

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

SCHEDULE 14A

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

Filed by the Registrant

Filed by a party other than the Registrant

CHECK THE APPROPRIATE BOX:

<input type="checkbox"/>	Preliminary Proxy Statement
<input type="checkbox"/>	Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))
<input checked="" type="checkbox"/>	Definitive Proxy Statement
<input type="checkbox"/>	Definitive Additional Materials
<input type="checkbox"/>	Soliciting Material under § 240.14a-12



**Assembly Biosciences, Inc.**

(Name of Registrant as Specified In Its Charter)  
(Name of Person(s) Filing Proxy Statement, if other than the Registrant)

PAYMENT OF FILING FEE (CHECK ALL BOXES THAT APPLY):

<input checked="" type="checkbox"/>	No fee required
<input type="checkbox"/>	Fee paid previously with preliminary materials
<input type="checkbox"/>	Fee computed on table in exhibit required by Item 25(b) per Exchange Act Rules 14a-6(i)(1) and 0-11



**ASSEMBLY BIOSCIENCES, INC.**  
**Two Tower Place, 7th Floor**  
**South San Francisco, California 94080**

**NOTICE OF 2025 ANNUAL MEETING OF STOCKHOLDERS**  
**To Be Held Thursday, June 5, 2025**

April 23, 2025

**Dear Stockholders:**

You are cordially invited to attend the 2025 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 on Thursday, June 5, 2025 at 8:00 a.m. Pacific Daylight Time (PDT) solely by remote communication (i.e., a virtual-only stockholder meeting) at [www.virtualshareholdermeeting.com/ASMB2025](http://www.virtualshareholdermeeting.com/ASMB2025). During the meeting, stockholders will be asked to:

1. Elect the ten nominees named in the attached proxy statement to our Board of Directors (the Board);
2. Approve, on a non-binding advisory basis, our named executive officers' compensation, as disclosed in the proxy statement accompanying this notice;
3. Ratify the selection of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2025;
- 4a. Approve an amendment to the Assembly Biosciences, Inc. Amended and Restated 2018 Stock Incentive Plan (the 2018 Plan) to increase the number of shares reserved for issuance thereunder by 375,000 shares;
- 4b. Approve an additional amendment to the 2018 Plan to increase the number of shares reserved for issuance thereunder by 225,000 shares solely to support a broad-based supplemental retention grant program;
5. Approve an amendment to the Assembly Biosciences, Inc. Second Amended and Restated 2018 Employee Stock Purchase Plan to increase the number of shares reserved for issuance thereunder to 225,000 shares; and
6. Vote on such other matters that may properly come before the meeting and any adjournment or postponement thereof.

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

Our Board has fixed the close of business on April 8, 2025 as the record date for the determination of stockholders entitled to notice of and to vote at the Annual Meeting and any adjournment or postponement thereof. See the attached proxy statement for information on how to attend the virtual Annual Meeting and vote during the meeting.

To ensure your representation at the Annual Meeting, you are requested to submit your vote as instructed in the Notice of Internet Availability of Proxy Materials that will be sent to you. You may also request a paper proxy card at any time on or before May 22, 2025 to submit your vote by mail. If you attend and vote at the Annual Meeting your proxy will not be used.

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We hope that you will attend the virtual Annual Meeting, and we very much appreciate your continuing interest in our Company.

By Order of the Board of Directors,



Jason A. Okazaki  
Chief Executive Officer and President

**Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting to be held solely by remote communication at [www.virtualshareholdermeeting.com/ASMB2025](http://www.virtualshareholdermeeting.com/ASMB2025) on Thursday, June 5, 2025 at 8:00 a.m. PDT.**

**The proxy statement and the Annual Report for the fiscal year ended December 31, 2024 are available at: [www.proxyvote.com](http://www.proxyvote.com).**

**You are cordially invited to attend the Annual Meeting by remote communication. Whether or not you expect to attend the Annual Meeting, please vote over the Internet using your 16-digit control number as instructed in your Notice of Internet Availability of Proxy Materials or proxy card or vote by mail by requesting a printed copy of the proxy card. Even if you have voted by proxy, you may still vote at the Annual Meeting if you attend by remote communication. Please note, however, that if you hold your shares through a broker or nominee and you wish to vote at the Annual Meeting, you must obtain your control number from your broker or nominee to vote.**

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**ASSEMBLY BIOSCIENCES, INC.**  
**Two Tower Place, 7th Floor**  
**South San Francisco, California 94080**

**PROXY STATEMENT**  
**FOR THE 2025 ANNUAL MEETING OF STOCKHOLDERS**

**June 5, 2025**

**INFORMATION CONCERNING SOLICITATION AND VOTING**

The Board of Directors (the Board) of Assembly Biosciences, Inc., a Delaware corporation (we, us, Assembly Bio, Assembly or the Company), is soliciting your proxy to vote at the 2025 Annual Meeting of Stockholders (the Annual Meeting) to be held on Thursday, June 5, 2025 at 8:00 a.m. Pacific Daylight Time (PDT) solely by remote communication (i.e., a virtual-only stockholder meeting) at [www.virtualshareholdermeeting.com/ASMB2025](http://www.virtualshareholdermeeting.com/ASMB2025). Any adjournments or postponements of the meeting will also be held by remote communication at the same location.

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 Notice of Internet Availability of Proxy Materials (the Proxy Availability Notice) described below to submit your proxy 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 sent the Proxy Availability Notice on or about April 23, 2025 to our stockholders of record and beneficial owners as of April 8, 2025, the record date for the Annual Meeting. The proxy materials, including this proxy statement, proxy card or voting instruction card and our Annual Report for the fiscal year ended December 31, 2024 are being distributed and made available on or about April 23, 2025. 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 also will 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 provide you with the information you need more rapidly, will save us the cost of printing and mailing documents to you and will conserve natural resources.

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## PROXY STATEMENT SUMMARY

This proxy statement summary highlights information that may be contained elsewhere in this proxy statement. This summary does not contain all information that you should consider, and you should read the entire proxy statement carefully before voting. Page references are supplied to help you find further information in this proxy statement.

### Proxy Voting Matters

		<i>Our Board's Recommendation</i>
<i>Proposal No. 1 – Election of Directors (page 11)</i> The Board and its Nominating and Governance Committee believe that the ten director nominees possess the necessary qualifications to provide effective oversight of our business.	<input checked="" type="checkbox"/>	FOR each Director Nominee
<i>Proposal No. 2 – Executive Compensation (page 28)</i> The Board recommends that stockholders approve, on a non-binding advisory basis, our named executive officers' compensation.	<input checked="" type="checkbox"/>	FOR
<i>Proposal No. 3 – Ratification of the Selection of Ernst &amp; Young LLP as Our Independent Registered Public Accounting Firm (page 32)</i> The Board and its Audit Committee believe that the continued retention of Ernst & Young LLP to serve as our independent registered public accounting firm for the fiscal year ending December 31, 2025 is in the best interests of the Company and its stockholders. As a matter of good corporate governance, stockholders are being asked to ratify the Audit Committee's selection of the Independent Auditors.	<input checked="" type="checkbox"/>	FOR
<i>Proposal No. 4a – Amendment to Amended and Restated 2018 Stock Incentive Plan to Increase Number of Reserved Shares by 375,000 Shares (page 33)</i> The Board believes that it is in the best interests of the Company to amend our Amended and Restated 2018 Stock Incentive Plan to increase the number of shares reserved thereunder by 375,000 shares.	<input checked="" type="checkbox"/>	FOR
<i>Proposal No. 4b – Amendment to Amended and Restated 2018 Stock Incentive Plan to Increase Number of Reserved Shares by 225,000 Shares to Support Broad-Based Supplemental Retention Grant Program (page 33)</i> The Board believes that it is in the best interests of the Company to amend our Amended and Restated 2018 Stock Incentive Plan to increase the number of shares reserved thereunder by 225,000 shares solely to support a broad-based retention supplemental retention grant program. Subject to stockholder approval, all 225,000 shares will be granted within 30 days of the date of the Annual Meeting in the form of performance-based restricted stock units.	<input checked="" type="checkbox"/>	FOR
<i>Proposal No. 5 – Amendment to Second Amended and Restated 2018 Employee Stock Purchase Plan to Increase the Number of Shares Reserved for Issuance Thereunder to 225,000 Shares (page 46)</i> The Board believes that it is in the best interests of the Company to amend our Second Amended and Restated 2018 Employee Stock Purchase Plan to increase the number of shares reserved for issuance thereunder to 225,000 shares.	<input checked="" type="checkbox"/>	FOR

## Governance Highlights

We are committed to good corporate governance, which promotes the long-term interests of stockholders, strengthens Board and management accountability and helps build public trust in the Company. The Board of Directors and Corporate Governance section beginning on page 19 describes our governance framework, which includes the following highlights:

### *Board Independence*

Six of our ten Board nominees are independent.

Our current Chief Executive Officer and President, our former Chief Executive Officer and President and two directors designated by Gilead Sciences, Inc. (Gilead) in connection with our collaboration with Gilead are the only non-independent nominees standing for election to the Board.

The independent directors hold regular executive sessions, and any independent director may raise matters for discussion at these executive sessions.

### *Independent Chair*

The Chair of the Board is independent.

### *Board Composition*

The Board will be comprised of ten directors after the Annual Meeting.

We regularly assess our Board size and can adjust the number of directors according to our needs.

Our directors possess a diverse mix of skills, experience and backgrounds.

### *Accountability to Stockholders*

*Proxy Access.* Our Amended and Restated Bylaws (the Bylaws) provide proxy access, allowing a stockholder or group of up to 20 stockholders continuously owning an aggregate of 3% or more of our outstanding common stock for at least three years to nominate and include in our proxy materials director nominees constituting up to the greater of 20% of the number of directors then in office or two nominees, provided the stockholders and nominees otherwise satisfy the requirements of our Bylaws.

*Stockholders' Right to Call Special Meetings.* Our Sixth Amended and Restated Certificate of Incorporation, as amended (the Certificate of Incorporation), and our Bylaws allow stockholders who hold in the aggregate at least 25% of our outstanding common stock to request special stockholders' meetings, provided they otherwise satisfy the requirements of our Bylaws.

*Annual Election of Directors.* Our Certificate of Incorporation provides for the annual election of all directors.

*Majority Voting Standard in Uncontested Director Elections.* Directors must receive more "for" votes than "against" votes to be elected in uncontested director elections.

*No Poison Pill.* We do not have a poison pill.

### *Independent Board Committees*

The Audit, Compensation and Nominating and Governance Committees are composed entirely of independent directors, and each of the standing committees has a charter that is reviewed annually and posted on our website.

Our Board and its committees may engage independent advisors in their sole discretion.

### *Risk Oversight*

Our full Board is responsible for risk oversight and has designated certain committees to have particular oversight of certain key risks. Our Board also oversees management as it fulfills its responsibilities of balancing assessment and mitigation of risks and with taking appropriate risk in operating the business.

### *Self-evaluation*

The Board and each of its standing committees conduct annual self-evaluations.

### *Ethics/Corporate Responsibility*

All of our directors and executive officers must abide by our Code of Conduct.

Our Board has adopted Corporate Governance Guidelines to assist in the exercise of its responsibilities.

## Executive Compensation

Our Compensation Philosophy is “Provide Competitive Overall Compensation That Attracts, Retains and Motivates Superior Performers.” We believe that executive compensation should be designed to closely align the interests of our named executive officers (NEOs) and stockholders and to attract, motivate, reward and retain high caliber management talent. Our executive compensation is comprised of the following components:

	<b>Element of Compensation</b>	<b>Purpose</b>	<b>Relevant Performance Metric</b>	<b>Fixed or Variable?</b>
<b>Annual/Short Term Incentives</b>	<i>Base Salary</i>	Provide competitive compensation based on individual performance and level of responsibility associated with position	N/A	Fixed
	<i>Annual Performance-based Cash Bonus</i>	Provide a short-term annual performance-based cash incentive opportunity through a bonus plan that is based upon achievement of established performance goals	Both Company-wide and individual goals	Variable
<b>Long-Term Incentive</b>	<i>Long-term Equity Incentive Awards</i>	Provide long-term incentive opportunities in the form of equity awards in order to retain those individuals with the leadership abilities necessary for increasing long-term stockholder value while aligning their interests with our stockholders’ interests	All stock option awards to our NEOs vest ratably over four-year periods, which incentivizes performance because stock options have value only to the extent the market value of our common stock increases	Variable

## QUESTIONS AND ANSWERS ABOUT THESE PROXY MATERIALS AND VOTING

### **Why did I receive the Notice of Internet 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 (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 sent a Proxy Availability Notice on or about April 23, 2025 to most stockholders of record entitled to vote at our 2025 Annual Meeting of Stockholders (the Annual Meeting). Stockholders may access the proxy materials on a website referred to in the Proxy Availability Notice commencing on or about April 23, 2025 or may 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 Proxy Availability Notice?**

We are providing paper copies of the proxy materials to stockholders who have previously requested to receive them in paper form or for whom an election to receive proxy materials electronically by email or over the Internet are not on file. 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 by email or over 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 for 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 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?**

You will not be able to attend the Annual Meeting in person at a physical location because it is being held in a virtual-only format. However, the Annual Meeting has been designed to provide stockholders comparable rights and opportunities to participate as they would have at an in-person meeting, and stockholders of record as of the close of business on April 8, 2025 will be able to participate, vote their shares and ask questions during the meeting by audio webcast. To be admitted to the virtual-only Annual Meeting, you should visit [www.virtualshareholdermeeting.com/ASMB2025](http://www.virtualshareholdermeeting.com/ASMB2025) and enter the 16-digit control number found on your Proxy Availability Notice.

Additional details on attending and participating in the virtual-only Annual Meeting:

- Access the meeting platform beginning at 7:45 a.m. Pacific Daylight Time (PDT) on June 5, 2025.
- Vote during the Annual Meeting by following the instructions available on the meeting website during the meeting.
- Submit a question during the meeting by visiting [www.virtualshareholdermeeting.com/ASMB2025](http://www.virtualshareholdermeeting.com/ASMB2025), entering your 16-digit control number and submitting the question in the “Ask a Question” field. Pertinent questions will be answered during the meeting, subject to time constraints.
- If you encounter any difficulties while accessing the virtual-only meeting, contact the technical support number that will be posted on the Virtual Shareholder Meeting log-in page. Technical support will be available beginning at 7:30 a.m. PDT on June 5, 2025 and will remain available until the Annual Meeting has ended.

Whether or not you attend the Annual Meeting, we urge you to vote and submit your proxy in advance of the meeting by one of the methods described in this proxy statement.

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

Only stockholders of record at the close of business on April 8, 2025 will be entitled to vote at the Annual Meeting. On the record date, there were 7,637,553 shares of common stock outstanding and entitled to vote. A list of stockholders of record entitled to vote will be open to inspection by stockholders for any purpose relevant to the Annual Meeting for ten days before the Annual Meeting during normal business hours at our corporate office.

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

If, on April 8, 2025, your shares were registered directly in your name with our transfer agent, Equiniti Trust Company, LLC, then you are a stockholder of record. As a stockholder of record, you may vote while attending the meeting or 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 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 8, 2025, your shares were held not in your name, but rather in an account at a broker, bank 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 and should follow the instructions provided by your broker, bank or other agent to vote your shares. You are also invited to attend the Annual Meeting.

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

There are six matters scheduled for a vote:

1. Election of ten directors;
2. Approval, on a non-binding advisory basis, our named executive officers’ compensation, as disclosed in this proxy statement in accordance with SEC rules;
3. Ratification of the selection by the Audit Committee of the Board of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2025;
- 4a. Approval of an amendment to the Assembly Biosciences, Inc. Amended and Restated 2018 Stock Incentive Plan (the 2018 Plan) to increase the number of shares reserved for issuance thereunder by 375,000 shares;
- 4b. Approval of an additional amendment to the 2018 Plan to increase the number of shares reserved for issuance thereunder by 225,000 shares solely to support a broad-based supplemental retention grant program; and
5. Approval of an amendment to the Assembly Biosciences, Inc. Second Amended and Restated 2018 Employee Stock Purchase Plan (the 2018 ESPP) to increase the number of shares reserved for issuance thereunder to 225,000 shares.

### **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?

For each of Proposals No. 1, 2, 3, 4a, 4b and 5, including each of our nominees to the Board, to be voted on, you may vote “FOR” or “AGAINST,” or you may 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 at the Annual Meeting, vote by proxy over the Internet, vote by proxy over the telephone or vote by proxy using a proxy card that we have provided or will provide upon request. 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 and vote at the meeting even if you have already voted by proxy.

- To vote at the meeting, attend the Annual Meeting, and follow the instructions available on the meeting website during the meeting.
- To vote over 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 your proxy card or Proxy Availability Notice. Your vote must be received by 11:59 p.m. Eastern Daylight Time (EDT) on June 4, 2025 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 your proxy card or Proxy Availability Notice. Your vote must be received by 11:59 p.m. EDT on June 4, 2025 to be counted.
- To vote using a proxy card, complete, sign and date the proxy card and return it pursuant to the instructions provided. Your vote must be received by June 4, 2025 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 us. In order to provide voting instructions to the holder of record of your shares, please refer to the materials forwarded by your broker, bank, or other nominee.

- To vote at the Annual Meeting, contact your broker, bank or other nominee to obtain your control number and follow the instructions on the meeting website.
- To vote over the Internet, go to [www.proxyvote.com](http://www.proxyvote.com) to complete an electronic proxy. You will be asked to provide your sixteen-digit control number from your voting instruction form. Your vote must be received by 11:59 p.m. EDT on June 4, 2025 to be counted.
- To vote over the telephone, dial toll-free +1.800.454.8683 using a touch-tone phone and follow the recorded instructions. You will be asked to provide the company control number from your voting instruction form or Proxy Availability Notice. Your vote must be received by 11:59 p.m. EDT on June 4, 2025 to be counted.
- To vote using the voting instruction form accompanying the Proxy Availability Notice, complete, sign and date the voting instruction form and return it pursuant to the instructions provided. Your vote must be received by June 4, 2025 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?**

You have one vote for each share of common stock you owned as of April 8, 2025 for each matter that is voted upon at the Annual Meeting.

**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 does, however, provide instructions on how to vote by Internet, mail (by requesting a paper proxy card or voting instruction card), and during the Annual 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 or revoke my proxy after submitting my proxy?**

*Stockholder of Record: Shares Registered in Your Name*

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

- You may grant a subsequent proxy by telephone or over the Internet.
- You may submit another properly completed proxy card with a later date.
- You may send a timely written notice that you are revoking your proxy to our Corporate Secretary at Two Tower Place, 7th Floor, South San Francisco, California 94080.
- You may attend and vote at the Annual Meeting. Simply attending the meeting will not, by itself, revoke your proxy.

Your most recent vote (prior to the deadline) by Internet, telephone or proxy card or vote at the Annual Meeting will be the one that is counted.

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

Yes. You can change your vote or 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 that you may also revoke your proxy in any one of the following ways:

- You may grant a subsequent voting instruction over the Internet or by telephone.
- You may attend and vote at the Annual Meeting by obtaining your control number 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, telephone or Internet proxy or vote at the Annual Meeting will be the one that is counted.

**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 other 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.

The only “routine” matter on the agenda for the Annual Meeting is Proposal No. 3—Ratification of the Selection of the Independent Registered Public Accounting Firm. Accordingly, all other matters on the agenda are “non-routine” matters.

### **How are votes counted?**

Votes will be counted by the inspector of elections appointed for the meeting.

With respect to the election of directors, you may vote “FOR” or “AGAINST” each of the nominees, or you may abstain from voting for one or more nominees. Neither abstentions nor broker non-votes will have any effect on the election of the nominees, but abstentions and broker non-votes will be counted to determine whether a quorum is present at the Annual Meeting.

With respect to the other proposals, you may vote “FOR” or “AGAINST” or you may abstain from voting. Neither abstentions nor broker non-votes will have any effect on the votes for Proposal No. 2, Proposal No. 3, Proposal No. 4a, Proposal No. 4b and Proposal No. 5, but abstentions and broker non-votes will be counted to determine whether a quorum is present at the Annual Meeting.

### **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:

- “FOR” the election of the ten director nominees identified in this proxy statement;
- “FOR” the approval, on a non-binding advisory basis, of our named executive officers’ compensation;
- “FOR” the ratification of the selection of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2025;
- “FOR” the approval of an amendment to the 2018 Plan to increase the number of shares reserved for issuance thereunder by 375,000 shares;
- “FOR” the approval of an additional amendment to the 2018 Plan to increase the number of shares reserved for issuance thereunder by 225,000 shares solely to support a broad-based supplemental retention grant program;
- “FOR” the approval of an amendment to the 2018 ESPP to increase the number of shares reserved for issuance thereunder to 225,000 shares; and
- 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 is the quorum requirement?**

A quorum of stockholders is necessary to hold a valid meeting. A quorum will be present if stockholders holding one-third (1/3) of the outstanding shares entitled to vote as of the Record Date are present at the virtual Annual Meeting or represented by proxy. On the record date, there were 7,637,553 shares of common stock outstanding and entitled to vote. As a result, the holders of 2,545,852 shares must be present in person or represented by proxy at the Annual Meeting for there to be a quorum.

Your shares will be counted towards a quorum only if you submit a valid proxy (or one is submitted on your behalf by your broker, bank or other nominee) by June 4, 2025 or if you vote at the Annual Meeting. Abstentions and

broker non-votes will be counted toward the quorum requirement. If there is no quorum, the holders of a majority of shares present at the Annual Meeting or represented by proxy may adjourn the Annual 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:

<b>Proposal</b>	<b>Description</b>	<b>Vote Required</b>	<b>Discretionary Voting Allowed</b>
No. 1	Election of Directors	Majority of Votes Cast	No
No. 2	Advisory Vote on Our Named Executive Officers' Compensation	Majority of Votes Cast	No
No. 3	Ratification of the Selection of Ernst & Young LLP as Our Independent Registered Public Accounting Firm for 2025	Majority of Votes Cast	Yes
No. 4a	Amendment of the 2018 Plan to Increase the Number of Shares Reserved for Issuance Thereunder by 375,000 Shares	Majority of Votes Cast	No
No. 4b	Additional Amendment of the 2018 Plan to Increase the Number of Shares Reserved for Issuance Thereunder by 225,000 Shares Solely to Support a Broad-Based Supplemental Retention Grant Program	Majority of Votes Cast	No
No. 5	Amendment of the 2018 ESPP to Increase the Number of Shares Reserved for Issuance Thereunder to 225,000 Shares	Majority of Votes Cast	No

*Election of Directors*

Directors will be elected by the affirmative vote of the majority of the votes cast (meaning the number of shares voted "FOR" a nominee must exceed the number of shares voted "AGAINST" that nominee). If any nominee for director receives a greater number of votes "AGAINST" his or her election than votes "FOR" such election, our Corporate Governance Guidelines require that person to promptly tender his or her written resignation to the Chair of the Board within five days following the certification of the vote. Abstentions and broker non-votes are not considered votes cast for the election of directors and will have no effect on the election of nominees.

*Other Proposals*

Adoption of Proposal No. 2, Proposal No. 3, Proposal No. 4a, Proposal No. 4b and Proposal No. 5 requires the affirmative vote of the majority of votes cast. Abstentions and broker non-votes are not considered votes cast and will have no effect on the vote for these proposals.

**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 Annual 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 for the fiscal year ended December 31, 2024 are available free of charge at [www.proxyvote.com](http://www.proxyvote.com). You can request a copy of our Annual Report free of charge by calling +1.833.509.4583 or by sending an email to our Corporate Secretary at [corpsecretary@assemblybio.com](mailto:corpsecretary@assemblybio.com). Please include your contact information with the request.

Our Annual Report on Form 10-K for the fiscal year ended December 31, 2024 as filed with the SEC is accessible free of charge on our website. It contains audited consolidated financial statements for our fiscal years ended December 31, 2023 and 2024. The Annual Report on Form 10-K, without exhibits, is included in the 2024 Annual Report to Stockholders that is available with this proxy statement.

**CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS**

This proxy statement contains forward-looking statements relating to future events that 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.

Statements that include the words may, will, would, could, should, might, believes, hopes, estimates, projects, potential, expects, plans, anticipates, intends, continues, forecast, designed, goal or the negative of those words or other comparable words, that express uncertainty, are forward-looking statements. We intend such forward-looking statements to be covered by the safe harbor provisions contained in Section 27A of the Securities Act of 1933, as amended (the Securities Act), and Section 21E of the Securities Exchange Act of 1934, as amended (the Exchange Act). Except as required by law, we assume no obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise.

## PROPOSAL NO. 1: ELECTION OF DIRECTORS

### General

Our Bylaws provide that the number of our directors is to be within a range of three to ten, with the exact number set by the Board. Our Board currently consists of ten directors, and there are ten 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 or her 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. Tomas Cihlar, Ph.D. and Robert D. Cook II have been designated to serve on the Board by Gilead Sciences, Inc. (Gilead) pursuant to the terms of an Investor's Rights Agreement entered into between us and Gilead (the Investor's Rights Agreement) in connection with our collaboration with Gilead. Each of the director nominees was previously elected by the stockholders. Directors are elected by a majority of the votes cast in the election of such director, requiring that the number of votes cast "for" a director nominee exceed the number of votes cast "against" that director nominee.

### Nominees for Director

The Nominating and Governance Committee has recommended, and the Board has approved, the nomination of each of William R. Ringo, Jr., Anthony E. Altig, Tomas Cihlar, Ph.D., Gina Consylman, Robert D. Cook II, Sir Michael Houghton, Ph.D., Lisa R. Johnson-Pratt, M.D., Susan Mahony, Ph.D., John G. McHutchison, A.O., M.D. and Jason A. Okazaki to serve as a director of our Company. The Board has determined that all of these nominees for director, other than Dr. Cihlar, Mr. Cook, Dr. McHutchison and Mr. Okazaki, are independent as determined in accordance with the rules of the Nasdaq Stock Market (the Nasdaq listing rules). There are no family relationships among any of our nominees for director or executive officers. The respective names, ages, lengths of service on our Board and brief biographical summaries of our nominees for director are as follows. For more information regarding the experience, qualifications, attributes and skills of the director nominees, see the matrix on page [20].

