EisnerAmper for its audit services rendered for the fiscal years ended December 31, 2015 and 2014 were approximately \$54,470 and \$239,000.

*Audit-Related Fees.* Audit-related services consist solely of routine accounting consultations. During the fiscal years ended December 31, 2015 and 2014, neither Ernst & Young nor EisnerAmper billed us for any audit-related services.

*Tax Fees.* Tax fees include corporate tax compliance, assistance with an IRS examination, as well as advisory services. The aggregate fees billed to us by EisnerAmper for tax-related services in the fiscal years ended December 31, 2015 and 2014 were approximately \$118,470 and \$10,000, respectively. Ernst & Young did not bill us for any tax fees in the fiscal year ended December 31, 2015.

*All Other Fees.* During the fiscal years ended December 31, 2015 and 2014, EisnerAmper did not bill us for any other fees. During the fiscal year ended December 31, 2015, Ernst & Young did not bill us for any other fees.

Ernst & Young did not engage persons who were not full-time, permanent employees to perform more than 50% of the hours needed to audit the Company's financial statements for the fiscal year ended December 31, 2015. EisnerAmper did not engage persons who were not full time, permanent employees to perform more than 50% of the hours needed to audit the Company's financial statements for the fiscal year ended December 31, 2014.

The Audit Committee of the Board considered all of the above activities to be compatible with the maintenance of EisnerAmper's and Ernst & Young's independence. The Audit Committee discussed these services with Ernst & Young, EisnerAmper and our management to determine that they are permitted under the rules and regulations concerning auditor independence promulgated by the SEC to implement the Sarbanes-Oxley Act of 2002, as well as the American Institute of Certified Public Accountants.

Prior to October 2, 2015, the Audit Committee did not have formal pre-approval policies and procedures in place; however, the Audit Committee pre-approved all of the services performed by EisnerAmper, LLP and Ernst & Young, LLP as discussed above, as required by SEC regulations. Effective as of October 2, 2015, the

charter of the Audit Committee was amended to provide that the Audit Committee shall pre-approve all auditing services and the terms thereof (which may include providing comfort letters in connection with securities underwritings) and non-audit services (other than non-audit services prohibited under Section 10A(g) of the Exchange Act or the applicable rules of the SEC or the Public Company Accounting Oversight Board) to be provided to us by the independent auditors. The pre-approval requirement is waived with respect to the provision of non-audit services for us if the “*de minimus*” provisions of Section 10A(i)(1)(B) of the Exchange Act are satisfied. This authority to pre-approve non-audit services may be delegated to one or more members of the Audit Committee, who shall present all decisions to pre-approve an activity to the full Audit Committee at its first meeting following such decision. The Audit Committee pre-approved all services provided by our independent registered public accounting firms for the fiscal years ended December 31, 2015 and 2014.

**Required Vote**

Assuming a quorum is present, to be approved, a majority of the shares of common stock held by holders present in person or represented by proxy at the Annual Meeting and entitled to vote on Proposal No. 4 must be voted “FOR” the ratification of the selection of Ernst & Young LLP as the Company’s independent registered public accounting firm for the fiscal year ending December 31, 2016. Abstentions will be deemed a vote against Proposal No. 4. Broker non-votes will not be considered towards vote totals on Proposal No. 4.

**Recommendation of the Board of Directors**

**THE BOARD OF DIRECTORS  
RECOMMENDS A VOTE IN FAVOR OF PROPOSAL NO. 4.**

## SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

### Principal Stockholders

The following table sets forth certain information regarding the ownership of shares of our common stock as of March 31, 2016 by (1) each person known by us to beneficially own more than 5% of the outstanding shares of common stock, (2) each director of our company, (3) each of the Named Executive Officers, as listed in the Summary Compensation Table below, and (4) all directors and executive officers of our company as a group.

This table is based upon information supplied by our Named Executive Officers, directors and principal stockholders and from Schedules 13G filed with the SEC. Unless otherwise indicated in the footnotes to this table and subject to community property laws where applicable, each of the stockholders named in this table has sole voting and investment power with respect to the shares indicated as beneficially owned by them, subject to community property laws, where applicable. Share ownership in each case includes shares issuable upon exercise of options and warrants that may be exercised within 60 days after March 31, 2016 for purposes of computing the percentage of common stock owned by such person, but not for purposes of computing the percentage owned by any other person. Unless otherwise noted, the address for each person listed below is c/o Assembly Biosciences, Inc., 101 Sixth Avenue, New York, New York 10013. Applicable percentages are based on 17,225,662 shares outstanding on March 31, 2016.

There are no arrangements, known to Assembly, including any pledge by any person of securities of Assembly, the operation of which may at a subsequent date result in a change in control of Assembly.

Name of Beneficial Owner	Shares Beneficially Owned	Percentage Owned (%)
<b>5% Stockholders:</b>		
EcoR1 Capital, LLC <sup>(1)</sup> 409 Illinois Street San Francisco, CA 94158	2,098,302	12.2%
Jennison Associates LLC <sup>(2)</sup> 466 Lexington Avenue New York, NY 10017	2,025,870	11.8%
Visium Balanced Master Fund, Ltd. c/o Visium Asset Management, LP <sup>(3)</sup> 888 Seventh Avenue New York, NY 10019	1,699,890	9.9%
OrbiMed Advisors LLC OrbiMed Capital LLC <sup>(4)</sup> 601 Lexington Avenue, 54 <sup>th</sup> Floor New York, NY 10022	1,397,100	8.1%
Adam Zlotnick <sup>(5)</sup> 615 Clifton Avenue Bloomington, IN 47401	1,406,342	8.2%
<b>Directors and Executive Officers:</b>		
Anthony E. Altig <sup>(6)</sup>	60,667	*
Mark Auerbach <sup>(7)</sup>	52,667	*
Richard DiMarchi, PhD <sup>(8)</sup>	371,907	2.2%
Russell H. Ellison <sup>(9)</sup>	556,547	3.1%
Myron Z. Holubiak <sup>(7)</sup>	52,667	*
William Ringo <sup>(10)</sup>	73,132	*
Alan J. Lewis, PhD <sup>(11)</sup>	0	*
Derek Small <sup>(12)</sup>	984,070	5.6%

Name of Beneficial Owner	Shares Beneficially Owned	Percentage Owned (%)
Lee Arnold, M.D. <sup>(7)</sup>	107,926	*
David J. Barrett <sup>(13)</sup>	514,470	2.9%
Richard Colonna, Ph.D. <sup>(11)</sup>	0	*
Uri Lopatin, M.D. <sup>(14)</sup>	733,318	4.2%
Thomas E. Rollins <sup>(11)</sup>	0	*
All directors and executive officers as a group (13 persons) <sup>(15)</sup>	2,950,824	15.9%

\* Less than 1%.

- (1) Based on the information contained in Schedule 13G/A filed with the SEC on February 12, 2016 by EcoR1 Capital, LLC, Oleg Nodelman, and EcoR1 Capital Fund Qualified, L.P. (“EcoR1 Qualified Fund”). According to the Schedule 13G/A, all three reporting persons hold shared voting and dispositive power over the shares of common stock. EcoR1 Qualified Fund may be deemed to beneficially own 1,521,145 shares of common stock. EcoR1 Capital, LLC, as the general partner of EcoR1 Qualified Fund, may be deemed to beneficially own the 1,521,145 shares of common stock owned by EcoR1 Qualified Fund. Oleg Nodelman, as the control person of EcoR1 Capital, LLC may be deemed to beneficially own the 2,098,302 shares of common stock, including 1,521,145 deemed beneficially owned by EcoR1 Qualified Fund. According to the Schedule 13G/A, EcoR1 Qualified Fund is not a member of a group and expressly disclaims membership in a group. Additionally, EcoR1 Qualified Fund disclaims that it is a beneficial owner of any stock covered by the Schedule 13G/A.
- (2) Based on the information contained in Schedule 13G/A filed with the SEC on January 28, 2016 by Prudential Financial, Inc. (the “Prudential 13G/A”) and the Schedule 13G/A filed with the SEC on February 6, 2016 by Jennison Associates, LLC (the “Jennison 13G/A”). According to the Prudential 13G/A, Prudential Financial, Inc. holds sole voting and dispositive power over 700 shares of common stock and through its parent/subsidiary relationship Prudential Financial, Inc. may be deemed to be the beneficial owner of an aggregate amount of 2,026,750 shares of common stock, of which 2,025,870 (11.76%) are held by Jennison Associates, LLC and 880 (0.01%) are held by Quantitative Management Associates, LLC. According to the Jennison Schedule 13G/A, Jennison Associates, LLC has sole voting and dispositive power over 2,025,870 of the shares of common stock.
- (3) Based on the information contained in Schedule 13G/A filed with the SEC on February 12, 2016 by Visium Asset Management, LP (“VAM”), Visium Balanced Master Fund, Ltd., JG Asset, LLC and Jacob Gottlieb. According to the Schedule 13G/A, all four reporting persons hold shared voting and dispositive power over the shares of common stock. VAM is investment manager to pooled investment vehicles and may be deemed to beneficially own the shares of common stock that are beneficially owned by the pooled investment vehicles. JG Asset, LLC is the general partner of VAM and may be deemed to beneficially own the shares of common stock that are beneficially owned by VAM. Jacob Gottlieb is the managing member of JG Asset, LLC and may be deemed to beneficially own the shares of common stock that are beneficially owned by JG Asset, LLC
- (4) Based on the information contained in Schedule 13G filed with the SEC on February 12, 2016 by OrbiMed Advisors LLC, OrbiMed Capital LLC and Samuel D. Isaly. According to the Schedule 13G the reporting persons hold 8.11% (3.76% in the case of OrbiMed Advisors, LLC and 4.35% in the case of OrbiMed Capital LLC) of the shares of common stock on behalf of other persons who have the right to receive or the power to direct the receipt of dividends from, or proceeds from the sale of, such securities. No one such other person’s interest in the securities whose ownership is reported relates to more than 5% of the class. OrbiMed Advisors, LLC and OrbiMed Capital LLC filed the Schedule 13G in their respective capacities as investment advisors and Samuel D. Isaly filed in his capacity as a control person of OrbiMed Advisors LLC and OrbiMed Capital LLC.
- (5) Includes 1,321,009 shares of common stock and 85,333 shares of common stock that Dr. Zlotnick has the right to acquire from us within 60 days of March 31, 2016 pursuant to the exercise of stock options.
- (6) Includes 8,000 shares of common stock and 52,667 shares of common stock that Mr. Altig has the right to acquire from us within 60 days of March 31, 2016 pursuant to the exercise of stock options.
- (7) Consists of shares of common stock that the individual has the right to acquire from us within 60 days of March 31, 2016 pursuant to the exercise of stock options.



- (8) Includes 319,240 shares of common stock and 52,667 shares of common stock that Dr. DiMarchi has the right to acquire from us within 60 days of March 31, 2016 pursuant to the exercise of stock options.
- (9) Consists of (i) 21,600 shares of common stock, (ii) 1,613 shares of our common stock issuable upon exercise of a warrant, and (iii) 533,334 shares of common stock that Dr. Ellison has the right to acquire from us within 60 days of March 31, 2016 pursuant to the exercise of stock options.
- (10) Includes 20,465 shares of common stock and 52,667 shares of common stock that Mr. Ringo has the right to acquire from us within 60 days of March 31, 2016 pursuant to the exercise of stock options.
- (11) Individuals have stock option grants that are not currently exercisable.
- (12) Includes 634,391 shares of common stock and 349,679 shares of common stock that Mr. Small has the right to acquire from us within 60 days of March 31, 2016 pursuant to the exercise of stock options.
- (13) Consists of (i) 19,936 shares of common stock, and (ii) 494,534 shares of common stock that Mr. Barrett has the right to acquire from us within 60 days of March 31, 2016 pursuant to the exercise of stock options.
- (14) Includes 621,651 shares of common stock, 5,000 shares of common stock beneficially owned by Dr. Lopatin's wife and 106,667 shares of common stock that Dr. Lopatin has the right to acquire from us within 60 days of March 31, 2016 pursuant to the exercise of stock options.
- (15) Includes the shares of common stock described in footnotes (6) through (8) and (10) through (14).

## EXECUTIVE OFFICERS

As of March 31, 2016, our executive officers are Derek Small, our President and Chief Executive Officer, David J. Barrett, our Chief Financial Officer and Chief Operating Officer, Dr. Uri Lopatin, our Chief Medical Officer and Vice President, Research and Development, Dr. Richard Colonno, our Chief Scientific Officer, Dr. Lee Arnold, our Chief Discovery Officer and Thomas E. Rollins, our Chief Development Officer and Head of Microbiome Program. Information on Mr. Small is provided above. Information on each of Messrs. Barrett and Rollins and Drs. Lopatin, Colonno and Arnold is provided below.

