

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549**

FORM 8-K

**CURRENT REPORT
Pursuant to Section 13 or 15(d)
of the Securities Exchange Act of 1934**

Date of Report (Date of earliest event reported): June 16, 2024

Assembly Biosciences, Inc.

(Exact name of Registrant as Specified in Its Charter)

Delaware
(State or Other Jurisdiction
of Incorporation)

001-35005
(Commission
File Number)

20-8729264
(IRS Employer
Identification No.)

**Two Tower Place, 7th Floor,
South San Francisco, California**
(Address of Principal Executive Offices)

94080
(Zip Code)

Registrant's Telephone Number, Including Area Code: (833) 509-4583

Not Applicable
(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value \$0.001	ASMB	The Nasdaq Global Select Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§ 230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§ 240.12b-2 of this chapter).

Emerging growth company

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

Item 1.01 Entry into a Material Definitive Agreement.

Equity Financing

Registered Direct Offering

On June 16, 2024, Assembly Biosciences, Inc. (the “Company”) entered into a Securities Purchase Agreement (the “Investor Purchase Agreement”) with a certain investor identified on the signature pages thereto (the “Purchaser”) for the issuance and sale, in a registered direct offering (the “Registered Direct Offering”), of 634,500 shares of the Company’s common stock, par value \$0.001 per share (the “Registered Shares”) and a warrant to purchase up to 634,500 shares of common stock (the “Registered Warrant” and together with the Registered Shares, the “Registered Securities”). The Registered Securities were sold at a combined offering price of \$15.46.

The Registered Warrant 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. The Purchaser, together with its affiliates, may not exercise any portion of the Registered Warrant to the extent that the Purchaser would own more than 4.99% or 9.99% (as elected by the Purchaser prior to the issuance of the Registered Warrant) of the number of shares of the Company’s common stock outstanding immediately after giving effect to such exercise, as such percentage ownership is determined in accordance with the terms of the Registered Warrant. However, upon at least 61 days’ prior notice from the Purchaser to the Company, the Purchaser may increase or decrease the beneficial threshold ownership of outstanding common stock after exercising any portion of the Purchaser’s Registered Warrant, as applicable, up to 19.99% of the common stock outstanding immediately prior to or after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the Registered Warrant.

The exercise price and the number of shares of common stock issuable upon exercise of the Registered Warrant will be subject to appropriate adjustment in the event of certain stock dividends and distributions, stock splits, stock combinations or stock reclassifications affecting the common stock.

The Investor Purchase Agreement contains customary representations, warranties, covenants and conditions. In the Investor Purchase Agreement, the Company agreed to indemnify the Purchaser against certain liabilities that could be incurred by the Purchaser in connection with the Registered Direct Offering.

The aggregate gross proceeds to the Company from the Registered Direct Offering are approximately \$9.8 million, before deducting offering expenses and excluding any proceeds the Company may receive upon exercise of the Registered Warrant. The Company anticipates using the net proceeds from the Registered Direct Offering for general corporate purposes.

The Registered Direct Offering was made pursuant to the Company’s existing effective shelf registration statement on Form S-3 (File 333-270760) that was originally filed on March 22, 2023 and declared effective by the Securities and Exchange Commission (“SEC”) on April 14, 2023. The Registered Direct Offering closed on June 17, 2024.

The foregoing summaries of the Registered Direct Offering, the Registered Securities and the Investor Purchase Agreement do not purport to be complete and are qualified in their entirety by reference to the definitive transaction documents. Copies of the forms of the Registered Warrant and the Investor Purchase Agreement are attached hereto as Exhibits 4.1 and 10.1, respectively, and are incorporated herein by reference.

In connection with the issuance of Common Stock in the Registered Direct Offering, the Company is filing, as Exhibit 5.1 hereto, the opinion of Skadden, Arps, Slate, Meagher & Flom LLP, counsel to the Company.

Private Placement

On June 17, 2024, the Company entered into a Securities Purchase Agreement (the “Gilead Purchase Agreement”) with Gilead Sciences, Inc. for the issuance and sale, in a private placement (the “Private Placement”), of 179,500 shares of the Company’s common stock, par value \$0.001 per share (the “Private Placement Shares”) and a warrant to purchase up to 179,500 shares of common stock (the “Private Placement Warrant” and together with the Private Placement Shares, the “Private Placement Securities”).

The Private Placement Securities were sold to Gilead pursuant to the terms of Gilead’s existing Investor Rights Agreement with the Company.

The Private Placement Warrant 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. Gilead, together with its affiliates, may not exercise any portion of the Private Placement Warrant to the extent that Gilead would own more than 19.99% (as elected by

Gilead prior to the issuance of the Private Placement Warrant) of the number of shares of the Company's common stock outstanding immediately after giving effect to such exercise, as such percentage ownership is determined in accordance with the terms of the Private Placement Warrant.

The exercise price and the number of shares of common stock issuable upon exercise of the Private Placement Warrant will be subject to appropriate adjustment in the event of certain stock dividends and distributions, stock splits, stock combinations or stock reclassifications affecting the common stock.

The Gilead Purchase Agreement contains customary representations, warranties, covenants and conditions. In the Gilead Purchase Agreement, the Company agreed to indemnify Gilead against certain liabilities that could be incurred by it in connection with the Private Placement.

The Private Placement closed on June 17, 2024. The aggregate gross proceeds to the Company from the Private Placement are approximately \$2.8 million, before deducting offering expenses and excluding any proceeds the Company may receive upon exercise of the Private Placement Warrant. The Company anticipates using the net proceeds from the Private Placement for general corporate purposes.

The foregoing summaries of the Private Placement Offering and the Gilead Purchase Agreement do not purport to be complete and are qualified in their entirety by reference to the definitive transaction documents. Copies of the Private Placement Warrant and the Gilead Purchase Agreement are attached hereto as Exhibits 4.2 and 10.2, respectively, and are incorporated herein by reference.

Amendments to Common Stock Purchase Agreement and Investor Rights Agreement

On June 17, 2024, the Company and Gilead entered into: (1) Amendment No. 1 to Common Stock Purchase Agreement (the "SPA Amendment") and (2) Amendment No. 1 to Investor Rights Agreement (the "IRA Amendment" and, together with the SPA Amendment, the "Amendments"), which amend the Common Stock Purchase Agreement (the "SPA") and the Investor Rights Agreement (the IRA and together with the SPA, the "Equity Agreements"), respectively, entered into between the Company and Gilead on October 15, 2023.

The SPA Amendment (1) extends the Equity Financing Deadline (as defined in the SPA) from the date that is nine months after the date of the SPA to the date that is 12 months after the date of the SPA and (2) extends various deadlines relating to the Company's ability to require Gilead to purchase additional shares of the Company's common stock from six or nine months, as applicable, following the occurrence of the Company meeting the Company Additional Share Purchase Condition (as defined in the SPA).

The IRA Amendment extends the requirement that the Company use good faith efforts to complete an Equity Financing (as defined in the IRA) from nine to 12 months after October 15, 2023. The IRA Amendment also amends the definition of Registrable Securities (as defined in the SPA) to explicitly include the Private Placement Shares and the shares underlying the Private Placement Warrant.

All other terms of the Equity Agreements remain unchanged.

The foregoing descriptions of the terms of the Amendments do not purport to be complete and are qualified in their entirety by reference to the SPA Amendment and the IRA Amendment, copies of which are attached hereto as Exhibits 10.3 and 10.4, respectively, and incorporated herein by reference.

On June 17, 2024, the Company issued a press release announcing its entry into the Investor Purchase Agreement, the Private Placement Agreement and the Amendments. A copy of the press release is attached as Exhibit 99.1 to this Current Report on Form 8-K.

Item 3.02 Unregistered Sales of Equity Securities.

The information set forth in Item 1.01 above under the caption "*Private Placement*" is incorporated by reference herein. The shares are being sold to Gilead pursuant to Section 4(a)(2) of the Securities Act of 1933, as amended, as a sale to a single accredited investor.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

<u>Exhibit Number</u>	<u>Description</u>
4.1	Registered Warrant.
4.2	Private Placement Warrant.
5.1	Opinion of Skadden, Arps, Slate, Meagher & Flom LLP.
10.1	Securities Purchase Agreement, dated June 16, 2024, by and between the Company and the Purchaser.
10.2	Securities Purchase Agreement, dated June 17, 2024, by and between the Company and Gilead Sciences, Inc.
10.3	Amendment No. 1 to Common Stock Purchase Agreement, by and between the Company and Gilead Sciences, Inc.
10.4	Amendment No. 1 to Investor Rights Agreement, by and between the Company and Gilead Sciences, Inc.
23.1	Consent of Skadden, Arps, Slate, Meagher & Flom LLP (included in Exhibit 5.1).
99.1	Press Release dated June 17, 2024.
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Assembly Biosciences, Inc.

Date: June 18, 2024

By: /s/ John O. Gunderson

John O. Gunderson

VP, General Counsel and Corporate Secretary

COMMON STOCK PURCHASE WARRANT
ASSEMBLY BIOSCIENCES, INC.

Warrant Shares: 634,500

Initial Exercise Date: June 16, 2024

THIS COMMON STOCK PURCHASE WARRANT (the "Warrant") certifies that, for value received, Armistice Capital Master Fund Ltd. or its assigns (the "Holder") is entitled, upon the terms and subject to the limitations on exercise and the conditions hereinafter set forth, at any time on or after the date hereof (the "Initial Exercise Date") and on or prior to 5:00 p.m. (New York City time) on June 18, 2029 (the "Termination Date") but not thereafter, to subscribe for and purchase from Assembly Biosciences, Inc., a Delaware corporation (the "Company"), up to 634,500 shares (as subject to adjustment hereunder, the "Warrant Shares") of common stock, par value \$0.001 per share, of the Company (the "Common Stock"). The purchase price of one share of Common Stock under this Warrant shall be equal to the Exercise Price, as defined in Section 2(b).

Section 1. Definitions. Capitalized terms used and not otherwise defined herein shall have the meanings set forth in that certain Securities Purchase Agreement (the "Purchase Agreement"), dated June 16, 2024, among the Company and the purchasers signatory thereto.

Section 2. Exercise.