<u>Name</u>	<u>Age</u>	<u>Director Since</u>	<u>Business Experience</u>
William R. Ringo, Jr.	79	2014	Mr. Ringo became a director in July 2014 upon the closing of the Assembly Pharmaceuticals, Inc. acquisition through a reverse merger by our predecessor company, Ventrus Biosciences, Inc. (the Merger) and became non-executive Chairman of the Board in February 2015. Mr. Ringo served as Interim Chief Executive Officer of Five Prime Therapeutics, Inc. (Five Prime) from September 2019 until April 2020. 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 biotechnology company acquired by Amgen, Inc. From 2001 to 2007, he served on various boards of directors, including the following public companies: 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 2003 to September 2003. His experience in the global pharmaceutical sector also includes nearly 30 years with Eli Lilly & Co. (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

Name	Age	Director Since	Business Experience
			<p>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. From 1994 to 2002, he served as a director and chairman of the board for Community Health Systems, Inc. and from February 2011 until the October 2013 acquisition by Amgen, Inc., on the Onyx Pharmaceuticals, Inc. board of directors.</p> <p>In the last five years, Mr. Ringo served as a director of Five Prime prior to Five Prime being acquired by Amgen Inc. Prior to being acquired, Five Prime was a public company. Mr. Ringo also served as a director at Dermira, Inc., Immune Design Corp., Mirati Therapeutics, Inc. and Sangamo Biosciences, Inc., each of which were public companies when Mr. Ringo served as a director. In addition, Mr. Ringo currently serves as the chairman of the board at Sensei Biotherapeutics, Inc. Mr. Ringo received a B.S. in business administration and an M.B.A. from the University of Dayton.</p> <p>Because of these and other professional experiences, Mr. Ringo possesses extensive knowledge of our business and industry and experience in senior leadership, financial audit, business development, public company board service, governance, financing and capital markets and corporate operations. 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 boards of directors of public pharmaceutical companies 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 due to our business focus and strategy.</p>
Anthony E. Altig	69	2012	<p>Mr. Altig joined our Board in January 2012. From 2008 until his retirement in December 2017, Mr. Altig was the Chief Financial Officer of Biotix Holdings, Inc., a company that manufactures microbiological consumables, which was acquired by Mettler Toledo in September 2017. 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. Mr. Altig formerly served as a director and chairman of the audit committee of TearLab Corporation (formerly OccuLogix, Inc.), an eyecare technology company that was a public company until it was taken private in July 2020, and as a director of MultiCell Technologies, Inc. and Optimer Pharmaceuticals, Inc., a pharmaceutical company that was a public company until its acquisition by Cubist Pharmaceuticals, Inc. in October 2013. Mr. Altig received his B.B.A. in business from the University of Hawaii at Manoa and is a Certified Public Accountant (inactive).</p> <p>Because of these and other professional experiences, Mr. Altig possesses particular knowledge and experience in finance and accounting, financial audit, public company board service, corporate governance and corporate operations that strengthen the Board's collective qualifications, skills and experience. Among other experiences, qualifications, attributes and skills, Mr. Altig's extensive management experience and financial expertise, as well</p>

Name	Age	Director Since	Business Experience
Tomas Cihlar, Ph.D.	58	2023	<p>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 due to our business focus and strategy.</p> <p>Dr. Cihlar joined our Board in December 2023. Dr. Cihlar was designated to serve on the Board pursuant to the terms of the Investor’s Rights Agreement between us and Gilead.</p> <p>Dr. Cihlar has served in a series of positions of increasing responsibility with Gilead since 1994. Most recently, Dr. Cihlar has served as Gilead’s Senior Vice President, Virology since October 2021. Prior to that, Dr. Cihlar was Gilead’s Vice President, Research Virology from August 2015 until October 2021. Dr. Cihlar has served on a number of advisory boards and committees, as well as on the editorial boards of <i>Antiviral Therapy</i> and <i>Antiviral Research</i>. Dr. Cihlar received his M.Sc. in biotechnology and bioengineering from the Institute of Chemical Technology in Prague, Czech Republic and his Ph.D. from the Institute of Organic Chemistry and Biochemistry in Prague, Czech Republic.</p> <p>Because of these and other professional experiences, Dr. Cihlar possesses particular knowledge and experience in infectious diseases, antiviral research, and drug discovery and development that strengthen the Board’s collective qualifications, skills and experience. Among other experiences, qualifications, attributes and skills, Dr. Cihlar’s extensive experience working in the infectious disease field, leadership of numerous antiviral discovery programs leading to novel drug candidates and contributions to multiple successful filings leading to regulatory approvals, as well as oversight of research programs and strategies in HIV, hepatitis, herpes, respiratory and emerging viral infections, led to the conclusion of the Board that he should serve as a director due to our business focus and strategy.</p>
Gina Consylman	53	2020	<p>Ms. Consylman joined our Board in October 2020. Ms. Consylman has served as Chief Financial Officer and Chief Operating Officer of R&amp;D at Takeda Pharmaceutical Company Limited (Takeda) since May 2024. Prior to that, Ms. Consylman served as Head, R&amp;D Strategy &amp; External Innovation and R&amp;D Chief Financial Officer at Takeda from June 2023 until May 2024. Prior to joining Takeda, Ms. Consylman served as Chief Financial Officer of Vedere Bio II, Inc. from April 2022 until April 2023. Prior to that, Ms. Consylman served as Chief Financial Officer of bluebird bio, Inc. (bluebird bio) from November 2021 until April 2022. Prior to her service as Chief Financial Officer of bluebird bio, Ms. Consylman served as the Chief Financial Officer of bluebird bio’s Severe Genetic Disease business. Prior to joining bluebird bio, from November 2017 until July 2021, Ms. Consylman served as Senior Vice President, Chief Financial Officer of Ironwood Pharmaceuticals, Inc. (Ironwood). From September 2017 until November 2017, Ms. Consylman was Ironwood’s interim Chief Financial Officer, from August 2015 until November 2017, she served as Ironwood’s Vice President of Finance and Chief Accounting Officer and from June 2014 until July 2015, she served as Ironwood’s Vice President, Corporate Controller and Chief</p>

Name	Age	Director Since	Business Experience
			<p>Accounting Officer. Prior to joining Ironwood, Ms. Consylman served as Vice President, Corporate Controller and Principal Accounting Officer of Analogic Corporation from February 2012 until June 2014. Prior to that, Ms. Consylman served in various roles of increasing responsibility at Biogen Inc. from November 2009 until February 2012, culminating in her role as Senior Director, Corporate Accounting. Prior to that, Ms. Consylman served as Corporate Controller at Varian Semiconductor Equipment Associates, Inc. From October 2018 until November 2021, Ms. Consylman served on the board of directors and as chair of the audit committee of Verastem, Inc., a public company. Ms. Consylman received her B.S. in accounting from Johnson &amp; Wales University and a M.S. in taxation from Bentley University. Ms. Consylman is a Certified Public Accountant.</p> <p>Because of these and other professional experiences, Ms. Consylman possesses particular knowledge and experience in finance and accounting, financial audit, public company board service and corporate governance and corporate operations that strengthen the Board's collective qualifications, skills and experience. Among other experiences, qualifications, attributes and skills, Ms. Consylman's extensive management experience and financial expertise, as well as her experience serving on the board of directors of Verastem, Inc., led to the conclusion of our Board that she should serve as a director due to our business focus and strategy.</p>
Robert D. Cook II	66	2024	<p>Mr. Cook joined our Board in March 2024. Mr. Cook was designated to serve on the Board pursuant to the terms of the Investor's Rights Agreement between us and Gilead.</p> <p>Mr. Cook has served as Vice President, Risk Governance and Audit at Gilead since March 2012. Prior to joining Gilead, Mr. Cook served as Vice President, Internal Audit and Risk Management at Yahoo Inc. from October 2006 until March 2012. Prior to that, Mr. Cook served as Vice President, Internal Audit at Chiron Corporation from 2005 until 2006. Prior to that, Mr. Cook worked at KPMG LLP from 10094 to 2005 and served as a Partner at KPMG LLP from 2003 until 2005. Mr. Cook holds an M.B.A. from the University of Southern California and a B.S. in Accounting from Indiana University and is a Certified Public Accountant (inactive).</p> <p>Because of these and other professional experiences, Mr. Cook possesses particular knowledge and experience in risk management, process and controls, and internal audit that strengthen the Board's collective qualifications, skills and experience. Among other experiences, qualifications, attributes and skills, Mr. Cook's extensive risk management and internal audit experience led to the conclusion of our Board that he should serve as a director due to our business focus and strategy.</p>
Sir Michael Houghton, Ph.D.	74	2021	<p>Sir Michael Houghton, Ph.D. joined our Board in July 2021. Since 2010, Dr. Houghton has served as the La Ka Shing Professor in the Department of Medical Microbiology and Immunology at the University of Alberta. Dr. Houghton is also the director of the La</p>

Name	Age	Director Since	Business Experience
			<p>Ka Shing Applied Virology Institute. Dr. Houghton has also served as Chief Scientific Officer at Applied Pharmaceutical Innovation in Canada since 2023. In 2020, Dr. Houghton was jointly named the 2020 Nobel Prize winner in Physiology or Medicine along with Harvey J. Alter and Charles M. Rice in recognition of the discovery of hepatitis C virus (HCV). Between 2010 and 2018, Dr. Houghton was also the Canada Excellence Research Chair in Virology at the University of Alberta. Prior to joining the University of Alberta, Dr. Houghton served as Chief Scientific Officer at Epiphany Biosciences, Inc. (Epiphany) from 2007 until 2009. Before joining Epiphany, Dr. Houghton served as Vice President, Hepatitis C and Virology Research at Novartis Vaccines &amp; Diagnostics, Inc. (Novartis). Prior to that, Dr. Houghton served in a number of positions of increasing responsibility at Chiron Corporation (Chiron) from 1982 until 2006. Dr. Houghton serves on the boards of directors of Prophysis Inc., Aurora Vaccines Inc., Achlys Inc., Heka Therapeutics Inc., Egerio Inc., Avisgas, Inc. and Alcuranex, all private Canadian startup companies. Dr. Houghton received his B.Sc. in Biological Sciences from the University of East Anglia and his Ph.D. in Biochemistry from King's College at the University of London and was awarded an Honorary Doctorate of Sciences from the University of East Anglia.</p> <p>Because of these and other professional experiences, Dr. Houghton possesses particular knowledge and experience with our business and industry, innovation and academia. Among other experiences, qualifications, attributes and skills, Dr. Houghton's scientific training and knowledge, extensive experience in the pharmaceutical industry, as well as 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 due to our business focus and strategy.</p>
Lisa R. Johnson-Pratt, M.D.	61	2021	<p>Dr. Johnson-Pratt was elected to our Board in May 2021. Dr. Johnson-Pratt has served Executive Vice President, Therapeutic Program Lead at Aspen Neurosciences since October 2024. Prior to that, Dr. Johnson-Pratt served as Senior Vice President, Therapeutic Program Lead at Aspen Neuroscience from January 2024 until October 2024. Also, since September 2019, Dr. Johnson-Pratt has served as a founder, and since June 2020, as Biotechnology, Cell and Gene Therapy Strategic Commercial Advisor, of Ananias Ventures. From November 2020 until May 2022, Dr. Johnson-Pratt served as Senior Vice President, Commercial of Ionis Pharmaceuticals, Inc. (Ionis). Prior to that, Dr. Johnson-Pratt served as Senior Vice President of Akcea Therapeutics, Inc. (Akcea) from March 2020 until Ionis's acquisition of Akcea, which was consummated in October 2020. Prior to that, Dr. Johnson-Pratt served as Vice President of Global Franchise Operations at GlaxoSmithKline plc (GSK) from January 2018 until July 2019, and from June 2015 until July 2019, she served as GSK's Head, Pipeline and Oncology Commercial Strategy. From 2013 until 2015, Dr. Johnson-Pratt was the Global Marketing Director at Stiefel Laboratories, Inc. Dr. Johnson-Pratt worked for Merck &amp; Co., Inc. from 2004 until 2013, in a series of</p>

Name	Age	Director Since	Business Experience
			<p>positions of increasing responsibility, culminating in her role as Business Unit Director (Mature Brands). Dr. Johnson-Pratt served on the board of directors of Tracon Pharmaceuticals, Inc., then a public company from March 2021 until July 2024. Dr. Johnson-Pratt earned a B.S. in science from Howard University, a Diploma of Pharmaceutical Medicine from the Royal College of Physicians, and an M.D. from Howard University.</p> <p>Because of these and other professional experiences, Dr. Johnson-Pratt possesses particular knowledge and in experience with the medical and the pharmaceutical industries. Among other experiences, qualifications, attributes and skills, Dr. Johnson-Pratt's medical training and her extensive commercial experience in the pharmaceutical industry led to the conclusion of our Board that she should be nominated to serve as a director due to our business focus and strategy.</p>
Susan Mahony, Ph.D.	60	2017	<p>Dr. Mahony joined our Board in December 2017. From 2011 until her retirement in August 2018, Dr. Mahony served as Senior Vice President and President of Lilly Oncology and was a member of the executive committee at Lilly. Prior to that, from 2000 until 2011, Dr. Mahony served in a variety of leadership roles at Lilly, including Senior Vice President Human Resources and Diversity, President and General Manager Lilly Canada, and Executive Director Global Development. Dr. Mahony worked in sales and marketing at Bristol-Myers Squibb Company from 1995 to 2000, at Amgen Limited from 1991 to 1995, and at Schering Plough from 1989 to 1991. Dr. Mahony has served on the board of directors of four public companies in the last five years. She currently serves on the board of directors of Zymeworks Inc. and Axsome Therapeutics, Inc., and she served on the board of directors of Vifor Pharma from May 2019 until August 2022 and Horizon Therapeutics plc from August 2019 until October 2023. Dr. Mahony earned a B.Sc. and Ph.D. in pharmacy and was awarded an Honorary Doctorate from Aston University, and she earned an M.B.A. from London Business School.</p> <p>Because of these and other professional experiences, Dr. Mahony possesses particular knowledge and experience in all aspects of corporate functions and company operations that strengthen the Board's collective qualifications, skills and experience. Among other experiences, qualifications, attributes and skills, Dr. Mahony's extensive experience in management at public pharmaceutical companies, together with her experience serving on the board of directors of public and private companies, led to the conclusion of our Board that she should serve as a director due to our business focus and strategy.</p>
John G. McHutchison, A.O., M.D.	67	2019	<p>Dr. McHutchison has served as the Chief Executive and Chairman of the Board of Tune Therapeutics, Inc. since March 2025. Prior to that, he served as the Chief Executive Officer and President of Velia Inc. from July 2023 until March 2025. Prior to that, Dr. McHutchison served as our Chief Executive Officer and President from August 2019 until he stepped down in December 2022. Prior</p>

Name	Age	Director Since	Business Experience
			<p>to joining us, Dr. McHutchison was the Chief Scientific Officer and Head of Research and Development at Gilead. Prior to joining Gilead in 2010, Dr. McHutchison worked at Duke University Medical Center, where he served as Associate Director of the Duke Clinical Research Institute. He also held the positions of Professor of Medicine in the Division of Gastroenterology at Duke University Medical Center, Associate Director at Duke Clinical Research Institute and Co-Director of the Duke Clinical and Translational Science Awards. Prior to his positions at Duke University, Dr. McHutchison spent nearly ten years at Scripps Clinic, most recently as Medical Director, Liver Transplantation. He also previously held an Assistant Professorship in Medicine at the University of Southern California. In June 2018, Dr. McHutchison was appointed an Officer of the Order of Australia in recognition of his distinguished service to medical research in gastroenterology and hepatology. Dr. McHutchison has undergraduate degrees in medicine and surgery from the University of Melbourne in Australia and completed his residency in internal medicine and fellowship in gastroenterology at the Royal Melbourne Hospital. He is a member of the Royal Australasian College of Physicians. Dr. McHutchison served on the board of directors of Metacrine, Inc., then a public company, from February 2020 until December 2023. Dr. McHutchison also serves on the board of directors of Velia Inc. and Tune Therapeutics, both private companies.</p> <p>Because of these and other professional experiences, Dr. McHutchison possesses extensive knowledge of our business and industry and experience in senior leadership, clinical development, innovation and technology development, corporate operations and academia. Among other experiences, qualifications, attributes and skills, Dr. McHutchison's status as an internationally recognized leader in infectious diseases, liver diseases, and gastrointestinal diseases and the leadership he demonstrated at Gilead as he led the organization in the successful filing of numerous New Drug Applications across multiple therapeutic areas, including the curative treatment regimens for chronic hepatitis C and treatment of chronic hepatitis B, led to the conclusion of our Board that he should serve as a director due to our business focus and strategy.</p>
Jason A. Okazaki	49	2023	<p>Mr. Okazaki has served as our Chief Executive Officer and President since January 2023. Prior to his promotion to Chief Executive Officer and President, Mr. Okazaki served as our President and Chief Operating Officer from August 2022 until January 2023. Mr. Okazaki served as our Chief Operating Officer from August 2021 until August 2022. Mr. Okazaki served as our Chief Legal and Business Officer from March 2020 until his promotion to Chief Operating Officer. Prior to joining us, Mr. Okazaki served in a series of positions of increasing responsibility in Gilead's legal department from 2006 until March 2020, culminating in his role as Senior Vice President, Legal, and Assistant Secretary. While at Gilead, Mr. Okazaki advised on strategic transactions, corporate governance, SEC matters and operational matters. He also led the Asia and Latin America legal</p>

Name	Age	Director Since	Business Experience
			<p>organizations. Prior to joining Gilead, Mr. Okazaki was a senior associate at Skadden, Arps, Slate, Meagher &amp; Flom LLP, where he represented companies in connection with mergers, acquisitions and corporate finance matters. Mr. Okazaki received a B.A. in Economics from Stanford University and a J.D. from U.C. College of the Law, San Francisco (formerly known as U.C. Hastings College of the Law).</p> <p>Because of these and other professional experiences, Mr. Okazaki possesses extensive knowledge of our business and industry. Among other experiences, qualifications, attributes and skills, Mr. Okazaki's experience in senior leadership, strategy, finance, corporate governance, corporate operations and corporate law led to the conclusion of our Board that he should serve as a director due to our business focus and strategy.</p>

**Required Vote**

Assuming a quorum is present, directors will be elected by the affirmative vote of the majority of the votes cast (meaning the number of shares voted "FOR" a nominee must exceed the number of shares voted "AGAINST" that nominee). All elected nominees will serve until the 2026 Annual Meeting of Stockholders and until their successors have been duly elected and qualified or, if sooner, until the director's death, resignation or removal. If any current director receives a greater number of votes "AGAINST" his or her election than votes "FOR" such election, our Corporate Governance Guidelines require that person to promptly tender his or her written resignation to the Chairman of the Board within five days following the certification of the vote. Abstentions and broker non-votes are not considered votes cast for the election of directors and will have no effect on the election of nominees.

**Recommendation of the Board of Directors**

**THE BOARD OF DIRECTORS RECOMMENDS A VOTE "FOR" THE ELECTION OF EACH NAMED NOMINEE FOR DIRECTOR.**

## THE BOARD OF DIRECTORS AND CORPORATE GOVERNANCE

This section describes key corporate governance guidelines and practices that we have adopted. Complete copies of the charters of our committees of the Board and our Corporate Governance Guidelines, Code of Conduct and Code of Ethics described below may be found in the Corporate Governance section of the Investors section of our website at *investor.assemblybio.com*. Alternatively, you can request a copy of any of these documents free of charge by writing to Assembly Biosciences, Inc., attn: Corporate Secretary, Two Tower Place, 7th Floor, South San Francisco, California 94080. Information on our website is not incorporated by reference into this proxy statement.

### Meetings of the Board

Our Company is managed under the general oversight of the Board as provided by the laws of Delaware and our Bylaws. During the year ended December 31, 2024, the Board held six meetings and acted by unanimous written consent twice. Our independent directors met in executive sessions at which only independent directors were present four times in 2024.

The Board has adopted a formal policy that a Board meeting be held on the same date as the annual meeting of stockholders, and all directors are encouraged to attend our annual meetings of stockholders. Every director at the time of the 2024 Annual Meeting was in attendance.

### Board Composition

Our Nominating and Governance Committee aims to assemble a Board that brings together a variety of perspectives and skills derived from high quality business and professional experience. Directors must possess high ethical standards, integrity and strong values and be committed to representing the best interests of our stockholders.

In fulfilling its responsibilities to select and recommend director nominees to serve on our Board, our Nominating and Governance Committee annually evaluates our incumbent Board members and other candidates, if any, against the following criteria in determining whether to recommend these directors for nomination:

- 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 depth and breadth of business experience of nominees;
- nominees' independence from management, including the percentage of the Board that meets the independence requirements of the Nasdaq listing rules;
- diversity of experience and competency in relevant fields; and
- applicable regulatory and listing requirements, including independence requirements and legal considerations.

Our Corporate Governance Guidelines provide that the Nominating and Governance Committee must be satisfied that each recommended nominee to the Board meets the following minimum qualifications:

- experience at a strategic or policymaking level in a business, government, non-profit or academic organization of high standing;
- highly accomplished in his or her respective field, with superior credentials and recognition;
- well-regarded in the community with a long-term reputation for high ethical and moral standards;
- sufficient time and availability to devote to the affairs of the Company, particularly accounting for the number of boards of directors on which he or she may serve; and
- demonstrated history of actively contributing at Board meetings, to the extent he or she serves or has previously served on other boards of directors.

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 our Company and our stockholders.

We seek a variety of types and degrees of knowledge, skills and experiences among our Board members. The following matrix provides information regarding our Board nominees, including select knowledge, skills, experiences and attributes possessed by our members that the Board believes are relevant to our business. The matrix is not intended to encompass all of the knowledge, skills, experiences or attributes of the nominees, and the fact that a particular knowledge, skill, experience or attribute is not listed does not mean that a nominee does not possess it. In addition, the absence of a particular knowledge, skill, experience or attribute does not mean that that particular nominee is unable to contribute to decision-making in that area.

	Ringo	Altig	Cihlar	Consylman	Cook	Houghton	Johnson-Pratt	Mahony	McHutchison	Okazaki
<b>Experience</b>										
Public Board Experience	•	•	•	•	•	•	•	•	•	•
Finance	•	•		•	•			•		•
Accounting	•	•		•	•					•
Corporate Governance	•	•		•			•		•	•
Compensation	•			•				•		•
Executive Experience	•	•		•		•	•	•	•	•
Operations	•	•		•	•		•	•	•	•
Strategic Planning	•	•	•	•	•		•	•	•	•
Pharmaceutical Industry	•	•	•	•	•	•	•	•	•	•
Academia						•			•	
<b>Board Tenure</b>										
Years	11	13	1	5	1	4	4	8	6	3
<b>Other Public Boards</b>										
Number	1	0	0	0	0	0	0	2	0	0

### Independence of Directors

Our Board assesses the independence of each of our directors under the Nasdaq listing rules, because our common stock is listed on The Nasdaq Global Select Market. Using the test provided in Rule 5605(a)(2) of the Nasdaq listing rules, the Board has determined that William R. Ringo, Jr., Anthony E. Altig, Gina Consylman, Sir Michael Houghton, Ph.D., Lisa R. Johnson-Pratt, M.D. and Susan Mahony, Ph.D. are independent. As part of this 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 such individuals and the association of certain of our directors with third parties. After considering these factors, our Board has affirmatively determined that none of Mr. Ringo, Mr. Altig, Ms. Consylman, Dr. Houghton, Dr. Johnson-Pratt and Dr. Mahony has a relationship with us that would interfere with the exercise of independent judgment in carrying out his or her responsibilities as a director.

The Board has determined that Jason A. Okazaki, our current Chief Executive Officer and President, and John G. McHutchison, A.O., M.D., our Chief Executive Officer and President until December 31, 2022, and Tomas Cihlar, Ph.D. and Robert D. Cook II, Gilead's designees to the Board, are not independent under the Nasdaq listing rules.

### Board Leadership Structure

Our Board does not have a specific policy regarding the separation of the roles of the Chair of the Board and the Chief Executive Officer and believes it is in the best interests of our Company and our stockholders to be able to exercise discretion in combining or separating these positions as we deem appropriate considering prevailing circumstances. The roles are currently separated, with Mr. Ringo serving as independent Chair. The Board believes that this structure currently best serves the interests of our stockholders because it allows our Chief Executive Officer to focus primarily on our business strategy and operations and most effectively leverages the experience of

the Chair. It also enhances the Board's independent oversight of our senior management team and enables better communication and relations between the Board, the Chief Executive Officer and other members of our senior management team. In that regard, our independent Chair presides at Board meetings and the executive sessions of the non-management and independent directors of the Board. Our approach provides flexibility and allows our Board to modify our leadership structure in the future as appropriate. We believe that we, like many U.S. companies, are well served by this flexible leadership structure.

### **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, the Compensation Committee and the Nominating and Governance 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.

The Audit Committee is responsible for information technology security, with a particular focus on cybersecurity. Management provides regular briefings to the Audit Committee if there are any information technology security breaches. In recent years, we have implemented a variety of initiatives, including implementing a single sign-on solution, enhancement of our email security, evaluation of data protection capabilities of our information technology systems and implementation of a cybersecurity incident response policy. In addition, we have also implemented a cybersecurity awareness initiative to enable our employees to identify and mitigate information security risks. The initiative is comprised of employee training on phishing and other malicious attacks, smart habit creation and best practices regarding file sharing, host security and email security. We have also incorporated cybersecurity training into our employee onboarding process to ensure that all new employees have the necessary skills to identify and mitigate information security risks. Our information technology team also runs periodic, unannounced, internally generated phishing "attacks" to test our employees' ability to identify and avoid real world phishing attacks. Every employee who fails a phishing test is assigned a training module to help ensure that he or she is better equipped to identify future phishing attacks. We also have a cybersecurity insurance policy that would defray the costs of an information security breach. We have not experienced any material information security breaches since August 2018, when our email system was hacked. We became aware of the breach and closed access prior to incurring any expenses related to the attack.

### **Board Committees**

The Board has four standing committees. Each committee operates under a charter that has been adopted by the Board, which can be found in the Corporate Governance section of the Investors section of our website at [investor.assemblybio.com](http://investor.assemblybio.com). Information on our website is not incorporated by reference into this proxy statement. 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 table below sets forth the current membership of each of the standing committees and the number of meetings each committee held in 2024. All directors attended 75% or more of the aggregate number of meetings of the Board and meetings of the committees on which he or she served during the period for which he or she was a director or committee member, as applicable, in 2024. The Board expects to review 2025 committee assignments at its meeting immediately following the Annual Meeting.

	Independent	Audit Committee	Compensation Committee	Nominating and Governance Committee	Science and Technology Committee
<b>Meetings Held</b>		5	5	4	1
William R. Ringo, Jr.*	•	•	•	•†	
Anthony E. Altig+	•	•†		•	
Tomas Cihlar, Ph.D.					
Gina Consylman+	•	•	•		
Robert D. Cook II					
Sir Michael Houghton, Ph.D.	•				•
Lisa R. Johnson-Pratt, M.D.	•			•	•
Susan Mahony, Ph.D.	•		•†		•
John G. McHutchison, A.O., M.D.					•†
Jason A. Okazaki					

\* Chairman of the Board

† Committee Chair

+ “Audit Committee Financial Expert” as defined in Item 407(d) of Regulation S-K

#### *Audit Committee*

The Audit Committee oversees: our corporate accounting and reporting practices; our systems of internal accounting and financial controls; the quality and integrity of our financial statements and reports; the qualifications, independence and performance of the independent registered public accounting firm engaged as our independent outside auditors; cybersecurity; and our processes for assessing key strategic, operational and compliance risks. Our Audit Committee is also responsible for reviewing and approving all related person transactions, including transactions with executive officers and directors, for potential conflicts of interests.