<u>Name</u>	<u>Age (as of 03/31/16)</u>	<u>Business Experience</u>
David J. Barrett	40	Mr. Barrett joined us as Chief Financial Officer in July 2010 and became our Chief Operating Officer in February 2015. From April 2006 to September 2009, Mr. Barrett served as Chief Financial Officer of Neuro-Hitech, Inc., a public company focused on developing, marketing and distributing branded and generic pharmaceutical products. From September 2003 to April 2006, Mr. Barrett was the Chief Financial Officer and Vice President of Finance of Overture Asset Managers and Overture Financial Services, which, at the time, was a start-up asset management firm that assembled investment products and platforms to distribute turnkey and unbundled investment solutions to financial intermediaries and institutional investors. From July 1999 to September 2003, Mr. Barrett was employed as a Manager at Deloitte & Touche, LLP. From May 2011 to July 2015, Mr. Barrett was a director of Coronado Biosciences, Inc. (NASDAQ: CNDO), a biopharmaceutical Company. Mr. Barrett received his B.S. in Accounting and Economics and his M.S. in Accounting from the University of Florida. He is a certified public accountant.
Dr. Uri Lopatin	44	Dr. Lopatin joined us as Chief Medical Officer and Vice President Research and Development in July 2014 upon the closing of the Merger. At Assembly Pharmaceuticals, he was Chief Medical Officer and Vice President Research and Development, a position he held since October 2012. Prior to that, he was a Senior Director for Clinical and Translational Research-Liver Disease at Gilead Sciences, Inc. from October 2010 to September 2012, a Translational Medical Leader at Roche from May 2008 to September 2010. He has designed and coordinated pre-clinical and clinical collaborations, as well as phase I through IV clinical studies of multiple new molecular entities. Dr. Lopatin has published extensively, especially on hepatitis B and immunology and is a co-author of multiple patents in the field of treatment and diagnosis for viral hepatitis. Dr. Lopatin received his infectious disease Board certification following fellowship training in Infectious Disease at the National Institute of Health, and internal medicine board certification following completion of residency at New York University. Dr. Lopatin graduated cum laude with distinction from Cornell University in 1994 and received his MD degree in 2000 from the University of Medicine and Dentistry-New Jersey Medical School, where he was awarded the Stanley S. Bergen medal of excellence.

<u>Name</u>	<u>Age (as of 03/31/16)</u>	<u>Business Experience</u>
Dr. Richard Colunno	66	Dr. Colunno, who joined as Chief Scientific Officer in January 2016, has been instrumental in the discovery and development of multiple approved antiviral drugs, including Baraclude® and Reyataz.® From September 2007 to January 2016, Dr. Colunno was the Chief Science Officer of Presidio Pharmaceuticals, Inc., where he directed its hepatitis C (HCV) antiviral programs, including the discovery and development of the HCV NS5A inhibitor ravidasvir. From June 1991 to August 2007, Dr. Colunno was Vice President, Infectious Diseases Drug Discovery at Bristol-Myers Squibb Co., where he played a pivotal role in building the Bristol-Myers Squibb's existing antiviral franchise. From August 1982 to May 1991 he was Senior Director of Antiviral Research at Merck Research Labs. Dr. Colunno received a PhD in Microbiology from the University of Kansas and has co-authored more than 160 scientific articles.
Dr. Lee Arnold	56	Dr. Lee Arnold joined us as Chief Scientific Officer in July 2014 upon the completion of the Merger. Dr. Arnold served as our Chief Scientific Officer from May 2014 until January 2016, when he was appointed as our Chief Discovery Officer. Prior to the Merger, Dr. Arnold served as Chief Scientific Officer of Assembly Pharmaceuticals, Inc. from May 2014 until the completion of the Merger. Dr. Arnold has a broad research background ranging from synthetic and medicinal chemistry, structure-based drug design, biochemistry and biophysics, drug metabolism, to preclinical efficacy, safety, toxicology, Process R&D, and IND-enabling studies. With pharma experience from Syntex Corporation, Pfizer, Inc., BASF/Abbott Bioresearch, and OSI Pharmaceuticals, Inc., he brings a history of over 27 years of industry contributions in molecularly-targeted small-molecule drug discovery in oncology, immunology and infectious disease. From July 2009 to April 2014, Dr. Arnold was Chief Scientific Officer at Coferon, Inc. Dr. Arnold led the creation, refinement, and deployment of an unprecedented self-assembling drug molecule platform to deliver larger, more potent and selective drugs into cells in parts. During his career, Dr. Arnold has played a direct role in delivering 7 innovative drug candidates into development for oncology. One of his inventions, TARCEVA, is the first orally-active kinase inhibitor demonstrated to improve survival in lung and pancreatic carcinoma patients. Since 2007 he has also been a visiting professor at the State University of New York at Stony Brook and a member of the Institute of Chemical Biology and Drug Discovery. Dr. Arnold is recognized in drug discovery through his inventorship on over 65 patent filings, more than 30 peer-reviewed publications, and numerous conference presentations. Dr. Arnold received a B.Sc. in Chemistry from the University of Waterloo and a Ph.D. in Organic Chemistry from the University of Alberta.

<u>Name</u>	<u>Age (as of 03/31/16)</u>	<u>Business Experience</u>
Thomas E. Rollins	60	Mr. Rollins joined Assembly as Chief Development Officer and Head of the Microbiome Program in January 2016. From July 2012 to April 2015, Mr. Rollins served in various capacities for Cubist Pharmaceuticals, Inc. an anti-infective drug developer, with his last position being Senior Vice President and Global Head, Program and Portfolio Management for Cubist Pharmaceuticals, where he oversaw global product development. During his tenure, Mr. Rollins oversaw the global development and commercialization of the anti-bacterial drugs that helped transform Cubist Pharmaceuticals Inc. into a multi-program, multi-product company. From December 2009 to June 2012, Mr. Rollins was Senior Vice President, Program Management at Sunovion Pharmaceuticals, where he led the Sunovion R&D harmonization and portfolio prioritization process. From January 2005 to December 2009, Mr. Rollins worked at Sepracor, Inc. as Senior Vice President of Development, Mr. Rollins established an efficient and productive semi-virtual drug development organization. From 1981 to 1990, Mr. Rollins was a researcher and from 1990 to 1994 he was part of the Project Management group at Merck Research Laboratories, where he was co-team leader for a number of major global products. Mr. Rollins received an MBA from Rutgers University and BS and MS degrees from Michigan State University.

### **Executive Compensation**

The Company meets the “accelerated filer” requirements as of the end of its 2015 fiscal year pursuant to Rule 12b-2 of the Exchange Act. However, pursuant to Rule 12b-2 and SEC Release No. 33-8876, the Company (as a smaller reporting company transitioning to the larger reporting company system based on its public float as of June 30, 2015) is not required to satisfy the larger reporting company requirements until its first quarterly report on Form 10-Q for the 2016 fiscal year and thus remains eligible to use the scaled disclosure requirements applicable to smaller reporting companies under Item 402(m) through (r) of Regulation S-K under the Securities Act of 1933, as amended. Accordingly, our named executive officers, or NEOs, for 2015, consist of each person that was a principal executive officer in fiscal year 2015, the two most highly compensated other executive officers and also up to two additional individuals for whom disclosure would have been provided under the preceding clause but for the fact that they are not executive officers as of December 31, 2015. Accordingly, Our Named Executive Officers for 2015 are Derek Small, our President and Chief Executive Officer, David J. Barrett, our Chief Financial Officer and Chief Operating Officer, and Dr. Lee Arnold, our Chief Discovery Officer. Additionally, as previously reported Russell H. Ellison, M.D. served as our Chief Executive Officer until February 2015 and as such is considered a NEO for 2015.

#### *Recent Accomplishments by our Management Team*

- In 2015 through early 2016, we expanded our chemistry, biochemistry, and biology teams.
- Our teams established distinct chemical series for the modulation of HBc and other targets that we believe are relevant to achieving cures for chronic HBV, along with innovative assays and biomarkers to facilitate the research and development process.
- In December 2015 we announced the selection of our first lead HBV candidate, which is now in IND-enabling development.
- We have advanced a number of other molecules toward possible candidate selection in the future and established a research engine to generate multiple molecules that are potential candidates for the combination regimens we believe will likely be required to cure HBV.
- We anticipate entering Phase 1 clinical trials with our first HBV candidate during the second half of 2016.

- In early 2015 we achieved a major human proof of concept milestone with Gemicel™. Human data confirming that Gemicel can successfully target bolus delivery to the ileum and colon were presented at a scientific meeting in January 2016.
- We advanced key components of our Microbiome Program significantly in 2015, and are now in IND-directed development of our first biologic drug candidate, ABI-M101. We expect to initiate a Phase 1b clinical trial in patients with recalcitrant *C. difficile* infections (rCDI) during the second half of 2016, and in parallel advance our programs into other disease indications.
- In March and April 2015, we raised approximately \$81 million (net of underwriting discounts and commissions) from the sale and issuance of approximately 6,388,888 shares of common stock.

#### *Sound Governance and Dedicated Board*

- We have an effective board structure that is supported by clearly articulated policies that drive management systems and processes. We continue to strengthen our governance policies and procedures through internal reviews and by evaluating and implementing external best practices.
- We have determined that all of our non-employee directors are independent under the listing rules of NASDAQ and the SEC.
- The directors operates under the framework of our Code of Conduct.
- The Board as a whole retains its oversight responsibility for strategic and competitive risks and risks related to succession of the CEO and other members of management.
- Board members annually self-assess the Board's performance overall and within each committee. The Board also provides an opportunity for executive sessions as part of every Board and committee meeting to allow independent directors an opportunity to discuss issues with more candor than they might with management present.

#### *Independent Compensation Consultants*

Pursuant to its Compensation Committee charter, the Compensation Committee is authorized to select and retain independent advisors and counsel to assist it with carrying out its duties and responsibilities. We have provided appropriate funding to the Compensation Committee to do so. Commencing in the third quarter of 2015, the Compensation Committee engaged Radford, an Aon Hewitt Company (Radford) as the independent compensation consultant to the Compensation Committee to assist with 2016 compensation planning cycle. Radford previously assisted the Compensation Committee with the 2015 compensation planning cycle. Radford conducted analysis and provided advice on, among other things, the appropriate peer group, officer cash bonus structure, annual compensation for the CEO and other executive officers and compensation trends in the biotechnology industry.

The independent compensation consultant reports directly to the Compensation Committee, which retains sole authority to direct the work and employ the consultant. The Compensation Committee regularly reviews the services provided by the independent compensation consultant and believes that at all times the independent compensation consultant was engaged by the Compensation Committee, such engagement was consistent with NASDAQ listing standards and did not raise any conflict of interest. The Compensation Committee continues to monitor the independence of its independent compensation consultant on a periodic basis.

#### *Compensation Adjustments and Peer Group Process*

The implementation of our compensation philosophy is carried out under the supervision of the Compensation Committee. The compensation for our CEO is reviewed and approved by our Compensation Committee. The Compensation Committee has direct responsibility for establishing the compensation for the direct reports to the CEO, including all of our executive officers. To assist the Compensation Committee, the CEO make recommendations to the Compensation Committee as to specific elements (*i.e.*, salary, bonus and equity awards) of compensation for executive officers (other than the CEO). The CEO does not make recommendations with respect to his own compensation. Management, under the guidelines and policies established by the Compensation Committee, makes decisions on all aspects of compensation for non-executive officer employees.

Mr. Small, our CEO, Mr. Barrett, our Chief Financial Officer, in addition to the Compensation Committee’s independent compensation consultant and outside legal counsel, regularly attend portions of the Compensation Committee meetings for the purpose of providing analysis, information and management’s recommendations on various human resources and compensation matters. The members of management generally do not participate in the executive sessions of the Compensation Committee unless invited by the Compensation Committee to provide specific information during closed session. No individual member of management is present for votes related to such individual’s compensation.

We generally review our compensation practices on an annual basis over the course of several meetings of the Compensation Committee and the Board. The first step in the process is that the Compensation Committee, with the support of its independent compensation consultant and management, reviews trends in biotechnology compensation practices and reviews and approves the list of peer companies used in the later stages of the process. As part of its analysis, for 2015, Radford collected and analyzed compensation information from a comparative group of biotechnology companies, or peer group, approved by the Compensation Committee. The Compensation Committee evaluates the criteria used in establishing the peer group at least annually to ensure that it appropriately represents the companies competing with us to attract and retain talent. The Compensation Committee seeks input from management in addition to the Compensation Committee’s independent compensation consultant to ensure the peer group is consistent with our current business model.