(a) Exercise of Warrant. Exercise of the purchase rights represented by this Warrant may be made, in whole or in part, at any time or times on or after the Initial Exercise Date and on or before the Termination Date by delivery to the Company of a duly executed facsimile copy or PDF copy submitted by e-mail (or e-mail attachment) of the Notice of Exercise in the form annexed hereto (the "Notice of Exercise"). Within the earlier of (i) one (1) Trading Day (as defined below) and (ii) the number of Trading Days comprising the Standard Settlement Period (as defined in Section 2(d)(i) herein) following the date of exercise as aforesaid, the Holder shall deliver the aggregate Exercise Price for the Warrant Shares specified in the applicable Notice of Exercise by wire transfer or cashier's check drawn on a United States bank unless the cashless exercise procedure specified in Section 2(c) below is specified in the applicable Notice of Exercise. No ink-original Notice of Exercise shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Exercise be required. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company until the Holder has purchased all of the Warrant Shares available hereunder and the Warrant has been exercised in full, in which case, the Holder shall surrender this Warrant to the Company for cancellation within three (3) Trading Days of the date on which the final Notice of Exercise is delivered to the Company. Partial exercises of this Warrant resulting in purchases of a portion of the total number of Warrant Shares available hereunder shall have the effect of lowering the outstanding number of Warrant Shares purchasable hereunder in an amount equal to the applicable number of Warrant Shares purchased. The Holder and the Company shall maintain records showing the number of Warrant Shares purchased and the date of such purchases. The Company shall deliver any objection to any Notice of Exercise within one (1) Trading Day of its receipt of such notice. **The Holder**

and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this paragraph, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time may be less than the amount stated on the face hereof.

(b) Exercise Price. The exercise price per share of Common Stock under this Warrant shall be \$17.00, subject to adjustment hereunder (the "Exercise Price").

(c) Cashless Exercise. If at the time of exercise of this Warrant there is no effective registration statement registering, or the prospectus contained therein is not available for, the resale of the Warrant Shares by the Holder, then this Warrant may also be exercised, in whole or in part, at such time by means of a "cashless exercise" in which the Holder shall be entitled to receive a number of Warrant Shares equal to the quotient obtained by dividing [(A-B) (X)] by (A), where:

- (A) = as applicable: (i) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise if such Notice of Exercise is (1) both executed and delivered pursuant to Section 2(a) hereof on a day that is not a Trading Day or (2) both executed and delivered pursuant to Section 2(a) hereof on a Trading Day prior to the opening of "regular trading hours" (as defined in Rule 600(b) of Regulation NMS promulgated under the federal securities laws) on such Trading Day, (ii) at the option of the Holder, either (y) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise or (z) the Bid Price of the Common Stock on the principal Trading Market as reported by Bloomberg L.P. ("Bloomberg") as of the time of the Holder's execution of the applicable Notice of Exercise if such Notice of Exercise is executed during "regular trading hours" on a Trading Day and is delivered within two (2) hours thereafter (including until two (2) hours after the close of "regular trading hours" on a Trading Day) pursuant to Section 2(a) hereof or (iii) the VWAP on the date of the applicable Notice of Exercise if the date of such Notice of Exercise is a Trading Day and such Notice of Exercise is both executed and delivered pursuant to Section 2(a) hereof after the close of "regular trading hours" on such Trading Day;
- (B) = the Exercise Price of this Warrant, as adjusted hereunder; and
- (X) = the number of Warrant Shares that would be issuable upon exercise of this Warrant in accordance with the terms of this Warrant if such exercise were by means of a cash exercise rather than a cashless exercise.

If Warrant Shares are issued in such a cashless exercise, the parties acknowledge and agree that in accordance with Section 3(a)(9) of the Securities Act, the Warrant Shares shall take on the characteristics of the Warrants being exercised, and the holding period of the Warrant Shares being issued may be tacked by such Holder to the holding period of such Holder of this Warrant. The Company agrees not to take any position contrary to this paragraph.

“Bid Price” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the bid price of the Common Stock for the time in question (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported on The Pink Open Market (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Purchasers of a majority in interest of the Securities then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

“Trading Day” means a day on which the principal Trading Market is open for trading.

“Trading Market” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE American, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market, the New York Stock Exchange, the OTCQB or the OTCQX (or any successors to any of the foregoing).

“VWAP” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg (based on a Trading Day from 9:30 a.m. (New York City time) to 4:00 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported in The Pink Open Market (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Purchasers of a majority in interest of the Securities then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

Notwithstanding anything herein to the contrary, on the Termination Date, this Warrant shall be automatically exercised via cashless exercise pursuant to this Section 2(c).

(d) Mechanics of Exercise.

(i) Delivery of Warrant Shares Upon Exercise. The Company shall cause the Warrant Shares purchased hereunder to be delivered by the Transfer Agent to the Holder by crediting the account of the Holder’s or its designee’s balance account with The Depository Trust Company through its Deposit or Withdrawal at Custodian system (“DWAC”) if the Company is then a participant in such system and either (A) there is an effective registration statement permitting the issuance of the Warrant Shares to the

Holder or resale of the Warrant Shares (and a concurrent resale is being made) by the Holder or (B) the Warrant Shares are eligible for resale by the Holder without volume or manner-of-sale limitations pursuant to Rule 144 (assuming cashless exercise of the Warrants), in each case, subject to the delivery by the Holder to the Company and its counsel and the Transfer Agent of customary representation letters and such other documents as such person may request, and otherwise by physical delivery of a certificate or a book-entry notation, registered in the Company's share register in the name of the Holder or its designee, for the number of Warrant Shares to which the Holder is entitled pursuant to such exercise to the address specified by the Holder in the Notice of Exercise by the date that is the earliest of (i) one (1) Trading Day after the delivery to the Company of the Notice of Exercise, (ii) one (1) Trading Day after delivery of the aggregate Exercise Price to the Company and (iii) the number of Trading Days comprising the Standard Settlement Period after the delivery to the Company of the Notice of Exercise (such date, the "Warrant Share Delivery Date"). Upon delivery of the Notice of Exercise to the Company, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Warrant Shares with respect to which this Warrant has been exercised, irrespective of the date of delivery of the Warrant Shares, provided that payment of the aggregate Exercise Price (other than in the case of a cashless exercise) is received within the earlier of (i) one (1) Trading Day and (ii) the number of Trading Days comprising the Standard Settlement Period following delivery of the Notice of Exercise to the Company. If the Company fails for any reason to deliver to the Holder the Warrant Shares subject to a Notice of Exercise by the Warrant Share Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares subject to such exercise (based on the VWAP of the Common Stock on the date of the applicable Notice of Exercise), \$10 per Trading Day (increasing to \$20 per Trading Day on the third Trading Day after the Warrant Share Delivery Date) for each Trading Day after such Warrant Share Delivery Date until such Warrant Shares are delivered or Holder rescinds such exercise. The Company agrees to maintain a transfer agent that is a participant in the FAST program so long as this Warrant remains outstanding and exercisable. As used herein, "Standard Settlement Period" means the standard settlement period, expressed in a number of Trading Days, on the Company's primary Trading Market with respect to the Common Stock as in effect on the date of delivery of the Notice of Exercise to the Company.

(ii) Delivery of New Warrants Upon Exercise. If this Warrant shall have been exercised in part, the Company shall, at the request of a Holder and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with this Warrant.

(iii) Rescission Rights. If the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares pursuant to Section 2(d)(i) by the Warrant Share Delivery Date, then the Holder will have the right to rescind such exercise.

(iv) Compensation for Buy-In on Failure to Timely Deliver Warrant Shares Upon Exercise. In addition to any other rights available to the Holder, if the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares in accordance with the provisions of Section 2(d)(i) above pursuant to an exercise on or before the Warrant Share Delivery Date, and if after such date the Holder is required by its broker to purchase (in an open market transaction or otherwise) or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "Buy-In"), then the Company shall (A) pay in cash to the Holder the amount, if any, by which (x) the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased exceeds (y) the amount obtained by multiplying (1) the number of Warrant Shares that the Company was required to deliver to the Holder in connection with the exercise at issue multiplied by (2) the price at which the sell order giving rise to such purchase obligation was executed, and (B) at the option of the Holder, either reinstate the portion of the Warrant and equivalent number of Warrant Shares for which such exercise was not honored (in which case such exercise shall be deemed rescinded) or deliver to the Holder the number of shares of Common Stock that would have been issued had the Company timely complied with its exercise and delivery obligations hereunder. For example, if the Holder purchases Common Stock having a total purchase price of \$11,000 to cover a Buy-In with respect to an attempted exercise of shares of Common Stock with an aggregate sale price giving rise to such purchase obligation of \$10,000, under clause (A) of the immediately preceding sentence the Company shall be required to pay the Holder \$1,000. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Buy-In and, upon request of the Company, evidence of the amount of such loss. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof.

(v) No Fractional Shares or Scrip. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of this Warrant. As to any fraction of a share which the Holder would otherwise be entitled to purchase upon such exercise, the Company shall, at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Exercise Price or round up to the next whole share.

(vi) Charges, Taxes and Expenses. Issuance of Warrant Shares shall be made without charge to the Holder for any issue or transfer tax or other incidental expense in respect of the issuance of such Warrant Shares, all of which taxes and expenses shall be paid by the Company, and such Warrant Shares shall be issued in the name of the Holder or in such name or names as may be directed by the Holder; provided, however, that, in the event that Warrant Shares are to be issued in a name other than the name of the Holder, this Warrant when surrendered for exercise shall be accompanied by the Assignment Form attached hereto duly executed by the Holder and the Company may require, as a condition thereto, the payment of a sum sufficient to reimburse it for any transfer tax incidental thereto. The Company shall pay all Transfer Agent fees required for same-day processing of any Notice of Exercise and all fees to the Depository Trust Company (or another established clearing corporation performing similar functions) required for same-day electronic delivery of the Warrant Shares.

(vii) Closing of Books. The Company will not close its stockholder books or records in any manner which prevents the timely exercise of this Warrant, pursuant to the terms hereof.

(e) Holder's Exercise Limitations. The Company shall not effect any exercise of this Warrant, and a Holder shall not have the right to exercise any portion of this Warrant, pursuant to Section 2 or otherwise, to the extent that after giving effect to such issuance after exercise as set forth on the applicable Notice of Exercise, the Holder (together with the Holder's Affiliates, and any other Persons acting as a group together with the Holder or any of the Holder's Affiliates (such Persons, "Attribution Parties")), would beneficially own in excess of the Beneficial Ownership Limitation (as defined below). For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by the Holder and its Affiliates and Attribution Parties shall include the number of shares of Common Stock issuable upon exercise of this Warrant with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which would be issuable upon (i) exercise of the remaining, nonexercised portion of this Warrant beneficially owned by the Holder or any of its Affiliates or Attribution Parties and (ii) exercise or conversion of the unexercised or nonconverted portion of any other securities of the Company subject to a limitation on conversion or exercise analogous to the limitation contained herein beneficially owned by the Holder or any of its Affiliates or Attribution Parties. Except as set forth in the preceding sentence, for purposes of this Section 2(e), beneficial ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder, it being acknowledged by the Holder that the Company is not representing to the Holder that such calculation is in compliance with Section 13(d) of the Exchange Act and the Holder is solely responsible for any schedules required to be filed in accordance therewith. To the extent that the limitation contained in this Section 2(e) applies, the determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable shall be in the sole discretion of the Holder, and the Holder's submission of a Notice of Exercise to the Company shall be deemed to be the Holder's determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable, in each case subject to the Beneficial Ownership Limitation, and, absent manifest error, the Company shall have no obligation to verify or confirm the accuracy of such determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 2(e), in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as reflected in (A) the Company's most recent periodic or annual report filed with the Commission, as the case may be, (B) a more recent public announcement by the Company or (C) a more recent written notice by the Company or the Transfer Agent setting forth the number of shares of Common Stock outstanding. Upon the written or oral request of a Holder, the Company shall within one Trading Day confirm orally

and in writing to the Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder or its Affiliates or Attribution Parties since the date as of which such number of outstanding shares of Common Stock was reported. As used herein, "Affiliate" shall mean any Person directly or indirectly controlled by, controlling or under common control with, a Holder, as such terms are used in and construed under Rule 405 under the Securities Act, but only for so long as such control shall continue. The "Beneficial Ownership Limitation" shall be 4.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock issuable upon exercise of this Warrant. The Holder, upon notice to the Company, may increase or decrease the Beneficial Ownership Limitation provisions of this Section 2(e), provided that the Beneficial Ownership Limitation in no event exceeds 9.99% (19.99% in the case of a holder who beneficially owns more than 9.99% of our common stock immediately prior to the issue date) of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon exercise of this Warrant held by the Holder and the provisions of this Section 2(e) shall continue to apply. Any increase in the Beneficial Ownership Limitation will not be effective until the 61st day after such notice is delivered to the Company. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 2(e) to correct this paragraph (or any portion hereof) which may be defective or inconsistent with the intended Beneficial Ownership Limitation herein contained or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitations contained in this paragraph shall apply to a successor holder of this Warrant.