At the direction of the Nominating and Governance Committee, the Audit Committee conducts an annual performance evaluation of itself and reports to the Board on the results of such evaluation.

Our Audit Committee charter requires that the Audit Committee have at least three independent directors. Our Audit Committee currently consists of Mr. Altig (Chair), Ms. Consylman and Mr. Ringo. The Board annually reviews the Nasdaq listing rules’ definition of independence for Audit Committee members and has determined that Mr. Altig, Ms. Consylman and Mr. Ringo are each independent under the Nasdaq listing rules for audit committee membership and within the meaning of Section 10A-3(b)(1) of the Exchange Act.

The Board has also determined that Mr. Altig and Ms. Consylman each qualify as an “audit committee financial expert” as that term is defined in Item 407(d) of Regulation S-K promulgated by the SEC. In making that determination, the Board relied on the past experience of Mr. Altig and Ms. Consylman. The Board made a qualitative assessment of Mr. Altig’s level of knowledge and experience based on several factors, including his experience as the chief financial officer of several public companies and having been a certified public accountant. The Board made a qualitative assessment of Ms. Consylman’s level of knowledge and experience based on a number of factors, including her current role as Chief Financial Officer and Chief Operating Officer, R&D at Takeda, as well as her past roles as Head, R&D Strategy & External Innovation and R&D Chief Financial Officer of Takeda, Chief Financial Officer of Vedere Bio II, Inc., bluebird bio, bluebird bio’s Severe Genetic Disease business and Ironwood Pharmaceuticals and the series of accounting and finance roles of increasing responsibility at Ironwood Pharmaceuticals, Analogic, Biogen and Varian Semiconductor Equipment Associates, her past role as the audit committee chair at Verastem, Inc. and her experience as a certified public accountant at Ernst & Young LLP.

#### *Compensation Committee*

The purpose of our Compensation Committee is to approve and evaluate our compensation plans, policies and programs applicable for the Company’s senior employees and non-employee Board members. In carrying out these responsibilities, our Compensation Committee reviews all components of executive officer compensation for consistency with our Compensation Committee’s primary objectives of attracting and retaining key management

personnel, driving long-term strategic values and enhancing stockholder value. The Compensation Committee charter specifies that the Compensation Committee will, among other things:

- take actions with respect to the compensation of the Company's senior employees, including its executive officers;
- approve and administer all incentive compensation plans, including all equity plans, performance-based cash incentive plans, severance plans and similar plans;
- approve the appointment, hiring, promotion and removal of any C-Level employees, Senior Vice Presidents, Vice Presidents and other employees subject to Section 16 of the Exchange Act (together, the Executive Officers), and approve all employment agreements to be entered into between the Company and its C-Level employees;
- determine, review and approve the compensation of the Company's Executive Officers, including, but not limited to, annual base salaries, annual cash-based incentive awards, equity awards and any other compensation, retention, benefit, severance or perquisite arrangements;
- in consultation with our management team, recommend to the Board a set of corporate goals and objectives, weighted to reflect the goals' relative importance to the achievement of our goals, measured over a 12-month period;
- review our executive compensation practices periodically to determine whether they are properly coordinated and to establish, oversee and periodically review policies for the administration of our executive compensation program;
- annually approve a peer group of companies to use as one of several datapoints to inform our compensation program;
- oversee succession planning with respect to the Chief Executive Officer and other C-Level employees;
- oversee our strategies related to human capital management;
- review and discuss with management the Compensation Discussion and Analysis (CD&A) and related disclosures to be included in our proxy statement, as and if required by SEC rules and, based on such review and discussion, determine whether or not to recommend to the Board that the CD&A be so included;
- if required by SEC rules and regulations, oversee production of the annual Compensation Committee Report for inclusion in the Company's proxy statement; and
- appoint, compensate and oversee the work of an independent compensation consultant to assist the Compensation Committee in carrying out its duties.

The charter for our Compensation Committee requires the committee to have not less than two independent members, subject to the Nasdaq listing rules. Our Compensation Committee currently consists of Dr. Mahony (Chair), Ms. Consylman and Mr. Ringo. Our Board has determined that Dr. Mahony, Ms. Consylman and Mr. Ringo are each independent under the Nasdaq listing rules for compensation committee membership and that each is a "non-employee director" as defined in Rule 16b-3 promulgated under the Exchange Act.

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 and delegate authority to specified executive officers to review and approve the compensation of nonexecutive officer employees.

At the direction of the Nominating and Governance Committee, the Compensation Committee conducts an annual performance evaluation and reports to the Board on its results.

The charter of the Compensation Committee grants the Compensation Committee full 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.

#### *Nominating and Governance Committee*

The role of our Nominating and Governance Committee is to assist the Board in fulfilling its responsibilities to the stockholders relating to the Company's corporate governance policies and practices, including Board and committee structure and nominations and monitoring the compliance functions managed by the Compliance Officer. In addition, the Nominating and Governance Committee has general oversight of our compliance with legal and regulatory requirements of our business operations, other than compliance with securities laws and regulations, including our financial reporting and disclosure obligations, or anti-bribery laws, which in each case is the responsibility of the Audit Committee.

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. Our Bylaws contain provisions for stockholders to recommend persons for nomination as a director candidate and, subject to certain conditions, to nominate director candidates for inclusion in our proxy statement, as set forth in this proxy statement under "Deadline for Stockholder Proposals for 2026 Annual Meeting of Stockholders." 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 under "—Board Composition," and the Nominating and Governance Committee's policy is to evaluate any recommendation for director nominees proposed by stockholders using the same criteria. 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.

After director candidates have been 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.

If the Nominating and Governance Committee determines that a candidate should be nominated 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.

The Nominating and Governance Committee charter requires the committee to consist of not less than two independent directors, subject to the Nasdaq listing rules. Our Nominating and Governance Committee currently consists of three directors, Mr. Ringo (Chair), Mr. Altig and Dr. Johnson-Pratt. The Board has determined that each of Mr. Ringo, Mr. Altig and Dr. Johnson-Pratt are independent under the Nasdaq listing rules.

All of the director nominees (William R. Ringo, Jr., Anthony E. Altig, Tomas Cihlar, Ph.D., Gina Consylman, Robert D. Cook II, Sir Michael Houghton, Ph.D., Lisa R. Johnson-Pratt, M.D., Susan Mahony, Ph.D., John G. McHutchison, A.O., M.D. and Jason A. Okazaki) have been recommended by the Nominating and Governance Committee to the Board for re-election to continue to serve as our directors at the Annual Meeting, and the Board has approved such recommendations.

The Nominating and Governance Committee also develops and oversees an annual self-evaluation process for the Board and each of its standing committees, including itself, and ensures that the results of such evaluations are reported to the Board.

#### *Science and Technology Committee*

Our Science and Technology Committee currently consists of Dr. McHutchison (Chair), Dr. Houghton, Dr. Johnson-Pratt and Dr. Mahony. The Science and Technology Committee charter requires the committee to consist of at least

two members of the Board, at least one of whom satisfies the independence requirement under the Nasdaq listing rules. The primary purpose of our Science and Technology Committee is to advise the Board regarding the Company's research and development strategies. In furtherance of its purpose, the Science and Technology Committee will, among its other responsibilities:

- provide strategic advice and make recommendations to the Board and management regarding current and planned research programs;
- provide strategic advice to the Board regarding emerging science and technology issues and trends; and
- report to the full Board with respect to significant matters covered at committee meetings.

The Science and Technology Committee charter requires that the Science and Technology Committee meet at least twice per year. The Science and Technology Committee historically met prior to our Board meetings in the second and fourth quarters, but in 2024, the Board decided that going forward, the Science and Technology Committee would meet prior to our Board meetings in the first and third quarter. As a result, the Science and Technology Committee met only once in 2024, but will resume meeting twice per year in 2025. The Chair of the Science and Technology Committee, in consultation with the other members and management, may set meeting agendas. The Science and Technology Committee will review and assess the adequacy of its charter periodically and recommend changes to the Board for approval.

At the direction of the Nominating and Governance Committee, the Science and Technology Committee conducts an annual performance evaluation of itself and reports to the Board on its results.

### **Code of Ethics and Code of Conduct**

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 can be found in the Corporate Governance section of the Investors 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 or Code of Conduct, as applicable, 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 our Company. 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 equity awards in amounts that correlate to their responsibilities and levels of Board participation, including service on Board committees. Mr. Okazaki does not receive separate compensation for service as a director because he is a Company employee. Neither Dr. Cihlar nor Mr. Cook, as Gilead designees to the Board, receive compensation for their service on the Board.

The following table sets forth the annual cash compensation payable to our non-employee directors in 2024.

Director Position	Annual Cash Compensation <sup>(1)</sup>
All Non-Employee Directors	\$ 40,000
Chair of the Board	\$ 80,000
Audit Committee Chair	\$ 20,000
Audit Committee Members (other than Chair)	\$ 10,000
Chair of Compensation Committee	\$ 15,000
Compensation Committee Members (other than Chair)	\$ 7,500
Chair of Nominating & Governance or Science and Technology Committees	\$ 10,000
Nominating & Governance or Science and Technology Committee Members (other than Chair)	\$ 5,000

(1) The annual cash compensation that we paid to Board members was based on their positions on the Board or the committees of the Board, and we do not compensate the Board members on a per meeting basis. The amounts reflected in the table were in effect for 2024.

In 2024, upon appointment or election to the Board, each new non-employee director appointed or elected would have been granted options to purchase 5,500 shares of our common stock, vesting over three years in three approximately equal installments on each anniversary of the date of grant. Each year, on the date of our annual meeting of stockholders, each non-employee director that is re-elected, other than Gilead designees, receives a grant of an equity award that vests in full upon the earlier of the first anniversary of the grant date and the next annual meeting of stockholders. The exercise price per share of equity awards that are options is 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 years. Non-employee directors elected to serve on the Board at the 2024 Annual Meeting were granted options to purchase 2,750 shares of our common stock.

The following table sets forth information regarding cash and non-cash compensation earned by or paid to each of our non-employee directors serving as directors during 2024.

Name	Fees Earned or Paid in Cash	Option Awards <sup>(1)(2)</sup>	Total
William R. Ringo, Jr.	\$ 107,500	\$ 31,751	\$ 139,251
Anthony E. Altig	\$ 65,000	\$ 31,751	\$ 96,751
Tomas Cihlar, Ph.D	\$ —	\$ —	\$ —
Gina Consylman	\$ 57,500	\$ 31,751	\$ 89,251
Robert D. Cook II	\$ —	\$ —	\$ —
Michael Houghton	\$ 45,000	\$ 31,751	\$ 76,751
Lisa Johnson-Pratt	\$ 50,000	\$ 31,751	\$ 81,751
Susan Mahony, Ph.D.	\$ 60,000	\$ 31,751	\$ 91,751
John G. McHutchison, A.O., M.D	\$ 50,000	\$ 31,751	\$ 81,751

(1) As of December 31, 2024, our non-employee directors held the following unexercised options to purchase shares of our common stock: Mr. Ringo, 11,914 shares; Mr. Altig, 11,914 shares; Ms. Consylman, 8,998 shares; Dr. Houghton, 8,582 shares; Dr. Johnson-Pratt, 8,582 shares; Dr. Mahony, 11,289 shares; and Dr. McHutchison, 107,746 shares, which includes unexercised options granted in connection with his former employment with the Company. Dr. Cihlar and Mr. Cook, as Gilead designees, do not receive option grants in connection with their appointments to, or service on, the Board.

(2) The reported amounts in the table above represent the aggregate grant date fair value of the options granted in 2024 computed in accordance with Financial Accounting Standards Boards (FASB) Accounting Standards Codification Topic 718, *Compensation—Stock Compensation* (ASC Topic 718). For a discussion of the assumptions used in calculating these values, see Note 2 to of the consolidated financial statements included in the Annual Report on Form 10-K for the fiscal year ended December 31, 2024.

## **Stockholder Communications**

Stockholders and other interested parties may communicate with the Board by writing to John O. Gunderson, our VP, General Counsel and Corporate Secretary, at Assembly Biosciences, Inc., Two Tower Place, 7th Floor, South San Francisco, California 94080. Upon receipt of a stockholder communication indicating a desire to communicate with the Board, Mr. Gunderson 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. Gunderson 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.

## **Stockholder Engagement**

### *General*

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

Our investor relations team keeps the Board regularly updated on the views of stockholders and provides reports from financial and other advisers concerning institutional stockholder feedback.

### *Say on Pay Outreach*

In 2024, we continued our narrow, targeted approach to stockholder engagement that we began in 2023, reaching out to the two institutional stockholders that held over 1% of our outstanding stock in Fall 2024. Neither stockholder requested a meeting. We expect to evaluate our stockholder base in the fourth quarter of 2025 and continue our annual outreach efforts and request meetings from all institutions holding over 1% of our then-outstanding stock.

## **Sustainability**

Management and the Board recognize that, as we continue to grow and advance our pipeline of product candidates, it is important to also focus our corporate responsibility programs on issues that support long-term sustainability of our operations and manage relevant sustainability risks. We highlight our programs, achievements and future plans on sustainability issues through the sustainability section to our corporate website, which can be found at [www.assemblybio.com/sustainability](http://www.assemblybio.com/sustainability). We update this section annually. The information posted on our website is not intended to be incorporated into this proxy statement. We monitor this section of our website and regularly update it.

## PROPOSAL NO. 2: ADVISORY VOTE TO APPROVE OUR NAMED EXECUTIVE OFFICERS' COMPENSATION

### General

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

We currently provide our stockholders with the opportunity to cast an advisory vote on our NEOs' compensation every year. Approximately 99% of the votes cast on our Say on Pay vote were voted in favor of the proposal in 2024.

Our NEOs' compensation addressed by this vote is disclosed in the "Executive Compensation" section of this proxy statement and the compensation tables and the related narrative disclosure contained in this proxy statement. As discussed in these disclosures, our 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 a mix of compensation that offers (1) targeted annual performance-based cash bonus opportunities based on Company-wide performance against Board-approved corporate goals weighted to reflect their relative importance, measured over a 12-month period and, for all employees other than our Chief Executive Officer during the measurement period, performance against individual performance objectives set by our employees in consultation with their managers, which may include certain department, group or team objectives applicable to these employees, and (2) the opportunity to share in our long-term success through equity incentive awards, including, in certain circumstances, performance-based equity awards;
- provide market-competitive base salaries, performance-based cash bonus opportunities, long-term equity awards and other compensation components and benefits that are competitive with those companies that compete with us for available high caliber talent; and
- deliver equitable pay for our NEOs, considering each NEO's title, role, breadth and complexity of responsibility, criticality of the role to the organization, experience, qualifications and performance, in both an individual and team context.

Accordingly, the Board is asking stockholders to indicate their support for the compensation of our 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 a non-binding advisory basis, the compensation of the Company's named executive officers, as disclosed in the proxy statement for the 2025 Annual Meeting of Stockholders pursuant to the compensation disclosure rules of the Securities and Exchange Commission, including the compensation tables and narrative discussion in the proxy statement for the 2025 Annual Meeting of Stockholders."

The "Executive Compensation" section of this proxy statement contains more details on our NEOs' 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 us, the Board or the Compensation Committee. Nevertheless, as demonstrated by our stockholder outreach conducted and continued engagement efforts going forward, the views expressed by our stockholders, whether through this vote or otherwise, are important to our management, the Board and the Compensation Committee. Our management, the Board and the Compensation Committee intend to consider the results of this vote in making recommendations and determinations in the future regarding executive compensation arrangements and our executive compensation principles, policies and procedures.

Our current practice is to submit the compensation of our NEOs to our stockholders for a non-binding advisory vote on an annual basis. Accordingly, the next stockholder advisory vote on the compensation of our NEOs after the Annual Meeting is expected to take place at the 2026 Annual Meeting of Stockholders.

**Required Vote**

Assuming a quorum is present, to be approved, the affirmative vote of the majority of the votes cast on Proposal No. 2 must be voted “FOR” the approval, on a non-binding advisory basis, of our NEOs’ compensation as disclosed in this proxy statement. Abstentions and broker non-votes will not be considered towards vote totals on Proposal No. 2 and will have no effect on the outcome of the vote.

**Recommendation of the Board of Directors**

**THE BOARD OF DIRECTORS RECOMMENDS A VOTE “FOR” THE APPROVAL, ON A NON-BINDING ADVISORY BASIS, OF OUR NAMED EXECUTIVE OFFICERS’ COMPENSATION.**

## MATTERS RELATING TO OUR INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

### Pre-Approval Policies and Procedures

The charter of the Audit Committee provides for Audit Committee pre-approval of all auditing services and the terms thereof (which may include providing comfort letters in connection with underwritten securities offerings) 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 our independent registered public accounting firm. The pre-approval requirement is waived with respect to the provision of non-audit services for us if the “de minimis” provisions of Section 10A(i)(1)(B) of the Exchange Act are satisfied. This authority to preapprove 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 Ernst & Young LLP, our independent registered public accounting firm for the fiscal years ended December 31, 2024 and 2023.

### Fees and Services

The following table represents aggregate fees billed to us for services related to the fiscal years ended December 31, 2024 and 2023 by Ernst & Young LLP, our independent registered public accounting firm:

Fees	2024	2023
Audit Fees <sup>(1)</sup>	\$ 881,000	\$ 969,730
Audit-Related Fees	—	—
Tax Fees <sup>(2)</sup>	223,973	173,694
All Other Fees	—	—
Total	\$ 1,104,973	\$ 1,143,424

(1) Audit Fees consisted of fees and expenses covering the audit of our consolidated financial statements, review of the interim condensed consolidated financial statements, accounting and financial reporting consultations, and the issuance of consents in connection with registration statement filings with the SEC and comfort letters in connection with registered securities offerings.

(2) Tax Fees consisted of fees and expenses for corporate tax compliance, tax advice and tax planning services.

All of the services described above were pre-approved by our Audit Committee. The Audit Committee concluded that the provision of these services by Ernst & Young LLP would not affect their independence.

### Report of the Audit Committee of the Board of Directors

The Audit Committee reviews our 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 controls. In this context, the Audit Committee hereby reports as follows:

1. The Audit Committee has reviewed and discussed our audited consolidated financial statements and internal control over financial reporting for the year ended December 31, 2024 with management.
2. The Audit Committee has discussed with Ernst & Young LLP, our independent registered public accounting firm, who is responsible for expressing an opinion on the conformity of our consolidated financial statements with generally accepted accounting principles in the United States, its judgments as to the quality, not just the acceptability, of our accounting principles and such other matters required to be discussed by the applicable requirements of the Public Company Accounting Oversight Board (PCAOB) and the U.S. Securities and Exchange Commission.

3. The Audit Committee has received the written disclosures and the letter from Ernst & Young LLP required by the PCAOB regarding the independent accountant's communications with the Audit Committee concerning independence and has discussed with Ernst & Young LLP its independence from the Company and management.
4. Based on the review and discussions described above, among other things, the Audit Committee has recommended to the Board that the audited consolidated financial statements and management's assessment of the effectiveness of our internal control over financial reporting be included in our Annual Report on Form 10-K for fiscal year ended December 31, 2024.

Submitted by:                   The Audit Committee  
                                        Anthony E. Altig, Chair  
                                        Gina Consylman  
                                        William R. Ringo, Jr.

### **PROPOSAL NO. 3: RATIFICATION OF THE SELECTION OF THE INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

#### **General**

The Audit Committee has selected Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2025. Ernst & Young LLP has served as our independent registered public accounting firm since 2015.

Neither our Bylaws nor other governing documents or law require stockholder ratification of the selection of Ernst & Young LLP as our independent registered public accounting firm. However, the Board is submitting the selection of Ernst & Young LLP to the stockholders for ratification as a matter of good corporate practice. If the stockholders fail to ratify the selection, the Audit Committee will reconsider whether to retain Ernst & Young LLP. Even if the selection is ratified, the Audit Committee, in its discretion, may direct the appointment of a different independent registered public accounting firm at any time during the year if the Audit Committee determines that such a change would be in the best interests of the Company and its stockholders. Representatives of Ernst & Young LLP are expected to attend the Annual Meeting, where they will have an opportunity to make a statement and be available to respond to appropriate questions.

#### **Required Vote**

Assuming a quorum is present, to be approved, the affirmative vote of the majority of the votes cast on Proposal No. 3 must be voted “FOR” the ratification of the selection of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2025. Abstentions and 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 “FOR” THE RATIFICATION OF THE SELECTION OF ERNST & YOUNG LLP AS OUR INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM.**

## PROPOSAL NO. 4: APPROVAL OF AMENDMENTS NO. 1 AND NO. 2 TO THE ASSEMBLY BIOSCIENCES, INC. AMENDED AND RESTATED 2018 STOCK INCENTIVE PLAN

### Background

On May 29, 2024, we adopted the Assembly Biosciences, Inc. Amended and Restated 2018 Stock Incentive Plan (the 2018 Plan). The 2018 Plan provides for the grant of equity awards to our employees, non-employee directors and consultants and it is necessary to have sufficient shares of common stock available under the 2018 Plan to ensure that we can continue to grant equity awards to eligible recipients at levels determined to be appropriate by the Board, the Compensation Committee and/or the Chief Executive Officer pursuant to his Board-delegated authority.

As of April 8, 2025, there were stock options to acquire 1,191,943 shares of common stock outstanding under our equity compensation plans. In addition, there were 86,999 shares subject to unvested restricted stock units (RSUs) with time-based vesting and 15,832 shares subject to unvested RSUs with performance-based vesting outstanding under our equity compensation plans. As of April 8, 2025, there were approximately 38,603 shares of common stock available and unallocated under our equity compensation plans, of which 13,761 shares are only issuable as inducement awards to new employees under our 2017 Inducement Award Plan, our 2019 Inducement Award Plan and our 2020 Inducement Award Plan collectively and so are unavailable for use as part of our compensation program for existing employees and directors. As a result, as of April 8, 2025, there were approximately 24,842 shares of common stock available under our stockholder approved plans, of which 24,801 shares of common stock remain available and unallocated for issuance under the 2018 Plan.

We also expect to issue an additional 24,500 stock options under the 2018 Plan at the Board meeting immediately following the Annual Meeting in connection with the re-election of seven non-employee directors who have not been designated to serve on the Board by Gilead Sciences, Inc. as part of the ordinary course of operations of our non-employee director compensation program.

On March 26, 2025, the Board, upon the recommendation of the Compensation Committee and subject to the approval of our stockholders at the Annual Meeting, approved: (1) Amendment No. 1 to the 2018 Plan to increase the number of shares reserved under the 2018 Plan by 375,000 from 1,103,333 to 1,478,333, or approximately 5.0% of our outstanding shares as of April 8, 2025, and (2) Amendment No. 2 to the 2018 Plan to reserve an additional 225,000 shares, or approximately 3.0% of our outstanding shares as of April 8, 2025, under the 2018 Plan, with all shares to be used solely in connection with a proposed broad-based supplemental equity award program (the Proposed Supplemental Retention Program) through which all of our employees would receive a grant of performance-based restricted stock units (PSUs).

### Purpose

The purpose of the 2018 Plan is to encourage ownership in the Company by our employees, directors and consultants and our affiliates whose long-term employment by, or service to, us is considered essential to our continued progress. Our culture of ownership aligns the interests of equity award recipients and stockholders and also permits award recipients to share in our success alongside our stockholders. The 2018 Plan provides an essential component of the total compensation package offered to our employees and other participants. It reflects the importance that we place on both motivating and retaining employees and other 2018 Plan participants to achieve superior results over the long term and rewarding our employees and other 2018 Plan participants based on long-term achievements. We strongly believe that our equity compensation programs and emphasis on employee and non-employee director stock ownership have been integral to building and retaining a strong employee and director base. We also believe these programs have contributed to our continued pipeline progress and advancement of four investigational product candidates into clinical studies in the last year and serve as valuable motivation for our employees as we seek to achieve superior research performance and clinical development results in the future. All of our, and our affiliates', employees, directors and our consultants are eligible to participate in the 2018 Plan.

### *Amendment No. 1*

The main purpose of Amendment No. 1 is to increase the number of shares reserved for issuance under the 2018 Plan by 375,000 shares. We believe the ability to grant market-competitive equity awards is a necessary and powerful recruiting and retention tool for us as we compete with others in our industry to attract and retain the quality and number of personnel we need to continue the forward momentum of our business. Our employees are critical to the continued research aimed at broadening our pipeline and the clinical and preclinical development of the product candidates currently in our pipeline.

We believe that 375,000 shares is a modest increase that will be sufficient to meet our potential hiring needs and broad-based annual equity grants to our employees to be made in March 2026. The 2018 Plan, as amended by Amendment No. 1, will also underpin one of our core compensation philosophies, Pay for Performance, by giving our employees and other participants the opportunity to share in our long-term success and motivate the creation of long-term stockholder value through equity compensation. As has historically been our practice, we anticipate seeking stockholder approval of another increase to the shares reserved for issuance under the 2018 Plan at our 2026 Annual Meeting to meet potential hiring needs and broad-based annual equity grants to our employees to be made in March 2027.

#### *Amendment No. 2*

The purpose of Amendment No. 2 is to provide us with additional reserved shares in an amount required to implement the Proposed Supplemental Retention Program. All shares approved under Amendment No. 2 would be used solely in connection with the Proposed Supplemental Retention Program, and all grants under the Proposed Supplemental Retention Program are contingent on receiving stockholder approval of Amendment No. 2. The Proposed Supplemental Retention Program is intended to: (1) provide a supplemental equity award to employees in connection with a critical milestone related to our clinical development that must be met over the course of the next two years (the Milestone) and (2) enhance the retention value in our overall equity program, particularly as a result of our 1-for-12 reverse stock split that occurred in February 2024.

The Milestone to be met in the Proposed Supplemental Retention Program is the initiation of a Phase 2 or Phase 3 clinical study of one of our programs by the end of 2027. The PSUs would vest as follows: (1) 50% would vest on the date (the First Vesting Date) of the later of (a) the first anniversary of the date of the PSU grant or (b) the date of completion of the Milestone; and (2) 50% would vest on the first anniversary of the First Vesting Date. The First Vesting Date will be established by the Compensation Committee's certification that the Milestone has been achieved.

We believe that 225,000 shares is a modest request that, through the Proposed Supplemental Retention Program, would help ensure continued motivation and retention of our employees. As we are a small company of 73 employees with four investigational product candidates in clinical studies, we believe that each of our employees is critical to our meeting the Milestone.