In making these compensation determinations, we compare our programs and compensation to a peer group approved by the Compensation Committee. The Compensation Committee evaluates the criteria used in establishing the peer group at least annually, to ensure that it appropriately represents the companies competing with us to attract and retain human talent. The list of peer companies is approved based on various factors including size, market capitalization, stage of development, actual or potential product revenue, and product focus. During 2015, we used a peer group that included biotechnology companies with a market capitalization below \$500 million (the “2015 Peer Group”). The 2015 Peer Group was used in connection with 2015 compensation decisions. As part of the annual review process, the Compensation Committee re-evaluated the 2015 Peer Group to determine if any changes were appropriate. Based on changes in market cap and business focus, the Compensation Committee approved the removal of Aptose Biosciences, Inc., Asterias Biotherapeutics, Inc. Bio-Path Holdings, Inc., iBio, Inc., Loxo Oncology, Inc., NanoViricides, Inc., Onconova Therapeutics, Inc. and ProQR Therapeutics NV from the peer group and the addition of new companies noted below to the peer group. The revised peer group (the “2016 Peer Group”) set forth below was used to determine compensation decisions for 2016 and was taken into account in determining the amounts for the annual option grants to non-employee directors to be made on the date of the Annual Meeting.

Arbutus Biopharma Corp.	ContraFect Corp.	Mirati Therapeutics, Inc. <sup>(*)</sup>
Arrowhead Pharmaceuticals, Inc. (f/k/a Arrowhead Research Corp.)	Dicerna Pharmaceuticals, Inc.	Neuralstem, Inc.
aTyr Pharma, Inc. <sup>(*)</sup>	Five Prime Therapeutics, Inc. <sup>(*)</sup>	Oncothyreon Inc. <sup>(*)</sup>
Bellicum Pharmaceuticals, Inc. <sup>(*)</sup>	Flex Pharma, Inc. <sup>(*)</sup>	Regulus Therapeutics, Inc. <sup>(*)</sup>
Calithera Biosciences, Inc.	Ignitya, Inc.	Sangamo Bioscience Inc. <sup>(*)</sup>
Capricor Therapeutics, Inc.	Immune Design Corp.	SCYNEXIS Inc
	Medgenics, Inc. <sup>(*)</sup>	Synthetic Biologics Inc.

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(\*) Company added to 2016 Peer Group.

After the list of peer companies is approved, management presents the Compensation Committee with recommendations regarding proposed adjustments to compensation elements and a variety of supporting data, including comparative compensation information from the approved peer group. This is presented individually for executive officers, including the NEOs, and based on classes of position for all other employees. Management and the independent compensation consultant each include significant supporting data with the presentation. These recommendations are discussed with and without management present and are discussed

with the independent compensation consultant. The Compensation Committee then determines what, if any, adjustments to the compensation elements are appropriate for executive officers other than the CEO.

The Compensation Committee also reviews the market information provided by the independent compensation consultant, considers the CEO's performance and experience and makes the determination for adjustments to the CEO's compensation. These discussions are conducted in executive sessions without involvement by management.

#### *Components of our Executive Compensation Program*

The principal components of our executive compensation program are base salary, annual bonus, and long-term incentives. Our Compensation Committee believes that each component of executive compensation must be evaluated and determined with reference to competitive market data, individual and corporate performance, our recruiting and retention goals, internal equity and consistency, and other information we deem relevant. We believe that in the biopharmaceutical/biotechnology industry, stock option and/or other equity awards are a primary motivator in attracting and retaining executives, in addition to salary and cash incentive bonuses.

The components of our compensation package are described in more detail below.

#### *Base Salary*

We provide base salaries for our NEOs to compensate them for their services rendered during the fiscal year. Base salaries for our NEOs have been established based on their position and scope of responsibilities, their prior experience and training, and competitive market compensation data we review for similar positions in our industry.

Base salaries are reviewed periodically and may be increased for merit reasons based on the executive's performance, for retention reasons or if the base salary is not competitive to salaries paid by comparative companies for similar positions. Additionally, we may adjust base salaries throughout the year for promotions or other changes in the scope or breadth of an executive's role or responsibilities. We may also adjust base salaries downward based on a review of base salaries among our peer group.

#### *Annual Incentive Bonus*

A significant element of the cash compensation of our NEOs is an annual performance-based cash bonus. A NEO's target bonus is generally set as a percentage of base salary to reward strong performance and retain his employment in a competitive labor market. In the case of Drs. Ellison and Arnold, and Messrs. Small and Barrett, their employment agreements, effective through 2015, provided for annual bonus opportunities of 50%, 30%, 50% and 50%, respectively. Bonuses are based on the achievement of significant company goals, including research and clinical development, financial, business development and operational milestones, with specific goals tailored to the executive officer's area of responsibility. The performance goals generally are determined by our Compensation Committee in the first quarter of the calendar year but the bonuses are determined at the time bonuses are paid. Additionally, the Board or the Compensation Committee may increase or decrease an executive's bonus payment (above or below the target percentage) based on its assessment of our and an executive's individual performance during a given year. For 2015, annual bonuses were based on achievement of Company goals related to development of our HBV and Microbiome programs, financial operations/investor relations, strategic planning, business development/commercialization, and corporate governance. Each officer's potential bonus was weighted differently for each set of goals, depending on his respective area of responsibility. For the business and financial executive positions, the Compensation Committee determined that Messrs. Small and Barrett were generally considered to have met their goals. For the science/technical executive position, Dr. Arnold was considered to have performed well in pursuit of the research and development objectives. The resulting bonuses were as follows for 2015: \$204,750 for Mr. Small (97.5% of goals achieved); \$180,250 for Mr. Barrett (100% of goals achieved); and \$85,050 for Dr. Arnold (90% of goals achieved). On February 10, 2015, our former Chief Executive Officer, Dr. Russell Ellison, transitioned to service as a consultant and therefore was not entitled to any payment of an annual incentive bonus for 2015.

### *Long-term Incentives*

Our equity-based long-term incentive program is designed to align our NEOs' long-term incentives with stockholder value creation. We believe that long-term participation by our executive officers in equity-based awards is a critical factor in the achievement of long-term company goals and business objectives. Our 2010 Equity Incentive Plan and our 2014 Stock Incentive Plan allow the grant to executive officers of stock options, restricted stock, restricted stock units, as well as other forms of equity incentives, collectively Awards, as part of our overall compensation program. Awards to our executive officers other than our CEO are recommended by the CEO and finalized by the Compensation Committee and/or the Board. Grants of Awards to our CEO are made by the Compensation Committee and/or the Board. Upon approval of the Amended and Restated 2014 Stock Incentive Plan by our stockholders no more awards will be made under our 2010 Equity Incentive Plan.

In 2015, no equity awards were made to NEOs in light of their existing awards.

In July 2014, we cancelled all outstanding options issued under our 2006 Equity Incentive Plan and all outstanding options and unvested restricted stock units issued under our 2010 Equity Incentive Plan. At the same time, our Board and our stockholders adopted and approved our 2014 Stock Incentive Plan and we granted the following stock options to our NEOs: Dr. Ellison, options to purchase 800,000 shares of common stock; and Mr. Barrett, options to purchase 741,800 shares of common stock. No options were granted to Mr. Small and Dr. Arnold because we assumed options to purchase 466,239 shares of common stock and 155,413 shares of common stock, respectively, in the Merger with Assembly Pharmaceuticals, Inc., which had been previously granted to them by Assembly Pharmaceuticals, Inc.

On February 10, 2015, Dr. Russell Ellison transitioned from the Company's Chief Executive Officer to serve as a consultant as had been contemplated during the Merger. In accordance with the original terms of his employment agreement, we accelerated the vesting of options to purchase 266,667 shares of common stock on March 3, 2015. The corresponding charge related to these options was also accelerated in the first quarter of 2015. Also, in accordance with the original terms of Dr. Ellison's employment agreement, the exercise period of Dr. Ellison's vested options was extended until the end of their term, or July 9, 2024. The remainder of options to purchase 266,666 shares of common stock that were unvested were forfeited in accordance with the original terms of his employment agreement.

In approving stock options, the Compensation Committee's and the Board's guiding principle is to create a program that is designed to incentivize management to generate a significant increase in total shareholder return as measured by sustained increases in our stock price.

### **Other Compensation**

We maintain broad-based benefits and perquisites that are provided to all eligible employees, including health insurance, life and disability insurance, dental insurance and paid vacation.

### **Pension Benefits**

We do not maintain any qualified or non-qualified defined benefit plans. As a result, none of our NEOs participates in or has account balances in qualified or non-qualified defined benefit plans sponsored by us. Our Compensation Committee may elect to adopt qualified or non-qualified benefit plans in the future if it determines that doing so is in our best interests.

### **Nonqualified Deferred Compensation**

None of our NEOs participates in or has account balances in nonqualified defined contribution plans or other non-qualified deferred compensation plans maintained by us. Our 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.



## Summary Compensation Table

The following table sets forth all compensation earned in the fiscal years ended December 31, 2015 and 2014 by our Named Executive Officers.

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Stock Awards (\$) <sup>(1)</sup>	Option Awards (\$) <sup>(1)</sup>	Non-Equity Incentive Plan Compensation (\$) <sup>(2)</sup>	All Other Compensation (\$)	Total (\$)
Derek Small <sup>(3)</sup>	2015	411,250	—	—	—	204,750	—	616,000
President and Chief Executive Officer	2014	160,416	150,000	—	—	116,667	—	427,083
Russell H. Ellison, M.D. <sup>(4)</sup>	2015	59,375	—	—	—	0	516,875	576,250
Former President and Chief Executive Officer	2014	465,000	—	—	4,694,538	142,500	—	5,302,038
David J. Barrett <sup>(5)</sup>	2015	359,187	—	—	—	180,250	—	539,437
Chief Financial Officer and Chief Operating Officer	2014	299,358	—	—	4,373,237	150,000	—	4,822,595
Lee Arnold, M.D.	2015	315,000	—	—	—	85,050	81,953 <sup>(6)</sup>	482,003
Chief Scientific Officer	2014	144,375	—	—	—	51,188	—	195,563

(1) The reported amounts represent the grant date fair value of the award, computed in accordance with FASB ASC Topic 718. Assumptions used in the calculation of these amounts are included in Note 8 of the financial statements included in the Form 10-K.

(2) Non-equity incentive plan compensation represents amounts paid as annual performance awards.

(3) Mr. Small became an employee on July 11, 2014. Mr. Small was named Chief Executive Officer on February 10, 2015. Mr. Small is not compensated for his service as a director of the Company.

(4) Dr. Ellison ceased to be an employee on February 10, 2015. Pursuant to Dr. Ellison's employment agreement described below in "Employment Arrangements," Dr. Ellison's compensation set forth under "All Other Compensation" includes \$376,042 in severance payments and \$15,833 in lieu of notice of termination. On February 10, 2015, Dr. Ellison entered into a consulting agreement with the Company, which initially expired October 10, 2015, but has been extended until May 9, 2016, subject to month to month extensions. Dr. Ellison's compensation set forth under "All Other Compensation" also includes \$125,000 in consulting fees that were paid in 2015 pursuant to the consulting agreement. Dr. Ellison did not receive compensation for his services as a director of the Company.

(5) On February 10, 2015, Mr. Barrett also assumed the role of Chief Operating Officer.

(6) Dr. Arnold's total compensation includes \$81,953 of moving expenses, which amount is included in "All Other Compensation."

## Outstanding Equity Awards at December 31, 2015

The following table contains certain information concerning unexercised options for the NEOs as of December 31, 2015. The Company made no stock awards to any NEOs in fiscal year 2015.

Name	Grant Date	Option Awards			
		Number of Securities Underlying Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price (\$)	Option Expiration Date
Derek Small	5/15/2014 <sup>(1)</sup>	349,679	116,560	\$ 2.22	5/15/2024
Russell H. Ellison, M.D.	7/10/2014 <sup>(2)</sup>	533,334	0	7.20	7/9/2024
David Barrett	7/10/2014 <sup>(3)</sup>	494,533	247,267	7.20	7/11/2024
Lee Arnold, M.D.	5/15/2014 <sup>(4)</sup>	107,926	47,487	2.22	5/15/2024

(1) These options were assumed in the Merger and vest 1/36<sup>th</sup> on a monthly basis beginning on February 2, 2014.

(2) One-third of the options vest on the grant date, one-third vest on the first anniversary of the grant date and one-third vest on the second anniversary of the grant date. However, in connection with Dr. Ellison's

cessation as Chief Executive Officer and pursuant to Dr. Ellison's employment agreement described below in "Employment Arrangements," one-third was accelerated on March 3, 2015 and the remaining one-third was forfeited.

- (3) One-third of the options vest on the grant date, one-third vest on the first anniversary of the grant date and one-third vest on the second anniversary of the grant date.
- (4) These options were assumed in the Merger and vest 1/36<sup>th</sup> on a monthly basis beginning on May 15, 2014.

### **Employment Arrangements**

All of our Named Executive Officers serve pursuant to an employment agreement.