Section 3. Certain Adjustments.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions on shares of its Common Stock or any other equity or equity equivalent securities payable in shares of Common Stock (which, for avoidance of doubt, shall not include any shares of Common Stock issued by the Company upon exercise, exchange or conversion of the Warrants or any other warrant or exercisable, exchangeable or convertible securities, and shall not include Purchase Rights for which Section 3(b) shall apply or any distribution of assets for which Section 3(c) shall apply), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, (iii) combines (including by way of reverse stock split) outstanding shares of Common Stock into a smaller number of shares, or (iv) issues by reclassification of shares of the Common Stock any shares of capital stock of the Company, then in each case the Exercise Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding treasury shares, if any) outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event, and the number of shares issuable upon exercise of this Warrant shall be proportionately adjusted such that the aggregate Exercise Price of this Warrant shall remain unchanged. Any adjustment made pursuant to this Section 3(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification.

(b) Subsequent Rights Offerings. In addition to any adjustments pursuant to Section 3(a) above, if at any time the Company grants, issues or sells any Common Stock Equivalents or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of shares of Common Stock (the "Purchase Rights"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the grant, issue or sale of such Purchase Rights (provided, however, that, to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Purchase Right to such extent (or beneficial ownership of such shares of Common Stock as a result of such Purchase Right to such extent) and such Purchase Right to such extent shall be held in abeyance for the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

(c) Pro Rata Distributions. During such time as this Warrant is outstanding, if the Company shall declare or make any dividend or other distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property or options by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction) (a "Distribution"), at any time after the issuance of this Warrant, then, in each such case, the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date of which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution (provided, however, that, to the extent that the Holder's right to participate in any such Distribution would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Distribution to such extent (or in the beneficial ownership of any shares of Common Stock as a result of such Distribution to such extent) and the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation). To the extent that this Warrant has not been partially or completely exercised at the time of such Distribution, such portion of the Distribution shall be held in abeyance for the benefit of the Holder until the Holder has exercised this Warrant.

(d) Fundamental Transaction. If, at any time while this Warrant is outstanding, (i) the Company, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Company with or into another Person, (ii) the Company, directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of the assets of the Company and its Subsidiaries, taken as a whole, in one or a series of related transactions, (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other

securities, cash or property and has been accepted by the holders of more than 50% of the outstanding Common Stock, (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, or (v) the Company, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off, merger or scheme of arrangement) with another Person or group of Persons whereby such other Person or group acquires more than 50% of the outstanding shares of Common Stock (not including any shares of Common Stock held by the other Person or other Persons making or party to, or associated or affiliated with the other Persons making or party to, such stock or share purchase agreement or other business combination) (each a "Fundamental Transaction"), then, upon any subsequent exercise of this Warrant, the Holder shall have the right to receive, for each Warrant Share that would have been issuable upon such exercise immediately prior to the occurrence of such Fundamental Transaction, at the option of the Holder (without regard to any limitation in Section 2(e) on the exercise of this Warrant), the number of shares of Common Stock of the successor or acquiring corporation or of the Company, if it is the surviving corporation, and any additional consideration (the "Alternate Consideration") receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which this Warrant is exercisable immediately prior to such Fundamental Transaction (without regard to any limitation in Section 2(e) on the exercise of this Warrant). For purposes of any such exercise, the determination of the Exercise Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. Notwithstanding anything to the contrary, in the event of a Fundamental Transaction that is approved by the Company's Board of Directors (and not for avoidance of doubt, if the Fundamental Transaction is not within the Company's control), the Holder shall surrender this Warrant and shall be entitled to receive from the Company or any Successor Entity (as defined below), as of the date of consummation of such Fundamental Transaction, the same type or form of consideration (and in the same proportion), at the Black Scholes Value of the unexercised portion of this Warrant, that is being offered and paid to the holders of Common Stock of the Company in connection with the Fundamental Transaction, whether that consideration be in the form of cash, stock or any combination thereof, or whether the holders of Common Stock are given the choice to receive from among alternative forms of consideration in connection with the Fundamental Transaction; provided, further, that if holders of Common Stock of the Company are not offered or paid any consideration in such Fundamental Transaction, such holders of Common Stock will be deemed to have received common stock of the Successor Entity (which Entity may be the Company following such Fundamental Transaction) in such Fundamental Transaction. "Black Scholes Value" means the value of this Warrant based on the Black-Scholes Option Pricing Model obtained from the "OV" function on Bloomberg determined as of the day of consummation of the applicable

Fundamental Transaction for pricing purposes and reflecting (A) a risk-free interest rate corresponding to the U.S. Treasury rate for a period equal to the time between the date of the public announcement of the applicable Fundamental Transaction and the Termination Date, (B) an expected volatility equal to the 100-day volatility obtained from the HVT function on Bloomberg (determined utilizing a 365-day annualization factor) as of the Trading Day immediately following the public announcement of the applicable Fundamental Transaction, (C) the underlying price per share used in such calculation shall be the sum of the price per share being offered in cash, if any, plus the value of any non-cash consideration, if any, being offered in such Fundamental Transaction and (D) a remaining option time equal to the time between the date of the public announcement of the applicable Fundamental Transaction and the Termination Date and (E) a zero cost of borrow. The payment of the Black Scholes Value will be made by wire transfer of immediately available funds (or such other consideration) within the later of (i) five Trading Days of the Holder's election and (ii) the date of consummation of the Fundamental Transaction.

The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the "Successor Entity") to assume in writing all of the obligations of the Company under this Warrant and the other Transaction Documents in accordance with the provisions of this Section 3(b) pursuant to written agreements in form and substance reasonably satisfactory to the Holder and approved by the Holder (without unreasonable delay) prior to such Fundamental Transaction and shall, at the option of the Holder, deliver to the Holder in exchange for this Warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to this Warrant which is exercisable for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon exercise of this Warrant (without regard to any limitations on the exercise of this Warrant) prior to such Fundamental Transaction, and with an exercise price which applies the exercise price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such exercise price being for the purpose of protecting the economic value of this Warrant immediately prior to the consummation of such Fundamental Transaction), and which is reasonably satisfactory in form and substance to the Holder. Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for (so that from and after the date of such Fundamental Transaction, the provisions of this Warrant and the other Transaction Documents referring to the "Company" shall refer instead to the Successor Entity), and may exercise every right and power of the Company and shall assume all of the obligations of the Company under this Warrant and the other Transaction Documents with the same effect as if such Successor Entity had been named as the Company herein.

(e) Calculations. All calculations under this Section 3 shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 3, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding treasury shares, if any) issued and outstanding.

(f) Notice to Holder.

(i) Adjustment to Exercise Price. Whenever the Exercise Price is adjusted pursuant to any provision of this Section 3, the Company shall promptly deliver to the Holder by facsimile or email a notice setting forth the Exercise Price after such adjustment and any resulting adjustment to the number of Warrant Shares and setting forth a brief statement of the facts requiring such adjustment.

(ii) Notice to Allow Exercise by Holder. If (A) the Company shall declare a dividend (or any other distribution in whatever form) on the Common Stock, (B) the Company shall declare a special nonrecurring cash dividend on or a redemption of the Common Stock, (C) the Company shall authorize the granting to all holders of the Common Stock rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights, (D) the approval of any stockholders of the Company shall be required in connection with any reclassification of the Common Stock, any consolidation or merger to which the Company (and all of its Subsidiaries, taken as a whole) is a party, any sale or transfer of all or substantially all of its assets, or any compulsory share exchange whereby the Common Stock is converted into other securities, cash or property, or (E) the Company shall authorize the voluntary or involuntary dissolution, liquidation or winding up of the affairs of the Company, then, in each case, the Company shall cause to be delivered by facsimile or email to the Holder at its last facsimile number or email address as it shall appear upon the Warrant Register of the Company, at least 10 calendar days prior to the applicable record or effective date hereinafter specified, a notice stating (x) the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of the Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined or (y) the date on which such reclassification, consolidation, merger, sale, transfer or share exchange is expected to become effective or close, and the date as of which it is expected that holders of the Common Stock of record shall be entitled to exchange their shares of the Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange; provided that the failure to deliver such notice or any defect therein or in the delivery thereof shall not affect the validity of the corporate action required to be specified in such notice. To the extent that any notice provided in this Warrant constitutes, or contains, material, non-public information regarding the Company or any of the Subsidiaries, the Company shall substantially simultaneously with the giving of such notice, disclose such information with the Commission pursuant to a Current Report on Form 8-K. The Holder shall remain entitled to exercise this Warrant during the period commencing on the date of such notice to the effective date of the event triggering such notice except as may otherwise be expressly set forth herein.

(g) Voluntary Adjustment By Company. Subject to the rules and regulations of the Trading Market, the Company may at any time during the term of this Warrant, subject to the prior written consent of the Holder, reduce the then current Exercise Price to any amount and for any period of time deemed appropriate by the board of directors of the Company.

Section 4. Transfer of Warrant.

(a) Transferability. Subject to compliance with any applicable securities laws and the conditions set forth in Section 4(d) hereof and to the provisions of Section 4.1 of the Purchase Agreement, this Warrant and all rights hereunder (including, without limitation, any registration rights for the resale of Warrant Shares) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Upon such surrender and, if required, such payment, the Company shall execute and deliver a new Warrant or Warrants in the name of the assignee or assignees, as applicable, and in the denomination or denominations specified in such instrument of assignment, and shall issue to the assignor a new Warrant evidencing the portion of this Warrant not so assigned, and this Warrant shall promptly be cancelled. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company unless the Holder has assigned this Warrant in full, in which case, the Holder shall surrender this Warrant to the Company within three (3) Trading Days of the date on which the Holder delivers an assignment form to the Company assigning this Warrant in full. The Warrant, if properly assigned in accordance herewith, may be exercised by a new holder for the purchase of Warrant Shares without having a new Warrant issued.