#### **Rationale**

##### *Amendment No. 1*

We believe you should vote to approve Amendment No. 1 for the following reasons:

- *The ability to continue to make equity grants helps us avoid unnecessary business disruption.* If Amendment No. 1 is not approved, we may have to restructure existing compensation programs for reasons not directly related to the achievement of our business objectives. Such restructuring will likely necessitate the replacement of components of compensation to be awarded in equity with cash, which would divert our cash reserves away from our research and development activities and our clinical studies, which would shorten our cash runway and negatively impact the progress of our product candidates and research and development activities, and in turn, impair stockholder value. We believe that such actions would be highly disruptive to both our business and our employees. In addition, this replacement of equity compensation with cash may not necessarily align employee interests with those of stockholders as effectively as equity.
- *We are committed to sound equity compensation practices.* We recognize that equity compensation awards dilute stockholder equity and must be used prudently. We strive to align our compensation practices with industry norms among our peer group described in this proxy statement under "Executive Compensation—Executive Summary—How We Determine Executive Compensation—Role of the Compensation Committee; Oversight of Executive Compensation—Peer Group Process." We believe our use of equity has consistently been responsible and mindful of stockholder interests.
- *Equity awards align the interests of management with those of stockholders.* We believe the grant of equity awards, particularly stock options and RSUs with performance-based vesting, are effective tools to

align management and stockholder interests, as management only realizes value from these awards if our stock price appreciates or meaningful performance metrics are achieved, respectively.

- *The 2018 Plan contains provisions that protect stockholder interests.* The 2018 Plan contains features designed to strongly align the interests of our employees and directors with those of our stockholders, including a minimum vesting requirement of one year for all time-vesting awards that are made to employees, subject to acceleration in the event of death, disability, retirement, separation of service or a Corporate Transaction (as described below), and a minimum vesting requirement of the earlier of (1) one year and (2) the next annual meeting of the stockholders for time-based vesting awards that are made to directors, subject to acceleration in the event of death, disability or a Corporate Transaction. The 2018 Plan also has no automatic acceleration of vesting provisions upon a Corporate Transaction unless the equity awards are not assumed in connection with the Corporate Transaction.
- *Equity compensation helps us to retain talent.* A talented, motivated and effective management team and workforce are essential to our continued progress. Equity compensation is an important component of our total compensation because we believe it will incentivize managers and employees to think and act like owners. Our employees are our most valuable assets, and the equity awards granted under the 2018 Plan are vital to our ability to both attract and retain outstanding and highly skilled team members. Of the 245,518 shares of common stock underlying equity awards granted in 2024, approximately 92% were issued for awards to existing employees and 8% were issued to non-employee directors. We plan to continue our practice of providing meaningful annual performance awards and retention award grants, as necessary, to existing employees to ensure continued alignment with our stockholders. We believe that our stockholders' long-term interests are best served by maintaining these equity compensation practices. If Amendment No. 1 is not approved by stockholders, retaining the best talent will be increasingly difficult, as the number of shares available and unallocated under the 2018 Plan is projected to fall below the number of shares of common stock that we will need to grant annual equity awards to employees in 2026 at levels comparable to those granted in 2025.
- *We recruit and seek to retain employees in highly competitive labor markets and need to provide competitive compensation arrangements to attract and retain talent.* The San Francisco Bay Area, where we are headquartered and where 74% of our employees are located, is among the most challenging markets in the world for hiring, particularly for life sciences and biotechnology companies. The challenges of recruiting in the Bay Area have been exacerbated by recent hiring trends, as the labor market nationwide has become increasingly competitive over the last several years. To continue to attract and retain an experienced and highly educated workforce with the skills necessary to advance our programs, we need to offer competitive compensation packages consisting of attractive cash and equity components. Our Compensation Committee has retained Alpine Rewards, LLC (Alpine) to serve as an independent outside compensation consultant. In this capacity, Alpine analyzes compensation information from a comparative group of biotechnology companies and provides us with recommendations regarding these compensation packages.
- *Our current equity-cash mix aligns employee incentives with stockholder gains.* Our employee compensation consists of base salary payable in cash, annual performance-based cash bonuses and long-term incentives in the form of equity awards. Our annual long-term performance equity incentive award grants are a combination of stock option and RSUs; however, in certain circumstances, the Compensation Committee may consider other equity awards under the Amended Plan, including restricted stock, SARs and dividend equivalent rights. Equity awards provide effective incentives for our employees to work toward achieving business results and scientific advances that will increase the long-term value of our stock as employees only realize value from stock options and SARs if the shares of common stock appreciate and the value of other equity awards depends on the price of our common stock.

#### *Amendment No. 2*

- *Recent grant date values of our annual equity grants made have been below the 25<sup>th</sup> percentile of our compensation peer group.* Our Compensation Philosophy is "Provide Competitive Overall Compensation That Attracts, Retains and Motivates Superior Performers." In keeping with this philosophy, we strive to

target our annual equity grants at the 50<sup>th</sup> percentile of our peer group as a percentage of outstanding shares but despite using these targets in 2023, 2024 and 2025, annual long-term equity incentive compensation grant values were below the 25<sup>th</sup> percentile due to the price at which our stock was traded on the grant dates. It is critical that we provide market-competitive compensation as we continue to compete with others in our industry to attract and retain the quality and number of personnel we need to continue progressing our investigational drug products through clinical studies and continue identifying and targeting additional indications, broadening our pipeline.

- *As we progress our investigative product candidates into pivotal clinical studies, it is critical that we retain our employees, and equity compensation helps us retain talent, particularly as we seek to retain employees in a highly competitive labor market.* We currently have four investigational product candidates in clinical studies. Three of these investigational product candidates, ABI-4334, ABI-5366 and ABI-1179 are in Phase 1b studies, and the fourth of our investigational product candidates, ABI-6250 is in a Phase 1a study. In each case, assuming positive results, we and our collaboration partner, Gilead Sciences, Inc., will be making data-driven decisions regarding how and when to progress these investigational product candidates into Phase 2 and Phase 3 studies. Furthermore, as mentioned above under “—Amendment No. 1,” we are headquartered in, and most of our employees are located in, the San Francisco Bay Area, which is among the most challenging markets in the world for hiring and retention, particularly for life sciences and biotechnology companies. It is critical that we retain our current employees to ensure we can continue rapidly advancing these programs.
- *The PSUs only vest upon achieving the Milestone, further aligning our employees’ incentives with stockholder gains.* The Milestone is a meaningful event in the clinical development of our programs. If the Milestone is achieved, we expect that the price of our common stock will increase, which would also benefit our non-employee stockholders. If we do not achieve the Milestone, the awards will lapse and the underlying shares only be used, if at all, for future performance-based awards. We believe that the PSUs to be issued under the Proposed Supplemental Retention Program provide a high-upside opportunity and low-downside risk for our stockholders.

## **2022 – 2024 Burn Rate and Outstanding Awards Overhang**

The following tables provide certain additional information regarding our equity incentive program and our equity burn rate over the last three years and overhang as of April 8, 2025. Note that burn rate and overhang are calculated on a non-diluted basis.

### *Burn Rate*

In 2022, we implemented a strategic plan (the Strategic Plan) to: (1) discontinue development of our first-generation core inhibitor, vebicorvir, based on review of interim on-treatment efficacy data from then on-going triple combination studies that did not support continuation; (2) advance our next-generation core inhibitors ABI-H3733 and ABI-4334, in clinical studies; and (3) prioritize research activities, including our HBV/HDV entry inhibitor and IFNAR agonist receptor programs as well as programs directed against two additional then-undisclosed viral targets, which were later announced to be recurrent genital herpes and transplant-associated herpesviruses infections. The Strategic Plan included a reduction of our workforce by 30 employees, resulting in a total of approximately 70 remaining employees. The Compensation Committee, in recognition that the Strategic Plan included prioritization of four very early stage programs, two of which had not yet been publicly announced, worked closely with Alpine to develop generous retention packages, given the criticality of retaining all of our key contributors, including the executive officers remaining with us following the implementation of the Strategic Plan. The Compensation Committee, based on Alpine’s advice, approved a broad-based retention compensation program, which consisted of (1) performance-based RSUs granted to our C-Level employees (other than our then-Chief Executive Officer and President) and (2) a mix of cash and stock options to all non-C-Level employees, led to significantly more equity awards than are granted than in a typical year.

In the case of non-C-Level employees, the stock options granted were tied to our annual equity grants and ranged from 1.0x of an employee’s annual grant to 2.0x of an employee’s annual grant, which aligns to grants that are made to new hires.

C-Level employees did not receive any cash under the retention program, as the Compensation Committee's goals included focusing on, and emphasizing, long-term alignment with our stockholders. The C-Level employees' equity grants were targeted at 2.0x of their annual equity grants, recognizing their criticality to the future of the organization.

The retention program implemented in connection with the Strategic Plan represented approximately 5.8% of our overall 2022 burn rate and approximately 5.7% of our net burn rate. Outside of the retention program, our 2022 burn rate was 5.2% and our net burn rate was 2.3%. Despite the high level of incremental burn rate associated with the retention program, the program was a success, as all key employees were retained following the implementation of the Strategic Plan.

In 2023 and 2024, our only significant equity granting event was in connection with our broad-based annual equity grants made in March 2023 and March 2024, respectively. There were no off-cycle grants made other than those made to newly hired employees and employees receiving promotions during the year. As a result, both our overall and net burn rates were below the median of our peer group in 2023 and 2024.

<b>Burn Rate</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
Stock options granted	340,527	190,591	220,165
Time-based full value shares granted	39,569	15,936	25,353
Performance-based full value shares granted	64,996	—	—
Total equity awards	445,092	206,527	245,518
Weighted average common shares outstanding	4,034,105	4,577,371	6,004,560
<b>Burn rate<sup>(1)</sup></b>	<b>11.0%</b>	<b>4.5%</b>	<b>4.1%</b>
Total equity awards cancelled	119,510	104,498	140,978
<b>Net burn rate<sup>(2)</sup></b>	<b>8.1%</b>	<b>2.2%</b>	<b>1.7%</b>

- (1) Burn Rate equals number of shares subject to equity awards granted during a fiscal year divided by weighted average common shares outstanding for that fiscal year.
- (2) Net Burn Rate equals (a) number of shares subject to equity awards granted during a fiscal year minus total equity awards forfeited or expired during that fiscal year, divided by (b) weighted average shares of common stock outstanding for that fiscal year.

#### *Outstanding Awards Overhang*

The following table provides additional information about our current overhang:

<b>Current Overhang (As of April 8, 2025)</b>	
Total number of shares of common stock subject to outstanding stock options <sup>(1)</sup>	1,191,943
Weighted-average exercise price of outstanding stock options	\$ 45.10
Weighted-average remaining term of outstanding stock options	7.6
Total number of shares of common stock subject to outstanding time-based full value awards <sup>(2)</sup>	86,999
Total number of shares of common stock subject to outstanding performance-based full value awards	15,832
Total number of shares of common stock available for grant under our equity compensation plans	38,603
Total number of shares of common stock subject to outstanding stock options and outstanding full value awards <sup>(1)(2)</sup>	1,294,774
Total number of shares of common stock outstanding	7,637,553
Per-share closing price of common stock as reported on Nasdaq Global Select Market	\$ 8.26

- (1) Includes shares underlying stock options that will not be available to return to the 2018 Plan if such stock options are forfeited or terminated, including the following: 19,862 under the 2010 Equity Incentive Plan (2010 Plan); 209,591 under the Assembly Biosciences, Inc. Amended and Restated 2014 Stock Incentive Plan (2014 Plan); 51,285 under the 2017 Inducement Award Plan (2017 Inducement Plan); 41,666 under the 2019 Inducement Award Plan (2019 Inducement Plan); and 58,746 under the 2020 Inducement Award Plan (2020 Inducement Plan).
- (2) Includes shares underlying RSUs that will not be available to return to the 2018 Plan if such RSUs are forfeited or terminated, including 770 under the 2014 Plan.

We also expect to issue an additional 24,500 stock options under the 2018 Plan at the Board meeting immediately following the Annual Meeting in connection with the election of seven non-employee directors.

The closing price of our common stock as reported on The Nasdaq Global Select Market on April 8, 2025, the record date for this annual meeting, was \$8.26.

### **Material Terms of the Amended Plan**

The following is a summary of the principal provisions of the 2018 Plan. A copy of the proposed 2018 Plan, assuming stockholder approval of both Amendment No. 1 and Amendment No. 2 (as amended, the Amended Plan), is attached as Appendix A, with proposed deletions indicated by strike-out and proposed revisions to be made to the 2018 Plan in the Amended Plan indicated by bold, underlined text. The following description of the Amended 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 Plan.

*Purpose of the Amended Plan.* The purpose of the Amended 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 our continued progress and, thereby, aligning the interests of the award recipients and stockholders and permitting the award recipients to share in our success. The Amended Plan provides an essential component of the total compensation package offered to our employees and other plan participants. It reflects the importance we place on motivating employees and other plan participants to achieve superior results over the long-term and paying employees and other plan participants based on such achievements. We strongly believe that our equity compensation programs and emphasis on employee and non-employee, non Gilead-designated director stock ownership have been integral to our progress and that a continuation of, and emphasis on, those programs is necessary for us to achieve superior performance in the future. All of our employees, directors and consultants and those of our affiliates are eligible to participate in the Amended Plan.

*Types of Awards.* The Amended Plan provides for the grant of non-qualified and incentive stock options (Options), SARs, dividend equivalent rights, unrestricted stock, restricted stock, RSUs or other rights or benefits under the Amended Plan (collectively, Awards).

*Shares Subject to the Amended Plan.* No more than 1,703,333 shares of common stock may be issued pursuant to Awards under the Amended 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 Plan for stock splits, stock dividends, recapitalizations and other similar events.

Each share of common stock subject to an Award granted pursuant to the Amended Plan will reduce the aggregate number of shares available under the Amended Plan by one share of common stock. Any shares of common stock that again become available for issuance under the Amended 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 Plan in this same manner and such shares will again be available for subsequent Awards, except as prohibited by law. Notwithstanding the foregoing, if any PSUs issued through the Proposed Supplemental Retention Program are forfeited, those shares of common stock will return to the the Amended Plan but will be maintained in a separate reserve to be used for future grants of PSUs. In the event any Option or other Award granted under the Amended Plan is exercised through the tendering of shares of common stock (either actually or through attestation) or withholding shares of common stock, 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 Plan. Shares of Common Stock subject to a SAR granted pursuant to Section 6(k) of the Amended 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 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 Plan.

*Director Compensation Limit.* The Amended Plan provides that the grant date value of all Awards awarded under the Amended Plan and all other cash compensation paid by the Company to any non-employee director in any calendar year shall not exceed \$1,000,000.

*Administration.* The Amended Plan will be administered by the Board or a committee designated by the Board (the Committee), which committee is constituted in such a manner as to satisfy the applicable laws and to permit such grants and related transactions under the Amended 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 generally serves as the Committee specified in the Amended Plan and acts as the administrator thereunder; however, the Board delegated authority to our Chief Executive Officer acting as a committee of one to serve as the administrator in the context of granting awards under the Amended Plan to newly hired employees or in connection with promotions to individuals that are not Section 16 officers, direct reports of the Chief Executive Officer or above the level of Vice President. Awards granted by the Chief Executive Officer are limited to a preset range prepared in consultation with our Compensation Consultant and consistent with our compensation philosophy. We refer to the entity or individual administering the Amended Plan as the Administrator.

Subject to the terms of the Amended 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 Plan and its administration, to interpret and construe the Amended Plan and the terms of all Award agreements, and to take all actions necessary or advisable to administer the Amended Plan or to effectuate its purposes. Subject to the terms of the Amended 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.

*Indemnification.* We 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 Amended Plan, or any Award granted thereunder, 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 30 days after the institution of such claim, investigation, action, suit or proceeding, such person shall offer to us, in writing, the opportunity at our expense to defend the same.

*Minimum Vesting.* Time-based awards granted to employees under the Amended Plan are subject to a one-year minimum vesting requirement other than in the case of death, disability, retirement, separation of service or a Corporate Transaction. Time-based awards granted to directors under the Amended Plan may not vest until the earlier of one year from the 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 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, vesting or settlement of an Award, under the Amended Plan.

*Options.* Options granted under the Amended 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 do not so qualify (Non-Qualified Stock Options). To qualify as ISOs, Options must meet additional federal tax requirements, including a \$100,000 limit on the value of shares subject to ISOs that first become exercisable by a Grantee in any one calendar year.

*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, surrender of shares of common stock, broker assisted exercise, with respect to Options that are not ISOs, by net exercise or by past or future services rendered to the Company or an affiliate. No more than 1,478,333 shares of common stock may be granted in the form of incentive stock options.

*Prohibition on Repricing.* Except in connection with certain corporate adjustment events, we may not, without stockholder approval, amend an Award granted under the Amended Plan to reduce the Award's exercise price per share, cancel and regrant new Awards with lower prices per share than the original price 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 (1) shares of restricted stock that are forfeitable until certain vesting requirements are met and (2) RSUs that represent the right to receive payment, in cash or in shares of common stock or other securities or a combination thereof, subject to the passage of time and continuous service or the attainment of performance criteria as established by the Administrator. The Administrator has discretion to determine the terms and conditions under which a Grantee's interests in restricted stock and RSUs 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.

*Income Tax Withholding.* As a condition for the issuance of shares of common stock pursuant to Awards, the Amended Plan requires the Grantee to make such arrangements as we 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. Subject to approval by the Administrator, Grantees may elect to have their tax withholding obligations satisfied by tendering previously owned shares of common stock or authorizing the Company to withhold shares of common stock to be issued pursuant to exercise or vesting. Any shares held back to satisfy such tax withholding will not be available for future issuance under the Amended Plan.

*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 Amended Plan shall terminate unless they are assumed or replaced in connection with the Corporate Transaction. To the extent all outstanding Awards granted under the Amended Plan terminate, except as may be otherwise expressly provided in the relevant Award Agreement, all Awards with solely time-based vesting that are not vested and/or exercisable immediately prior to the effective time of the Corporate Transaction shall become fully vested and exercisable as of immediately prior to the effective time of the Corporate Transaction and all Awards with conditions and restrictions relating to the attainment of performance goals shall be deemed to vest and become nonforfeitable as of the Corporate Transaction as provided in the relevant Award Agreement or if not provided for in the relevant Award Agreement shall be deemed to vest and become nonforfeitable as of the Corporate Transaction assuming the higher of (a) achievement of all relevant performance goals at the "target" level (prorated based upon the length of time within the performance period that has elapsed prior the Corporate Transaction or partial achievement of the performance goals), or (b) actual achievement of all relevant performance goals as of the date of such Corporate Transaction. In the event of such termination of the Awards, the Company shall have the option (in its sole discretion) to (1) make or provide for a payment, in cash or in kind, to the Grantees holding Options and SARs, in exchange for the cancellation thereof, in an amount equal to the difference between (A) the Sale Price multiplied by the number of Shares subject to outstanding Options and SARs and (B) the aggregate exercise price of all such outstanding Options and SARs (provided that, in the case of an Option or SAR with an exercise price equal to or more than the Sale Price, such Option or SAR shall be cancelled for no

consideration); or (2) permit each Grantee, within a specified period of time prior to the consummation of the Corporate Transaction as determined by the Administrator, to exercise all outstanding Options and SARs (to the extent then exercisable including due to acceleration as contemplated by Section 13(a) of the Amended Plan if the Awards are not assumed or replaced) held by such Grantee as of immediately prior to the effective time of the Corporate Transaction. In the event of a termination of Awards pursuant to Section 13(a) of the Amended Plan, the Company shall also have the option (in its sole discretion) to make or provide for a payment, in cash or in kind, to the Grantees holding other Awards in an amount equal to the Sale Price multiplied by the number of vested Shares under such Awards. For purposes of Section 13(a) of the Amended Plan, "Sale Price" means the value as determined by the Administrator of the consideration payable, or otherwise to be received by stockholders, per share pursuant to a Corporate Transaction.

The Administrator has 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 Amended 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 Amended 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 ISOs accelerated in connection with a Corporate Transaction shall remain exercisable as an ISO under the Code only to the extent the \$100,000 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 (4) and (5) whether multiple transactions are related, and its determination shall be final, binding and conclusive: (1) a merger or consolidation in which we are not the surviving entity, except for a transaction the principal purpose of which is to change the state in which we are incorporated; (2) the sale, transfer or other disposition of all or substantially all of our assets; (3) the complete liquidation or dissolution of the Company; (4) 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 we are 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 50% of the total combined voting power of our 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 (5) 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 50% of the total combined voting power of our outstanding securities.

*Term of the Amended Plan; Amendments and Termination.* The term of the Amended Plan is ten years from May 29, 2024, except that no ISOs may be granted after March 13, 2034. This is an extension of the term of the plan, which originally terminated on May 30, 2028, with no ISOs to be granted after April 5, 2028. The Board may, from time to time, amend, alter, suspend, discontinue or terminate the Amended Plan; provided, that any amendment to increase the number of shares of common stock available for Awards under the Amended Plan and certain other amendments will be subject to stockholder approval. Additionally, no amendment, suspension or termination of the Amended Plan shall materially and adversely affect Awards already granted unless it relates to an adjustment pursuant to certain transactions that change our 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 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 U.S. federal tax consequences of certain transactions under the Amended Plan. This summary is not intended to be complete and

does not describe state or local tax consequences. Grantees in the Amended Plan should review the current tax treatment with their individual tax advisors at the time of grant, exercise, vesting or any other transaction relating to an Award or the underlying shares.

Under the Code, we will generally be entitled to a deduction for U.S. federal income tax purposes at the same time and in the same amount as the ordinary income that Grantees recognize pursuant to Awards. 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.
- *Stock Appreciation Rights.* A Grantee will not recognize income at the time a SAR is granted. At the time a SAR 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 or the amount of cash paid, 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 SAR, 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.
- *Restricted Stock and Restricted Stock Units.* In general, a Grantee will not recognize income at the time of grant of restricted stock or RSUs, unless the Grantee elects with respect to restricted shares to accelerate income taxation to the date of a restricted stock award by making a timely 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 on the grant date 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 will 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 RSUs, 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.
- *Parachute Payments.* Under certain circumstances, the grant, 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 we may be denied a tax deduction.
- *Income Taxes and Deferred Compensation.* The Amended 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). Nevertheless, the Amended Plan

permits the Administrator to establish one or more programs under the Amended Plan to permit selected Grantees the opportunity to elect to defer receipt of consideration upon exercise or vesting of an Award or other event that absent the election would entitle the Grantee to payment or receipt of shares of common stock 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 2018 Plan are our employees, directors and other consultants and those of our affiliates as selected from time to time by the Administrator in its discretion. As of April 8, 2024, approximately 80 individuals are currently eligible to participate in the 2018 Plan, which includes four executive officers, 69 full-time employees who are not executive officers and seven non-employee, non-Gilead designated directors. At this time, we do not have any plans to make future grants to any consultants. Assuming stockholder approval of Amendment No. 2, only employees are eligible to receive grants under the Proposed Supplemental Retention Program.

## New Plan Benefits

### Amendment No. 1

Because the grant of Awards under the 2018 Plan is within the discretion of the Administrator, we cannot determine the dollar value or number of shares of common stock that will in the future be received by or allocated to any participant in the 2018 Plan, as amended by Amendment No. 1. Accordingly, in lieu of providing information regarding benefits that will be received, the following table provides information concerning the benefits that were received by the following persons and groups during 2024 under the 2018 Plan: (a) each named executive officer; (b) all current executive officers, as a group; (c) all current directors who are not executive officers, as a group; and (d) all employees who are not executive officers as a group.

Name and Position	Options		Stock Awards	
	Weighted Average Exercise Price	Number of Awards	Dollar Value <sup>(1)</sup>	Number of Awards
Jason A. Okazaki <i>Chief Executive Officer and President</i>	\$ 13.30	65,000	\$ —	—
William E. Delaney IV, Ph.D. <i>Chief Scientific Officer</i>	\$ 13.30	20,000	\$ —	—
Nicole S. White, Ph.D. <i>Chief Manufacturing Officer</i>	\$ 13.30	17,500	\$ —	—
All current executive officers, as a group	\$ 13.30	102,500	\$ —	—
All current directors who are not executive officers, as a group <sup>(2)</sup>	\$ 15.06	19,250	\$ —	—
All current employees who are not executive officers, as a group	\$ 13.53	98,415	\$ 338,254 <sup>(3)</sup>	25,353

- (1) The valuation of stock awards is based on the grant date fair value computed in accordance with FASB ASC Topic 718. For a discussion of the assumptions used in calculating these values, see Note 2 to of the consolidated financial statements included in the Annual Report on Form 10-K for the fiscal year ended December 31, 2024.
- (2) Non-employee directors including Mr. Ringo, Mr. Altig, Ms. Consylman, Dr. Houghton, Dr. Johnson-Pratt, Dr. Mahony and Dr. McHutchison were granted options to purchase 2,750 shares of common stock at the Board meeting following the 2024 Annual Meeting in connection with their re-election to the Board at the 2024 Annual Meeting.
- (3) Represents the aggregate grant date fair value for the group.

## Amendment No. 2

Assuming that Amendment No. 2 is approved by our stockholders, the following table provides information concerning approximate benefits to be received by the following persons and groups under the Proposed Supplemental Retention Program: (a) each named executive officer; (b) all current executive officers, as a group; (c) all current directors who are not executive officers, as a group; and (d) all employees who are not executive officers as a group. In each case, the allocation of the 225,000 shares proposed to be available under the Proposed Supplemental Retention Program is subject to the discretion of the Administrator of the 2018 Plan.

Name and Position	Stock Awards	
	Dollar Value <sup>(1)</sup>	Number of Awards
Jason A. Okazaki <i>Chief Executive Officer and President</i>	\$ 314,417	38,065
William E. Delaney IV, Ph.D. <i>Chief Scientific Officer</i>	\$ 112,295	13,595
Nicole S. White, Ph.D. <i>Chief Manufacturing Officer</i>	\$ 112,295	13,595
All current executive officers, as a group	\$ 651,301	78,850
All current directors who are not executive officers, as a group <sup>(2)</sup>	\$ —	—
All current employees who are not executive officers, as a group	\$ 1,207,199	146,150

- (1) The valuation of stock awards has been approximated based on the closing price of our common stock as reported on The Nasdaq Global Select Market on April 8, 2025, the record date for this annual meeting. The actual valuation of stock awards will be based on the grant date fair value computed in accordance with FASB ASC Topic 718. For a discussion of the assumptions used in calculating these values, see Note 2 to of the consolidated financial statements included in the Annual Report on Form 10-K for the fiscal year ended December 31, 2024.
- (2) Non-employee directors will not be granted any stock awards under the Proposed Supplemental Retention Program.