In connection with the Merger, we entered into employment agreements with Derek Small and Lee Arnold. Pursuant to these agreements, Mr. Small was initially appointed President, Chief Operating Officer and Budget Chief; and Dr. Arnold was initially appointed Chief Scientific Officer. In February 2015, Mr. Small was appointed as our President and Chief Executive Officer and relinquished his title of Chief Operating Officer, and in January 2016, Dr. Arnold was appointed as our Chief Discovery Officer and Vice President, Research and Development. Mr. Small's employment agreement has an initial term of two years and will automatically extend for additional one-year periods unless the Company notifies Mr. Small of the decision not to extend at least 180 days prior to the end of the term. Dr. Arnold's employment agreement provides for at-will employment, subject to payment of severance benefits depending on the circumstances of termination. The employment agreements initially provided for a base salary of \$350,000 per year for Mr. Small (increased to base salary of \$420,000 in February 2015 and \$450,000 in March 2016) and \$315,000 per year for Dr. Arnold (increased to base salary of \$326,000 in March, 2016). Each employee is also eligible for an annual discretionary bonus based on achievement of financial, clinical development and business milestones established by the Board of Directors, with Mr. Small currently eligible for a bonus of up to 50% of his base salary, and Dr. Arnold currently eligible for a bonus of up to 30% of his base salary. Mr. Small received a retention bonus after three months of employment in the amount of \$150,000. Under the employment agreements, Mr. Small and Dr. Arnold are prohibited for 12 months after termination of employment from engaging in certain competitive activities.

In January 2014, we entered into an employment agreement with Dr. Russell Ellison. Dr. Ellison's employment agreement had a term of two years subject to automatic one-year extensions unless we notify him at least 180 days prior to the then current expiration date that we intend to not extend the employment agreement. The employment agreement provides for a base salary of \$465,000 per year for Dr. Ellison and an annual discretionary bonus of up to 50% of the officer's base salary based on financial, clinical development and business milestones established by the Board. On February 10, 2015, as had been agreed during the Merger, Mr. Small succeeded Dr. Ellison as our Chief Executive Officer. At the same time, our director William Ringo succeeded Dr. Ellison as Chairman. Dr. Ellison continued to serve as a director until the 2015 annual meeting, and continues to serve as a Senior Advisor in a consulting capacity. The succession constituted a "termination without cause" under Dr. Ellison's employment agreement. As a result, Dr. Ellison became entitled to 12 months of salary, immediate vesting of an additional one-third of his outstanding option and an extension of the exercise period to the option expiration date of July 9, 2024, and reimbursement of COBRA premiums for 12 months or until he is eligible for insurance benefits from another employer, whichever is earlier. On February 10, 2015, we entered into a consulting agreement with Dr. Ellison, pursuant to which he was paid \$12,500 per month (pro-rated for a partial month) until October 10, 2015 (the "Initial Term"). The consulting agreement was amended and restated at the end of the Initial Term to extend the Initial Term until May 9, 2016, to increase the monthly rate to \$13,000 per month and to require six (6) business days of service per month. Under the consulting agreement, Dr. Ellison provides services to assist the Company in achieving certain milestones related to the Company's Microbiome Program. Additionally, under the consulting agreement, Dr. Ellison is prohibited for 12 months after termination of the consulting agreement from engaging in certain competitive activities.

In January 2014, we entered into an employment agreement with David Barrett. Mr. Barrett's employment agreement had an initial term of two years and is subject to automatic extension for additional one-year periods unless we notify him at least 180 days prior to the then current expiration date that we intend to not extend the employment agreement. The employment agreement provided for a base salary of \$300,000 for Mr. Barrett (subsequently increased to \$350,000), and an annual discretionary bonus of up to

50% of his base salary based on financial, clinical development and business milestones established by the Board. On February 10, 2015, we named Mr. Barrett our Chief Operating Officer, in addition to Chief Financial Officer. In consideration for the additional responsibilities undertaken by Mr. Barrett with this new role, he received a 3% salary increase, bringing his base salary to \$360,500. Mr. Barrett's base salary was increased to \$373,100 in March 2016 and Mr. Barrett is currently eligible for a bonus of up to 50% of his base salary.

Under Mr. Barrett's employment agreement, he is prohibited for 12 months after termination of employment from (i) engaging within the restricted territory (as defined in the agreement) in developing novel prescription drugs for the specific disease treatment of hemorrhoids, anal fissures, and fecal incontinence or any other business in which we are actively engaged at the time of termination of employment, (ii) holding a position in or with responsibility for all or a part of the restricted territory (A) with any person or entity engaged in such a business and for which he will perform services that are the same or substantially similar to those performed by him for us within 12 months prior to termination of employment, or (B) in which he will use or disclose any of our confidential information, (iii) being employed or engaged by any person or entity that was an agent or customer of ours with whom he worked during his employment with us and for whom he will be performing services that are the same or substantially similar to those services he provided to the agent or customer during the officer's employment with us, (iv) soliciting our customers for purposes of marketing or selling similar or competitive products, or interfering with the business relationship between our company and our customers, and (v) inducing any employee or consultant of ours to terminate employment or a contractual relationship with us. In the employment agreement, the term "restricted territory" is defined generally as any country in which we conduct business as of the date of termination of the officer's employment.

If we terminate Mr. Barrett for cause (as defined in his employment agreement) or if he resigns from his employment, we will pay his then-current base salary through the date of his termination and any expense reimbursement amounts owed through the date of termination. If Mr. Barrett's employment is terminated as a result of death, then we will pay to his estate his then-current base salary for a period of 12 months following such termination.

If Mr. Barrett's employment is terminated in connection with, or within six months of, a change in control (as defined in his employment agreement), we will provide him the following benefits: (i) a lump-sum payment equal to 18 months of his then-current base salary, (ii) the full annual discretionary bonus as established by the Board, (iii) immediate vesting in full of all equity awards, (iv) extension of the exercise period for all stock options to the end of their term, and (v) reimbursement of COBRA premiums for 18 months or until he is eligible for insurance benefits from another employer, whichever is earlier. In the employment agreement, the term "change in control" is defined generally as the acquisition by any person of more than 50% of the voting power of our then-outstanding securities, and/or the merger or consolidation of our company or the sale of all or substantially all of our assets.

If Mr. Barrett's employment is terminated as a result of disability, by us without cause (as defined in his employment agreement), or by Mr. Barrett for good reason (as defined in his employment agreement), we will provide him the following benefits: (i) continued payment of his then-base salary for 12 months following date of termination of employment, (ii) immediate vesting in full of all equity awards that would have become vested during the 12 months following termination of employment, (iii) extension of the exercise period for all vested stock options to the end of their term, and (iv) reimbursement of COBRA premiums for 18 months or until he is eligible for insurance benefits from another employer, whichever is earlier.

In the employment agreements, the term "cause" is defined generally as (i) willful failure to perform the officer's duties, (ii) willful or intentional misconduct or gross negligence, (iii) indictment of any felony or a misdemeanor involving moral turpitude, (iv) engagement in some form of harassment prohibited by law, (v) intentional misappropriation or embezzlement of our property, (vi) breach by the officer of the non-misappropriation, non-compete and non-solicitation provisions of the agreement, and (vii) uncured breach by the officer of any other provision of the agreement. In the employment agreement, the term "good reason" is defined generally as (i) any material reduction of the officer's duties, responsibilities, or authority, (ii) any

material reduction of the officer's compensation or benefits, and (iii) relocation of our headquarters or the officer's residence or primary place of employment to a location outside a 30-mile radius of New York, New York.

### **Stockholder Engagement**

Senior management regularly engages with our stockholders at industry conferences and investor meetings. In response to feedback gained through our engagement program, we remain focused on delivering on our growth strategy, and we continue to enhance the transparency and disclosure of our financial, operational and environmental and governance performance.

Our investor relations team keeps the board regularly updated on the views of stockholders as well as provides reports from investor relations advisers concerning institutional shareholder feedback.

### **Say-on-Pay**

The Company held a non-binding advisory vote on named executive officer compensation at the annual meeting of the stockholders held on May 8, 2012 and, consistent with the stockholder vote on frequency in 2012, again in 2015. The holders of approximately 85% of our outstanding shares of common stock present and entitled to vote on executive officer compensation in 2015 approved the named executive officer compensation. Although no stockholder has requested a say-on-pay vote at this year's Annual Meeting and the Company is not required to put a say-on-pay proposal before the stockholders at the Annual Meeting, the Board and management have decided to submit the matter for a stockholder vote on an annual basis until the next advisory vote on the frequency of the stockholder vote on executive compensation.

## CERTAIN RELATIONSHIPS, RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

### INDEPENDENCE OF DIRECTORS

Because our common stock is listed on the NASDAQ Capital Market, our Board applies the NASDAQ Capital Market's test for director independence to all of our directors. Using that test, the Board has determined that directors Mark Auerbach, Anthony E. Altig, Richard DiMarchi, PhD, Myron Z. Holubiak, Alan J. Lewis, PhD, and William Ringo are independent under the NASDAQ Marketplace Rules. Derek Small is not independent because he is our President and Chief Executive Officer. As part of such determination of independence, our Board has affirmatively determined that each of Mr. Altig, Mr. Auerbach, Dr. DiMarchi, Mr. Holubiak, Dr. Lewis and Mr. Ringo does not have a relationship with Assembly that would interfere with the exercise of independent judgment in carrying out his responsibilities as a director.

### CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

The written charter of our Audit Committee authorizes and the NASDAQ Marketplace Rules require our Audit Committee to review and approve related party transactions. In reviewing related party transactions, our Audit Committee applies the basic standard that transactions with affiliates should be made on terms no less favorable to us than could have been obtained from unaffiliated parties. Therefore, the Audit Committee reviews the benefits of the transactions, terms of the transactions and the terms available from unrelated third parties, as applicable. All transactions other than compensatory arrangements between us and our officers, directors, principal stockholders and their affiliates will be approved or ratified by our Audit Committee or a majority of the disinterested directors, and will continue to be on terms no less favorable to us than could be obtained from unaffiliated third parties.

Other than the compensation agreements and other arrangements described under "Executive Officers" and the transactions described below, since January 1, 2015, there has not been and there is not currently proposed, any transaction or series of similar transactions to which we were, or will be, a party in which the amount involved exceeded, or will exceed, \$120,000 and in which any director, executive officer, holder of five percent or more of any class of our capital stock or any member of the immediate family of, or entities affiliated with, any of the foregoing persons, had, or will have, a direct or indirect material interest.

#### **Extension of Sponsored Research Agreement with Indiana University**

Assembly is a party to a Research Agreement dated August 5, 2014 with The Trustees of Indiana University (the "Research Agreement"), pursuant to which Indiana University, under the direction of Dr. Adam Zlotnick, an advisor to the Company and an owner of approximately 8.2% of Assembly's common stock, conducts research activities in connection with the research proposal entitled "Development of HBV Core Proteins Allosteric Modulators." By agreement dated October 28, 2014, the term of the Research Agreement was extended until August 31, 2015 in consideration for aggregate payments to Indiana University during the term of \$424,099. In September 2015, the term of the research program was further extended until August 31, 2017 and provided for aggregate payments to Indiana University through the end of the term of approximately \$724,198. Our Audit Committee has determined, based on currently available information, that Dr. Zlotnick may be deemed to have an indirect interest in these payments due to his supervision of the research funded by the Company under the Research Agreement, and has reviewed and ratified the Research Agreement and the extensions thereto in accordance with the Audit Committee Charter.

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

Pursuant to Section 16(a) of the Securities Exchange Act, our directors and executive officers are required to file reports with the SEC indicating their holdings of and transactions in our equity securities. To our knowledge, based solely on our review of the copies of such reports furnished to us and written representations, our officers, directors and holders of more than 10% of our common stock complied with all applicable filing requirements during the fiscal year ended December 31, 2015.

## **DEADLINE FOR STOCKHOLDER PROPOSALS FOR 2017 ANNUAL MEETING**

Stockholders having proposals that they desire to present at next year's annual meeting of our stockholders should, if they desire that such proposals be included in our proxy statement relating to such meeting, submit such proposals in time to be received by us not later than December 23, 2016. To be so included, all such submissions must comply with the requirements of Rule 14a-8 promulgated under the Securities Exchange Act and we direct your close attention to that rule. In addition, management's proxy holders will have discretion to vote proxies given to them on any stockholder proposal of which we do not have notice prior to April 3, 2017. Proposals should be mailed to the Corporate Secretary, 11711 N. Meridian Street, Suite 310, Carmel, IN 46032.

## **OTHER MATTERS**

The Board knows of no other business to be brought before the meeting, but intends that, as to any such other business, the shares will be voted pursuant to the proxy in accordance with the best judgment of the person or persons acting thereunder.

## APPENDIX A

### ASSEMBLY BIOSCIENCES, INC.

#### AMENDED AND RESTATED 2014 STOCK INCENTIVE PLAN

1. **Purposes of the Plan.** The purposes of this Plan are to attract and retain the best available personnel, to provide additional incentives to Employees, Directors and Consultants and to promote the success of the Company's business.

2. **Definitions.** The following definitions shall apply as used herein and in the individual Award Agreements except as defined otherwise in an individual Award Agreement. In the event a term is separately defined in an individual Award Agreement, such definition shall supersede the definition contained in this Section 2.

(a) "**Administrator**" means the Board or any of the Committees appointed to administer the Plan.