(b) New Warrants. This Warrant may be divided or combined with other Warrants upon presentation hereof at the aforesaid office of the Company, together with a written notice specifying the names and denominations in which new Warrants are to be issued, signed by the Holder or its agent or attorney. Subject to compliance with Section 4(a), as to any transfer which may be involved in such division or combination, the Company shall execute and deliver a new Warrant or Warrants in exchange for the Warrant or Warrants to be divided or combined in accordance with such notice. All Warrants issued on transfers or exchanges shall be dated the Initial Exercise Date and shall be identical with this Warrant except as to the number of Warrant Shares issuable pursuant thereto.

(c) Warrant Register. The Company shall register this Warrant, upon records to be maintained by the Company for that purpose (the “Warrant Register”), in the name of the record Holder hereof from time to time. The Company may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

(d) Transfer Restrictions. If, at the time of the surrender of this Warrant in connection with any transfer of this Warrant, the transfer of this Warrant shall not be either (i) registered pursuant to an effective registration statement under the Securities Act and under applicable state securities or blue sky laws or (ii) eligible for resale without volume or manner-of-sale restrictions or current public information requirements pursuant to Rule 144, the Company may require, as a condition of allowing such transfer, that the Holder or transferee of this Warrant, as the case may be, comply with the provisions of Section 5.7 of the Purchase Agreement.

(e) Representation by the Holder. The Holder, by the acceptance hereof, represents and warrants that it is acquiring this Warrant and, upon any exercise hereof, will acquire the Warrant Shares issuable upon such exercise, for its own account and not with a view to or for distributing or reselling such Warrant Shares or any part thereof in violation of the Securities Act or any applicable state securities law.

Section 5. Miscellaneous.

(a) No Rights as Stockholder Until Exercise; No Settlement in Cash. This Warrant does not entitle the Holder to any voting rights, dividends or other rights as a stockholder of the Company prior to the exercise hereof as set forth in Section 2(d)(i), except as expressly set forth in Section 3. Without limiting any rights of a Holder to receive Warrant Shares on a “cashless exercise” pursuant to Section 2(c) or to receive cash payments pursuant to Section 2(d)(i) and Section 2(d)(iv) herein, in no event shall the Company be required to net cash settle an exercise of this Warrant.

(b) Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Warrant Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of the Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

(c) Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Trading Day, then such action may be taken or such right may be exercised on the next succeeding Trading Day.

(d) Authorized Shares.

The Company covenants that, during the period the Warrant is outstanding, it will reserve from its authorized and unissued Common Stock a sufficient number of shares to provide for the issuance of the Warrant Shares upon the exercise of any purchase rights under this Warrant. The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of issuing the necessary Warrant Shares upon the exercise of the purchase rights under this Warrant. The Company will take all such reasonable action as may be necessary to assure that such Warrant Shares may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of the Trading Market upon which the Common Stock may be listed. The Company covenants that all Warrant Shares which may be issued upon the exercise of the purchase rights represented by this Warrant will, upon exercise of the purchase rights represented by this Warrant and payment for such Warrant Shares in accordance herewith, be duly authorized, validly issued, fully paid and nonassessable and free from all taxes, liens and charges created by the Company in respect of the issue thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue).

Except and to the extent as waived or consented to by the Holder, the Company shall not take any action, including, without limitation, amending its certificate of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, in order to avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary to carry out such terms. Without limiting the generality of the foregoing, the Company will (i) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (ii) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares upon the exercise of this Warrant and (iii) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof, as may be, necessary to enable the Company to perform its obligations under this Warrant.

Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall use commercially reasonable efforts to obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

(e) Jurisdiction. All questions concerning the construction, validity, enforcement and interpretation of this Warrant shall be determined in accordance with the provisions of the Purchase Agreement.

(f) Restrictions. The Holder acknowledges that the Warrant Shares acquired upon the exercise of this Warrant will have restrictions upon resale imposed by state and federal securities laws and will bear a restrictive legend, subject to Section 2(c) in the case of cashless exercise.

(g) Nonwaiver and Expenses. No course of dealing or any delay or failure to exercise any right hereunder on the part of Holder shall operate as a waiver of such right or otherwise prejudice the Holder's rights, powers or remedies. Without limiting any other provision of this Warrant or the Purchase Agreement, if the Company willfully and knowingly fails to comply with any provision of this Warrant, which results in any material damages to the Holder, the Company shall pay to the Holder such amounts as shall be sufficient to cover any costs and expenses including, but not limited to, reasonable and documented out of pocket external attorneys' fees of one counsel, including those of appellate proceedings, incurred by the Holder in collecting any amounts due pursuant hereto or in otherwise enforcing any of its rights, powers or remedies hereunder.

(h) Notices. Any notice, request or other document required or permitted to be given or delivered to the Holder by the Company shall be delivered in accordance with the notice provisions of the Purchase Agreement.

(i) Limitation of Liability. No provision hereof, in the absence of any affirmative action by the Holder to exercise this Warrant to purchase Warrant Shares, and no enumeration herein of the rights or privileges of the Holder, shall give rise to any liability of the Holder for the purchase price of any Common Stock or as a stockholder of the Company, whether such liability is asserted by the Company or by creditors of the Company.

(j) Remedies. The Holder, in addition to being entitled to exercise all rights granted by law, including recovery of damages, will be entitled to specific performance of its rights under this Warrant. The Company agrees that monetary damages would not be adequate compensation for any loss incurred by reason of a breach by it of the provisions of this Warrant and hereby agrees to waive and not to assert the defense in any action for specific performance that a remedy at law would be adequate.

(k) Successors and Assigns. Subject to applicable securities laws, this Warrant and the rights and obligations evidenced hereby shall inure to the benefit of and be binding upon the successors and permitted assigns of the Company and the successors and permitted assigns of Holder. The provisions of this Warrant are intended to be for the benefit of any Holder from time to time of this Warrant and shall be enforceable by the Holder or holder of Warrant Shares.

(l) Amendment. This Warrant may be modified or amended or the provisions hereof waived with the written consent of the Company and the Holder.

(m) Severability. Wherever possible, each provision of this Warrant shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Warrant shall be prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this Warrant.

(n) Headings. The headings used in this Warrant are for the convenience of reference only and shall not, for any purpose, be deemed a part of this Warrant.

(Signature Page Follows)

IN WITNESS WHEREOF, the Company has caused this Warrant to be executed by its officer thereunto duly authorized as of the date first above indicated.

ASSEMBLY BIOSCIENCES, INC.

By: /s/ Jason A. Okazaki
Name: Jason A. Okazaki
Title: Chief Executive Officer and President

NOTICE OF EXERCISE

To: Assembly Biosciences, Inc. (the "Company")

(1) The undersigned hereby elects to purchase _____ Warrant Shares of the Company pursuant to the terms of the attached Warrant (only if exercised in full), and tenders herewith payment of the exercise price in full, together with all applicable transfer taxes, if any.

(2) Payment shall take the form of (check applicable box):

- in lawful money of the United States; or
- [if permitted the cancellation of such number of Warrant Shares as is necessary, in accordance with the formula set forth in subsection 2(c), to exercise this Warrant with respect to the maximum number of Warrant Shares purchasable pursuant to the cashless exercise procedure set forth in subsection 2(c).

(3) Please issue said Warrant Shares in the name of the undersigned or in such other name as is specified below:

The Warrant Shares shall be delivered to the following DWAC Account Number:

By its delivery of this Notice of Exercise, the undersigned represents and warrants to the Company that in giving effect to the exercise evidenced hereby the Holders will not beneficially own in excess of the number of shares of Common Stock permitted to be owned under Section 2(e) of the Warrant to which this notice relates.

[SIGNATURE OF HOLDER]

Name of Investing Entity: _____

Signature of Authorized Signatory of Investing Entity: _____

Name of Authorized Signatory: _____

Title of Authorized Signatory: _____

Date: _____

ASSIGNMENT FORM

(To assign the foregoing Warrant, execute this form and supply required information. Do not use this form to purchase shares.)

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to

Name: _____
(Please Print)

Address: _____
(Please Print)

Phone Number: _____

Email Address: _____

Dated: _____, _____

Holder's Signature: _____

Holder's Address: _____

NEITHER THIS SECURITY NOR THE SECURITIES FOR WHICH THIS SECURITY IS EXERCISABLE HAVE BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION OR THE SECURITIES COMMISSION OF ANY STATE IN RELIANCE UPON AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), AND, ACCORDINGLY, MAY NOT BE OFFERED OR SOLD EXCEPT PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT OR PURSUANT TO AN AVAILABLE EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND IN ACCORDANCE WITH APPLICABLE STATE SECURITIES LAWS.

COMMON STOCK PURCHASE WARRANT

ASSEMBLY BIOSCIENCES, INC.

Warrant Shares: 179,500

Initial Exercise Date: June 17, 2024

THIS COMMON STOCK PURCHASE WARRANT (the "Warrant") certifies that, for value received, Gilead Sciences, Inc. or its assigns (the "Holder") is entitled, upon the terms and subject to the limitations on exercise and the conditions hereinafter set forth, at any time on or after the date hereof (the "Initial Exercise Date") and on or prior to 5:00 p.m. (New York City time) on June 18, 2029 (the "Termination Date") but not thereafter, to subscribe for and purchase from Assembly Biosciences, Inc., a Delaware corporation (the "Company"), up to 179,500 shares (as subject to adjustment hereunder, the "Warrant Shares") of common stock, par value \$0.001 per share, of the Company (the "Common Stock"). The purchase price of one share of Common Stock under this Warrant shall be equal to the Exercise Price, as defined in Section 2(b).

Section 1. Definitions. Capitalized terms used and not otherwise defined herein shall have the meanings set forth in that certain Securities Purchase Agreement (the "Purchase Agreement"), dated June 17, 2024, among the Company and the purchasers signatory thereto.

Section 2. Exercise.