## Equity Plans

The following table sets forth information as of December 31, 2024 regarding shares of common stock that may be issued under our equity compensation plans:

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted average exercise price of outstanding options, warrants and rights <sup>(1)</sup> (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by our stockholders	858,550 <sup>(2)</sup>	\$ 39.95	484,852 <sup>(3)</sup>
Equity compensation plans not approved by our stockholders	965,697 <sup>(4)</sup>	\$ 34.54	13,761 <sup>(5)</sup>
<b>Total</b>	<b>1,824,247</b>		<b>498,613</b>

- (1) The weighted average exercise price is calculated solely based on the exercise prices of the outstanding stock options and does not reflect the shares that will be issued upon the vesting of outstanding awards of RSUs, which have no exercise price.
- (2) This number includes the following: 19,862 shares subject to stock options granted under the 2010 Plan; 138,150 shares subject to outstanding awards granted under the 2014 Plan, of which 136,991 were subject to outstanding stock options and 1,159 were subject to outstanding RSUs; and 700,538 shares subject to outstanding awards granted under the 2018 Plan, of which 633,643 were subject to outstanding stock options and 66,895 were subject to outstanding RSUs. This number excludes purchase rights currently accruing under the Assembly Biosciences, Inc. Amended and Restated 2018 Employee Stock Purchase Plan (2018 ESPP).

- (3) This number includes: no shares under the 2010 Plan, which has been frozen; 72,641 shares available for issuance under the 2014 Plan; 255,396 shares available for issuance under the 2018 Plan; and 94,917 shares reserved for issuance under the 2018 ESPP. Eligible employees may participate in the 2018 ESPP at a minimum of 1% and up to a maximum of 15% of such employee's compensation for each pay period, subject to annual IRS limitations of \$25,000.
- (4) This number includes 51,285 shares subject to outstanding stock options granted under the 2017 Inducement Plan; 41,666 shares subject to stock options granted under the 2019 Inducement Plan; and 58,746 shares subject to outstanding options granted under the 2020 Inducement Plan; and 814,000 warrants granted in a registered direct offering and a private placement in June 2024.
- (5) This number includes: 13,756 shares available for issuance under the 2017 Inducement Plan, no shares under the 2019 Inducement Plan and 5 shares available for issuance under the 2020 Inducement Plan.

#### **Required Vote**

##### *Amendment No. 1 - Proposal No. 4a*

Assuming a quorum is present, to be approved, the affirmative vote of the majority of the votes cast on Proposal No. 4a must be voted "FOR" approval of Amendment No. 1. Abstentions and broker non-votes will not be considered towards vote totals on Proposal No. 4a.

##### *Amendment No. 2 - Proposal No. 4b*

Assuming a quorum is present, to be approved, the affirmative vote of the majority of the votes cast on Proposal No. 4b must be voted "FOR" approval of Amendment No. 2. Abstentions and broker non-votes will not be considered towards vote totals on Proposal No. 4b.

#### **Recommendation of the Board of Directors**

**THE BOARD OF DIRECTORS RECOMMENDS A VOTE "FOR" APPROVAL OF THE FOLLOWING PROPOSED AMENDMENTS TO THE ASSEMBLY BIOSCIENCES, INC. AMENDED AND RESTATED 2018 STOCK INCENTIVE PLAN:**

- **AMENDMENT NO. 1 TO THE 2018 PLAN TO INCREASE THE NUMBER OF SHARES RESERVED FOR ISSUANCE THEREUNDER BY 375,000 SHARES; AND**
- **AMENDMENT NO. 2 TO THE 2018 PLAN TO INCREASE THE NUMBER OF SHARES RESERVED FOR ISSUANCE THEREUNDER BY 225,000 SHARES SOLELY TO SUPPORT THE PROPOSED SUPPLEMENTAL RETENTION PROGRAM.**

## **PROPOSAL NO. 5: APPROVAL OF AN AMENDMENT TO THE ASSEMBLY BIOSCIENCES, INC. SECOND AMENDED AND RESTATED 2018 EMPLOYEE STOCK PURCHASE PLAN**

### **Background**

On May 29, 2024, we adopted the Assembly Biosciences, Inc. Second Amended and Restated 2018 Employee Stock Purchase Plan (the ESPP). On March 26, 2025, the Board, upon the recommendation of the Compensation Committee and subject to the approval of our stockholders at the Annual Meeting, approved Amendment No. 1 to the ESPP to increase the number of shares reserved under the ESPP to a total of 225,000 shares of common stock (Amendment No. 1 to ESPP). As of April 8, 2025, there were 164,500 shares reserved for issuance under the ESPP. Based solely on the closing price of our common stock reported on The Nasdaq Global Select Market on April 8, 2025, the maximum aggregate market value of the 155,417 shares of common stock that could potentially be issued under the ESPP, as amended by Amendment No. 1, is approximately \$1,283,744.

### **Purpose**

We believe that the adoption of Amendment No. 1 to the ESPP (as amended, the Amended ESPP) will benefit us by continuing to provide employees with an opportunity to acquire shares of our common stock, which gives employees a stake in our growth, and will enable us to attract, retain and motivate valued employees.

### **Material Terms of the Amended ESPP**

The following is a brief summary of certain provisions of the Amended ESPP. A copy of the full Amended ESPP, with proposed deletions indicated by strike-out and proposed revisions to be made in the Amended ESPP indicated by bold and underline, is attached as Appendix B to this proxy statement and is incorporated herein by reference. The following description of the Amended ESPP does not purport to be complete and is qualified in its entirety by reference to Appendix B. It is our intention that the Amended ESPP qualify as an “employee stock purchase plan” under Section 423 of the Code.

*Shares Subject to the Plan.* An aggregate of 225,000 shares will be reserved for issuance under the Amended ESPP. If our capital structure changes because of a stock dividend, stock split or similar event, the number of shares that can be issued under the Amended ESPP will be appropriately adjusted. As of April 8, 2025, 94,917 shares were available under the ESPP.

*Plan Administration.* The Amended ESPP will be administered by the Compensation Committee, which will have full authority to make, administer and interpret such rules and regulations regarding the Amended ESPP as it deems advisable.

*Eligibility.* All individuals classified as employees on the payroll records of the Company or its designated subsidiaries are eligible to participate in the Amended ESPP so long as the employee has been employed for at least 30 days on the first day of the applicable offering period. No person who owns or holds, or as a result of participation in the Amended ESPP would own or hold, common stock or options to purchase common stock, that together equal to 5% or more of total outstanding common stock is entitled to participate in the Amended ESPP. No employee may exercise an option granted under the Amended ESPP that permits the employee to purchase common stock having a value of more than \$25,000 (determined using the fair market value of the stock at the time such option is granted) in any calendar year.

*Participation; Payroll Deductions.* Participation in the Amended ESPP is limited to eligible employees who authorize payroll deductions equal to a whole percentage of base pay to be applied to the Amended ESPP. Employees may authorize payroll deductions, with a minimum of 1% of base pay and a maximum of 15% of base pay. As of April 8, 2025, there are 72 employees who will be eligible to participate in the Amended ESPP. Once an employee becomes a participant in the Amended ESPP, that employee will automatically participate in successive offering periods, as described below, until such time as that employee withdraws from the Amended ESPP, becomes ineligible to participate in the Amended ESPP, or his or her employment ceases.

*Offering Periods.* Unless otherwise determined by the Administrator of the Amended ESPP, each offering of common stock under the Amended ESPP will be for a period of six months, which we refer to as an “offering”

period.” The current offering period under the ESPP ends on May 14, 2025. Subsequent offerings under the Amended ESPP will generally begin on the first business day occurring on or after each November 15 and May 15 and will end on the last business day occurring on or before the following May 14 and November 14, respectively. Shares are purchased on the last business day of each offering period, with that day being referred to as an “exercise date.” The Administrator of the Amended ESPP may establish different offering periods or exercise dates under the Amended ESPP.

*Exercise Price.* On the first day of an offering period, employees participating in that offering period will receive an option to purchase shares of our common stock. On the exercise date of each offering period, the employee is deemed to have exercised the option, at the exercise price, to the extent of accumulated payroll deductions. The option exercise price is equal to the lesser of (1) 85% the fair market value per share of our common stock on the first day of the offering period or (2) 85% of the fair market value per share of our common stock on the exercise date. The maximum number of shares of common stock that may be issued to any employee under the Amended ESPP in any offering period is the statutory limit in Section 423 of the Code or such other lesser number of shares as determined by the Administrator of the Amended ESPP from time to time.

Subject to certain limitations, the number of shares of our common stock a participant purchases in each offering period is determined by dividing the total amount of payroll deductions withheld from the participant’s compensation during the offering period by the option exercise price. In general, if an employee is no longer a participant on an exercise date, the employee’s option will be automatically terminated, and the amount of the employee’s accumulated payroll deductions will be refunded.

*Terms of Participation.* Except as may be permitted by the Administrator of the Amended ESPP in advance of an offering, a participant may not increase or decrease the amount of his or her payroll deductions during any offering period but may increase or decrease his or her payroll deduction with respect to the next offering period by filing a new enrollment form within the period beginning 15 business days before the first day of such offering period and ending on the day prior to the first day of such offering period. A participant may withdraw from an offering period at any time without affecting his or her eligibility to participate in future offering periods. If a participant withdraws from an offering period, that participant may not again participate in the same offering period, but may enroll in subsequent offering periods. An employee’s withdrawal will be effective as of the business day following the employee’s delivery of written notice of withdrawal under the Amended ESPP.

*Term; Amendments and Termination.* The Amended ESPP will continue until terminated by the Board. The Board may, in its discretion, at any time, terminate or amend the Amended ESPP. Upon termination of the Amended ESPP, all amounts in the accounts of participating employees will be refunded.

#### **New Plan Benefits**

Because participation in the Amended ESPP is voluntary, the benefits or amounts that will be received by or allocated to any individual or group of individuals under the Amended ESPP in the future are not determinable.

#### **Summary of Federal Income Tax Consequences**

The following is only a summary of the effect of the U.S. income tax laws and regulations upon an employee and us with respect to an employee’s participation in the Amended ESPP. This summary does not purport to be a complete description of all federal tax implications of participation in the Amended ESPP, nor does it discuss the income tax laws of any municipality, state or foreign country in which a participant may reside or otherwise be subject to tax.

A participant in the Amended ESPP recognizes no taxable income either as a result of participation in the Amended ESPP or upon exercise of an option to purchase shares of our common stock under the terms of the Amended ESPP.

If a participant disposes of shares purchased upon exercise of an option granted under the Amended ESPP within two years from the first day of the applicable offering period or within one year from the exercise date, which we refer to as a “disqualifying disposition,” the participant will realize ordinary income in the year of that disposition equal to the amount by which the fair market value of the shares on the date the shares were purchased exceeds the purchase price. The amount of ordinary income will be added to the participant’s basis in the shares, and any additional gain or resulting loss recognized on the disposition of the shares will be a capital gain or loss. A capital

gain or loss will be long-term if the participant's holding period is more than 12 months, or short-term if the participant's holding period is 12 months or less.

If the participant disposes of shares purchased upon exercise of an option granted under the Amended ESPP at least two years after the first day of the applicable offering period and at least one year after the exercise date, the participant will realize ordinary income in the year of disposition equal to the lesser of (1) 15% of the fair market value of the common stock on the first day of the offering period in which the shares were purchased and (2) the excess of the amount actually received for the common stock over the amount paid. The amount of any ordinary income will be added to the participant's basis in the shares, and any additional gain recognized upon the disposition after that basis adjustment will be a long-term capital gain. If the fair market value of the shares on the date of disposition is less than the exercise price, there will be no ordinary income and any loss recognized will be a long-term capital loss.

We are generally entitled to a tax deduction in the year of a disqualifying disposition equal to the amount of ordinary income recognized by the participant as a result of that disposition. In all other cases, we are not allowed a deduction.

#### **Vote Required**

Assuming a quorum is present, to be approved, the affirmative vote of the majority of the votes cast on Proposal No. 5 must be voted "FOR" the approval of Amendment No. 1 to the ESPP. Abstentions and broker non-votes will not be considered towards vote totals on Proposal No. 5.

#### **Recommendation of the Board of Directors**

**THE BOARD OF DIRECTORS RECOMMENDS A VOTE "FOR" THE APPROVAL OF AMENDMENT NO. 1 TO THE ASSEMBLY BIOSCIENCES, INC. SECOND AMENDED AND RESTATED 2018 EMPLOYEE STOCK PURCHASE PLAN.**

## EXECUTIVE OFFICERS

As of April 8, 2025, our executive officers were: Jason A. Okazaki, our Chief Executive Officer and President, William E. Delaney IV, Ph.D, our Chief Scientific Officer, Anuj Gaggar, M.D., Ph.D., our Chief Medical Officer, and Nicole S. White, Ph.D., our Chief Manufacturing Officer. Information regarding Dr. Delaney, Dr. Gaggar and Dr. White is below. For information on Mr. Okazaki, see “Proposal No. 1—Election of Directors—Nominees for Director.”

Name	Age	Business Experience
William E. Delaney IV, Ph.D.	53	Dr. Delaney has served as our Chief Scientific Officer since May 2020. Prior to joining us, Dr. Delaney served in a series of positions of increasing responsibility in Gilead’s clinical virology and biology research groups from 2000 until May 2020, culminating in his role as Executive Director, Biology. Prior to joining Gilead, Dr. Delaney was a research and molecular development fellow at Victorian Infectious Diseases Reference Laboratory from 1999 until 2000. Dr. Delaney received a B.S. in Biotechnology from the University of Delaware and a Ph.D. in Cell and Molecular Biology from Penn State University, College of Medicine.
Anuj Gaggar, M.D., Ph.D.	47	Dr. Gaggar has served as our Chief Medical Officer since November 2023. Prior to joining us, Dr. Gaggar most recently served at Arrive Bio, a private early-stage biotechnology company, as co-founder and Chief Executive Officer from April 2021 until November 2023. Prior to Arrive Bio, he served in a series of positions of increasing responsibility in the clinical research team at Gilead from December 2012 until April 2021, culminating in his role as Vice President, Clinical Research where he was responsible for scientific clinical development strategy and execution. In this role, he led the HBV cure development program, including the design and execution of global clinical trials and was the project lead for early development programs and HBV translational studies. Dr. Gaggar also contributed to the registrational studies for Vemlidy® (tenofovir alafenamide), Sovaldi® (sofosbuvir), and Veklury® (remdesivir) and served as project team lead for a portfolio of approved HCV therapeutics. Dr. Gaggar was a clinical fellow in infectious diseases at the University of California, San Francisco, where he also served as chief resident. Dr. Gaggar received a B.S. in Chemistry from Stanford University and his M.D. and Ph.D. from the University of Washington.
Nicole S. White, Ph.D.	45	Dr. White has served as our Chief Manufacturing Officer since February 2022. Dr. White served as our Senior Vice President, Pharmaceutical Development and Manufacturing from November 2020 until her promotion to Chief Manufacturing Officer. Prior to joining us, Dr. White served as Senior Director & Head of Process Chemistry at Gossamer Bio from September 2019 until November 2020 and Director of Process Chemistry from May 2018 until September 2019. Prior to joining Gossamer Bio, Dr. White served as Director of CMC at Abide Therapeutics from January 2017 until April 2018 and as Associate Director of Process Chemistry from October 2015 until January 2017. Prior to that, she held progressive leadership roles at Gilead to advance multiple programs from Phase 1 through commercial launch and helped guide the drug substance manufacturing and global outsourcing strategy. While at Gilead she contributed to the development and commercial launch of multiple antiviral programs, including Harvoni®, Vemlidy® and Vosevi®. Dr. White received a B.S. in Chemistry from the University of California, San Diego and a Ph.D. in Organic Chemistry from the University of California, Irvine.

## EXECUTIVE COMPENSATION

We are a “smaller reporting company” under Item 10 of Regulation S-K promulgated under the Exchange Act. The following compensation disclosure is intended to comply with the requirements applicable to smaller reporting companies. Although the rules allow us to provide less detail about our executive compensation program, the Compensation Committee is committed to providing all of the information necessary to help stockholders understand its executive compensation-related decisions. Accordingly, this section includes supplemental narratives that describe the 2024 executive compensation program for our named executive officers (NEOs).

### Named Executive Officers

Our named executive officers (NEOs) for the fiscal year ended December 31, 2024 are:

Name	Role During 2024
Jason A. Okazaki	Chief Executive Officer and President
William E. Delaney IV, Ph.D.	Chief Scientific Officer
Nicole S. White, Ph.D.	Chief Manufacturing Officer

### Executive Summary

#### *2024 Accomplishments*

Despite the challenging environment that biotech companies continued to face in 2024, we had a number of successes and a very productive 2024, with a number of significant accomplishments highlighted below:

#### *Corporate Accomplishments*

- Strengthened our balance sheet by raising \$42.7 million, extending our cash runway into mid-2026 by:
  - o Raising an aggregate of \$12.6 million in a June 2024 equity financing transaction
  - o Executing an equity investment of \$20.1 million by Gilead Sciences, Inc. (Gilead) pursuant to the terms of the Common Stock Purchase Agreement, as amended, between us and Gilead
  - o Receiving \$10.0 million under the collaboration agreement between us and Gilead

#### *Clinical Development Accomplishments*

- Completed Investigational New Drug (IND)/Clinical Trial Application (CTA) enabling studies for ABI-5366, ABI-1179 and ABI-6250
- Initiated both the Phase 1a and Phase 1b portions of a Phase 1a/b study of ABI-5366 (5366), a development candidate for our long-acting helicase-primase inhibitor (HPI) program targeting recurrent genital herpes
  - o Announced positive interim results from the Phase 1a portion in September 2024
- Initiated the Phase 1a portion of a Phase 1a/b study of ABI-1179, also a development candidate for our long-acting HPI program targeting recurrent genital herpes, which is exclusively licensed to us by Gilead under our collaboration
- Initiated a Phase 1a study of ABI-6250 (6250), a development candidate for our orally bioavailable hepatitis delta (HDV) entry inhibitor program
- Initiated a Phase 1b study of ABI-4334 (4334), a highly potent, next generation capsid assembly modular designed to disrupt the replication cycle of hepatitis B virus (HBV)

### ***Research and Development Accomplishments***

- Nominated ABI-7423 (7423), a development candidate in our broad-spectrum non-nucleoside polymerase inhibitor (NNPI) in our transplant-associated herpes virus program
- Advanced 7423 into IND/CTA-enabling studies
- Continued to leverage the expertise of our research team to identify new viral targets and novel compounds to address significant unmet medical needs

### ***Presentations at Scientific Conferences***

- Presented two posters and delivered an oral presentation at the 48th Annual International Herpesvirus Workshop titled:
  - o Poster: “The Helicase-Primase Inhibitor ABI-5366 Is a Novel, Potent, Long-Acting Inhibitor for the Treatment of Recurrent Genital Herpes”
  - o Poster and Oral Presentation: “Preclinical Characterization of ABI-1179, a Potent Helicase-Primase Inhibitor for the Treatment of Recurrent Genital Herpes”
- Presented a poster at the International Liver Congress™, the Annual Meeting of the European Association for the Study of the Liver titled: “ABI-6250 - Preclinical Profiling of ABI-6250, a Novel Orally Bioavailable Small-Molecule Therapeutic Candidate for the Treatment of Chronic Hepatitis D”

### ***Operational Excellence***

- Only lost one employee to turnover, while retaining all critical employees

### ***Say on Pay Vote***

At our 2024 Annual Meeting of Stockholders, our Say on Pay proposal received support of approximately 99% of the shares voted. In late 2024, we continued our narrow, targeted approach to stockholder engagement that we began in 2023, reaching out to the two institutional stockholders that held over 1% of our outstanding stock in the fall of 2024. Neither stockholder requested a meeting. We expect to evaluate our stockholder base in the fourth quarter of 2025 and continue our annual outreach efforts and request meetings from all institutions holding over 1% of our then-outstanding stock.

### ***Compensation Philosophy and Best Practices***

Our Compensation Philosophy is to “Provide Competitive Overall Compensation That Attracts, Retains and Motivates Superior Performers.” As we strive to adhere to this philosophy, we have instituted the following executive compensation best practices:

**What We Do**

- Annual Say on Pay vote
- Annual performance-based cash bonus opportunities tied to Company-wide and individual performance
- Equity grants with multi-year vesting requirements
- Minimum vesting period of one year for all equity grants
- Entirely independent Compensation Committee
- Utilize an independent compensation consultant
- Double-trigger severance and equity acceleration rights
- Clawback policy

**What We Don't Do**

- No guaranteed performance bonuses
- No excise tax gross ups
- No pension, deferred compensation or special retirement plans for executives
- No special health or welfare benefits
- No hedging or pledging of our stock
- No significant perquisites provided to our NEOs
- No stock option repricing without stockholder pre-approval

*How We Determine Executive Compensation***Overview**

The Compensation Committee believes that executive compensation should be designed to promote both short-term and long-term goals, because the pharmaceutical research and development for each of our programs requires sustained, focused effort over many years. Accordingly, it is important that the Compensation Committee's executive compensation program both (1) motivate our executives to meet short- and long-term goals and (2) align the financial interests of our employees, including our NEOs, with those of our stockholders. To achieve these goals, our compensation program is structured to:

- **Pay for Performance:** Two of the three components of our compensation program—annual cash bonuses annual equity grants—are performance-based and are intended to motivate our employees to meet both short- and long-term goals. We offer:
  - o Targeted annual performance-based cash bonus opportunities based on Company-wide performance against Board-approved corporate goals weighted to reflect their relative importance to the achievement of our goals, measured over a 12-month period and, for all employees other than our Chief Executive Officer, performance against individual performance objectives set by our employees in consultation with their managers, which may include certain department, group or team objectives applicable to these employees, and
  - o Opportunity to share in our long-term success through annual equity incentive awards, which have been comprised of stock options and time-based restricted stock units (RSUs), each of which create alignment between our employees and our stockholders, as these awards will only provide significant value if we succeed. The Compensation Committee annually reviews both the size and type of equity incentive awards for use in our broad-based annual equity granting process, taking into account our stock price and upcoming research and development milestones.
  - o In 2025, subject to stockholder approval at the Annual Meeting, we will make broad-based supplemental retention grants in the form of performance-based RSUs. For more information on this supplemental retention grant program, see "Proposal 4: Approval of Amendments No. 1 and No. 2 to the Assembly Biosciences, Inc. Amended and Restated 2018 Stock Incentive Plan."
- **Attract and Retain Superior Performers:** We provide market-competitive base salaries, performance-based cash bonus opportunities, long-term equity awards and other compensation components and benefits that are attract high caliber talent within the industry.
- **Pay Equitably:** We believe that it is important to apply generally consistent guidelines for all our employees. To deliver equitable pay for our NEOs, the Compensation Committee considers each NEO's title, role, breadth and complexity of responsibility, criticality of the role to the organization, experience, qualifications and performance, in both an individual and team context.

### ***At-Risk and Long-Term Pay***

To implement our compensation philosophy, the Compensation Committee has determined that the primary elements of our employees', including our NEOs', compensation should consist of base salary, annual performance-based cash bonuses and long-term equity incentive awards, which the Compensation Committee uses to create a pay mix designed to meet the goals of our compensation philosophy. The pay mix emphasizes "at-risk" compensation in the form of (1) long-term equity awards and (2) annual performance-based cash bonuses based on the achievement of (a) Board-approved Company-wide objectives weighted to reflect their relative importance to the achievement of our goals and (b) for all employees other than our Chief Executive Officer, individual performance objectives, which include certain department, group and/or team objectives applicable to the participants, tailored to responsibilities of each of our employees, including our NEOs.

As a result, a substantial portion of the 2024 compensation paid to each of our NEOs—64%, 47% and 47% for Mr. Okazaki, Dr. Delaney and Dr. White, respectively—consisted of "at-risk" compensation.

### ***Role of the Compensation Committee; Oversight of Executive Compensation***

The Compensation Committee develops and supervises the implementation of our compensation philosophy. The Compensation Committee also has direct responsibility for reviewing and approving the compensation of our Chief Executive Officer and each of our other executive officers, including our NEOs. To assist the Compensation Committee in determining compensation of our other executive officers, the Chief Executive Officer makes recommendations to the Compensation Committee as to the specific elements (i.e., base salary, annual performance-based cash bonus and long-term equity incentive awards) of compensation. The Chief Executive Officer does not make recommendations, and is not present for discussions, regarding his own 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 for the Compensation Committee, with the support of management and representatives from Alpine Rewards, LLC (Alpine), the Compensation Committee's independent outside compensation consultant, to review trends in biotech compensation practices and recommend the list of peer companies to be used as a reference point in this compensation review process. The peer group determination process is detailed below in "—Peer Group Process."

Our Chief Executive Officer, our Chief Human Resources Officer and our General Counsel, in addition to representatives from Alpine, regularly attend portions of the Compensation Committee meetings to provide analysis, information and recommendations regarding various human resources and compensation matters. Members of management generally do not participate in the Compensation Committee's executive sessions unless invited by the Compensation Committee to provide specific information during these closed sessions. The Chief Executive Officer is not present for any discussion of, deliberation on, or votes related to, his compensation.

### ***The Compensation Consultant***

The Compensation Committee initially retained Alpine to serve as its independent compensation consultant in June 2022. Alpine's fees are paid by us but approved by the Compensation Committee. In connection with its retention for the 2024 compensation cycle, Alpine analyzed and provided advice on, among other things, the composition of our peer group, annual performance-based cash bonuses, long-term equity incentive awards as both a portion of annual compensation and as a retention tool, compensation packages for executive officers being hired or promoted, annual compensation for the executive officers, compensation trends in the biotech industry and applicable public disclosures regarding our compensation programs.

The Compensation Committee assessed Alpine's independence and determined that the work that Alpine performed did not raise any conflicts of interest in 2024. In making this assessment, the Compensation Committee considered the independence factors enumerated in Rule 10C-1(b) under the Exchange Act, including the following factors: (1) Alpine did not provide any other services to us; (2) evaluating the level of fees Alpine received as a percentage of Alpine's firm revenues; (3) Alpine's internal policies and procedures to prevent conflicts of interest and protect independence; (4) the Alpine representatives that provided advice to the Compensation Committee neither owned any of our stock nor had any business or personal relationships with members of the Compensation Committee or our executive officers; and (5) the Compensation Committee was unaware of any relationship that may have existed between our executive officers and Alpine. The Compensation Committee continues to monitor Alpine's independence at least annually.

### Peer Group Process

As part of its analysis for 2024, Alpine collected and analyzed compensation information in September 2023 from a peer group comprised of a comparative group of biotech companies approved by the Compensation Committee.