(b) "**Affiliate**" and "**Associate**" shall have the respective meanings ascribed to such terms in Rule 12b-2 promulgated under the Exchange Act.

(c) "**Applicable Laws**" means the legal requirements relating to the Plan and the Awards under applicable provisions of federal and state securities laws, the corporate laws of California and, to the extent other than California, the corporate law of the state of the Company's incorporation, the Code, the rules of any applicable stock exchange or national market system, and the rules of any non-U.S. jurisdiction applicable to Awards granted to residents therein.

(d) "**Assumed**" means that pursuant to a Corporate Transaction either (i) the Award is expressly affirmed by the Company or (ii) the contractual obligations represented by the Award are expressly assumed (and not simply by operation of law) by the successor entity or its Parent in connection with the Corporate Transaction with appropriate adjustments to the number and type of securities of the successor entity or its Parent subject to the Award and the exercise or purchase price thereof which at least preserves the compensation element of the Award existing at the time of the Corporate Transaction as determined in accordance with the instruments evidencing the agreement to assume the Award.

(e) "**Award**" means the grant of an Option, SAR, Dividend Equivalent Right, Restricted Stock, Restricted Stock Unit, Unrestricted Stock or other right or benefit under the Plan.

(f) "**Award Agreement**" means the written agreement evidencing the grant of an Award executed by the Company and the Grantee, including any amendments thereto.

(g) "**Board**" means the Board of Directors of the Company.

(h) "**Cause**" means, with respect to the termination by the Company or a Related Entity of the Grantee's Continuous Service, that such termination is for "Cause" as such term (or word of like import) is expressly defined in a then-effective written agreement between the Grantee and the Company or such Related Entity, or in the absence of such then-effective written agreement and definition, is based on, in the determination of the Administrator, the Grantee's: (i) performance of any act or failure to perform any act in bad faith and to the detriment of the Company or a Related Entity; (ii) dishonesty, intentional misconduct or material breach of any agreement with the Company or a Related Entity; or (iii) commission of a crime involving dishonesty, breach of trust, or physical or emotional harm to any person; provided, however, that with regard to any agreement that defines "Cause" on the occurrence of or in connection with a Corporate Transaction, such definition of "Cause" shall not apply until a Corporate Transaction actually occurs.

(i) "**Code**" means the Internal Revenue Code of 1986, as amended, or any successor statute.

(j) "**Committee**" means any committee composed of members of the Board appointed by the Board to administer the Plan.

(k) "**Common Stock**" means the Company's Common Stock, par value \$0.001 per share.

(l) “**Company**” means Assembly Biosciences, Inc., a Delaware corporation, formerly known as Ventrus Biosciences, Inc., or any successor entity that adopts the Plan in connection with a Corporate Transaction.

(m) “**Consultant**” means any natural person (other than an Employee or a Director, solely with respect to rendering services in such person’s capacity as a Director) who is engaged by the Company or any Related Entity to render consulting or advisory services to the Company or such Related Entity.

(n) “**Continuous Service**” means that the provision of services to the Company or a Related Entity in any capacity of Employee, Director or Consultant is not interrupted or terminated. In jurisdictions requiring notice in advance of an effective termination as an Employee, Director or Consultant, Continuous Service shall be deemed terminated upon the actual cessation of providing services to the Company or a Related Entity notwithstanding any required notice period that must be fulfilled before a termination as an Employee, Director or Consultant can be effective under Applicable Laws. A Grantee’s Continuous Service shall be deemed to have terminated either upon an actual termination of Continuous Service or upon the entity for which the Grantee provides services ceasing to be a Related Entity. Continuous Service shall not be considered interrupted in the case of (i) any approved leave of absence, (ii) transfers among the Company, any Related Entity, or any successor in any capacity of Employee, Director or Consultant, or (iii) any change in status as long as the individual remains in the service of the Company or a Related Entity in any capacity of Employee, Director or Consultant (except as otherwise provided in the Award Agreement). An approved leave of absence shall include sick leave, military leave, or any other authorized personal leave. For purposes of each Incentive Stock Option granted under the Plan, if such leave exceeds three (3) months, and reemployment upon expiration of such leave is not guaranteed by statute or contract, then the Incentive Stock Option shall be treated as a Non-Qualified Stock Option on the day three (3) months and one (1) day following the expiration of such three (3) month period.

(o) “**Corporate Transaction**” means any of the following transactions, provided, however, that the Administrator shall determine under parts (iv) and (v) whether multiple transactions are related, and its determination shall be final, binding and conclusive:

(i) a merger or consolidation in which the Company is not the surviving entity, except for a transaction the principal purpose of which is to change the state in which the Company is incorporated;

(ii) the sale, transfer or other disposition of all or substantially all of the assets of the Company;

(iii) the complete liquidation or dissolution of the Company;

(iv) any reverse merger or series of related transactions culminating in a reverse merger (including, but not limited to, a tender offer followed by a reverse merger) in which the Company is the surviving entity but (A) the shares of Common Stock outstanding immediately prior to such merger are converted or exchanged by virtue of the merger into other property, whether in the form of securities, cash or otherwise, or (B) in which securities possessing more than fifty percent (50%) of the total combined voting power of the Company’s outstanding securities are transferred to a person or persons different from those who held such securities immediately prior to such merger or the initial transaction culminating in such merger; or

(v) acquisition in a single or series of related transactions by any person or related group of persons (other than the Company or by a Company-sponsored employee benefit plan) of beneficial ownership (within the meaning of Rule 13d-3 of the Exchange Act) of securities possessing more than fifty percent (50%) of the total combined voting power of the Company’s outstanding securities.

(p) “**Covered Employee**” means an Employee who is a “covered employee” under Section 162(m)(3) of the Code.

(q) “**Director**” means a member of the Board or the board of directors of any Related Entity.



(r) “**Disability**” means as defined under the long-term disability policy of the Company or the Related Entity to which the Grantee provides services regardless of whether the Grantee is covered by such policy. If the Company or the Related Entity to which the Grantee provides service does not have a long-term disability plan in place, “Disability” means that a Grantee is unable to carry out the responsibilities and functions of the position held by the Grantee by reason of any medically determinable physical or mental impairment for a period of not less than ninety (90) consecutive days. A Grantee will not be considered to have incurred a Disability unless he or she furnishes proof of such impairment sufficient to satisfy the Administrator in its discretion.

(s) “**Disqualifying Disposition**” means any disposition (including any sale) of Common Stock received upon exercise of an Incentive Stock Option before either (i) two years after the date the Employee was granted the Incentive Stock Option, or (ii) one year after the date the Employee acquired Common Stock by exercising the Incentive Stock Option. If the Employee has died before such stock is sold, these holding period requirements do not apply and no Disqualifying Disposition can occur thereafter.

(t) “**Dividend Equivalent Right**” means a right entitling the Grantee to compensation measured by dividends paid with respect to Common Stock.

(u) “**Employee**” means any person, including an Officer or Director, who is in the employ of the Company or any Related Entity, subject to the control and direction of the Company or any Related Entity as to both the work to be performed and the manner and method of performance. The payment of a director’s fee by the Company or a Related Entity shall not be sufficient to constitute “employment” by the Company.

(v) “**Exchange Act**” means the Securities Exchange Act of 1934, as amended.

(w) “**Fair Market Value**” means, as of any date, the value of Common Stock determined as follows.

(i) If the Common Stock is listed on one or more established stock exchanges or national market systems, including without limitation The NASDAQ Global Select Market, The NASDAQ Global Market or The NASDAQ Capital Market of The NASDAQ Stock Market LLC, its Fair Market Value shall be the closing sales price for such stock (or the closing bid, if no sales were reported) as quoted on the principal exchange or system on which the Common Stock is listed (as determined by the Administrator) on the date of determination (or, if no closing sales price or closing bid was reported on that date, as applicable, on the last trading date such closing sales price or closing bid was reported), as reported in The Wall Street Journal or such other source as the Administrator deems reliable;

(ii) If the Common Stock is regularly quoted on an automated quotation system (including the OTC Bulletin Board) or by a recognized securities dealer, its Fair Market Value shall be the closing sales price for such stock as quoted on such system or by such securities dealer on the date of determination, but if selling prices are not reported, the Fair Market Value of a share of Common Stock shall be the mean between the high bid and low asked prices for the Common Stock on the date of determination (or, if no such prices were reported on that date, on the last date such prices were reported), as reported in The Wall Street Journal or such other source as the Administrator deems reliable; or

(iii) In the absence of an established market for the Common Stock of the type described in (i) and (ii), above, the Fair Market Value thereof shall be determined by the Administrator in a manner in compliance with Section 409A of the Code, or in the case of an Incentive Stock Option, in a manner in compliance with Section 422 of the Code.

(x) “**Grantee**” means an Employee, Director or Consultant who receives an Award under the Plan.

(y) “**Incentive Stock Option**” means an Option intended to qualify as an incentive stock option within the meaning of Section 422 of the Code.

- (z) “**Non-Qualified Stock Option**” means an Option not intended to qualify as an Incentive Stock Option.
- (aa) “**Officer**” means a person who is an officer of the Company or a Related Entity within the meaning of Section 16 of the Exchange Act and the rules and regulations promulgated thereunder.
- (bb) “**Option**” means an option to purchase Shares pursuant to an Award Agreement granted under the Plan.
- (cc) “**Parent**” means a “parent corporation,” whether now or hereafter existing, as defined in Section 424(e) of the Code.
- (dd) “**Performance-Based Compensation**” means compensation qualifying as “performance-based compensation” under Section 162(m) of the Code.
- (ee) “**Plan**” means this Assembly Biosciences, Inc. Amended and Restated 2014 Stock Incentive Plan.
- (ff) “**Post-Termination Exercise Period**” means the period specified in the Award Agreement of not less than thirty (30) days commencing on the date of termination (other than termination by the Company or any Related Entity for Cause) of the Grantee’s Continuous Service, or such longer period as may be applicable upon death or Disability.
- (gg) “**Related Entity**” means any Parent or Subsidiary of the Company.
- (hh) “**Replaced**” means that pursuant to a Corporate Transaction the Award is replaced with a comparable stock award or a cash incentive program of the Company, the successor entity (if applicable) or Parent of either of them which preserves the compensation element of such Award existing at the time of the Corporate Transaction and provides for subsequent payout in accordance with the same (or a more favorable) vesting schedule applicable to such Award. The determination of Award comparability shall be made by the Administrator and its determination shall be final, binding and conclusive.
- (ii) “**Restricted Stock**” means Shares issued under the Plan to the Grantee for such consideration, if any, and subject to such restrictions on transfer, rights of first refusal, repurchase provisions, forfeiture provisions, and other terms and conditions as established by the Administrator.
- (jj) “**Restricted Stock Units**” means an Award which may be earned in whole or in part upon the passage of time or the attainment of performance criteria established by the Administrator and which may be settled for cash, Shares or other securities or a combination of cash, Shares or other securities as established by the Administrator.
- (kk) “**Rule 16b-3**” means Rule 16b-3 promulgated under the Exchange Act or any successor thereto.
- (ll) “**SAR**” means a stock appreciation right entitling the Grantee to Shares or cash compensation, as established by the Administrator, measured by appreciation in the value of Common Stock.
- (mm) “**Share**” means a share of the Common Stock.
- (nn) “**Subsidiary**” means a “subsidiary corporation,” whether now or hereafter existing, as defined in Section 424(f) of the Code.
- (oo) “**Unrestricted Stock**” means an award of Shares free from any risks of forfeiture.

### 3. Stock Subject to the Plan.

(a) Subject to the provisions of Sections 3(b) and 12 below, the maximum aggregate number of Shares which may be issued pursuant to all Awards (including Incentive Stock Options) is increased from Two Million Five Hundred Sixty Thousand (2,560,000) Shares (post reverse stock split) to Four Million One Hundred Sixty Thousand (4,160,000) Shares. The Shares granted under the Plan may be authorized, but unissued, or reacquired Common Stock.

(b) Any Shares covered by an Award (or portion of an Award) which is forfeited, canceled or expires (whether voluntarily or involuntarily) shall be deemed not to have been issued for purposes of determining the maximum aggregate number of Shares which may be issued under the Plan, except that the maximum aggregate number of Shares which may be issued pursuant to the exercise of Incentive Stock Options shall not exceed the number specified in Section 3(a). Shares that actually have been issued under the Plan pursuant to an Award shall not be returned to the Plan and shall not become available for future issuance under the Plan, except that if Options or other Awards granted under this Plan or the Company's 2010 Equity Incentive Plan are forfeited or repurchased by the Company, such Shares shall become available for future grant under the Plan. In the event any Option or other Award granted under the Plan or the Company's 2010 Equity Incentive Plan is exercised through the tendering of shares of Common Stock (either actually or through attestation), or in the event tax withholding obligations are satisfied by tendering or withholding shares of Common Stock, any shares of Common Stock so tendered or withheld shall not again be available for awards under the Plan. Shares of Common Stock subject to an SAR granted pursuant to Section 6(l) of this Plan or the Company's 2010 Equity Incentive Plan that are not issued in connection with cash or stock settlement of the exercise of the SAR shall not again be available for award under the Plan. Shares of Common Stock reacquired by the Company on the open market or otherwise using cash proceeds from the exercise of Options shall not be available for awards under the Plan.