(a) Exercise of Warrant. Exercise of the purchase rights represented by this Warrant may be made, in whole or in part, at any time or times on or after the Initial Exercise Date and on or before the Termination Date by delivery to the Company of a duly executed facsimile copy or PDF copy submitted by e-mail (or e-mail attachment) of the Notice of Exercise in the form annexed hereto (the "Notice of Exercise"). Within the earlier of (i) one (1) Trading Day (as defined below) and (ii) the number of Trading Days comprising the Standard Settlement Period (as defined in Section 2(d)(i) herein) following the date of exercise as aforesaid, the Holder shall deliver the aggregate Exercise Price for the Warrant Shares specified in the applicable Notice of Exercise by wire transfer or cashier's check drawn on a United States bank unless the cashless exercise procedure specified in Section 2(c) below is specified in the applicable Notice of Exercise. No ink-original Notice of Exercise shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Exercise be required. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically

surrender this Warrant to the Company until the Holder has purchased all of the Warrant Shares available hereunder and the Warrant has been exercised in full, in which case, the Holder shall surrender this Warrant to the Company for cancellation within three (3) Trading Days of the date on which the final Notice of Exercise is delivered to the Company. Partial exercises of this Warrant resulting in purchases of a portion of the total number of Warrant Shares available hereunder shall have the effect of lowering the outstanding number of Warrant Shares purchasable hereunder in an amount equal to the applicable number of Warrant Shares purchased. The Holder and the Company shall maintain records showing the number of Warrant Shares purchased and the date of such purchases. The Company shall deliver any objection to any Notice of Exercise within one (1) Trading Day of its receipt of such notice. **The Holder and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this paragraph, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time may be less than the amount stated on the face hereof.**

(b) Exercise Price. The exercise price per share of Common Stock under this Warrant shall be \$17.00, subject to adjustment hereunder (the "Exercise Price").

(c) Cashless Exercise. If at the time of exercise of this Warrant there is no effective registration statement registering, or the prospectus contained therein is not available for, the resale of the Warrant Shares by the Holder, then this Warrant may also be exercised, in whole or in part, at such time by means of a "cashless exercise" in which the Holder shall be entitled to receive a number of Warrant Shares equal to the quotient obtained by dividing [(A-B) (X)] by (A), where:

(A) = as applicable: (i) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise if such Notice of Exercise is (1) both executed and delivered pursuant to Section 2(a) hereof on a day that is not a Trading Day or (2) both executed and delivered pursuant to Section 2(a) hereof on a Trading Day prior to the opening of "regular trading hours" (as defined in Rule 600(b) of Regulation NMS promulgated under the federal securities laws) on such Trading Day, (ii) at the option of the Holder, either (y) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise or (z) the Bid Price of the Common Stock on the principal Trading Market as reported by Bloomberg L.P. ("Bloomberg") as of the time of the Holder's execution of the applicable Notice of Exercise if such Notice of Exercise is executed during "regular trading hours" on a Trading Day and is delivered within two (2) hours thereafter (including until two (2) hours after the close of "regular trading hours" on a Trading Day) pursuant to Section 2(a) hereof or (iii) the VWAP on the date of the applicable Notice of Exercise if the date of such Notice of Exercise is a Trading Day and such Notice of Exercise is both executed and delivered pursuant to Section 2(a) hereof after the close of "regular trading hours" on such Trading Day;

(B) = the Exercise Price of this Warrant, as adjusted hereunder; and

(X) = the number of Warrant Shares that would be issuable upon exercise of this Warrant in accordance with the terms of this Warrant if such exercise were by means of a cash exercise rather than a cashless exercise.

If Warrant Shares are issued in such a cashless exercise, the parties acknowledge and agree that in accordance with Section 3(a)(9) of the Securities Act, the Warrant Shares shall take on the characteristics of the Warrants being exercised, and the holding period of the Warrant Shares being issued may be tacked by such Holder to the holding period of such Holder of this Warrant. The Company agrees not to take any position contrary to this paragraph.

“Bid Price” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the bid price of the Common Stock for the time in question (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported on The Pink Open Market (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Purchasers of a majority in interest of the Securities then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

“Trading Day” means a day on which the principal Trading Market is open for trading.

“Trading Market” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE American, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market, the New York Stock Exchange, the OTCQB or the OTCQX (or any successors to any of the foregoing).

“VWAP” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg (based on a Trading Day from 9:30 a.m. (New York City time) to 4:00 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported in The Pink Open Market (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Purchasers of a majority in interest of the Securities then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

Notwithstanding anything herein to the contrary, on the Termination Date, this Warrant shall be automatically exercised via cashless exercise pursuant to this Section 2(c).

(d) Mechanics of Exercise.

(i) Delivery of Warrant Shares Upon Exercise. The Company shall cause the Warrant Shares purchased hereunder to be delivered by the Transfer Agent to the Holder by crediting the account of the Holder's or its designee's balance account with The Depository Trust Company through its Deposit or Withdrawal at Custodian system ("DWAC") if the Company is then a participant in such system and either (A) there is an effective registration statement permitting the issuance of the Warrant Shares to the Holder or resale of the Warrant Shares (and a concurrent resale is being made) by the Holder or (B) the Warrant Shares are eligible for resale by the Holder without volume or manner-of-sale limitations pursuant to Rule 144 (assuming cashless exercise of the Warrants), in each case, subject to the delivery by the Holder to the Company and its counsel and the Transfer Agent of customary representation letters and such other documents as such person may request, and otherwise by physical delivery of a certificate or a book-entry notation, registered in the Company's share register in the name of the Holder or its designee, for the number of Warrant Shares to which the Holder is entitled pursuant to such exercise to the address specified by the Holder in the Notice of Exercise by the date that is the earliest of (i) one (1) Trading Day after the delivery to the Company of the Notice of Exercise, (ii) one (1) Trading Day after delivery of the aggregate Exercise Price to the Company and (iii) the number of Trading Days comprising the Standard Settlement Period after the delivery to the Company of the Notice of Exercise (such date, the "Warrant Share Delivery Date"). Upon delivery of the Notice of Exercise to the Company, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Warrant Shares with respect to which this Warrant has been exercised, irrespective of the date of delivery of the Warrant Shares, provided that payment of the aggregate Exercise Price (other than in the case of a cashless exercise) is received within the earlier of (i) one (1) Trading Day and (ii) the number of Trading Days comprising the Standard Settlement Period following delivery of the Notice of Exercise to the Company. If the Company fails for any reason to deliver to the Holder the Warrant Shares subject to a Notice of Exercise by the Warrant Share Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares subject to such exercise (based on the VWAP of the Common Stock on the date of the applicable Notice of Exercise), \$10 per Trading Day (increasing to \$20 per Trading Day on the third Trading Day after the Warrant Share Delivery Date) for each Trading Day after such Warrant Share Delivery Date until such Warrant Shares are delivered or Holder rescinds such exercise. The Company agrees to maintain a transfer agent that is a participant in the FAST program so long as this Warrant remains outstanding and exercisable. As used herein, "Standard Settlement Period" means the standard settlement period, expressed in a number of Trading Days, on the Company's primary Trading Market with respect to the Common Stock as in effect on the date of delivery of the Notice of Exercise to the Company.

(ii) Delivery of New Warrants Upon Exercise. If this Warrant shall have been exercised in part, the Company shall, at the request of a Holder and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with this Warrant.

(iii) Rescission Rights. If the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares pursuant to Section 2(d)(i) by the Warrant Share Delivery Date, then the Holder will have the right to rescind such exercise.

(iv) Compensation for Buy-In on Failure to Timely Deliver Warrant Shares Upon Exercise. In addition to any other rights available to the Holder, if the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares in accordance with the provisions of Section 2(d)(i) above pursuant to an exercise on or before the Warrant Share Delivery Date, and if after such date the Holder is required by its broker to purchase (in an open market transaction or otherwise) or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "Buy-In"), then the Company shall (A) pay in cash to the Holder the amount, if any, by which (x) the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased exceeds (y) the amount obtained by multiplying (1) the number of Warrant Shares that the Company was required to deliver to the Holder in connection with the exercise at issue multiplied by (2) the price at which the sell order giving rise to such purchase obligation was executed, and (B) at the option of the Holder, either reinstate the portion of the Warrant and equivalent number of Warrant Shares for which such exercise was not honored (in which case such exercise shall be deemed rescinded) or deliver to the Holder the number of shares of Common Stock that would have been issued had the Company timely complied with its exercise and delivery obligations hereunder. For example, if the Holder purchases Common Stock having a total purchase price of \$11,000 to cover a Buy-In with respect to an attempted exercise of shares of Common Stock with an aggregate sale price giving rise to such purchase obligation of \$10,000, under clause (A) of the immediately preceding sentence the Company shall be required to pay the Holder \$1,000. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Buy-In and, upon request of the Company, evidence of the amount of such loss. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof.

(v) No Fractional Shares or Scrip. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of this Warrant. As to any fraction of a share which the Holder would otherwise be entitled to purchase upon such exercise, the Company shall, at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Exercise Price or round up to the next whole share.

(vi) Charges, Taxes and Expenses. Issuance of Warrant Shares shall be made without charge to the Holder for any issue or transfer tax or other incidental expense in respect of the issuance of such Warrant Shares, all of which taxes and expenses shall be paid by the Company, and such Warrant Shares shall be issued in the name of the Holder or in such name or names as may be directed by the Holder; provided, however, that, in the event that Warrant Shares are to be issued in a name other than the name of the Holder, this Warrant when surrendered for exercise shall be accompanied by the Assignment Form attached hereto duly executed by the Holder and the Company may require, as a condition thereto, the payment of a sum sufficient to reimburse it for any transfer tax incidental thereto. The Company shall pay all Transfer Agent fees required for same-day processing of any Notice of Exercise and all fees to the Depository Trust Company (or another established clearing corporation performing similar functions) required for same-day electronic delivery of the Warrant Shares.

(vii) Closing of Books. The Company will not close its stockholder books or records in any manner which prevents the timely exercise of this Warrant, pursuant to the terms hereof.