The list of peer companies is evaluated and approved annually by the Compensation Committee at its September meeting based upon input from Alpine and management to ensure that our peer group (1) includes companies that are similar in terms of stages of development, headcount and market capitalization, (2) appropriately represents the type of companies competing with us to attract and retain talent and (3) reflects our current and future business objectives and strategy. In September 2023, with assistance from Alpine and management, the Compensation Committee revised the peer group for reference in connection with making 2024 compensation decisions and approved a peer group consisting of publicly traded biopharmaceutical companies with the following characteristics:

- Companies in Phase 1 and Phase 2 clinical development, with preference given to companies with similar therapeutic focus;
- Companies with market capitalization up to \$300 million with flexibility in valuation due to the Company's then-current market capitalization of \$48.7 million;
- Companies with fewer than 150 full-time employees, consistent with our then-current profile based on approximately two times the Company's then current headcount of 64 employees; and
- Companies located in similar "hub" locations to reflect the talent market.

Due to the above criteria, several companies were either added to or removed from the peer group as a result of M&A activity, bankruptcy proceedings, out of scope market capitalization, headcount or stage of development. 89bio, Inc., Akero Therapeutics, Inc., Atara Biotherapeutics, Inc., Concert Pharmaceuticals, Inc., CymaBay Therapeutics, Inc., Eiger BioPharmaceuticals, Inc., Jounce Therapeutics, Inc., Sangamo Therapeutics, Inc., Viking Therapeutics, Inc. and Wave Live Sciences, Ltd. were each members of our 2023 Peer Group, but were removed from the 2024 Peer Group either due to the new size parameters or because they were acquired or ceased operations.

Based on the above criteria, the Compensation Committee approved the revised peer group (the 2024 Peer Group) set forth below and used the 2024 Peer Group as one of multiple datapoints in determining 2024 compensation.

Aligos Therapeutics, Inc.	Bolt Therapeutics, Inc.*	ORIC Pharmaceuticals, Inc.
AN2 Therapeutics, Inc.*	CytomX Therapeutics, Inc.	Precision BioSciences, Inc.*
Annexon, Inc.*	HOOKIPA Pharma, Inc.	Spero Therapeutics, Inc.*
Arbutus Biopharma Corporation	Invivyd, Inc.*	Spruce Biosciences, Inc.*
aTyr Pharma, Inc.	Kronos Bio, Inc.	Terns Pharmaceuticals, Inc.
Black Diamond Therapeutics, Inc.	Olema Pharmaceuticals, Inc.	Vaxart, Inc.*

\* Added to 2024 Peer Group.

As of September 2023, when the Compensation Consultant completed its work developing recommendations for the 2024 Peer Group, the 50<sup>th</sup> percentile of market capitalization and headcount of the 2024 Peer Group were \$103.3 million (based upon a 30-day average market capitalization) and 85 employees, respectively. Meanwhile, our market capitalization and headcount were at that time \$48.7 million (based upon a 30-day average market capitalization) and 64 employees, respectively.

After the Compensation Committee approves the list of peer companies, management and Alpine 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. The Compensation Committee generally believes that to achieve our overall compensation-related goals, our compensation elements of base salary and annual performance-based bonus opportunities should target the 50<sup>th</sup> percentile of our peers and long-term equity incentive compensation should also target the 50<sup>th</sup> percentile of our peers. Despite targeting long-term equity incentive compensation at the 50<sup>th</sup> percentile of our peers, 2024 annual

equity grant values resulted in our NEOs total direct compensation to be below the 25<sup>th</sup> percentile of our peer group. For more information, see “Summary Compensation Table—Narrative Disclosure to Summary Compensation Table—Long-Term Equity Incentive Awards.”

Notwithstanding the guidelines, the Compensation Committee may, in its discretion, set an individual NEO’s compensation above or below this level, based on an individual’s experience, criticality, amount of responsibility and either individual or Company-wide performance. These recommendations are presented to the Compensation Committee individually for each NEO. The recommendations for the NEOs are discussed with our Chief Human Resources Officer and Alpine. The Chief Executive Officer is not present for any discussion of, deliberation on, or votes related to, his compensation. The Compensation Committee then determines what, if any, adjustments to the compensation elements are appropriate for executive officers.

### Summary Compensation Table

The following table shows the total compensation earned by the NEOs in the last two fiscal years.

Name and Principal Position	Year	Salary	Option Awards <sup>(1)</sup>	Non-Equity Incentive Plan Compensation <sup>(2)</sup>	All Other Compensation <sup>(3)</sup>	Total
Jason A. Okazaki	2024	\$ 626,250	\$ 637,731	\$ 488,600	\$ 14,610	\$ 1,767,191
Chief Executive Officer and President	2023	\$ 600,000	\$ 306,100	\$ 453,600	\$ 14,010	\$ 1,373,710
William E. Delaney IV, Ph.D.	2024	\$ 498,200	\$ 196,225	\$ 254,000	\$ 15,042	\$ 963,467
Chief Scientific Officer	2023	\$ 470,000	\$ 88,579	\$ 238,800	\$ 14,442	\$ 811,821
Nicole S. White, Ph.D.	2024	\$ 424,000	\$ 171,697	\$ 217,500	\$ 14,340	\$ 827,537
Chief Manufacturing Officer	2023	\$ 400,000	\$ 88,572	\$ 203,200	\$ 13,740	\$ 705,512

- (1) The reported amounts represent the grant date fair value of the award, computed in accordance with FASB ASC Topic 718 disregarding any estimated forfeitures related to service-based vesting. For a discussion of the assumptions used in calculating these values, see Note 2 to of the consolidated financial statements included in the Annual Report on Form 10-K for the fiscal year ended December 31, 2024.
- (2) Non-equity incentive plan compensation represents amounts earned as annual performance-based cash bonuses based on the achievement of Company-wide and individual performance goals and other factors deemed relevant by the Compensation Committee for the year indicated. For more information regarding the calculation of annual performance based cash bonuses, see “—Narrative to Summary Disclosure Table—Annual Performance-Based Cash Bonus.”
- (3) “All Other Compensation” represents 401(k) matching contributions made by the Company and premiums paid for group term life insurance coverage greater than \$50,000.

### Narrative Disclosure to Summary Compensation Table

The three principal components of our executive compensation program are base salary, annual performance-based cash bonus and long-term equity incentive awards. Our Compensation Committee believes that each component of executive compensation must be evaluated and determined with reference to competitive market data, individual and Company-wide performance, our recruiting and retention goals, internal equity and consistency, and other information that the Committee deems relevant. The Compensation Committee believes that in the biotech 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 primary components of our compensation packages are described in more detail below.

### Base Salary

Base salaries provide financial stability and security to our NEOs by providing a fixed amount of cash for performing their job responsibilities. Our NEOs’ base salaries are established based on each NEO’s position, criticality and scope of responsibilities, prior experience and training, then-current compensation levels and competitive market-based 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 with salaries paid by comparative companies for similar positions. In addition, 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. The NEOs' annualized base salaries for 2023 and 2024, effective as of February 16 of each year or as otherwise noted, were as follows:

NEO	2023	2024	Percentage Increase
Jason A. Okazaki	\$ 600,000	\$ 630,000	5.0%
William E. Delaney IV, Ph.D.	\$ 470,000	\$ 498,200	6.0%
Nicole S. White, Ph.D.	\$ 400,000	\$ 424,000	6.0%

(1) In 2023, the Compensation Committee elected not to increase base salary for either Dr. Delaney or Dr. White, instead making salary increases for both contingent on a capital raise that would extend our cash runway into 2025. Execution of our collaboration with Gilead, entered into in October 2023, met this goal, but rather than increasing base salaries in late 2023, the Compensation Committee decided to wait until 2024 to adjust the base salaries of Dr. Delaney and Dr. White, effective as of January 1, 2024.

### Annual Performance-Based Cash Bonus

Our employees, including our NEOs, are eligible to earn annual performance-based cash bonuses to reward strong performance and encourage retention in our sector's competitive labor market. We pay these bonuses to motivate and reward our employees for achieving or exceeding our shorter-term corporate goals, which are each designed to be measured over a calendar year.

Annual performance-based cash bonuses are earned based on the achievement of significant pre-set, objective Company-wide goals weighted to reflect their relative importance to the achievement of our goals, with specific goals tailored to the NEOs' areas of responsibility. These performance goals are pre-set by our Compensation Committee in the first quarter of the applicable calendar year and approved by the Board. Actual bonus amounts earned are determined in the first quarter of the following year based on achievement of the pre-set Company-wide goals and, for employees other than our Chief Executive Officer, individual performance objectives set by our employees, including our NEOs other than the Chief Executive Officer, in consultation with their managers, which may include certain department, group or team objectives applicable to these employees. The Compensation Committee may increase or decrease an NEO's bonus payment (above or below the target percentage) based on its assessment of our Company-wide performance and that NEO's individual performance during a given year. For 2024, annual bonuses were based on achievement of a broad variety of goals and included specific goals related to clinical development, research, financing/corporate development and employee retention. The selected goals were designed such that high rates of achievement overall required strong performances by all of our internal teams. Our 2024 corporate objectives, a statement regarding achievement, relative weight and achievement of each as of December 31, 2024 were as follows:

2024 Corporate Objectives				
Functions	Goals	Achievement	Weight	Achieved
Development	5366: Complete IND/CTA-enabling studies and initiate Phase 1a with interim data available in the second half of 2024	Results far exceeded expectations; announced in the third quarter of 2024	30.00%	70.00%
	1179: Complete IND/CTA-enabling studies and initiate Phase 1a study by end of 2024	Completed		
	6250: Complete IND/CTA-enabling studies and initiate Phase 1a study by end of 2024	Completed		
	4334: Initiate Phase 1b study by mid-year timeframe	Completed		
Research	Nominate and initiate IND/CTA-enabling activities for one development candidate with a potential best-in-class profile	Completed: 7423	15.00%	15.00%
	Advance at least one additional discovery program into lead optimization by end of 2024	Completed: Currently undisclosed target	5.00%	5.00%

Finance/ Corporate Development	Execute on a transaction, or series of transactions, and/or achieve partnership triggering points to extend cash runway into mid-2026	Financing transactions in June 2024 and December 2024  Collaboration amendment in December 2024	25.00%	31.25%
Organization	Develop, engage and retain critical talent throughout the organization	Only one resignation (anticipated and quickly replaced)	5.00%	8.00%

Total Achievement 129.25%

2024 was a very strong year for us as an organization, as we moved four investigative product candidates forward in their respective clinical studies. Our Research and Development teams performed especially strongly. Both teams achieved all of their 2024 goals, and the Development team surpassed its goal, as 5366 Phase 1a data far exceeded the team's expectations. In addition to these Research and Development achievements, our Finance and Corporate Development teams were able to extend our cash runway into mid-2026 by bringing in an aggregate of approximately \$42.7 million dollars, comprised of \$12.6 million raised in a financing transaction in June 2024 and \$30.1 million through an additional equity investment and accelerated funding from Gilead. In addition, our organization, with the assistance of the Human Resources team, retained all of our most important talent, which was critical to the progress of our pipeline.

After receiving and considering management's analysis and recommendations, the Compensation Committee determined that the percentage achievement of the 2024 Company-wide performance goals was 129.25%. This determination of achievement for our 2024 corporate objectives was supported by the excellent performances of our Finance, Research, Development and Manufacturing teams, as well as our successful retention of our critical talent, which met, and in some cases far exceeded, the 2024 goals.

In determining individual performance-based cash bonus payouts, the NEOs' potential performance-based cash bonuses were weighted differently, depending on their respective areas of responsibility and contributions to our Company-wide goals.

Dr. Delaney's individual performance was evaluated based on his successful leadership of our Research organization and the Research team's strong year, which included continued execution on 5366, 1179 and 6250, all of which were critical in 2024. In addition, the Research team delivered on its goal of nominating and initiating IND/CTA-enabling studies for a new development candidate in our NNPI program, with the nomination of 7423.

Dr. White's individual performance was evaluated based on her successful leadership of our CMC organization and the CMC team's similarly strong year, including continued execution on 5366, 1179 and 6250, in addition to key contributions to the nomination of 7423. In addition, Dr. White served an integral role in developing a new formulation of 1179, which we believe contributed to the early success of 1179 in clinical studies.

Each of our employees, including our NEOs, is eligible for a target bonus, which is set as a percentage of annualized base salary. The Compensation Committee determines these target bonus percentages based on the range of target bonus percentages for similar positions in our peer group, and our Compensation Committee periodically reviews and evaluates our NEOs' target bonus percentages as compared to our peers. The target bonus percentages for our NEOs are set forth in the table below.

NEO	2024 Target Bonus		2024 Actual Bonus	
	Percentage of Base Salary	Amount	Amount	Percentage of Target Bonus
Jason A. Okazaki	60%	\$ 378,000	\$ 488,600	129.25%
William E. Delaney IV, Ph.D.	40%	\$ 199,280	\$ 254,000	127.46%
Nicole S. White, Ph.D.	40%	\$ 169,600	\$ 217,500	128.24%

### *Long-term Equity Incentive Awards*

Our equity-based long-term incentive program is designed to align our employees', including our NEOs', long-term incentives with those of our stockholders. In approving annual equity awards, the Compensation Committee's and the Board's guiding principles are to create a program that is designed to:

- Motivate management to generate significant total stockholder return, as measured by sustained increases in our stock price,
- Incentivize and reward our NEOs for achieving multi-year strategic goals, and
- Attract, motivate and retain high caliber employees.

We believe that participation by our employees, including our NEOs, in our long-term equity incentive program is a critical factor in the achievement of long-term Company-wide goals and business objectives. In furtherance of these objectives, equity awards are a critical component of our compensation practices.

We believe that stock options provide meaningful incentives to employees, including our NEOs, to achieve increases in the value of our stock over time, because employees profit from stock options only if our stock price increases relative to the stock option's exercise price. Though we no longer utilize RSU grants for our NEOs, we believe that RSUs are also effective tools to retain and motivate our employees below the SVP level to achieve longer-term financial goals that we expect to lead to increased value to our stockholders while resulting in less dilution to our stockholders than stock options. In each case the interests of our employees, including our NEOs, and our stockholders are aligned; as our stock price increases, both our employees and our stockholders benefit. We impose a minimum vesting period of one year on all equity grants made to employees, including our NEOs. Our standard vesting terms for equity grants made to employees are as follows: (1) 25% of stock options vest on the first anniversary of the grant date, with the remaining 75% vesting monthly over the next thirty six months; and (2) 25% of RSUs vest on each of the first four anniversaries of the grant date. In each case, the equity grants vest over four years.

Grants of annual equity awards made to our NEOs, other than those to our Chief Executive Officer, are recommended by the Chief Executive Officer, considering input from the Compensation Committee's independent compensation consultant, and approved by the Compensation Committee. Grants of equity awards made to our Chief Executive Officer are discussed and determined by the Compensation Committee, in consultation with the Compensation Committee's independent compensation consultant, without the Chief Executive Officer present at any time.

In 2024, based on analysis of the Compensation Committee's independent compensation consultant, while most of our employees received our standard mix of stock options and time-based restricted stock units (RSUs), the Compensation Committee approved 2024 annual grants to our NEOs targeted at the 50<sup>th</sup> percentile of our peer group as a percentage of then-outstanding shares through awards of 100% stock options. The Compensation Committee agreed that it was appropriate for our NEOs' annual equity grants to be made entirely of stock options, given the potential upside in our stock price, as our stock was trading at \$13.30 on the date of grant and the performance-based, at-risk nature of options. While the annual equity grants are typically targeted at the 50<sup>th</sup> percentile of our peer group as a percentage of outstanding shares, as a result of the price at which our stock was trading, the actual grant date values for our NEOs' grants were at or below the 25<sup>th</sup> percentile of our peer group.

The Compensation Committee considers the value of existing long-term equity incentive awards, internal pay equity considerations and individual and Company-wide performance when determining the size of annual equity grants. We believe the applicable vesting criteria encourages long-term employment, while allowing our NEOs to realize compensation in line with the value that they have created for our stockholders. After considering these factors, in March 2024, the Compensation Committee approved the annual grants to our NEOs summarized in the table below.

NEO	Options to Purchase Common Stock	
	Number of Shares	Grant Date Fair Value <sup>(1)</sup>
Jason A. Okazaki	65,000	\$ 637,731
William E. Delaney IV, Ph.D.	20,000	\$ 196,225
Nicole S. White, Ph.D.	17,500	\$ 171,697

(1) The reported amounts represent the grant date fair value of the award, computed in accordance with FASB ASC Topic 718 disregarding any estimated forfeitures related to service-based vesting. For a discussion of the assumptions used in calculating these values, see Note 2 to of the consolidated financial statements included in the Annual Report on Form 10-K for the fiscal year ended December 31, 2024.

### ***Other Compensation***

In 2024, we maintained broad-based benefits and perquisites that are provided to all eligible employees on the same terms, including 401(k) match, health insurance, life and disability insurance, dental insurance, sick leave and non-accrual vacation time.

### ***Other Executive Compensation Policies***

#### *Insider Trading Policy*

We have an Insider Trading Policy that governs the purchase, sale and/or other dispositions of our securities by our officers, directors and employees. As part of our Insider Trading Policy, we prohibit those subject to the policy from engaging in the following transactions related to our securities:

- Short sales;
- Publicly traded options, including put options, call options or other derivative securities;
- Hedging and monetization transactions, including through the use of financial instruments such as prepaid variable forwards, equity swaps, collars and exchange funds; and
- Margin accounts and pledged securities.

Our Insider Trading Policy prohibits these types of transactions because there is both a heightened legal risk and the appearance of improper conduct if covered persons take part in transactions of this sort.

This Insider Trading Policy is reasonably designed to promote compliance with insider trading laws, rules and regulations, and the listing standards applicable our company. A copy of our Insider Trading Policy was filed as Exhibit 19.1 to our Annual Report on Form 10-K for the fiscal year ended December 31, 2024. In addition, with regard to the Company's trading in its own securities, it is the Company's policy to comply with the federal securities laws and the applicable exchange listing requirements.

#### *Clawback Policy*

In September 2023, the Board approved a clawback policy that went into effect on October 2, 2023. The clawback policy complies with both the SEC's final rules adopted pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act and the related Nasdaq listing standards.

### *Sections 280G and 4999 of the Internal Revenue Code*

Sections 280G and 4999 of the Internal Revenue Code (the Code) provide that executive officers and directors who hold significant equity interests and certain other service providers may be subject to significant additional taxes if they receive payments or benefits in connection with a change in control that exceeds certain prescribed limits, and that we (or a successor) may forfeit a deduction on the amounts subject to this additional tax. We have not agreed to provide any executive officer with a “gross-up” or other reimbursement payment for any tax liability that the executive officer might owe because of the application of Sections 280G or 4999 of the Code.

### *Compensation Risk Assessment*

We believe that our executive compensation policies and programs do not encourage excessive or unnecessary risk taking. This is primarily because our compensation programs are designed to encourage our executive officers and other employees to focus on both short-term and long-term strategic goals. As a result, we do not believe that our compensation programs are reasonably likely to have a material adverse effect on us.

### *Stock Ownership Guidelines*

The Compensation Committee most recently discussed the implementation of stock ownership guidelines in May 2024. The Compensation Committee noted the volatile nature of stock prices in the biotech sector and determined that it is not appropriate for us to adopt stock ownership guidelines at this time. The Compensation Committee intends to review this topic on an annual basis, including reviewing the practices of our peers. In addition, we are regularly reviewing the holdings of our executive team to ensure there is sufficient alignment with our stockholders.

### **Employment Arrangements**

As of December 31, 2024, all our NEOs served pursuant to employment agreements. These agreements all share the following characteristics:

- Upon a change of control, double-trigger severance and equity acceleration rights;
- No guaranteed bonuses;
- No excise tax gross-ups; and
- No special health or welfare benefits.

### ***Jason A. Okazaki***

In December 2022, we entered into an amended and restated agreement effective January 1, 2023 with Mr. Okazaki in connection with his promotion to Chief Executive Officer and President. Mr. Okazaki’s employment agreement provided for an initial annualized base salary of \$600,000 and an annual performance-based incentive cash bonus in an amount initially targeted at 60% of Mr. Okazaki’s base salary. Effective February 2024, Mr. Okazaki’s base salary was increased to \$630,000 and his target bonus opportunity as a percentage of salary was unchanged.

If Mr. Okazaki’s employment is terminated by us as a result of his disability or without cause or by Mr. Okazaki for good reason, in each case during the period from one month prior to and through 12 months, following a change of control (as defined in his employment agreement), provided that Mr. Okazaki signs and does not revoke a general release of claims against us, we will provide him the following benefits: (1) a lump sum payment equal to 18 months of his then-current base salary; (2) an amount equal to 1.5 times his full target annual bonus for the year in which the termination occurred; (3) immediate vesting in full of all equity awards (including equity awards that vest based on performance but only to the extent accelerated vesting is provided in the agreements governing such equity awards); provided, however that (a) in the event that such termination occurs during the one month prior to a change of control, any equity-based compensation outstanding as of the termination will not accelerate but will remain outstanding and eligible to vest immediately prior to the consummation of the change of control and (b) in the event that such termination occurs prior to a change of control and such change of control is not consummated on or prior to the date one month after such termination, no vesting will occur and any equity awards outstanding as of the termination will vest, if at all, and terminate in accordance with, and to the extent provided in the non-change of control separation provisions and the equity award agreements; (4) extension of the exercise period for all vested

stock options held by Mr. Okazaki as of the termination date until the earlier of the first anniversary of the employment termination date and the termination date of the vested stock options; and (5) if Mr. Okazaki properly elects COBRA, reimbursement of the portion of the COBRA premiums that we would have paid had he remained employed for 18 months following termination or the end of his COBRA continuation period, whichever is earlier; provided, however, our obligation to pay such premiums will terminate earlier if he becomes eligible for insurance benefits from another employer during such period.

If Mr. Okazaki's employment is terminated as a result of his disability, by us without cause or by Mr. Okazaki for good reason, and such termination does not occur within 12 months following a change of control and provided that Mr. Okazaki signs and does not revoke a general release of claims against us, we will provide him the following benefits: (1) continued payment of his then-current base salary for 12 months following date of termination of employment, (2) an annual performance bonus, if any, for the year in which termination occurs in an amount that Mr. Okazaki would have earned based on the Company's performance if Mr. Okazaki was employed for the full year, prorated based on the number of days employed for the year of termination, (3) all equity awards that would have time vested during the 12 months following the termination date will accelerate and vest, (4) extension of the exercise period for all vested stock options held by Mr. Okazaki until the earlier of the first anniversary of the employment termination date and the termination date of the vested stock options and (5) if Mr. Okazaki properly elects COBRA, reimbursement of the portion of the COBRA premiums that we would have paid had he remained employed for 12 months following termination or the end of his COBRA continuation period, whichever is earlier; provided, however, our obligation to pay such premiums will terminate earlier if he becomes eligible for insurance benefits from another employer during such period. Such benefits are in lieu of, and not in addition to, the benefits described in the preceding paragraph.

If the payments or benefits payable to Mr. Okazaki in connection with a change in control would be subject to the excise tax on golden parachutes imposed under Section 4999 of the Code, then those payments or benefits will be reduced if such reduction would result in a higher net after-tax benefit to Mr. Okazaki.

***William E. Delaney IV, Ph.D.***

In May 2020, we entered into an employment agreement with Dr. Delaney. Dr. Delaney's base salary in 2020 was \$415,000 and his target bonus opportunity was 40% of his base salary. Effective September 2021, Dr. Delaney's annualized base salary was increased to \$470,000 to bring his base salary more in line with Chief Scientific Officers at comparable companies, and his target bonus opportunity remained unchanged. Effective January 2024, Dr. Delaney's base salary was increased to \$498,200, and his target bonus opportunity as a percentage of salary remained unchanged.

For a description of Dr. Delaney's severance entitlements under his employment agreement, see "—Severance and Change in Control Provisions" below.

***Nicole S. White, Ph.D.***

In February 2022, we entered into an employment agreement with Dr. White. Dr. White's base salary in 2022 was \$400,000 and her target bonus opportunity was 40% of her base salary. Effective January 2024, Dr. White's base salary was increased to \$424,000, and her target bonus opportunity as a percentage of salary remained unchanged.

For a description of Dr. White's severance entitlements under her employment agreement, see "—Severance and Change in Control Provisions" below.

***Severance and Change in Control Provisions***

In addition to the terms detailed above, the employment agreements between us and Dr. Delaney and Dr. White share the following terms:

- If the NEO's employment is terminated by us as a result of his or her disability or without cause or by the NEO for good reason within 12 months immediately following a change of control (as defined in his or her employment agreement), provided that the NEO signs and does not revoke a general release of claims against us, we will provide him or her the following benefits: (1) a lump sum payment equal to 12 months of his or her then-current base salary; (2) an amount equal to his or her full target annual bonus for the year in which the termination occurred; (3) immediate vesting in full of all equity awards

held by the NEO that are subject to time-based vesting; and (4) if the NEO properly elects COBRA, reimbursement of the portion of the COBRA premiums that we would have paid had he or she remained employed for 12 months following termination or the end of his or her COBRA continuation period, whichever is earlier; provided, however, our obligation to pay such premiums will terminate earlier if he or she becomes eligible for insurance benefits from another employer during such period.

- If the NEO's employment is terminated as a result of his or her disability, by us without cause or by the NEO for good reason, and such termination does not occur within 12 months following a change of control and provided that the NEO signs and does not revoke a general release of claims against us, we will provide him or her the following benefits: (1) continued payment of his or her then-current base salary for 12 months following date of termination of employment, and (2) if the NEO properly elects COBRA, reimbursement of the portion of the COBRA premiums that we would have paid had he or she remained employed for 12 months following termination or the end of his or her COBRA continuation period, whichever is earlier; provided, however, our obligation to pay such premiums will terminate earlier if he or she becomes eligible for insurance benefits from another employer during such period. Such benefits are in lieu of, and not in addition to, the benefits described in the preceding paragraph.
- If the payments or benefits payable to the NEO in connection with a change in control would be subject to the excise tax on golden parachutes imposed under Section 4999 of the Code, then those payments or benefits will be reduced if such reduction would result in a higher net after-tax benefit to the NEO.

## Outstanding Equity Awards at December 31, 2024

The following table contains certain information concerning outstanding equity awards held by the NEOs as of December 31, 2024. All share numbers in the table below have been equitably adjusted in connection with our February 2024 1-for-12 reverse stock split.