### 4. Administration of the Plan.

#### (a) Plan Administrator.

(i) Administration with Respect to Directors and Officers. With respect to grants of Awards to Directors or Employees who are also Officers or Directors of the Company, the Plan shall be administered by (A) the Board or (B) a Committee designated by the Board, which Committee shall be constituted in such a manner as to satisfy the Applicable Laws and to permit such grants and related transactions under the Plan to be exempt from Section 16(b) of the Exchange Act in accordance with Rule 16b-3. Once appointed, such Committee shall continue to serve in its designated capacity until otherwise directed by the Board.

(ii) Administration With Respect to Consultants and Other Employees. With respect to grants of Awards to Employees or Consultants who are neither Directors nor Officers of the Company, the Plan shall be administered by (A) the Board or (B) a Committee designated by the Board, which Committee shall be constituted in such a manner as to satisfy the Applicable Laws. Once appointed, such Committee shall continue to serve in its designated capacity until otherwise directed by the Board.

(iii) Administration With Respect to Covered Employees. Notwithstanding the foregoing, grants of Awards to any Covered Employee intended to qualify as Performance-Based Compensation shall be made only by a Committee (or subcommittee of a Committee) which is comprised solely of two or more Directors eligible to serve on a committee making Awards qualifying as Performance-Based Compensation. In the case of such Awards granted to Covered Employees, references to the "Administrator" or to a "Committee" shall be deemed to be references to such Committee or subcommittee.

(b) Multiple Administrative Bodies. The Plan may be administered by different bodies with respect to Directors, Officers, Consultants, and Employees who are neither Directors nor Officers.

(c) Powers of the Administrator. Subject to Applicable Laws and the provisions of the Plan (including any other powers given to the Administrator hereunder), and except as otherwise provided by the Board, the Administrator shall have the authority, in its discretion:

- (i) to select the Employees, Directors and Consultants to whom Awards may be granted from time to time hereunder;
- (ii) to determine whether and to what extent Awards are granted hereunder;
- (iii) to determine the number of Shares or the amount of other consideration to be covered by each Award granted hereunder;
- (iv) to approve forms of Award Agreements for use under the Plan;
- (v) to determine the type, terms and conditions of any Award granted hereunder;
- (vi) to establish additional terms, conditions, rules or procedures to accommodate the rules or laws of applicable non-U.S. jurisdictions and to afford Grantees favorable treatment under such rules or laws; provided, however, that no Award shall be granted under any such additional terms, conditions, rules or procedures with terms or conditions which are inconsistent with the provisions of the Plan;
- (vii) to amend the terms of any outstanding Award granted under the Plan, provided that any amendment that would adversely affect the Grantee's rights under an outstanding Award shall not be made without the Grantee's written consent; provided, however, that an amendment or modification that may cause an Incentive Stock Option to become a Non-Qualified Stock Option shall not be treated as adversely affecting the rights of the Grantee;
- (viii) to construe and interpret the terms of the Plan and Awards, including without limitation, any notice of award or Award Agreement, granted pursuant to the Plan;
- (ix) to institute an option exchange program; and
- (x) to take such other action, not inconsistent with the terms of the Plan, as the Administrator deems appropriate.

The express grant in the Plan of any specific power to the Administrator shall not be construed as limiting any power or authority of the Administrator; provided that the Administrator may not exercise any right or power reserved to the Board. Any decision made, or action taken, by the Administrator or in connection with the administration of this Plan shall be final, conclusive and binding on all persons having an interest in the Plan.

(d) Indemnification. In addition to such other rights of indemnification as they may have as members of the Board or as Officers or Employees of the Company or a Related Entity, members of the Board and any Officers or Employees of the Company or a Related Entity to whom authority to act for the Board, the Administrator or the Company is delegated shall be defended and indemnified by the Company to the extent permitted by law on an after-tax basis against all reasonable expenses, including attorneys' fees, actually and necessarily incurred in connection with the defense of any claim, investigation, action, suit or proceeding, or in connection with any appeal therein, to which they or any of them may be a party by reason of any action taken or failure to act under or in connection with the Plan, or any Award granted hereunder, and against all amounts paid by them in settlement thereof (provided such settlement is approved by the Company) or paid by them in satisfaction of a judgment in any such claim, investigation, action, suit or proceeding, except in relation to matters as to which it shall be adjudged in such claim, investigation, action, suit or proceeding that such person is liable for gross negligence, bad faith or intentional misconduct; provided, however, that within thirty (30) days after the institution of such claim, investigation, action, suit or proceeding, such person shall offer to the Company, in writing, the opportunity at the Company's expense to defend the same.

5. Eligibility. Awards other than Incentive Stock Options may be granted to Employees, Directors and Consultants of the Company and any Related Entity. Incentive Stock Options may be granted only to Employees of the Company or a Parent or a Subsidiary of the Company. An Employee, Director or Consultant who has been granted an Award may, if otherwise eligible, be granted additional Awards. Awards may be granted to such Employees, Directors or Consultants who are residing in non-U.S. jurisdictions as the Administrator may determine from time to time.

6. Terms and Conditions of Awards.

(a) Types of Awards. The Administrator is authorized under the Plan to award any type of arrangement to an Employee, Director or Consultant that is not inconsistent with the provisions of the Plan and that by its terms involves or might involve the issuance of (i) Shares, (ii) cash or (iii) an Option, an SAR, or similar right with a fixed or variable price related to the Fair Market Value of the Shares and with an exercise or conversion privilege related to the passage of time, the occurrence of one or more events, or the satisfaction of performance criteria or other conditions. Such awards include, without limitation, Options, SARs, sales or bonuses of Restricted Stock, Restricted Stock Units, Unrestricted Stock or Dividend Equivalent Rights, and an Award may consist of one such security or benefit, or two (2) or more of them in any combination or alternative. Unrestricted Stock may be granted in respect of past services or other valid consideration, or in lieu of cash compensation due to the grantee.

(b) Designation of Award. Each Award shall be designated in the Award Agreement. In the case of an Option, the Option shall be designated as either an Incentive Stock Option or a Non-Qualified Stock Option. However, notwithstanding such designation, an Option will qualify as an Incentive Stock Option under the Code only to the extent the \$100,000 dollar limitation of Section 422(d) of the Code is not exceeded. The \$100,000 limitation of Section 422(d) of the Code is calculated based on the aggregate Fair Market Value of the Shares subject to Options designated as Incentive Stock Options which become exercisable for the first time by a Grantee during any calendar year (under all plans of the Company or any Parent or Subsidiary of the Company). For purposes of this calculation, Incentive Stock Options shall be taken into account in the order in which they were granted, and the Fair Market Value of the Shares shall be determined as of the grant date of the relevant Option.

(c) Conditions of Award. Subject to the terms of the Plan, the Administrator shall determine the provisions, terms, and conditions of each Award including, but not limited to, the Award vesting schedule, repurchase provisions, rights of first refusal, forfeiture provisions, form of payment (cash, Shares, or other consideration) upon settlement of the Award, payment contingencies, and satisfaction of any performance criteria. The performance criteria established by the Administrator may be based on any one of, or combination of, increase in share price, earnings per share, total stockholder return, return on equity, return on assets, return on investment, net operating income, cash flow, revenue, economic value added, initiation or completion of clinical trials, results of clinical trials, regulatory approval, regulatory submissions, drug development or commercialization milestones, collaboration milestones or strategic partnerships. Partial achievement of the specified criteria may result in a payment or vesting corresponding to the degree of achievement as specified in the Award Agreement.

(d) Acquisitions and Other Transactions. The Administrator may issue Awards under the Plan in settlement, assumption or substitution for, outstanding awards or obligations to grant future awards in connection with the Company or a Related Entity acquiring another entity, an interest in another entity or an additional interest in a Related Entity whether by merger, stock purchase, asset purchase or other form of transaction.

(e) Deferral of Award Payment. The Administrator may establish one or more programs under the Plan to permit selected Grantees the opportunity to elect to defer receipt of consideration upon exercise of an Award, satisfaction of performance criteria, or other event that absent the election would entitle the Grantee to payment or receipt of Shares or other consideration under an Award. The Administrator may establish the election procedures, the timing of such elections, the mechanisms for payments of, and accrual of interest or other earnings, if any, on amounts, Shares or other consideration so deferred, and

such other terms, conditions, rules and procedures that the Administrator deems advisable for the administration of any such deferral program.

(f) Separate Programs. The Administrator may establish one or more separate programs under the Plan for the purpose of issuing particular forms of Awards to one or more classes of Grantees on such terms and conditions as determined by the Administrator from time to time.

(g) Individual Option and SAR Limit. The maximum number of Shares with respect to which Options and SARs may be granted to any Grantee in any calendar year shall be One Million (1,000,000) Shares. The foregoing limitation shall be adjusted proportionately in connection with any change in the Company's capitalization pursuant to Section 12 below. To the extent required by Section 162(m) of the Code or the regulations thereunder, in applying the foregoing limitations with respect to a Grantee, if any Option or SAR is canceled, the canceled Option or SAR shall continue to count against the maximum number of Shares with respect to which Options and SARs may be granted to the Grantee. For this purpose, the repricing of an Option (or in the case of an SAR, the base amount on which the stock appreciation is calculated is reduced to reflect a reduction in the Fair Market Value of the Common Stock) shall be treated as the cancellation of the existing Option or SAR and the grant of a new Option or SAR.

(h) Early Exercise. The Award Agreement may, but need not, include a provision whereby the Grantee may elect at any time while an Employee, Director or Consultant to exercise any part or all of the Award prior to full vesting of the Award. Any unvested Shares received pursuant to such exercise may be subject to a repurchase right in favor of the Company or a Related Entity or to any other restriction the Administrator determines to be appropriate.

(i) Term of Option or SAR. The term of each Option or SAR shall be the term stated in the Award Agreement, provided, however, that the term shall be no more than ten (10) years from the date of grant thereof. However, in the case of an Incentive Stock Option granted to a Grantee who, at the time the Option is granted, owns stock representing more than ten percent (10%) of the voting power of all classes of stock of the Company or any Parent or Subsidiary of the Company, the term of the Incentive Stock Option shall be five (5) years from the date of grant thereof or such shorter term as may be provided in the Award Agreement.

(j) Transferability of Awards. Unless the Administrator provides otherwise, in its sole discretion, no Award may be sold, pledged, assigned, hypothecated, transferred, or disposed of in any manner other than by will or by the laws of descent or distribution and may be exercised, during the lifetime of the Grantee, only by the Grantee. Notwithstanding the foregoing, the Grantee may designate one or more beneficiaries of the Grantee's Award in the event of the Grantee's death on a beneficiary designation form provided by the Administrator.

(k) Time of Granting Awards. The date of grant of an Award shall for all purposes be the date on which the Administrator makes the determination to grant such Award, or such other later date as is determined by the Administrator.

(l) Stock Appreciation Rights. An SAR may be granted (i) with respect to any Option granted under this Plan, either concurrently with the grant of such Option or at such later time as determined by the Administrator (as to all or any portion of the shares of Common Stock subject to the Option), or (ii) alone, without reference to any related Option. Each SAR granted by the Administrator under this Plan shall be subject to the following terms and conditions. Each SAR granted to any participant shall relate to such number of shares of Common Stock as shall be determined by the Administrator, subject to adjustment as provided in Section 12. In the case of an SAR granted with respect to an Option, the number of shares of Common Stock to which the SAR pertains shall be reduced in the same proportion that the holder of the Option exercises the related Option. The exercise price of an SAR will be determined by the Administrator, in its discretion, at the date of grant but may not be less than 100% of the Fair Market Value of the shares of Common Stock subject thereto on the date of grant. Subject to the right of the Administrator to deliver cash in lieu of shares of Common Stock (which, as it pertains to

Officers and Directors of the Company, shall comply with all requirements of the Exchange Act), the number of shares of Common Stock which shall be issuable upon the exercise of an SAR shall be determined by dividing:

- (i) the number of shares of Common Stock as to which the SAR is exercised multiplied by the amount of the appreciation in such shares (for this purpose, the “appreciation” shall be the amount by which the Fair Market Value of the shares of Common Stock subject to the SAR on the exercise date exceeds (1) in the case of an SAR related to an Option, the exercise price of the shares of Common Stock under the Option or (2) in the case of an SAR granted alone, without reference to a related Option, an amount which shall be determined by the Administrator at the time of grant, subject to adjustment under Section 12); by
- (ii) the Fair Market Value of a share of Common Stock on the exercise date.