(e) Holder's Exercise Limitations. The Company shall not effect any exercise of this Warrant, and a Holder shall not have the right to exercise any portion of this Warrant, pursuant to Section 2 or otherwise, to the extent that after giving effect to such issuance after exercise as set forth on the applicable Notice of Exercise, the Holder (together with the Holder's Affiliates, and any other Persons acting as a group together with the Holder or any of the Holder's Affiliates (such Persons, "Attribution Parties")), would beneficially own in excess of the Beneficial Ownership Limitation (as defined below). For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by the Holder and its Affiliates and Attribution Parties shall include the number of shares of Common Stock issuable upon exercise of this Warrant with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which would be issuable upon (i) exercise of the remaining, nonexercised portion of this Warrant beneficially owned by the Holder or any of its Affiliates or Attribution Parties and (ii) exercise or conversion of the unexercised or nonconverted portion of any other securities of the Company subject to a limitation on conversion or exercise analogous to the limitation contained herein beneficially owned by the Holder or any of its Affiliates or Attribution Parties. Except as set forth in the preceding sentence, for purposes of this Section 2(e), beneficial ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder, it being acknowledged by the Holder that the Company is not representing to the Holder that such calculation is in compliance with Section 13(d) of the Exchange Act and the Holder is solely responsible for any schedules required to be filed in accordance therewith. To the extent that the limitation contained in this Section 2(e) applies, the determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable shall be in the sole discretion of the Holder, and the Holder's submission of a Notice of Exercise to the Company shall be deemed to be the Holder's determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable, in each case subject to the Beneficial Ownership Limitation, and, absent manifest error, the Company shall have no obligation to verify or confirm the accuracy of such

determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 2(e), in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as reflected in (A) the Company's most recent periodic or annual report filed with the Commission, as the case may be, (B) a more recent public announcement by the Company or (C) a more recent written notice by the Company or the Transfer Agent setting forth the number of shares of Common Stock outstanding. Upon the written or oral request of a Holder, the Company shall within one Trading Day confirm orally and in writing to the Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder or its Affiliates or Attribution Parties since the date as of which such number of outstanding shares of Common Stock was reported. As used herein, "Affiliate" shall mean any Person directly or indirectly controlled by, controlling or under common control with, a Holder, as such terms are used in and construed under Rule 405 under the Securities Act, but only for so long as such control shall continue. The "Beneficial Ownership Limitation" shall be 19.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock issuable upon exercise of this Warrant. The Holder, upon notice to the Company, may increase or decrease the Beneficial Ownership Limitation provisions of this Section 2(e), provided that the Beneficial Ownership Limitation in no event exceeds 29.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon exercise of this Warrant held by the Holder and the provisions of this Section 2(e) shall continue to apply. Any increase in the Beneficial Ownership Limitation will not be effective until the 61st day after such notice is delivered to the Company. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 2(e) to correct this paragraph (or any portion hereof) which may be defective or inconsistent with the intended Beneficial Ownership Limitation herein contained or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitations contained in this paragraph shall apply to a successor holder of this Warrant.

Section 3. Certain Adjustments.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions on shares of its Common Stock or any other equity or equity equivalent securities payable in shares of Common Stock (which, for avoidance of doubt, shall not include any shares of Common Stock issued by the Company upon exercise, exchange or conversion of the Warrants or any other warrant or exercisable, exchangeable or convertible securities, and shall not include Purchase Rights for which Section 3(b) shall apply or any distribution of assets for which Section 3(c) shall apply), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, (iii) combines (including by way of reverse stock split) outstanding shares of Common Stock into a smaller number of shares, or (iv) issues by reclassification of shares of the Common Stock any shares of capital stock of the Company, then in each case the Exercise Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding treasury shares, if any) outstanding immediately before such event and of which the

denominator shall be the number of shares of Common Stock outstanding immediately after such event, and the number of shares issuable upon exercise of this Warrant shall be proportionately adjusted such that the aggregate Exercise Price of this Warrant shall remain unchanged. Any adjustment made pursuant to this Section 3(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification.

(b) Subsequent Rights Offerings. In addition to any adjustments pursuant to Section 3(a) above, if at any time the Company grants, issues or sells any Common Stock Equivalents or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of shares of Common Stock (the "Purchase Rights"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the grant, issue or sale of such Purchase Rights (provided, however, that, to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Purchase Right to such extent (or beneficial ownership of such shares of Common Stock as a result of such Purchase Right to such extent) and such Purchase Right to such extent shall be held in abeyance for the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

(c) Pro Rata Distributions. During such time as this Warrant is outstanding, if the Company shall declare or make any dividend or other distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property or options by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction) (a "Distribution"), at any time after the issuance of this Warrant, then, in each such case, the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date of which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution (provided, however, that, to the extent that the Holder's right to participate in any such Distribution would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Distribution to such extent (or in the beneficial ownership of any shares of Common Stock as a result of such Distribution to such extent) and the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation). To the extent that this Warrant has not been partially or completely exercised at the time of such Distribution, such portion of the Distribution shall be held in abeyance for the benefit of the Holder until the Holder has exercised this Warrant.

(d) Fundamental Transaction. If, at any time while this Warrant is outstanding, (i) the Company, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Company with or into another Person, (ii) the Company, directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of the assets of the Company and its Subsidiaries, taken as a whole, in one or a series of related transactions, (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of more than 50% of the outstanding Common Stock, (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, or (v) the Company, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off, merger or scheme of arrangement) with another Person or group of Persons whereby such other Person or group acquires more than 50% of the outstanding shares of Common Stock (not including any shares of Common Stock held by the other Person or other Persons making or party to, or associated or affiliated with the other Persons making or party to, such stock or share purchase agreement or other business combination) (each a "Fundamental Transaction"), then, upon any subsequent exercise of this Warrant, the Holder shall have the right to receive, for each Warrant Share that would have been issuable upon such exercise immediately prior to the occurrence of such Fundamental Transaction, at the option of the Holder (without regard to any limitation in Section 2(e) on the exercise of this Warrant), the number of shares of Common Stock of the successor or acquiring corporation or of the Company, if it is the surviving corporation, and any additional consideration (the "Alternate Consideration") receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which this Warrant is exercisable immediately prior to such Fundamental Transaction (without regard to any limitation in Section 2(e) on the exercise of this Warrant). For purposes of any such exercise, the determination of the Exercise Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. Notwithstanding anything to the contrary, in the event of a Fundamental Transaction that is approved by the Company's Board of Directors (and not for avoidance of doubt, if the Fundamental Transaction is not within the Company's control), the Holder shall surrender this Warrant and shall be entitled to receive from the Company or any Successor Entity (as defined below), as of the date of consummation of such Fundamental Transaction, the same type or form of consideration (and in the same proportion), at the Black Scholes Value of the unexercised portion of this Warrant, that is being offered and paid to the

holders of Common Stock of the Company in connection with the Fundamental Transaction, whether that consideration be in the form of cash, stock or any combination thereof, or whether the holders of Common Stock are given the choice to receive from among alternative forms of consideration in connection with the Fundamental Transaction; provided, further, that if holders of Common Stock of the Company are not offered or paid any consideration in such Fundamental Transaction, such holders of Common Stock will be deemed to have received common stock of the Successor Entity (which Entity may be the Company following such Fundamental Transaction) in such Fundamental Transaction. “Black Scholes Value” means the value of this Warrant based on the Black-Scholes Option Pricing Model obtained from the “OV” function on Bloomberg determined as of the day of consummation of the applicable Fundamental Transaction for pricing purposes and reflecting (A) a risk-free interest rate corresponding to the U.S. Treasury rate for a period equal to the time between the date of the public announcement of the applicable Fundamental Transaction and the Termination Date, (B) an expected volatility equal to the 100-day volatility obtained from the HVT function on Bloomberg (determined utilizing a 365-day annualization factor) as of the Trading Day immediately following the public announcement of the applicable Fundamental Transaction, (C) the underlying price per share used in such calculation shall be the sum of the price per share being offered in cash, if any, plus the value of any non-cash consideration, if any, being offered in such Fundamental Transaction and (D) a remaining option time equal to the time between the date of the public announcement of the applicable Fundamental Transaction and the Termination Date and (E) a zero cost of borrow. The payment of the Black Scholes Value will be made by wire transfer of immediately available funds (or such other consideration) within the later of (i) five Trading Days of the Holder’s election and (ii) the date of consummation of the Fundamental Transaction.

The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the “Successor Entity”) to assume in writing all of the obligations of the Company under this Warrant and the other Transaction Documents in accordance with the provisions of this Section 3(b) pursuant to written agreements in form and substance reasonably satisfactory to the Holder and approved by the Holder (without unreasonable delay) prior to such Fundamental Transaction and shall, at the option of the Holder, deliver to the Holder in exchange for this Warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to this Warrant which is exercisable for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon exercise of this Warrant (without regard to any limitations on the exercise of this Warrant) prior to such Fundamental Transaction, and with an exercise price which applies the exercise price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such exercise price being for the purpose of protecting the economic value of this Warrant immediately prior to the consummation of such Fundamental Transaction), and which is reasonably satisfactory in form and substance to the Holder. Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for (so that from and after the date of such Fundamental Transaction, the provisions of this Warrant and the other Transaction Documents referring to the “Company” shall refer instead to the Successor Entity), and may exercise every right and power of the Company and shall assume all of the obligations of the Company under this Warrant and the other Transaction Documents with the same effect as if such Successor Entity had been named as the Company herein.

(e) Calculations. All calculations under this Section 3 shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 3, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding treasury shares, if any) issued and outstanding.

(f) Notice to Holder.

(i) Adjustment to Exercise Price. Whenever the Exercise Price is adjusted pursuant to any provision of this Section 3, the Company shall promptly deliver to the Holder by facsimile or email a notice setting forth the Exercise Price after such adjustment and any resulting adjustment to the number of Warrant Shares and setting forth a brief statement of the facts requiring such adjustment.

(ii) Notice to Allow Exercise by Holder. If (A) the Company shall declare a dividend (or any other distribution in whatever form) on the Common Stock, (B) the Company shall declare a special nonrecurring cash dividend on or a redemption of the Common Stock, (C) the Company shall authorize the granting to all holders of the Common Stock rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights, (D) the approval of any stockholders of the Company shall be required in connection with any reclassification of the Common Stock, any consolidation or merger to which the Company (and all of its Subsidiaries, taken as a whole) is a party, any sale or transfer of all or substantially all of its assets, or any compulsory share exchange whereby the Common Stock is converted into other securities, cash or property, or (E) the Company shall authorize the voluntary or involuntary dissolution, liquidation or winding up of the affairs of the Company, then, in each case, the Company shall cause to be delivered by facsimile or email to the Holder at its last facsimile number or email address as it shall appear upon the Warrant Register of the Company, at least 10 calendar days prior to the applicable record or effective date hereinafter specified, a notice stating (x) the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of the Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined or (y) the date on which such reclassification, consolidation, merger, sale, transfer or share exchange is expected to become effective or close, and the date as of which it is expected that holders of the Common Stock of record shall be entitled to exchange their shares of the Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange; provided that the failure to deliver such notice or any defect therein or in the delivery thereof shall not affect the validity of the corporate action required to be specified in such notice. To the extent that any notice provided in this Warrant constitutes, or contains, material, non-public information regarding the Company or any of the Subsidiaries, the Company shall substantially simultaneously with the giving of such notice, disclose such information with the Commission pursuant to a Current Report on Form 8-K. The Holder shall remain entitled to exercise this Warrant during the period commencing on the date of such notice to the effective date of the event triggering such notice except as may otherwise be expressly set forth herein.

(g) Voluntary Adjustment By Company. Subject to the rules and regulations of the Trading Market, the Company may at any time during the term of this Warrant, subject to the prior written consent of the Holder, reduce the then current Exercise Price to any amount and for any period of time deemed appropriate by the board of directors of the Company.

Section 4. Transfer of Warrant.