Name	Option Awards				Stock Awards				
	Number of Securities Underlying Unexercised Options Exercisable	Number of Securities Underlying Unexercised Options Unexercisable	Option Exercise Price	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested	Market Value of Shares or Units of Stock That Have Not Vested	Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested	Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested	
Jason A. Okazaki	20,833	— <sup>(1)</sup>	\$ 180.60	03/26/2030	—	—	—	—	
	6,445	429 <sup>(1)</sup>	\$ 51.96	03/29/2031	—	—	—	—	
	7,161	3,255 <sup>(1)</sup>	\$ 27.60	03/29/2032	—	—	—	—	
	12,153	8,680 <sup>(1)</sup>	\$ 24.12	08/01/2032	—	—	—	—	
	17,135	22,031 <sup>(1)</sup>	\$ 10.68	03/29/2033	—	—	—	—	
	—	65,000 <sup>(1)</sup>	\$ 13.30	03/29/2034	—	—	—	—	
	—	—	—	—	286 <sup>(2)</sup>	\$ 4,513	—	—	
	—	—	—	—	1,302 <sup>(3)</sup>	\$ 20,546	—	—	
	—	—	—	—	—	—	2,604 <sup>(4)</sup>	\$ 41,091	
	—	—	—	—	—	—	—	—	
William E. Delaney IV, Ph.D.	8,333	— <sup>(1)</sup>	\$ 246.24	05/27/2030	—	—	—	—	
	5,273	351 <sup>(1)</sup>	\$ 51.96	03/29/2031	—	—	—	—	
	5,729	2,603 <sup>(1)</sup>	\$ 27.60	03/29/2032	—	—	—	—	
	9,724	6,942 <sup>(1)</sup>	\$ 24.12	08/01/2032	—	—	—	—	
	5,104	6,562 <sup>(1)</sup>	\$ 10.68	03/29/2033	—	—	—	—	
	—	20,000 <sup>(1)</sup>	\$ 13.30	03/29/2034	—	—	—	—	
	—	—	—	—	233 <sup>(2)</sup>	\$ 3,677	—	—	
	—	—	—	—	1,041 <sup>(3)</sup>	\$ 16,427	—	—	
	—	—	—	—	—	—	2,083 <sup>(4)</sup>	\$ 32,870	
	—	—	—	—	—	—	—	—	
Nicole S. White, Ph.D.	4,166	— <sup>(1)</sup>	\$ 67.44	11/16/2030	—	—	—	—	
	5,732	2,600 <sup>(1)</sup>	\$ 27.60	03/29/2032	—	—	—	—	
	9,725	6,940 <sup>(1)</sup>	\$ 24.12	08/01/2032	—	—	—	—	
	5,104	6,561 <sup>(1)</sup>	\$ 10.68	03/29/2033	—	—	—	—	
	—	17,500 <sup>(1)</sup>	\$ 13.30	03/29/2034	—	—	—	—	
	—	—	—	—	1,041 <sup>(3)</sup>	\$ 16,427	—	—	
	—	—	—	—	—	—	2,083 <sup>(4)</sup>	\$ 32,870	

- (1) These options vest and become exercisable 25% on the first anniversary of the grant date and the remainder over the next 36 months in approximately equal monthly installments, provided the executive officer continues to be employed with us through the applicable vesting date.
- (2) These RSUs vest in four approximately equal installments on March 29, 2022, March 29, 2023, March 29, 2024 and March 29, 2025, provided the executive officer continues to be employed with us through the applicable vesting date.
- (3) These RSUs vest in four approximately equal installments on March 29, 2023, March 29, 2024, March 29, 2025 and March 29, 2026, provided the executive officer continues to be employed with us through the applicable vesting date.
- (4) Reflects market-based RSUs granted on March 29, 2022. As of December 31, 2024, none of the market-based RSUs have vested.

## Pay Versus Performance

As required by Section 953(a) of the Dodd-Frank Wall Street Reform and Consumer Protection Act and Item 402(v) of Regulation S-K, we are providing the following information about the relationship between executive compensation actually paid and our financial performance.

### Required Tabular Disclosure

The following table discloses information on "compensation actually paid" to our principal executive officer (PEO) and, on average, to our other NEOs (non-PEO NEOs) during the specified years alongside total shareholder return (TSR). All share numbers in the tables below have been equitably adjusted in connection with our February 2024 1-for-12 reverse stock split.

Year	Summary Compensation Table Total for PEO <sup>(1)</sup>	Compensation Actually Paid to PEO <sup>(1)(2)(3)</sup>	Average Summary Compensation Table Total for NEOs <sup>(1)</sup>	Average Compensation Actually Paid to NEOs <sup>(1)(2)(3)</sup>	Total Shareholder Return Based on an Initial Fixed \$100 Investment	Net Loss (in thousands)
2024	\$ 1,767,191	\$ 2,147,925	\$ 895,502	\$ 1,078,074	\$ 160.34	\$ (40,177)
2023	\$ 1,373,710	\$ 1,132,572	\$ 758,666	\$ 593,973	\$ 63.08	\$ (61,228)
2022	\$ 1,759,202	\$ 1,318,469	\$ 1,605,579	\$ 1,117,797	\$ 21.49	\$ (93,092)

- (1) Amounts represent compensation actually paid to our PEO and the average compensation actually paid to our remaining NEOs for the relevant fiscal year, as determined under SEC rules (and described below), which includes the individuals indicated in the table below for each fiscal year:

Year	PEO	Non-PEO NEOs
2024	Jason A. Okazaki	William E. Delaney IV, Ph.D. and Nicole S. White, Ph.D.
2023	Jason A. Okazaki	William E. Delaney IV, Ph.D. and Nicole S. White, Ph.D.
2022	John G. McHutchison, A.O., M.D.	Jason A. Okazaki and William E. Delaney IV, Ph.D.

- (2) The amounts shown for Compensation Actually Paid have been calculated in accordance with Item 402(v) of Regulation S-K of the SEC rules and do not reflect compensation actually earned, realized, or received by our NEOs. These amounts reflect the Summary Compensation Table Total with certain required adjustments as described in footnote 3 below.
- (3) Compensation Actually Paid reflects the exclusions and inclusions of certain amounts for the PEO and the NEOs for the applicable year as set forth below. Equity values are calculated in accordance with FASB ASC Topic 718. Amounts in the Deductions: Stock and Option Awards column are the totals from the Stock and Option Awards columns set forth in the Summary Compensation Table.

Year	Summary Compensation Table Total for PEO	Deductions: Stock and Option Awards	Fair Value of Shares Granted During the Year at 12/31	Change in Fair Value of Prior Years' Awards (Unvested at 12/31)	Change in Fair Value of Prior Years' Awards Vested during Applicable Year	Compensation Actually Paid to PEO
2024	\$ 1,767,191	\$ (637,731)	\$ 714,577	\$ 166,704	\$ 137,183	\$ 2,147,925
2023	\$ 1,373,710	\$ (306,100)	\$ 272,345	\$ (186,472)	\$ (20,912)	\$ 1,132,572
2022	\$ 1,759,202	\$ (902,402)	\$ 452,827	\$ 14,884	\$ (6,042)	\$ 1,318,469

Year	Average Summary Compensation Table Total for NEOs	Deductions: Stock and Option Awards	Fair Value of Shares Granted During the Year at 12/31	Change in Fair Value of Prior Years' Awards (Unvested at 12/31)	Change in Fair Value of Prior Years' Awards Vested during Applicable Year	Average Compensation Actually Paid to NEOs
2024	\$ 895,502	\$ (183,961)	\$ 206,128	\$ 81,774	\$ 78,631	\$ 1,078,074
2023	\$ 758,666	\$ (88,575)	\$ 81,117	\$ (142,012)	\$ (15,223)	\$ 593,973
2022	\$ 1,605,579	\$ (838,738)	\$ 394,622	\$ (40,448)	\$ (3,219)	\$ 1,117,797

#### Equity Award Granting Practices

Every year since 2017, we have made our annual equity grants on March 29, other than the 2020 annual equity grants made on March 27, which was the last business day prior to March 29. We issue these grants on March 29, because, with one exception since 2017, the grants have been made at least a week after the filing of our Annual Report on Form 10-K (Form 10-K), which typically cleanses our employees of material non-public information.

However, in 2024, as a result of complex accounting issues related to our collaboration with Gilead executed in 2023, we filed our Form 10-K later than normal, on March 28, 2024, one day prior to our annual equity grants. The sizes of the annual equity grants had been determined in advance of the filing of the Form 10-K. Tabular disclosure related to the 2024 annual equity grants made to NEOs can be found in the below table.

The Committee does not take material nonpublic information into account when determining the grant date, vesting date or other terms and conditions of equity awards and does not time the disclosure of material nonpublic information for the purpose of affecting the value of executive compensation.

#### Item 402(x) Information

Name	Grant Date	Number of securities Underlying the Award	Exercise Price of the Award (\$/Sh)	Grand Date Fair Value of the Award	Percentage Change in the Closing Market Price of the Securities Underlying the Award Between the Trading Day Ending Immediately Prior to the Disclosure of Material Nonpublic Information and the Trading Day Beginning Immediately Following the Disclosure of Material Nonpublic Information
Jason A. Okazaki	3/29/2024	65,000	\$ 13.30	\$ 637,731	-3 %
William E. Delaney IV, Ph.D.	3/29/2024	20,000	\$ 13.30	\$ 196,225	-3 %
Nicole S. White, Ph.D.	3/29/2024	17,500	\$ 13.30	\$ 171,697	-3 %

## CERTAIN RELATIONSHIPS AND RELATED PARTY TRANSACTIONS

The written charter of our Audit Committee authorizes 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 only on terms no less favorable to us than could be obtained from unaffiliated third parties.

The following is a description of transactions since January 1, 2023, to which we have been a party in which the amount involved exceeded \$120,000 and in which any of our executive officers, directors or beneficial holders of more than 5% of our capital stock had or will have a direct or indirect material interest, other than compensation arrangements which are disclosed elsewhere in this proxy statement:

We and Gilead Sciences, Inc. (Gilead), a beneficial holder of more than 5% of our capital stock, are parties to the following agreements:

- Option, License and Collaboration Agreement (the Collaboration Agreement) with Gilead entered into in October 2023 pursuant to which we received an \$85 million upfront cash payment pursuant to which Gilead will (1) exclusively license to us its helicase-primase inhibitor and non-nucleoside polymerase inhibitor programs, while retaining opt-in rights to these programs and (2) have an option to take an exclusive license, on a program-by-program basis, to all of our other current and future pipeline programs. During the 12-year collaboration term, subject to payment by Gilead of extension fees of \$75 million in each of the third, fifth and seventh years of the collaboration, and for a specified period thereafter, Gilead may exercise its opt-in rights, on a program-by-program basis, on one of two timepoints, and upon Gilead's exercise, we are eligible to receive option exercise payments ranging from \$45 million to \$125 million per program depending on the type of program and when the option is exercised. In December 2024, we and Gilead entered into the First Amendment to the Gilead Collaboration Agreement (the First Amendment), which restructured certain option time points and fees payable to us under the terms of the Gilead Collaboration Agreement due to an agreed upon development plan for ABI-6250 (6250). To facilitate this development plan, (1) we received a payment of \$10 million from Gilead and (2) the opt-in fee payable by Gilead in connection with 6250 was restructured, though it remains in the range of opt-in fees detailed above. The \$10 million payment received in connection with the First Amendment is creditable towards future collaboration-related payments payable by Gilead. If Gilead exercises opt-in rights to any current or future program under the collaboration, we are eligible to receive up to \$330 million in potential regulatory and commercial milestones on that program, in addition to royalties ranging from the high single-digits to high teens, depending on the clinical stage of the applicable program at the time of the opt-in. Following Gilead's exercise of its option for each of our programs, we may opt in to cover 40% of the research and development costs for the applicable program in the United States and share 40% of the profits and operating loss in the United States for products within the program in lieu of receiving milestones and royalties for that program in the United States, unless we later opt out of the cost/profit share for the program. Prior to Gilead's potential exercise of its opt-in, we are primarily responsible for all discovery, research and development on both our programs and the two Gilead-contributed programs. Following Gilead's opt-in, Gilead will control the further discovery, research, development and commercialization on any optioned program. As of December 31, 2024, we have received \$95 million from Gilead under the Collaboration Agreement, and as of December 31, 2024, Gilead has not obtained an exclusive license to any of our investigational products.
- Common Stock Purchase Agreement and Investor Rights Agreement with Gilead entered into in October 2023 (together, the Equity Agreements), which were both amended in June 2024 in connection with a financing transaction (the 2024 Financing Transaction). Pursuant to the Equity Agreements, Gilead made an upfront equity investment of \$15 million by purchasing from us 1,089,472 shares at a purchase price of \$13.92. As a part of the 2024 Financing Transaction, we and Gilead entered into a Securities Purchase Agreement for the issuance and sale, in a private placement, of 179,500 shares of

our common stock and a warrant to purchase up to 179,500 shares of our common stock at a combined purchase price of \$15.46. The common stock and warrant were sold to Gilead pursuant to the terms of the Investor Rights Agreement. The warrant sold to Gilead has an exercise price equal to \$17.00 per share, became immediately exercisable on the date of issuance and will expire on June 18, 2029. Subject to certain exceptions, neither Gilead nor its affiliates may exercise any portion of the warrant to the extent that Gilead would own more than 19.9% of the number of our shares of common stock outstanding immediately after giving effect to such exercise. The terms of the Equity Agreements provided Gilead the right to elect to purchase additional shares of common stock from us at a premium in an amount that results in Gilead owning 29.9% of our then-outstanding voting common stock. This right was exercised in December 2024, at a purchase price of \$21.37 per share, which represents a 35% premium to the 30-trading day volume weighted average price immediately prior to the date of purchase. The Equity Agreements also include standstill and lockup provisions, with customary exceptions, and provide Gilead with certain other stock purchase rights and registration rights, as well as the right to designate two directors (or, alternatively, board observers at Gilead's election) to our Board. Gilead's current director designees are Tomas Cihlar, Ph.D. and Robert D. Cook II. As of April 8, 2025, Gilead held approximately 28.9% of our outstanding common stock.

## STOCK OWNERSHIP INFORMATION

### Security Ownership of Certain Beneficial Owners and Management

The following table sets forth certain information regarding the ownership of shares of our common stock based on 7,637,553 shares outstanding as of April 8, 2025, by (1) each person known by us to beneficially own more than 5% of the outstanding shares of common stock, (2) each of our directors and (3) each of our NEOs and (4) all of our directors and current executive officers as a group.

This table is based upon information supplied by our directors and NEOs and from Schedules 13D and 13G filed with the SEC by our stockholders. 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. Share ownership in each case includes (1) shares issuable upon exercise of options and warrants that may be exercised within 60 days after April 8, 2025 and (2) RSUs held by the individual that are scheduled to vest and settle within 60 days after April 8, 2025 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., Two Tower Place, 7th Floor, South San Francisco, California 94080. Applicable percentages are based on 7,637,553 shares outstanding as of April 8, 2025.

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

Name of Beneficial Owner	Shares Beneficially Owned	Percentage Owned (%)
<b>5% Stockholders:</b>		
Gilead Sciences, Inc. <sup>(1)</sup>	2,209,471	28.9 %
Alexander Schornstein <sup>(2)</sup>	728,113	9.5 %
<b>Directors and Named Executive Officers:</b>		
William R. Ringo, Jr. <sup>(3)</sup>	12,536	*
Anthony E. Altig <sup>(4)</sup>	11,747	*
Tomas Cihlar, Ph.D. <sup>(5)</sup>	—	*
Gina Consylman <sup>(6)</sup>	8,998	*
Robert D. Cook II <sup>(5)</sup>	—	*
Sir Michael Houghton, Ph.D. <sup>(7)</sup>	11,784	*
Lisa R. Johnson-Pratt <sup>(6)</sup>	8,582	*
Susan Mahony, Ph.D. <sup>(6)</sup>	11,289	*
John G. McHutchison, A.O., M.D. <sup>(8)</sup>	118,539	1.6 %
Jason A. Okazaki <sup>(9)</sup>	104,990	1.4 %
William E. Delaney IV, Ph.D. <sup>(10)</sup>	60,521	*
Nicole S. White, Ph.D. <sup>(11)</sup>	41,820	*
<b>All directors and executive officers as a group (13 persons)</b>	<b>406,439</b>	<b>5.3 %</b>

\* Less than 1%.

- (1) Based on Schedule 13D/A filed with the SEC on December 23, 2024 by Gilead Sciences, Inc., reporting beneficial ownership as of December 19, 2024. The principal business address of Gilead is 333 Lakeside Drive, Foster City, California 94404.
- (2) Based on Schedule 13G/A filed with the SEC on December 23, 2024 by Alexander Schornstein, reporting beneficial ownership as of December 19, 2024. Mr. Schornstein's address is Kaiser-Friedrich-Allee 2, 52074 Aachen, Germany, 004915142314669.
- (3) Includes 1,455 shares of common stock and 11,081 shares of common stock that Mr. Ringo has the right to acquire from us within 60 days after April 8, 2025 pursuant to the exercise of stock options.
- (4) Includes 666 shares of common stock and 11,081 shares of common stock that Mr. Altig has the right to acquire from us within 60 days after April 8, 2025 pursuant to the exercise of stock options.

- (5) Dr. Cihlar and Mr. Cook, as Gilead designees, do not receive option grants in connection with their appointments to, or service on, the Board.
  - (6) Includes shares of common stock that the individual has the right to acquire from us within 60 days after April 8, 2025 pursuant to the exercise of stock options.
  - (7) Includes 3,202 shares of common stock and 8,582 shares of common stock that Dr. Houghton has the right to acquire from us within 60 days after April 8, 2025 pursuant to the exercise of stock options.
  - (8) Includes 16,604 shares of common stock and 101,935 shares of common stock that Dr. McHutchison has the right to acquire from us within 60 days after April 8, 2025 pursuant to the exercise of stock options.
  - (9) Includes 14,107 shares of common stock and 90,883 shares of common stock that Mr. Okazaki has the right to acquire from us within 60 days after April 8, 2025 pursuant to the exercise of stock options.
  - (10) Includes 16,005 shares of common stock and 44,516 shares of common stock that Dr. Delaney has the right to acquire from us within 60 days after April 8, 2025 pursuant to the exercise of stock options.
  - (11) Includes 7,822 shares of common stock and 33,998 shares of common stock that Dr. White has the right to acquire from us within 60 days after April 8, 2025 pursuant to the exercise of stock options.
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## **DEADLINE FOR STOCKHOLDER PROPOSALS FOR THE 2026 ANNUAL MEETING OF STOCKHOLDERS**

Any stockholder who meets the requirements of the proxy rules under the Exchange Act may submit proposals to the Board to be included in next year's proxy statement and on our proxy card for the 2026 Annual Meeting of Stockholders. 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, any proposals must be submitted in writing by December 24, 2025, to our Corporate Secretary at Two Tower Place, 7th Floor, South San Francisco, California 94080; provided, however, that if our 2026 Annual Meeting of Stockholders is held before May 6, 2026 or after July 5, 2026, then the deadline is a reasonable amount of time prior to the date we begin to print and send our proxy statement for the 2026 Annual Meeting of Stockholders.

Subject to compliance with applicable requirements of state law and the Exchange Act, our Bylaws also provide for separate notice procedures to propose business to be considered by stockholders at a meeting. Such proposals must comply with the requirements, including without limitation, the separate notice procedures, of our Bylaws. If you wish to submit such a proposal, written notice must be received by the Corporate Secretary no later than the close of business not more than 120 days before or less than 90 days before the anniversary date of the immediately preceding annual meeting. For our 2026 Annual Meeting of Stockholders, such notice must be received at the address above no earlier than the close of business on February 5, 2026 and no later than the close of business on March 7, 2026.

Our Bylaws permit a stockholder, or a group of up to 20 eligible stockholders, that has owned at least 3% of our outstanding common stock for at least three years to nominate and include in our proxy statement candidates for the Board, subject to certain requirements. Any such nomination must be received at the address above no earlier than the close of business on November 24, 2025 and no later than the close of business on December 24, 2025; provided, however, that if our 2026 Annual Meeting of Stockholders is held before May 6, 2026 or after July 5, 2026, then the deadline is the later of close of business on the date that is 180 days prior to the 2026 Annual Meeting of Stockholders and the tenth day following the date that the 2026 Annual Meeting of Stockholders is first publicly announced or disclosed. Any such notice must meet the other requirements set forth in our Bylaws, which are publicly available on the SEC's website.

Our Bylaws also provide for separate notice procedures to nominate a person as a director. Such nominations must comply with the requirements, including without limitation, the separate notice procedures, of our Bylaws. If you wish to nominate a director, written notice must be received by the Corporate Secretary no later than the close of business not more than 120 days before or less than 90 days before the anniversary date of the immediately preceding annual meeting. For our 2026 Annual Meeting of Stockholders, such notice must be received at the address above no earlier than the close of business on February 5, 2026 and no later than the close of business on March 7, 2026; provided, however, that if our 2026 Annual Meeting of Stockholders is held before May 11, 2026 or after June 30, 2026, then the deadline is no later than the close of business on the tenth day following the day on which notice of the date of the 2026 Annual Meeting of Stockholders was mailed or public disclosure of the date of the 2026 Annual Meeting of Stockholders was made, whichever first occurs.

## **DELIVERY OF DOCUMENTS TO STOCKHOLDERS SHARING AN ADDRESS**

The 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 +1.833.509.4583 or by mailing a request to Two Tower Place, 7th Floor, South San Francisco, California 94080. Stockholders at a shared address who receive multiple Proxy Availability Notices 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.

## **OTHER MATTERS**

The Board knows of no business to be brought before the meeting other than the proposals identified in this proxy statement. If any other matters properly come before the stockholders at the Annual Meeting, it is the intention of the persons named on the proxy to vote the shares represented thereby in accordance with their best judgment.

**Proposed Amendment No. 1 to Assembly Biosciences, Inc. Amended and Restated 2018 Stock Incentive Plan**

**AMENDMENT NO. 1**

**TO**

**ASSEMBLY BIOSCIENCES, INC.  
AMENDED AND RESTATED 2018 STOCK INCENTIVE PLAN**

Assembly Biosciences, Inc., a Delaware corporation (the “Company”) adopted the Assembly Biosciences, Inc. Amended and Restated 2018 Stock Incentive Plan on May 29, 2024 (the “Plan”).

Prior to this Amendment No. 1 to the Plan, the number of shares of Common Stock, par value \$0.001 per share, reserved under the Plan was 1,103,333.

The Board of Directors of the Company (the “Board”) may, with stockholder approval, amend the Plan to increase the number of authorized shares reserved for issuance under the Plan.

The Board has determined that it is advantageous to the Company and necessary to attract and retain the best available personnel to amend the Plan to increase the number of shares reserved for issuance under the Plan.

Now, therefore, the Plan is hereby amended and restated as follows:

1. Section 3(a) of the Plan shall be amended as follows:

“(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 One Million Four Hundred Seventy-Eight Thousand Three Hundred Thirty-Three (1,478,333) Shares. The Shares granted under the Plan may be authorized, but unissued, or reacquired Common Stock.”

Except as expressly set forth in this Amendment No. 1, all other terms and conditions set forth in the Plan shall remain in full force and effect. Each capitalized term used and not defined herein shall have the meaning set forth in the Plan.

Subject to approval of the stockholders, this Amendment No. 1 has been adopted by the Board of Directors of the Company as of March 26, 2025.

This Amendment No. 1 will be submitted to the stockholders of the Company for approval at the annual stockholders meeting to be held on June 5, 2025 and will become effective upon receipt of approval by the stockholders.

March 26, 2025: Subject to Stockholder Approval, adopted by Board of Directors

June [●], 2025: Approved by Stockholders

**Proposed Amendment No. 2 to Assembly Biosciences, Inc. Amended and Restated 2018 Stock Incentive Plan**

**AMENDMENT NO. 2**

**TO**

**ASSEMBLY BIOSCIENCES, INC.  
AMENDED AND RESTATED 2018 STOCK INCENTIVE PLAN**

Assembly Biosciences, Inc., a Delaware corporation (the “Company”) adopted the Assembly Biosciences, Inc. Amended and Restated 2018 Stock Incentive Plan on May 29, 2024 (the “Plan”).

Prior to this Amendment No. 2 to the Plan, assuming Amendment No. 1 is approved by the Company’s stockholders, the number of shares of Common Stock, par value \$0.001 per share, reserved under the Plan was 1,478,333.

The Board of Directors of the Company (the “Board”) may, with stockholder approval, amend the Plan to increase the number of authorized shares reserved for issuance under the Plan.

The Board has determined that it is advantageous to the Company and necessary to attract and retain the best available personnel to amend the Plan to increase the number of shares reserved for issuance under the Plan.

Now, therefore, the Plan is hereby amended as follows:

1. Section 3(a) of the Plan shall be amended and restated as follows:

“(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 One Million Four Hundred Seventy-Eight Thousand Three Hundred Thirty-Three (1,478,333) Shares. In addition, Two Hundred Twenty-Five Thousand (225,000) additional Shares may be issued, provided that such Awards are subject to performance-based vesting. The Shares granted under the Plan may be authorized, but unissued, or reacquired Common Stock. ”

Except as expressly set forth in this Amendment No. 2, all other terms and conditions set forth in the Plan shall remain in full force and effect. Each capitalized term used and not defined herein shall have the meaning set forth in the Plan.

Subject to approval of the stockholders, this Amendment No. 1 has been adopted by the Board of Directors of the Company as of March 26, 2025.

This Amendment No. 2 will be submitted to the stockholders of the Company for approval at the annual stockholders meeting to be held on June 5, 2025 and will become effective upon receipt of approval by the stockholders.

March 26, 2025: Subject to Stockholder Approval, adopted by Board of Directors

June [●], 2025: Approved by Stockholders

## Assembly Biosciences, Inc. 2018 Stock Incentive Plan, Incorporating Proposed Amendments

## ASSEMBLY BIOSCIENCES, INC.

## AMENDED AND RESTATED 2018 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 provides bona fide services to the Company or any Related Entity, within the meaning of Form S-8 promulgated under the Securities Act of 1933, as amended, and provided, further, that a Consultant will include only those persons to whom the issuance of Shares may be registered under Form S-8 promulgated under the Securities Act of 1933, as amended.

(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.

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

(r) “**Disability**” shall have the meaning set forth in 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 (2) years after the date the Employee was granted the Incentive Stock Option, or (ii) one (1) 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, and 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 designated and qualified as an incentive stock option within the meaning of Section 422 of the Code.

(z) “**Non-Qualified Stock Option**” means an Option that is not 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) “**Plan**” means this Assembly Biosciences, Inc. 2018 Stock Incentive Plan.
- (ee) “**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.
- (ff) “**Related Entity**” means any Parent or Subsidiary of the Company.
- (gg) “**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.
- (hh) “**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.
- (ii) “**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.
- (jj) “**Rule 16b-3**” means Rule 16b-3 promulgated under the Exchange Act or any successor thereto.
- (kk) “**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.
- (ll) “**Share**” means a share of the Common Stock.
- (mm) “**Subsidiary**” means a “subsidiary corporation,” whether now or hereafter existing, as defined in Section 424(f) of the Code.
- (nn) “**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 ~~One Million One Hundred Three Thousand Three Hundred Thirty-Three (1,103,333)~~ **One Million Four Hundred Seventy-Eight Thousand Three Hundred Thirty-Three (1,478,333)** Shares. **In addition, Two Hundred Twenty-Five Thousand (225,000) additional Shares may be issued, provided that such Awards are subject to performance-based vesting.** 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 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 is exercised through the tendering of shares of Common Stock (either actually or through attestation) or withholding shares of Common Stock, 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(k) of this 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.