In lieu of issuing shares of Common Stock upon the exercise of an SAR, the Administrator may elect to pay the holder of the SAR cash equal to the Fair Market Value on the exercise date of any or all of the shares which would otherwise be issuable. No fractional shares of Common Stock shall be issued upon the exercise of an SAR; instead, the holder of the SAR shall be entitled to receive a cash adjustment equal to the same fraction of the Fair Market Value of a share of Common Stock on the exercise date or to purchase the portion necessary to make a whole share at its Fair Market Value on the date of exercise. The exercise of an SAR related to an Option shall be permitted only to the extent that the Option is exercisable under Section 10 on the date of surrender. Any Incentive Stock Option surrendered pursuant to the provisions of this Section 6(l) shall be deemed to have been converted into a Non-Qualified Stock Option immediately prior to such surrender.

(m) Compliance with Section 409A of the Code. Notwithstanding anything to the contrary set forth herein, any Award that is not exempt from the requirements of Section 409A of the Code shall contain such provisions so that such Award will comply with the requirements of Section 409A of the Code. Such restrictions, if any, shall be determined by the Administrator and contained in the Award Agreement evidencing such Award.

(n) Minimum Vesting. Awards granted to Employees under the Plan that are subject to time vesting shall not vest or become exercisable until at least one year after the date of grant, except in the case of death, Disability or a Corporate Transaction. Awards granted to Directors under the Plan that are subject to time vesting shall not vest or become exercisable until at least the earlier of (i) one year after the date of grant or (ii) the next annual meeting of stockholders, except in the case of death, Disability or a Corporate Transaction.

#### 7. Award Exercise or Purchase Price, Consideration and Taxes.

(a) Exercise or Purchase Price. The exercise or purchase price, if any, for an Award shall be as follows.

(i) In the case of an Incentive Stock Option:

(1) granted to an Employee who, at the time of the grant of such Incentive Stock Option owns stock representing more than ten percent (10%) of the voting power of all classes of stock of the Company or any Parent or Subsidiary of the Company, the per Share exercise price shall be not less than one hundred ten percent (110%) of the Fair Market Value per Share on the date of grant; or

(2) granted to any Employee other than an Employee described in the preceding paragraph, the per Share exercise price shall be not less than one hundred percent (100%) of the Fair Market Value per Share on the date of grant.

(ii) In the case of a Non-Qualified Stock Option, the per Share exercise price shall be not less than one-hundred percent (100%) of the Fair Market Value per Share on the date of grant.

(iii) In the case of Awards intended to qualify as Performance-Based Compensation, the exercise or purchase price, if any, shall be not less than one hundred percent (100%) of the Fair Market Value per Share on the date of grant.

(iv) In the case of other Awards, such price as is determined by the Administrator.

(v) Notwithstanding the foregoing provisions of this Section 7(a), in the case of an Award issued pursuant to Section 6(d), above, the exercise or purchase price for the Award shall be determined in accordance with the provisions of the relevant instrument evidencing the agreement to issue such Award.

(b) Consideration. Subject to Applicable Laws, the consideration to be paid for the Shares to be issued upon exercise or purchase of an Option or upon the issuance of another Award, including the method of payment, shall be determined by the Administrator. In addition to any other types of consideration the Administrator may determine, the Administrator is authorized to accept as consideration for Shares issued under the Plan the following:

(i) cash;

(ii) check;

(iii) delivery of Grantee's promissory note with such recourse, interest, security, and redemption provisions as the Administrator determines as appropriate (but only to the extent that the acceptance or terms of the promissory note would not violate an Applicable Law); provided, however, that interest shall compound at least annually and shall be charged at the minimum rate of interest necessary to avoid (i) the imputation of interest income to the Company and compensation income to the Grantee under any applicable provisions of the Code, and (B) the classification of the Award as a liability for financial accounting purposes;

(iv) surrender of Shares or delivery of a properly executed form of attestation of ownership of Shares as the Administrator may require which have a Fair Market Value on the date of surrender or attestation equal to the aggregate exercise price of the Shares as to which said Award shall be exercised;

(v) payment through a broker-dealer sale and remittance procedure pursuant to which the Grantee (A) shall provide written instructions to a Company designated brokerage firm to effect the immediate sale of some or all of the purchased Shares and remit to the Company sufficient funds to cover the aggregate exercise price payable for the purchased Shares and (B) shall provide written directives to the Company to deliver the certificates (or other evidence satisfactory to the Company to the extent that the Shares are uncertificated) for the purchased Shares directly to such brokerage firm in order to complete the sale transaction;

(vi) with respect to Non-Qualified Options, payment through a "net exercise" such that, without the payment of any funds, the Grantee may exercise the Option and receive the net number of Shares equal to (i) the number of Shares as to which the Option is being exercised, multiplied by (ii) a fraction, the numerator of which is the Fair Market Value per Share (on such date as is determined by the Administrator) less the Exercise Price per Share, and the denominator of which is such Fair Market Value per Share; or

(vii) past or future services actually or to be rendered to the Company or a Related Entity; or

(viii) any combination of the foregoing methods of payment.

The Administrator may at any time or from time to time, by adoption of or by amendment to the standard forms of Award Agreement described in Section 4(c)(iv), or by other means, grant Awards which do not permit all of the foregoing forms of consideration to be used in payment for the Shares or which otherwise restrict one or more forms of consideration.



8. Notice to Company of Disqualifying Disposition. Each Employee who receives an Incentive Stock Option must agree to notify the Company in writing immediately after the Employee makes a Disqualifying Disposition of any Common Stock acquired pursuant to the exercise of an Incentive Stock Option.

9. Withholding of Additional Income Taxes.

(a) Upon the exercise of a Non-Qualified Stock Option or SAR, the grant of any other Award for less than the Fair Market Value of the Common Stock, the grant of Unrestricted Stock or the vesting of restricted Common Stock acquired on the exercise of an Award hereunder, the Company, in accordance with Section 3402(a) of the Code and any applicable state statute or regulation, may require the Grantee to pay to the Company additional withholding taxes in respect of the amount that is considered compensation includable in such person's gross income. With respect to (i) the exercise of an Option, (ii) the grant of Unrestricted Stock, (iii) the grant of any other Award for less than its Fair Market Value, (iv) the vesting of restricted Common Stock acquired by exercising an Award, or (v) the exercise of an SAR, the Committee in its discretion may condition such event on the payment by the Grantee of any such additional withholding taxes.

(b) At the sole and absolute discretion of the Administrator, the holder of Awards may pay all or any part of the total estimated federal and state income tax liability arising out of the exercise or receipt of such Awards or the vesting of restricted Common Stock acquired on the exercise of an Award hereunder (each of the foregoing, a "**Tax Event**") by tendering already-owned shares of Common Stock or by directing the Company to withhold shares of Common Stock otherwise to be transferred to the Grantee as a result of the exercise or receipt thereof in an amount equal to the estimated federal and state income tax liability arising out of such event, provided that no more Shares may be withheld than are necessary to satisfy the Grantee's actual minimum withholding obligation with respect to the exercise of Awards unless excess share withholding would not result in liability accounting treatment for Awards granted under the Plan under applicable accounting rules. In such event, the Grantee must, however, notify the Administrator of his or her desire to pay all or any part of the total estimated federal and state income tax liability arising out of a Tax Event by tendering already-owned shares of Common Stock or having shares of Common Stock withheld prior to the date that the amount of federal or state income tax to be withheld is to be determined. For purposes of this Section 9, shares of Common Stock shall be valued at their Fair Market Value on the date that the amount of the tax withholdings is to be determined.

10. Exercise of Award.

(a) Procedure for Exercise; Rights as a Stockholder.

(i) Any Award granted hereunder shall be exercisable at such times and under such conditions as determined by the Administrator under the terms of the Plan and specified in the Award Agreement.

(ii) An Award shall be deemed to be exercised when written notice of such exercise has been given to the Company in accordance with the terms of the Award by the person entitled to exercise the Award and full payment for the Shares with respect to which the Award is exercised has been made, including, to the extent selected, use of the broker-dealer sale and remittance procedure to pay the purchase price as provided in Section 7(b)(v).

(b) Exercise of Award Following Termination of Continuous Service. In the event of termination of a Grantee's Continuous Service for any reason other than Disability or death (but not in the event of a Grantee's change of status from Employee to Consultant or from Consultant to Employee), such Grantee may, but only during the Post-Termination Exercise Period (but in no event later than the expiration date of the term of such Award as set forth in the Award Agreement), exercise the portion of the Grantee's Award that was vested at the date of such termination or such other portion of the Grantee's Award as may be determined by the Administrator. The Grantee's Award Agreement may provide that upon the termination of the Grantee's Continuous Service for Cause, the Grantee's right to exercise the Award shall terminate concurrently with the termination of Grantee's Continuous Service. In the event of a Grantee's change of status from Employee to Consultant, an Employee's Incentive Stock Option shall convert automatically to a Non-Qualified Stock Option on the day three (3) months and one day

following such change of status. To the extent that the Grantee's Award was unvested at the date of termination, or if the Grantee does not exercise the vested portion of the Grantee's Award within the Post-Termination Exercise Period, the Award shall terminate.

(c) Disability of Grantee. In the event of termination of a Grantee's Continuous Service as a result of his or her Disability, such Grantee may, but only within twelve (12) months from the date of such termination (or such longer period as specified in the Award Agreement but in no event later than the expiration date of the term of such Award as set forth in the Award Agreement), exercise the portion of the Grantee's Award that was vested at the date of such termination; provided, however, that if such Disability is not a "disability" as such term is defined in Section 22(e)(3) of the Code, in the case of an Incentive Stock Option such Incentive Stock Option shall automatically convert to a Non-Qualified Stock Option on the day three (3) months and one day following such termination. To the extent that the Grantee's Award was unvested at the date of termination, or if Grantee does not exercise the vested portion of the Grantee's Award within the time specified herein, the Award shall terminate.

(d) Death of Grantee. In the event of a termination of the Grantee's Continuous Service as a result of his or her death, or in the event of the death of the Grantee during the Post-Termination Exercise Period or during the twelve (12) month period following the Grantee's termination of Continuous Service as a result of his or her Disability, the Grantee's estate or a person who acquired the right to exercise the Award by bequest or inheritance may exercise the portion of the Grantee's Award that was vested as of the date of termination, within twelve (12) months from the date of death (or such longer period as specified in the Award Agreement but in no event later than the expiration of the term of such Award as set forth in the Award Agreement). To the extent that, at the time of death, the Grantee's Award was unvested, or if the Grantee's estate or a person who acquired the right to exercise the Award by bequest or inheritance does not exercise the vested portion of the Grantee's Award within the time specified herein, the Award shall terminate.

(e) Extension if Exercise Prevented by Law. Notwithstanding the foregoing, if the exercise of an Award within the applicable time periods set forth in this Section 10 is prevented by the provisions of Section 11 below, the Award shall remain exercisable until one (1) month after the date the Grantee is notified by the Company that the Award is exercisable, but in any event no later than the expiration of the term of such Award as set forth in the Award Agreement.

#### 11. Conditions Upon Issuance of Shares.

(a) If at any time the Administrator determines that the delivery of Shares pursuant to the exercise, vesting or any other provision of an Award is or may be unlawful under Applicable Laws, the vesting or right to exercise an Award or to otherwise receive Shares pursuant to the terms of an Award shall be suspended until the Administrator determines that such delivery is lawful and shall be further subject to the approval of counsel for the Company with respect to such compliance. The Company shall have no obligation to effect any registration or qualification of the Shares under federal or state laws.

(b) As a condition to the exercise of an Award, the Company may require the person exercising such Award to represent and warrant at the time of any such exercise that the Shares are being purchased only for investment and without any present intention to sell or distribute such Shares if, in the opinion of counsel for the Company, such a representation is required by any Applicable Laws.

12. Adjustments. Subject to any required action by the stockholders of the Company, the number of Shares covered by each outstanding Award, and the number of Shares which have been authorized for issuance under the Plan but as to which no Awards have yet been granted or which have been returned to the Plan, the exercise or purchase price of each such outstanding Award, as well as any other terms that the Administrator determines require adjustment shall be proportionately adjusted for (i) any increase or decrease in the number of issued Shares resulting from a stock split, reverse stock split, stock dividend, combination or reclassification of the Shares, or similar transaction affecting the Shares, (ii) any other increase or decrease in the number of issued Shares effected without receipt of consideration by the Company, or (iii) any other transaction with respect to the Company's Common Stock including a corporate merger, consolidation, acquisition of property or stock, separation (including a spin-off or other distribution of stock or property),

reorganization, liquidation (whether partial or complete) or any similar transaction; provided, however that conversion of any convertible securities of the Company shall not be deemed to have been “effected without receipt of consideration.” Such adjustment shall be made by the Administrator and its determination shall be final, binding and conclusive. Except as the Administrator determines, no issuance by the Company of shares of stock of any class, or securities convertible into shares of stock of any class, shall affect, and no adjustment by reason hereof shall be made with respect to, the number or price of Shares subject to an Award. No adjustments shall be made for dividends paid in cash or in property other than Common Stock of the Company, nor shall cash dividends or dividend equivalents accrue or be paid in respect of unexercised Options or unvested Awards hereunder.