(a) Transferability. Subject to compliance with any applicable securities laws and the conditions set forth in Section 4(d) hereof and to the provisions of Section 4.1 of the Purchase Agreement, this Warrant and all rights hereunder (including, without limitation, any registration rights for the resale of Warrant Shares) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Upon such surrender and, if required, such payment, the Company shall execute and deliver a new Warrant or Warrants in the name of the assignee or assignees, as applicable, and in the denomination or denominations specified in such instrument of assignment, and shall issue to the assignor a new Warrant evidencing the portion of this Warrant not so assigned, and this Warrant shall promptly be cancelled. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company unless the Holder has assigned this Warrant in full, in which case, the Holder shall surrender this Warrant to the Company within three (3) Trading Days of the date on which the Holder delivers an assignment form to the Company assigning this Warrant in full. The Warrant, if properly assigned in accordance herewith, may be exercised by a new holder for the purchase of Warrant Shares without having a new Warrant issued.

(b) New Warrants. This Warrant may be divided or combined with other Warrants upon presentation hereof at the aforesaid office of the Company, together with a written notice specifying the names and denominations in which new Warrants are to be issued, signed by the Holder or its agent or attorney. Subject to compliance with Section 4(a), as to any transfer which may be involved in such division or combination, the Company shall execute and deliver a new Warrant or Warrants in exchange for the Warrant or Warrants to be divided or combined in accordance with such notice. All Warrants issued on transfers or exchanges shall be dated the Initial Exercise Date and shall be identical with this Warrant except as to the number of Warrant Shares issuable pursuant thereto.

(c) Warrant Register. The Company shall register this Warrant, upon records to be maintained by the Company for that purpose (the "Warrant Register"), in the name of the record Holder hereof from time to time. The Company may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

(d) Transfer Restrictions. If, at the time of the surrender of this Warrant in connection with any transfer of this Warrant, the transfer of this Warrant shall not be either (i) registered pursuant to an effective registration statement under the Securities Act and under applicable state securities or blue sky laws or (ii) eligible for resale without volume or manner-of-sale restrictions or current public information requirements pursuant to Rule 144, the Company may require, as a condition of allowing such transfer, that the Holder or transferee of this Warrant, as the case may be, comply with the provisions of Section 5.7 of the Purchase Agreement.

(e) Representation by the Holder. The Holder, by the acceptance hereof, represents and warrants that it is acquiring this Warrant and, upon any exercise hereof, will acquire the Warrant Shares issuable upon such exercise, for its own account and not with a view to or for distributing or reselling such Warrant Shares or any part thereof in violation of the Securities Act or any applicable state securities law.

Section 5. Miscellaneous.

(a) No Rights as Stockholder Until Exercise; No Settlement in Cash. This Warrant does not entitle the Holder to any voting rights, dividends or other rights as a stockholder of the Company prior to the exercise hereof as set forth in Section 2(d)(i), except as expressly set forth in Section 3. Without limiting any rights of a Holder to receive Warrant Shares on a “cashless exercise” pursuant to Section 2(c) or to receive cash payments pursuant to Section 2(d)(i) and Section 2(d)(iv) herein, in no event shall the Company be required to net cash settle an exercise of this Warrant.

(b) Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Warrant Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of the Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

(c) Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Trading Day, then such action may be taken or such right may be exercised on the next succeeding Trading Day.

(d) Authorized Shares.

The Company covenants that, during the period the Warrant is outstanding, it will reserve from its authorized and unissued Common Stock a sufficient number of shares to provide for the issuance of the Warrant Shares upon the exercise of any purchase rights under this Warrant. The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of issuing the necessary Warrant Shares upon the exercise of the purchase rights under this Warrant. The Company will take all such

reasonable action as may be necessary to assure that such Warrant Shares may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of the Trading Market upon which the Common Stock may be listed. The Company covenants that all Warrant Shares which may be issued upon the exercise of the purchase rights represented by this Warrant will, upon exercise of the purchase rights represented by this Warrant and payment for such Warrant Shares in accordance herewith, be duly authorized, validly issued, fully paid and nonassessable and free from all taxes, liens and charges created by the Company in respect of the issue thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue).

Except and to the extent as waived or consented to by the Holder, the Company shall not take any action, including, without limitation, amending its certificate of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, in order to avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary to carry out such terms. Without limiting the generality of the foregoing, the Company will (i) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (ii) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares upon the exercise of this Warrant and (iii) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof, as may be, necessary to enable the Company to perform its obligations under this Warrant.

Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall use commercially reasonable efforts to obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

(e) Jurisdiction. All questions concerning the construction, validity, enforcement and interpretation of this Warrant shall be determined in accordance with the provisions of the Purchase Agreement.

(f) Restrictions. The Holder acknowledges that the Warrant Shares acquired upon the exercise of this Warrant will have restrictions upon resale imposed by state and federal securities laws and will bear a restrictive legend, subject to Section 2(c) in the case of cashless exercise.

(g) Nonwaiver and Expenses. No course of dealing or any delay or failure to exercise any right hereunder on the part of Holder shall operate as a waiver of such right or otherwise prejudice the Holder's rights, powers or remedies. Without limiting any other provision of this Warrant or the Purchase Agreement, if the Company willfully and knowingly fails to comply with any provision of this Warrant, which results in any material damages to the Holder, the Company shall pay to the Holder such amounts as shall be sufficient to cover any costs and expenses including, but not limited to, reasonable and documented out of pocket external attorneys' fees of one counsel, including those of appellate proceedings, incurred by the Holder in collecting any amounts due pursuant hereto or in otherwise enforcing any of its rights, powers or remedies hereunder.

(h) Notices. Any notice, request or other document required or permitted to be given or delivered to the Holder by the Company shall be delivered in accordance with the notice provisions of the Purchase Agreement.

(i) Limitation of Liability. No provision hereof, in the absence of any affirmative action by the Holder to exercise this Warrant to purchase Warrant Shares, and no enumeration herein of the rights or privileges of the Holder, shall give rise to any liability of the Holder for the purchase price of any Common Stock or as a stockholder of the Company, whether such liability is asserted by the Company or by creditors of the Company.

(j) Remedies. The Holder, in addition to being entitled to exercise all rights granted by law, including recovery of damages, will be entitled to specific performance of its rights under this Warrant. The Company agrees that monetary damages would not be adequate compensation for any loss incurred by reason of a breach by it of the provisions of this Warrant and hereby agrees to waive and not to assert the defense in any action for specific performance that a remedy at law would be adequate.

(k) Successors and Assigns. Subject to applicable securities laws, this Warrant and the rights and obligations evidenced hereby shall inure to the benefit of and be binding upon the successors and permitted assigns of the Company and the successors and permitted assigns of Holder. The provisions of this Warrant are intended to be for the benefit of any Holder from time to time of this Warrant and shall be enforceable by the Holder or holder of Warrant Shares.

(l) Amendment. This Warrant may be modified or amended or the provisions hereof waived with the written consent of the Company and the Holder.

(m) Severability. Wherever possible, each provision of this Warrant shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Warrant shall be prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this Warrant.

(n) Headings. The headings used in this Warrant are for the convenience of reference only and shall not, for any purpose, be deemed a part of this Warrant.

(Signature Page Follows)

IN WITNESS WHEREOF, the Company has caused this Warrant to be executed by its officer thereunto duly authorized as of the date first above indicated.

ASSEMBLY BIOSCIENCES, INC.

By: /s/ Jason A. Okazaki

Name: Jason A. Okazaki

Title: Chief Executive Officer and President

NOTICE OF EXERCISE

To: Assembly Biosciences, Inc. (the "Company")

(1) The undersigned hereby elects to purchase _____ Warrant Shares of the Company pursuant to the terms of the attached Warrant (only if exercised in full), and tenders herewith payment of the exercise price in full, together with all applicable transfer taxes, if any.

(2) Payment shall take the form of (check applicable box):

- in lawful money of the United States; or
- [if permitted the cancellation of such number of Warrant Shares as is necessary, in accordance with the formula set forth in subsection 2(c), to exercise this Warrant with respect to the maximum number of Warrant Shares purchasable pursuant to the cashless exercise procedure set forth in subsection 2(c).

(3) Please issue said Warrant Shares in the name of the undersigned or in such other name as is specified below:

The Warrant Shares shall be delivered to the following DWAC Account Number:

(4) Accredited Investor. The undersigned is an "accredited investor" as defined in Regulation D promulgated under the Securities Act of 1933, as amended.

By its delivery of this Notice of Exercise, the undersigned represents and warrants to the Company that in giving effect to the exercise evidenced hereby the Holders will not beneficially own in excess of the number of shares of Common Stock permitted to be owned under Section 2(e) of the Warrant to which this notice relates.

[SIGNATURE OF HOLDER]

Name of Investing Entity: _____

Signature of Authorized Signatory of Investing Entity: _____

Name of Authorized Signatory: _____

Title of Authorized Signatory: _____

Date: _____

ASSIGNMENT FORM

(To assign the foregoing Warrant, execute this form and supply required information. Do not use this form to purchase shares.)

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to

Name: _____
(Please Print)

Address: _____
(Please Print)

Phone Number: _____

Email Address: _____

Dated: _____, _____

Holder's Signature: _____

Holder's Address: _____

SKADDEN, ARPS, SLATE, MEAGHER & FLOM LLP
 ONE MANHATTAN WEST
 NEW YORK, NY 10001

TEL: (212) 735-3000
 FAX: (212) 735-2000
 www.skadden.com

FIRM/AFFILIATE
 OFFICES

BOSTON
 CHICAGO
 HOUSTON
 LOS ANGELES
 PALO ALTO
 WASHINGTON, D.C.
 WILMINGTON

BEIJING
 BRUSSELS
 FRANKFURT
 HONG KONG
 LONDON
 MUNICH
 PARIS
 SÃO PAULO
 SEOUL
 SHANGHAI
 SINGAPORE
 TOKYO
 TORONTO

June 18, 2024

Assembly Biosciences, Inc.
 Two Tower Place, 7th Floor
 South San Francisco, California

Re: Assembly Biosciences, Inc.
Registration Statement on Form S-3

Ladies and Gentlemen:

We have acted as special United States counsel to Assembly Biosciences, Inc., a Delaware corporation (the "Company"), in connection with the public offering by the Company of 634,500 shares (the "Shares") of common stock, par value \$0.001 per share (the "Common Stock"), of the Company and 634,500 warrants to purchase shares of Common Stock (the "Warrants"). The Shares, the Warrants and the shares of Common Stock issuable upon exercise of the Warrants, collectively are referred to herein as the "Securities".

This opinion is being furnished in accordance with the requirements of Item 601(b)(5) of Regulation S-K under the Securities Act of 1933 (the "Securities Act").