(c) Notwithstanding anything to the contrary in this Plan, the value of all Awards awarded under this Plan and all other cash compensation paid by the Company to any non-employee Director in any calendar year shall not exceed \$1,000,000. For the purpose of this limitation, the value of any Award shall be its grant date fair value, as determined in accordance with ASC 718 or successor provision but excluding the impact of estimated forfeitures related to service-based vesting provisions.

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.

(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 (1) 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) 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.

(h) 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.

(i) 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.

(j) 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.

(k) 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 one hundred percent (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(k) shall be deemed to have been converted into a Non-Qualified Stock Option immediately prior to such surrender.

(l) 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.

(m) 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, retirement, separation of service 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 other Awards, such price as is determined by the Administrator.

(iv) 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 withholding obligation with respect to the exercise of Awards; provided, however, that the amount withheld does not exceed the maximum statutory tax rate or such lesser amount as is necessary to avoid liability accounting treatment for Awards granted under the Plan. 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 (1) 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 (1) 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) Treatment of Awards in Corporate Transaction. Except as the Administrator may otherwise specify with respect to particular Awards in the relevant Award Agreement, in the case of and subject to the consummation of a Corporate Transaction, the parties to the Corporate Transaction may cause the Awards to be Assumed or Replaced by the successor entity as such parties shall agree. To the extent the parties to such Corporate Transaction do not provide for the Awards to be Assumed or Replaced upon the effective time of the Corporate Transaction, the Plan and all outstanding Awards granted under the Plan shall terminate. In such case, except as may be otherwise expressly provided in the relevant Award Agreement, all Awards with solely time-based vesting that are not vested and/or exercisable immediately prior to the effective time of the Corporate Transaction shall become fully vested and exercisable as of immediately prior to the effective time of the Corporate Transaction and all Awards with conditions and restrictions relating to the attainment of performance goals shall be deemed to vest and become nonforfeitable as of the Corporate Transaction as provided in the relevant Award Agreement or if not provided for in the relevant Award Agreement shall be deemed to vest and become nonforfeitable as of the Corporate Transaction assuming the higher of (i) achievement of all relevant performance goals at the "target" level (prorated based upon the length of time within the performance period that has elapsed prior the Corporate Transaction or partial achievement of the performance goals), or (ii) actual achievement of all relevant performance goals as of the date of such Corporate Transaction. In the event of such termination of the Awards, the Company shall have the option (in its sole discretion) to (1) make or provide for a payment, in cash or in kind, to the Grantees holding Options and SARs, in exchange for the cancellation thereof, in an amount equal to the difference between (A) the Sale Price multiplied by the number of Shares subject to outstanding Options and SARs and (B) the aggregate exercise price of all such outstanding Options and SARs (provided that, in the case of an Option or SAR with an exercise price equal to or more than the Sale Price, such Option or SAR shall be cancelled for no consideration); or (2) permit each Grantee, within a specified period of time prior to the consummation of the Corporate Transaction as determined by the Administrator, to exercise all outstanding Options and SARs (to the extent then exercisable including due to acceleration as contemplated by this Section 13(a) if the Awards are not Assumed or Replaced) held by such Grantee as of immediately prior to the effective time of the Corporate Transaction. In the event of a termination of Awards pursuant to this Section 13(a), the Company shall also have the option (in its sole discretion) to make or provide for a payment, in cash or in kind, to the Grantees holding other Awards in an amount equal to the Sale Price multiplied by the number of vested Shares under such Awards. For purposes of this Section 13(a), "Sale Price" means the value as determined by the Administrator of the consideration payable, or otherwise to be received by stockholders, per Share pursuant to a 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 March 13, 2034. Subject to 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. 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.

21. 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.

22. 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.

23. 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.

24. 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 March 13, 2024 and the stockholders on May 29, 2024

Amendment No. 1 approved by the Board of Directors on March 26, 2025 and the stockholders on June [●], 2025.

Amendment No. 2 approved by the Board of Directors on March 26, 2025 and the stockholders on June [●], 2025.

**Proposed Amendment No. 1 to Assembly Biosciences, Inc. Second Amended and Restated  
2018 Employee Stock Purchase Plan**

**AMENDMENT NO. 1**

**TO**

**ASSEMBLY BIOSCIENCES, INC.  
SECOND AMENDED AND RESTATED 2018 EMPLOYEE STOCK PURCHASE PLAN**

Assembly Biosciences, Inc., a Delaware corporation (the “Company”) adopted the Assembly Biosciences, Inc. Second Amended and Restated 2018 Employee Stock Purchase Plan on May 29, 2024 (the “ESPP”).

Prior to this Amendment No. 1 to the ESPP, the number of shares of Common Stock, par value \$0.001 per share, reserved under the ESPP was 164,500.

The Board of Directors of the Company (the “Board”) may, with stockholder approval, amend the ESPP to increase the number of authorized shares reserved for issuance under the ESPP.

The Board has determined that it is advantageous to the Company and necessary to attract and retain the best available personnel to amend the ESPP to increase the number of shares reserved for issuance under the ESPP.

Now, therefore, the ESPP is hereby amended as follows:

1. The lead-in to the ESPP shall be amended and restated as follows:

“(a) “The purpose of the Assembly Biosciences, Inc. Second Amended and Restated 2018 Employee Stock Purchase Plan (“the Plan”) is to provide eligible employees of Assembly Biosciences, Inc. (the “Company”) and each Designated Subsidiary (as defined in Section 11) with opportunities to purchase shares of the Company’s common stock, par value \$0.001 per share (the “Common Stock”). The maximum aggregate number of shares of Common Stock that may be issued under the Plan is increased from 164,500 shares of Common Stock to 225,000 shares of Common Stock, which shares have been approved and reserved for this purpose.”

Except as expressly set forth in this Amendment No. 1, all other terms and conditions set forth in the ESPP shall remain in full force and effect. Each capitalized term used and not defined herein shall have the meaning set forth in the ESPP.

Subject to approval of the stockholders, this Amendment No. 1 has been adopted by the Board of Directors of the Company as of March 26, 2025.

This Amendment No. 1 will be submitted to the stockholders of the Company for approval at the annual stockholders meeting to be held on June 5, 2025 and will become effective upon receipt of approval by the stockholders.

March 26, 2025: Subject to Stockholder Approval, adopted by Board of Directors

June [●], 2025: Approved by Stockholders

**Assembly Biosciences, Inc. 2018 Second Amended and Restated Employee Stock Purchase Plan, Incorporating Proposed Amendment**

**SECOND AMENDED AND RESTATED 2018 EMPLOYEE STOCK PURCHASE PLAN**

~~The purpose of the Assembly Biosciences, Inc. 2018 Employee Stock Purchase Plan (“the Plan”) is to provide eligible employees of Assembly Biosciences, Inc. (the “Company”) and each Designated Subsidiary (as defined in Section 11) with opportunities to purchase shares of the Company’s common stock, par value \$0.01 per share (the “Common Stock”). An~~ ~~The maximum aggregate number of shares of Common Stock that may be issued under the Plan of is increased from 1,300,000 108,333 shares of Common Stock (post reverse stock split) to 164,500 shares of Common Stock, which shares have been approved and reserved for this purpose.~~ **The purpose of the Assembly Biosciences, Inc. Second Amended and Restated 2018 Employee Stock Purchase Plan (“the Plan”) is to provide eligible employees of Assembly Biosciences, Inc. (the “Company”) and each Designated Subsidiary (as defined in Section 11) with opportunities to purchase shares of the Company’s common stock, par value \$0.001 per share (the “Common Stock”). The maximum aggregate number of shares of Common Stock that may be issued under the Plan is increased from 164,500 shares of Common Stock to 225,000 shares of Common Stock, which shares have been approved and reserved for this purpose.**

The Plan includes two components: a Code Section 423 Component (the “423 Component”) and a non-Code Section 423 Component (the “Non-423 Component”). It is intended for the 423 Component to constitute an “employee stock purchase plan” within the meaning of Section 423(b) of the U.S. Internal Revenue Code of 1986, as amended (the “Code”) and the 423 Component shall be interpreted in accordance with that intent (although the Company makes no undertaking or representation to maintain such qualification). In addition, this Plan authorizes the grant of options under the Non-423 Component that does not qualify as an “employee stock purchase plan” under Section 423 of the Code. Except as otherwise provided herein, the Non-423 Component will operate and be administered in the same manner as the 423 Component.

1. **Administration.** The Plan will be administered by the person or persons (the “Administrator”) appointed by the Company’s Board of Directors (the “Board”) for such purpose. The Administrator has authority at any time to: (i) adopt, alter and repeal such rules, guidelines and practices for the administration of the Plan and for its own acts and proceedings as it shall deem advisable; (ii) interpret the terms and provisions of the Plan; (iii) make all determinations it deems advisable for the administration of the Plan; (iv) decide all disputes arising in connection with the Plan; and (v) otherwise supervise the administration of the Plan. All interpretations and decisions of the Administrator shall be binding on all persons, including the Company and the Participants. No member of the Board or individual exercising administrative authority with respect to the Plan shall be liable for any action or determination made in good faith with respect to the Plan or any option granted hereunder.

2. **Offerings.** The Company will make one or more offerings to eligible employees to purchase Common Stock under the Plan (“Offerings”). Unless otherwise determined by the Administrator, the initial Offering will begin on June 15, 2018 and will end on the following November 14th (the “Initial Offering”). Thereafter, unless otherwise determined by the Administrator, an Offering will begin on the first business day occurring on or after each November 15th and May 15th and will end on the last business day occurring on or before the following May 14th and November 14th, respectively. The Administrator may, in its discretion, designate a different period for any Offering, provided that no Offering shall exceed six months in duration or overlap any other Offering.

3. **Eligibility.** All individuals classified as employees on the payroll records of the Company and each Designated Subsidiary are eligible to participate in any one or more of the Offerings under the Plan, provided that as of the first day of the applicable Offering (the “Offering Date”) they are employed by the Company or a Designated Subsidiary and have completed at least 30 days of employment. Notwithstanding any other provision herein, individuals who are not contemporaneously classified as employees of the Company or a Designated Subsidiary for purposes of the Company’s or applicable Designated Subsidiary’s payroll system are not considered to be eligible employees of the Company or any Designated Subsidiary and shall not be eligible to participate in the Plan. In the event any such individuals are reclassified as employees of the Company or a Designated Subsidiary for any purpose, including, without limitation, common law or statutory employees, by any action of any third party, including, without limitation, any government agency, or as a result of any private lawsuit, action or administrative proceeding, such individuals shall, notwithstanding such reclassification, remain ineligible for participation.

Notwithstanding the foregoing, the exclusive means for individuals who are not contemporaneously classified as employees of the Company or a Designated Subsidiary on the Company's or Designated Subsidiary's payroll system to become eligible to participate in this Plan is through an amendment to this Plan, duly executed by the Company, which specifically renders such individuals eligible to participate herein.

#### 4. Participation.

(a) An eligible employee who is not a Participant in any prior Offering may participate in a subsequent Offering by submitting an enrollment form to his or her appropriate payroll location at least 15 business days before the Offering Date (or by such other deadline as shall be established by the Administrator for the Offering).

(b) The enrollment form will (a) state a whole percentage to be deducted from an eligible employee's Compensation (as defined in Section 11) per pay period, (b) authorize the purchase of Common Stock in each Offering in accordance with the terms of the Plan and (c) specify the exact name or names in which shares of Common Stock purchased for such individual are to be issued pursuant to Section 10. An employee who does not enroll in accordance with these procedures will be deemed to have waived the right to participate. Unless a Participant files a new enrollment form or withdraws from the Plan, such Participant's deductions and purchases will continue at the same percentage of Compensation for future Offerings, provided he or she remains eligible.

(c) Notwithstanding the foregoing, participation in the Plan will neither be permitted nor be denied contrary to the requirements of the Code.

5. Employee Contributions. Each eligible employee may authorize payroll deductions at a minimum of one percent up to a maximum of 15 percent of such employee's Compensation for each pay period. The Company will maintain book accounts showing the amount of payroll deductions made by each Participant for each Offering. No interest will accrue or be paid on payroll deductions.

6. Deduction Changes. Except as may be determined by the Administrator in advance of an Offering, a Participant may not increase or decrease his or her payroll deduction during any Offering, but may increase or decrease his or her payroll deduction with respect to the next Offering (subject to the limitations of Section 5) by filing a new enrollment form at least 15 business days before the next Offering Date (or by such other deadline as shall be established by the Administrator for the Offering). The Administrator may, in advance of any Offering, establish rules permitting a Participant to increase, decrease or terminate his or her payroll deduction during an Offering.

7. Withdrawal. A Participant may withdraw from participation in the Plan by delivering a written notice of withdrawal to his or her appropriate payroll location. The Participant's withdrawal will be effective as of the next business day. Following a Participant's withdrawal, the Company will promptly refund such individual's entire account balance under the Plan to him or her (after payment for any Common Stock purchased before the effective date of withdrawal). Partial withdrawals are not permitted. Such an employee may not begin participation again during the remainder of the Offering, but may enroll in a subsequent Offering in accordance with Section 4.

8. Grant of Options. On each Offering Date, the Company will grant to each eligible employee who is then a Participant in the Plan an option ("Option") to purchase on the last day of such Offering (the "Exercise Date"), at the Option Price hereinafter provided for, the lowest of (a) a number of shares of Common Stock determined by dividing such Participant's accumulated payroll deductions on such Exercise Date by the Option Price (as defined herein) or (b) such maximum number of shares as shall have been established by the Administrator in advance of the Offering; provided, however, that such Option shall be subject to the limitations set forth below. Each Participant's Option shall be exercisable only to the extent of such Participant's accumulated payroll deductions on the Exercise Date. The purchase price for each share purchased under each Option (the "Option Price") will be 85 percent of the Fair Market Value of the Common Stock on the Offering Date or the Exercise Date, whichever is less.

Notwithstanding the foregoing, no Participant may be granted an option hereunder if such Participant, immediately after the option was granted, would be treated as owning stock possessing five percent or more of the total combined voting power or value of all classes of stock of the Company or any Parent or Subsidiary (as defined in Section 11). For purposes of the preceding sentence, the attribution rules of Section 424(d) of the Code shall apply in determining the stock ownership of a Participant, and all stock which the Participant has a contractual right

to purchase shall be treated as stock owned by the Participant. In addition, no Participant may be granted an Option which permits his or her rights to purchase stock under the Plan, and any other employee stock purchase plan of the Company and its Parents and Subsidiaries, to accrue at a rate which exceeds \$25,000 of the fair market value of such stock (determined on the option grant date or dates) for each calendar year in which the Option is outstanding at any time. The purpose of the limitation in the preceding sentence is to comply with Section 423(b)(8) of the Code and shall be applied taking Options into account in the order in which they were granted.

9. Exercise of Option and Purchase of Shares. Each employee who continues to be a Participant in the Plan on the Exercise Date shall be deemed to have exercised his or her Option on such date and shall acquire from the Company such number of whole shares of Common Stock reserved for the purpose of the Plan as his or her accumulated payroll deductions on such date will purchase at the Option Price, subject to any other limitations contained in the Plan. Any amount remaining in a Participant's account at the end of an Offering solely by reason of the inability to purchase a fractional share will be carried forward to the next Offering; any other balance remaining in a Participant's account at the end of an Offering will be refunded to the Participant promptly.

10. Issuance of Certificates. Certificates representing shares of Common Stock purchased under the Plan may be issued only in the name of the employee, in the name of the employee and another person of legal age as joint tenants with rights of survivorship, or in the name of a broker authorized by the employee to be his, her or their, nominee for such purpose.

#### 11. Definitions.

The term "Compensation" means the amount of base pay, prior to salary reduction pursuant to Sections 125, 132(f) or 401(k) of the Code, but excluding overtime, commissions, incentive or bonus awards, allowances and reimbursements for expenses such as relocation allowances or travel expenses, income or gains on the exercise of Company stock options, and similar items.

The term "Designated Subsidiary" means any present or future Subsidiary (as defined below) that has been designated by the Board to participate in the Plan. The Board may so designate any Subsidiary, or revoke any such designation, at any time and from time to time, either before or after the Plan is approved by the stockholders and may further designate such Subsidiaries as participating in the 423 Component or the Non-423 Component. The current list of Designated Subsidiaries is attached hereto as Appendix A.

The term "Fair Market Value of the Common Stock" on any given date means the fair market value of the Common Stock determined in good faith by the Administrator; provided, however, that if the Common Stock is admitted to quotation on the National Association of Securities Dealers Automated Quotation System ("NASDAQ"), NASDAQ Global Select Market or The NASDAQ Capital Market of The NASDAQ Stock Market LLC or another national securities exchange, the determination shall be made by reference to the closing price on such date. If there is no closing price for such date, the determination shall be made by reference to the last date preceding such date for which there is a closing price.

The term "Parent" means a "parent corporation" with respect to the Company, as defined in Section 424(e) of the Code.

The term "Participant" means an individual who is eligible as determined in Section 3 and who has complied with the provisions of Section 4.

The term "Subsidiary" means a "subsidiary corporation" with respect to the Company, as defined in Section 424(f) of the Code.

The term "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.

12. Rights on Termination of Employment. If a Participant's employment terminates for any reason before the Exercise Date for any Offering, no payroll deduction will be taken from any pay due and owing to the Participant and the balance in the Participant's account will be paid to such Participant or, in the case of such Participant's death, to his or her designated beneficiary as if such Participant had withdrawn from the Plan under Section 7. An employee will be deemed to have terminated employment, for this purpose, if the corporation that employs him or her, having been a Designated Subsidiary, ceases to be a Subsidiary, or if the employee is transferred to any corporation other than the Company or a Designated Subsidiary. An employee will not be deemed to have terminated employment for this purpose, if the employee is on an approved leave of absence for military service or sickness or for any other purpose approved by the Company, if the employee's right to reemployment is guaranteed either by a statute or by contract or under the policy pursuant to which the leave of absence was granted or if the Administrator otherwise provides in writing.

13. Special Rules. Notwithstanding anything herein to the contrary, the Administrator may adopt special rules applicable to the employees of a particular Designated Subsidiary, whenever the Administrator determines that such rules are necessary or appropriate for the implementation of the Plan in a jurisdiction where such Designated Subsidiary has employees; provided that if such rules are inconsistent with the requirements of Section 423(b) of the Code, these employees will participate in the Non-423 Component. Any special rules established pursuant to this Section 13 shall, to the extent possible, result in the employees subject to such rules having substantially the same rights as other Participants in the Plan.

14. Optionees Not Stockholders. Neither the granting of an Option to a Participant nor the deductions from his or her pay shall constitute such Participant a holder of the shares of Common Stock covered by an Option under the Plan until such shares have been purchased by and issued to him or her.

15. Rights Not Transferable. Rights under the Plan are not transferable by a Participant other than by will or the laws of descent and distribution, and are exercisable during the Participant's lifetime only by the Participant.

16. Designation of Beneficiary.

(a) A Participant may file a written designation of a beneficiary who is to receive any shares of Common Stock and/or cash, if any, from the Participant's account under the Plan in the event of such Participant's death subsequent to the end of an Offering but prior to delivery to the Participant of such shares of Common Stock or cash. In addition, a Participant may file a written designation of a beneficiary who is to receive any cash from the Participant's account under the Plan in the event of such Participant's death during an Offering. Any such designation shall be on a form provided by or otherwise acceptable to the Company.

(b) The Participant may change such designation of beneficiary at any time by written notice to the Company. In the event of the death of a Participant and in the absence of a beneficiary validly designated under the Plan who is living at the time of such Participant's death, the Company shall deliver such shares of Common Stock and/or cash to the executor or administrator of the estate of the Participant, or if no such executor or administrator has been

appointed (to the knowledge of the Company), the Company, in its sole discretion, may deliver such shares of Common Stock and/or cash to the spouse or to any one or more dependents or relatives of the Participant, or if no spouse, dependent or relative is known to the Company, then to such other person as the Company may designate.

17. Application of Funds. All funds received or held by the Company under the Plan may be combined with other corporate funds and may be used for any corporate purpose.

18. Adjustment in Case of Changes Affecting Common Stock; Corporate Transaction.

(a) In the event of a subdivision of outstanding shares of Common Stock, the payment of a dividend in Common Stock or any other change affecting the Common Stock, the number of shares approved for the Plan shall be equitably or proportionately adjusted to give proper effect to such event.

(b) In the event of a Corporate Transaction, then the Participants' accumulated payroll deductions under an ongoing Offering shall be used to purchase shares of Common Stock subject to the limitations in this Plan on a date determined by the Company within ten (10) business days prior to the closing of the Corporate Transaction, which date shall constitute the Exercise Date under this Plan, and the Plan shall terminate immediately after such Exercise Date and the issuance of the shares purchased on such Exercise Date.

19. Amendment of the Plan. The Board may at any time and from time to time amend the Plan in any respect, except that without the approval within 12 months of such Board action by the stockholders, no amendment shall be made increasing the number of shares approved for the Plan or making any other change that would require stockholder approval in order for the Plan, as amended, to qualify as an "employee stock purchase plan" under Section 423(b) of the Code.

20. Insufficient Shares. If the total number of shares of Common Stock that would otherwise be purchased on any Exercise Date plus the number of shares purchased under previous Offerings under the Plan exceeds the maximum number of shares issuable under the Plan, the shares then available shall be apportioned among Participants in proportion to the amount of payroll deductions accumulated on behalf of each Participant that would otherwise be used to purchase Common Stock on such Exercise Date.

21. Termination of the Plan. Except as otherwise contemplated under Section 18(b) with respect to a Corporate Transaction, the Plan may be terminated at any time by the Board. Upon termination of the Plan, all amounts in the accounts of Participants shall be promptly refunded.

22. Governmental Regulations. The Company's obligation to sell and deliver Common Stock under the Plan is subject to obtaining all governmental approvals required in connection with the authorization, issuance, or sale of such stock.

23. Governing Law. This Plan and all Options and actions taken thereunder shall be governed by, and construed in accordance with, the laws of the State of Delaware, applied without regard to conflict of law principles.

24. Issuance of Shares. Shares may be issued upon exercise of an Option from authorized but unissued Common Stock, from shares held in the treasury of the Company, or from any other proper source.

25. Tax Withholding. Participation in the Plan is subject to any minimum required tax withholding on income of the Participant in connection with the Plan. Each Participant agrees, by entering the Plan, that the Company and its Subsidiaries shall have the right to deduct any such taxes from any payment of any kind otherwise due to the Participant, including shares issuable under the Plan.

26. Notification Upon Sale of Shares. Each Participant agrees, by entering the Plan, to give the Company prompt notice of any disposition of shares purchased under the Plan where such disposition occurs within two years after the date of grant of the Option pursuant to which such shares were purchased or within one year after the date such shares were purchased.

27. Effective Date and Approval of Shareholders. The Plan shall take effect on the later of the date it is adopted by the Board and the date it is approved by the holders of a majority of the votes cast at a meeting of stockholders at which a quorum is present or by written consent of the stockholders.

**APPENDIX A**  
**Designated Subsidiaries**

None



[www.assemblybio.com](http://www.assemblybio.com)

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ASSEMBLY BIOSCIENCES, INC.  
TWO TOWER PLACE, 7TH FLOOR  
SOUTH SAN FRANCISCO, CA 94080



**VOTE BY INTERNET**  
Before The Meeting - Go to [www.proxyvote.com](http://www.proxyvote.com) or scan the QR Barcode above

Use the Internet to transmit your voting instructions and for electronic delivery of information. Vote by 11:59 P.M. EDT on June 4, 2025. Have your proxy card in hand when you access the website and follow the instructions to obtain your records and to create an electronic voting instruction form.

During The Meeting - Go to [www.virtualshareholdermeeting.com/ASMB2025](http://www.virtualshareholdermeeting.com/ASMB2025)

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

**VOTE BY PHONE - 1-800-690-6903**  
Use any touch-tone telephone to transmit your voting instructions. Vote by 11:59 P.M. EDT on June 4, 2025. 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:

V65642-P26884

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

THIS PROXY CARD IS VALID ONLY WHEN SIGNED AND DATED.

ASSEMBLY BIOSCIENCES, INC.							
The Board of Directors recommends you vote FOR the following ten nominees.							
1. Election of Directors.							
Nominees:	For	Against	Abstain	The Board of Directors recommends you vote FOR proposals 2, 3, 4a, 4b and 5.	For	Against	Abstain
1a. William R. Ringo, Jr.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. Approval, on a non-binding advisory basis, of our named executive officers' compensation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1b. Anthony E. Altig	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. Ratification of the selection of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2025.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1c. Tomas Cihlar, Ph.D.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4a. Approval of an amendment to our Amended and Restated 2018 Stock Incentive Plan to increase the number of shares reserved for issuance thereunder by 375,000 shares.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1d. Gina Consylman	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4b. Approval of an additional amendment to our Amended and Restated 2018 Stock Incentive Plan to increase the number of shares reserved for issuance thereunder by 225,000 shares to support a broad-based supplemental retention grant program.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1e. Robert D. Cook II	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5. Approval of an amendment to our Second Amended and Restated 2018 Employee Stock Purchase Plan to increase the authorized number of shares reserved for issuance thereunder to 225,000 shares.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1f. Sir Michael Houghton, Ph.D.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>NOTE:</b> Your proxy holder will also vote in their discretion upon such other matters that may properly come before the meeting and any adjournment or postponement thereof.			
1g. Lisa R. Johnson-Pratt, M.D.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
1h. Susan Mahony, Ph.D.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
1i. John G. McHutchison, A.O., M.D.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
1j. Jason A. Okazaki	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
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.							
<input type="text"/>	<input type="text"/>			<input type="text"/>	<input type="text"/>		
Signature [PLEASE SIGN WITHIN BOX]	Date			Signature (Joint Owners)	Date		

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

The Notice of Assembly Biosciences, Inc.'s 2025 Annual Meeting of Stockholders and Proxy Statement and Annual Report for the fiscal year ended December 31, 2024 are available at [www.proxyvote.com](http://www.proxyvote.com).

V65643-P26884

**ASSEMBLY BIOSCIENCES, INC.  
Annual Meeting of Stockholders  
June 5, 2025 8:00 A.M. PDT  
This proxy is solicited by the Board of Directors**

The stockholder(s) hereby appoint(s) Jason A. Okazaki and John O. Gunderson, or either of them, as proxies, each with the power to appoint his substitute, and hereby authorize(s) either 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 8:00 A.M. PDT on June 5, 2025 at [www.virtualshareholdermeeting.com/ASMB2025](http://www.virtualshareholdermeeting.com/ASMB2025).

**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.