13. Corporate Transactions.

(a) Termination of Award to Extent Not Assumed in Corporate Transaction. Effective upon the consummation of a Corporate Transaction, all outstanding Awards under the Plan shall terminate. However, all such Awards shall not terminate to the extent they are Assumed in connection with the Corporate Transaction.

(b) Acceleration of Award Upon Corporate Transaction. The Administrator shall have the authority, exercisable either in advance of any actual or anticipated Corporate Transaction or at the time of an actual Corporate Transaction and exercisable at the time of the grant of an Award under the Plan or any time while an Award remains outstanding, to provide for the full or partial automatic vesting and exercisability of one or more outstanding unvested Awards under the Plan and the release from restrictions on transfer and repurchase or forfeiture rights of such Awards in connection with a Corporate Transaction on such terms and conditions as the Administrator may specify. The Administrator also shall have the authority to condition any such Award vesting and exercisability or release from such limitations upon the subsequent termination of the Continuous Service of the Grantee within a specified period following the effective date of the Corporate Transaction. The Administrator may provide that any Awards so vested or released from such limitations in connection with a Corporate Transaction shall remain fully exercisable until the expiration or sooner termination of the Award.

(c) Effect of Acceleration on Incentive Stock Options. Any Incentive Stock Option accelerated under this Section 13 in connection with a Corporate Transaction shall remain exercisable as an Incentive Stock Option under the Code only to the extent the \$100,000 dollar limitation of Section 422(d) of the Code is not exceeded.

14. Effective Date and Term of Plan. The Plan shall become effective upon the earlier to occur of its adoption by the Board or its approval by the stockholders of the Company. It shall continue in effect for a term of ten (10) years from the date of stockholder approval unless sooner terminated, provided that no incentive stock options may be granted under the Plan after April 7, 2026. Subject to Section 19 below, and Applicable Laws, Awards may be granted under the Plan upon Board approval, contingent on stockholder approval.

15. Amendment, Suspension or Termination of the Plan.

(a) The Board may at any time amend, suspend or terminate the Plan in any respect, except that it may not, without the approval of the stockholders obtained within twelve (12) months before or after the Board adopts a resolution authorizing any of the following actions, do any of the following:

- (i) increase the total number of shares that may be issued under the Plan (except by adjustment pursuant to Section 12);
- (ii) modify the provisions of Section 6 regarding eligibility for grants of ISOs may not be modified;
- (iii) the provisions of Section 7(a) regarding the exercise price at which shares may be offered pursuant to Options may not be modified (except by adjustment pursuant to Section 12);
- (iv) extend the expiration date of the Plan; and

(v) except as provided in Section 12 (including, without limitation, any stock dividend, stock split, extraordinary cash dividend, recapitalization, reorganization, merger, consolidation, split-up, spin-off, combination, or exchange of shares), the Company may not amend an Award granted under the Plan to reduce its exercise price per share, cancel and regrant new Awards with lower prices per share than the original prices per share of the cancelled Awards, or cancel any Awards in exchange for cash or the grant of replacement Awards with an exercise price that is less than the exercise price of the original Awards, essentially having the effect of a repricing, without approval by the Company's stockholders.

(b) No Award may be granted during any suspension of the Plan or after termination of the Plan.

(c) No suspension or termination of the Plan (including termination of the Plan under Section 15, above) shall adversely affect any rights under Awards already granted to a Grantee without his or her consent.

16. Reservation of Shares.

(a) The Company, during the term of the Plan, will at all times reserve and keep available such number of Shares as shall be sufficient to satisfy the requirements of the Plan.

(b) The inability of the Company to obtain authority from any regulatory body having jurisdiction, which authority is deemed by the Company's counsel to be necessary to the lawful issuance and sale of any Shares hereunder, shall relieve the Company of any liability in respect of the failure to issue or sell such Shares as to which such requisite authority shall not have been obtained.

17. No Effect on Terms of Employment/Consulting Relationship. The Plan shall not confer upon any Grantee any right with respect to the Grantee's Continuous Service, nor shall it interfere in any way with his or her right or the right of the Company or a Related Entity to terminate the Grantee's Continuous Service at any time, with or without Cause, and with or without notice. The ability of the Company or any Related Entity to terminate the employment of a Grantee who is employed at will is in no way affected by its determination that the Grantee's Continuous Service has been terminated for Cause for the purposes of this Plan.

18. No Effect on Retirement and Other Benefit Plans. Except as specifically provided in a retirement or other benefit plan of the Company or a Related Entity, Awards shall not be deemed compensation for purposes of computing benefits or contributions under any retirement plan of the Company or a Related Entity, and shall not affect any benefits under any other benefit plan of any kind or any benefit plan subsequently instituted under which the availability or amount of benefits is related to level of compensation. The Plan is not a "Retirement Plan" or "Welfare Plan" under the Employee Retirement Income Security Act of 1974, as amended.

19. Stockholder Approval. Continuance of the Plan shall be subject to approval by the stockholders of the Company within twelve (12) months before or after the date the Plan is adopted by the Board. Such stockholder approval shall be obtained in the degree and manner required under Applicable Laws. Any Award exercised before stockholder approval is obtained shall be rescinded if stockholder approval is not obtained within the time prescribed, and Shares issued on the exercise of any such Award shall not be counted in determining whether stockholder approval is obtained.

20. Effect of Section 162(m) of the Code. To the extent that the Administrator determines as of the date of grant of an Award that (i) the Award is intended to qualify as Performance-Based Compensation and (ii) the Award is not exempt from the application of Section 162(m) of the Code, such Award shall not be effective until any stockholder approval required under Section 162(m) of the Code has been obtained. The maximum Award intended to be Performance-Based Compensation (other than an Option or an SAR) granted to a Covered Employee under the Plan for any performance period shall not exceed 500,000 Shares.

21. Electronic Delivery. The Administrator may, in its sole discretion, decide to deliver any documents related to any Award granted under the Plan through an online or electronic system established and maintained by the Company or another third party designated by the Company or to request a Grantee's consent to participate in the Plan by electronic means. Each Grantee hereunder consents to receive such documents by electronic delivery and agrees to participate in the Plan through an online or electronic system established and maintained by the Company or another third party designated by the Company, and such consent shall remain in effect throughout Grantee's term of employment or service with the Company and any Related Entity and thereafter until withdrawn in writing by Grantee.

22. Data Privacy. The Administrator may, in its sole discretion, decide to collect, use and transfer, in electronic or other form, personal data as described in this Plan or any Award for the exclusive purpose of implementing, administering and managing participation in the Plan. Each Grantee hereunder acknowledges that the Company holds certain personal information about Grantee, including, but not limited to, name, home address and telephone number, date of birth, social security number or other identification number, salary, nationality, job title, details of all Awards awarded, cancelled, exercised, vested or unvested, for the purpose of implementing, administering and managing the Plan (the "**Data**"). Each Grantee hereunder further acknowledges that Data may be transferred to any third parties assisting in the implementation, administration and management of the Plan and that these third parties may be located in jurisdictions that may have different data privacy laws and protections, and Grantee authorizes such third parties to receive, possess, use, retain and transfer the Data, in electronic or other form, for the purposes of implementing, administering and managing the Plan, including any requisite transfer of such Data as may be required to a broker or other third party with whom the recipient or the Company may elect to deposit any shares of Common Stock acquired upon any Award.

23. Compliance with Section 409A. To the extent that the Administrator determines that any Award granted hereunder is subject to Section 409A of the Code, the Award Agreement evidencing such Award shall incorporate the terms and conditions necessary to avoid the consequences specified in Section 409A(a)(1) of the Code. To the extent applicable, the Plan and Award Agreements shall be interpreted in accordance with Section 409A of the Code and Department of Treasury regulations and other interpretive guidance issued thereunder, including without limitation any such regulations or other guidance that may be issued or amended after the effective date of the Plan. Notwithstanding any provision of the Plan to the contrary, in the event that following the effective date of the Plan the Administrator determines that any Award may be subject to Section 409A of the Code and related Department of Treasury guidance (including such Department of Treasury guidance as may be issued after the effective date of the Plan), the Administrator may adopt such amendments to the Plan and the applicable Award Agreement or adopt other policies and procedures (including amendments, policies and procedures with retroactive effect), or take any other actions, that the Administrator determines are necessary or appropriate to (1) exempt the Award from Section 409A of the Code and/or preserve the intended tax treatment of the benefits provided with respect to the Award, or (2) comply with the requirements of Section 409A of the Code and related Department of Treasury guidance.

24. Unfunded Obligation. Grantees shall have the status of general unsecured creditors of the Company. Any amounts payable to Grantees pursuant to the Plan shall be unfunded and unsecured obligations for all purposes, including, without limitation, Title I of the Employee Retirement Income Security Act of 1974, as amended. Neither the Company nor any Related Entity shall be required to segregate any monies from its general funds, or to create any trusts, or establish any special accounts with respect to such obligations. The Company shall retain at all times beneficial ownership of any investments, including trust investments, which the Company may make to fulfill its payment obligations hereunder. Any investments or the creation or maintenance of any trust or any Grantee account shall not create or constitute a trust or fiduciary relationship between the Administrator, the Company or any Related Entity and a Grantee, or otherwise create any vested or beneficial interest in any Grantee or the Grantee's creditors in any assets of the Company or a Related Entity. The Grantees shall have no claim against the Company or any Related Entity for any changes in the value of any assets that may be invested or reinvested by the Company with respect to the Plan.

25. Construction. Captions and titles contained herein are for convenience only and shall not affect the meaning or interpretation of any provision of the Plan. Except when otherwise indicated by the context, the singular shall include the plural and the plural shall include the singular. Use of the term “or” is not intended to be exclusive, unless the context clearly requires otherwise.

As approved by the Board of Directors on April 8, 2016

And the stockholders on [            ], 2016

**ASSEMBLY BIOSCIENCES, INC.**  
**101 6TH AVE, 9TH FLOOR**  
**NEW YORK, N.Y. 10013**

**VOTE BY INTERNET - [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 meeting date. Have your proxy card in hand when you access the web site and follow the instructions to obtain your records and to create an electronic voting instruction form.

**ELECTRONIC DELIVERY OF FUTURE PROXY MATERIALS**

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

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

Use any touch-tone telephone to transmit your voting instructions up until 11:59 P.M. Eastern Time the day before the 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:

E07664-P74795

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

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**THIS PROXY CARD IS VALID ONLY WHEN SIGNED AND DATED.**  
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**ASSEMBLY BIOSCIENCES, INC.**

The Board of Directors recommends you vote FOR the following:

1. Election of Directors

**Nominees:**

- |                           |                        |
|---------------------------|------------------------|
| 01) Anthony E. Altig      | 05) William Ringo      |
| 02) Mark Auerbach         | 06) Alan J. Lewis, PhD |
| 03) Richard DiMarchi, PhD | 07) Derek Small        |
| 04) Myron Z. Holubiak     |                        |

**For All**   **Withhold All**   **For All Except**

    

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.

\_\_\_\_\_

The Board of Directors recommends you vote FOR proposals 2, 3 and 4.

**For   Against   Abstain**

2. To approve the amendment and restatement of the Assembly Biosciences, Inc. 2014 Stock Incentive Plan.

    

3. To approve a non-binding advisory resolution approving the compensation of the Company's named executive officers.

    

4. To ratify the selection of Ernst & Young LLP as Company's independent registered public accounting firm for the Company's fiscal year ending December 31, 2016.

    

**NOTE:** Your proxy holder is also authorized to vote in his discretion to act upon such other matters that may properly come before the meeting or any adjournment thereof.

Please sign exactly as your name(s) appear(s) hereon. When signing as attorney, executor, administrator, or other fiduciary, please give full title as such. Joint owners should each sign personally. All holders must sign. If a corporation or partnership, please sign in full corporate or partnership name by authorized officer.

Signature [PLEASE SIGN WITHIN BOX]	Date

Signature (Joint Owners)	Date

**Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting:**

The Notice, Proxy Statement, Proxy Card and Annual Report on Form 10-K are available at  
[www.proxyvote.com](http://www.proxyvote.com).

E07665-P74795

**ASSEMBLY BIOSCIENCES, INC.  
Annual Meeting of Stockholders  
June 2, 2016 9:00 AM  
This proxy is solicited by the Board of Directors**

The Stockholder(s) hereby appoint(s) Derek Small and David Barrett, or either of them, as proxies, each with the power to appoint his substitute, and hereby authorize(s) each of them to represent and to vote, as designated on the reverse side of this ballot, all of the shares of common stock of ASSEMBLY BIOSCIENCES, INC. that the Stockholder(s) is/are entitled to vote at the Annual Meeting of Stockholders to be held at 9:00 AM EDT on June 2, 2016, at the Company's offices located at 11711 N. Meridian Street, Suite 310, Carmel, IN 46032 and any adjournment or postponement thereof.

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

**Continued and to be signed on reverse side**