In rendering the opinions stated herein, we have examined and relied upon the following:

(a) the registration statement on Form S-3 (File No. 333-270760) of the Company relating to the Securities and other securities of the Company filed on March 22, 2023 with the Securities and Exchange Commission (the "Commission") under the Securities Act allowing for delayed offerings pursuant to Rule 415 of the General Rules and Regulations under the Securities Act (the "Rules and Regulations"), including the information deemed to be a part of the registration statement pursuant to Rule 430B of the Rules and Regulations and the Notice of Effectiveness of the Commission posted on its website declaring such registration statement effective on April 14, 2023 (such registration statement being hereinafter referred to as the "Registration Statement");

(b) the prospectus, dated April 14, 2023 (the “Base Prospectus”), which forms a part of and is included in the Registration Statement;

(c) the prospectus supplement, dated June 17, 2024 (together with the Base Prospectus, the “Prospectus”), relating to the offering of the Securities;

(d) an executed copy of the Securities Purchase Agreement, dated June 16, 2024 (the “Purchase Agreement”), between the Company and Armistice Capital, LLC (the “Purchaser”), relating to the sale by the Company to the Purchaser of the Shares and Warrants;

(e) an executed copy of the agreement evidencing the Warrants (the “Warrant Agreement”);

(f) an executed copy of a certificate of John O. Gunderson, VP, General Counsel and Corporate Secretary of the Company, dated the date hereof (the “Secretary’s Certificate”);

(g) a copy of the Company’s Sixth Amended and Restated Certificate of Incorporation (the “Sixth Amended and Restated Certificate of Incorporation”), certified by the Secretary of State of the State of Delaware as of June 14, 2024 and certified pursuant to the Secretary’s Certificate;

(h) a copy of the Company’s Amended and Restated Bylaws (the “Amended and Restated Bylaws”) in effect as of the date hereof, certified pursuant to the Secretary’s Certificate; and

(i) a copy of certain resolutions of the Board of Directors of the Company, adopted on March 13, 2024 and certain resolutions of the Pricing Committee thereof, adopted on June 16, 2024, certified pursuant to the Secretary’s Certificate.

We have also examined originals or copies, certified or otherwise identified to our satisfaction, of such records of the Company and such agreements, certificates and receipts of public officials, certificates of officers or other representatives of the Company and others, and such other documents as we have deemed necessary or appropriate as a basis for the opinions stated below, including the facts and conclusions set forth in the Secretary’s Certificate and the factual representations and warranties contained in the Purchase Agreement.

In our examination, we have assumed the genuineness of all signatures, including electronic signatures, the legal capacity and competency of all natural persons, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as facsimile, electronic, certified or photocopied copies, and the authenticity of the originals of such copies. As to any facts relevant to the opinions stated herein that we did not independently establish or verify, we have relied upon statements and representations of officers and other representatives of the Company and others and of public officials, including the facts and conclusions set forth in the Secretary’s Certificate and the factual representations and warranties set forth in the Purchase Agreement.

We do not express any opinion with respect to the laws of any jurisdiction other than (i) the laws of the State of New York and (ii) the General Corporation Law of the State of Delaware (the “DGCL”) (all of the foregoing being referred to as “Opined-On Law”).

As used herein, “Transaction Documents” means the Purchase Agreement and the Warrant Agreement.

Based upon the foregoing and subject to the qualifications and assumptions stated herein, we are of the opinion that:

1. The Shares have been duly authorized by all requisite corporate action on the part of the Company under the DGCL and when issued and sold in accordance with the Purchase Agreement, will be validly issued, fully paid and nonassessable, provided that the consideration therefor is not less than \$0.001 per Share;

2. The Warrants have been duly authorized by all requisite corporate action on the part of the Company under the DGCL and when issued in accordance with the Purchase Agreement will constitute the valid and binding obligations of the Company, enforceable against the Company in accordance with their terms under the laws of the State of New York; and

3. The shares of Common Stock issuable upon exercise of the Warrants, when issued upon exercise of the Warrants in the manner and on the terms described in the Prospectus and the Warrant Agreement, will have been duly authorized by all requisite corporate action on the part of Company under the DGCL and will be validly issued, fully paid and nonassessable.

The opinions stated herein are subject to the following qualifications:

(a) we do not express any opinion with respect to the effect on the opinions stated herein of any bankruptcy, insolvency, reorganization, moratorium, fraudulent transfer, preference and other similar laws or governmental orders affecting creditors’ rights generally, and the opinions stated herein are limited by such laws and governmental orders and by general principles of equity (regardless of whether enforcement is sought in equity or at law);

(b) we do not express any opinion with respect to any law, rule or regulation that is applicable to any party to any of the Transaction Documents or the transactions contemplated thereby solely because such law, rule or regulation is part of a regulatory regime applicable to any such party or any of its affiliates as a result of the specific assets or business operations of such party or such affiliates;

(c) except to the extent expressly stated in the opinions contained herein, we have assumed that each of the Transaction Documents constitutes the valid and binding obligation of each party to such Transaction Document, enforceable against such party in accordance with its terms;

(d) we do not express any opinion with respect to the enforceability of any provision contained in any Transaction Document relating to any indemnification, contribution, non-reliance, exculpation, release, limitation or exclusion of remedies, waiver or other provisions having similar effect that may be contrary to public policy or violative of federal or state securities laws, rules or regulations, or to the extent any such provision purports to, or has the effect of, waiving or altering any statute of limitations;

(e) to the extent that any opinion relates to the enforceability of the choice of New York law and choice of New York forum provisions contained in the Purchase Agreement or the Warrant Agreement, the opinions stated herein are subject to the qualification that such enforceability may be subject to, in each case, (i) the exceptions and limitations in New York General Obligations Law sections 5-1401 and 5-1402 and (ii) principles of comity and constitutionality;

(f) we do not express any opinion with respect to the enforceability of Section 5(e) of the Warrant Agreement to the extent that such section purports to bind the Company to the exclusive jurisdiction of any particular federal court or courts; and

(g) we do not express any opinion whether the execution or delivery of any Transaction Document by the Company, or the performance by the Company of its obligations under any transactions contemplated thereby will constitute a violation of, or a default under, any covenant, restriction or provision with respect to financial ratios or tests or any aspect of the financial condition or results of operations of the Company or any of its subsidiaries.

In addition, in rendering the foregoing opinions we have assumed that:

(a) neither the execution and delivery by the Company of the Transaction Documents nor the performance by the Company of its obligations thereunder, including the issuance and sale of the Securities: (i) constitutes or will constitute a violation of, or a default under, any lease, indenture, agreement or other instrument to which the Company or its property is subject (except that we do not make the assumption set forth in this clause (i) with respect to those agreements or instruments expressed to be governed by the laws of the State of New York which are listed in Part II of the Registration Statement or the Company's Annual Report on Form 10-K for the year ended December 31, 2023), (ii) contravenes or will contravene any order or decree of any governmental authority to which the Company or its property is subject, or (iii) violates or will violate any law, rule or regulation to which the Company or its property is subject (except that we do not make the assumption set forth in this clause (iii) with respect to Opined-On Law);

(b) neither the execution and delivery by the Company of the Transaction Documents nor the enforceability of each of the Transaction Documents against the Company requires or will require the consent, approval, licensing or authorization of, or any filing, recording or registration with, any governmental authority under any law, rule or regulation of any jurisdiction; and

(c) (i) the issuance of the Securities does not violate or conflict with any agreement or instrument binding on the Company (except that we do not make this assumption with respect to the Sixth Amended and Restated Certificate of Incorporation, the Amended or Restated Bylaws or those agreements or instruments expressed to be governed by the laws of the State of New York which are listed in Part II of the Registration Statement), and (ii) the Company will continue to have sufficient shares of Common Stock.

We hereby consent to the reference to our firm under the heading “Legal Matters” in the Prospectus. We also hereby consent to the filing of this opinion with the Commission as an exhibit to the Company’s Current Report on Form 8-K being filed on the date hereof and incorporated by reference into the Registration Statement. In giving this consent, we do not thereby admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the Rules and Regulations.

Very truly yours,

/s/ Skadden, Arps, Slate, Meagher & Flom LLP

SECURITIES PURCHASE AGREEMENT

This Securities Purchase Agreement (this “Agreement”) is dated as of June 16, 2024, between Assembly Biosciences, Inc., a Delaware corporation (the “Company”), and Armistice Capital LLC (including its successors and assigns, the “Purchaser”).

WHEREAS, subject to the terms and conditions set forth in this Agreement and pursuant to an effective registration statement under the Securities Act (as defined below), the Company desires to issue and sell to the Purchaser, and the Purchaser desires to purchase from the Company, securities of the Company as more fully described in this Agreement.

NOW, THEREFORE, IN CONSIDERATION of the mutual covenants contained in this Agreement, and for other good and valuable consideration the receipt and adequacy of which are hereby acknowledged, the Company and the Purchaser agree as follows:

ARTICLE I.
DEFINITIONS

1.1 Definitions. In addition to the terms defined elsewhere in this Agreement, for all purposes of this Agreement, the following terms have the meanings set forth in this Section 1.1:

“Action” means an action, suit, inquiry, notice of violation, proceeding or investigation pending or, to the knowledge of the Company, threatened against or affecting the Company, any Subsidiary or any of their respective properties before or by any court, arbitrator, governmental or administrative agency or regulatory authority (federal, state, county, local or foreign).

“Affiliate” means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person as such terms are used in and construed under Rule 405 under the Securities Act.

“Board of Directors” means the board of directors of the Company.

“Business Day” means any day other than Saturday, Sunday or other day on which commercial banks in The City of New York are authorized or required by law to remain closed.

“Closing” means the closing of the purchase and sale of the Securities pursuant to Section 2.1.

“Closing Date” means the Trading Day on which all of the Transaction Documents have been executed and delivered by the applicable parties thereto, and all conditions precedent to (i) the Purchaser’s obligations to pay the Subscription Amount and (ii) the Company’s obligations to deliver the Securities, in each case, have been satisfied or waived, but in no event later than the second (2nd) Trading Day following the date hereof.

“Closing Statement” means the Closing Statement in the form on Annex A attached hereto.

“Commission” means the United States Securities and Exchange Commission.

“Common Stock” means the common stock of the Company, par value \$0.001 per share, and any other class of securities into which such securities may hereafter be reclassified or changed.

“Common Stock Equivalents” means any securities of the Company or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, right, option, warrant or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

“Company Counsel” means Skadden, Arps, Slate, Meagher & Flom LLP, with offices located at 300 South Grand Ave #3400, Los Angeles, CA 90071.

“Disclosure Schedules” means the Disclosure Schedules of the Company delivered concurrently herewith.

“Exchange Act” means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“Exempt Issuance” means the (a) issuance of shares of Common Stock or options to employees, officers or directors of the Company pursuant to any stock, option or other plan or arrangement duly adopted for such purpose by the Board of Directors or a committee thereof, (b) issuance of securities upon the exercise or exchange of or conversion of any Securities issued hereunder and/or other securities exercisable or exchangeable for or convertible into shares of Common Stock issued and outstanding on the date of this Agreement, provided that such securities have not been amended since the date of this Agreement to increase the number of such securities or to decrease the exercise price, exchange price or conversion price of such securities (other than in connection with stock splits or combinations or otherwise pursuant to the terms of the agreements governing such securities (as such agreements are in effect as of the date of this Agreement)) or to extend the term of such securities, (c) issuance of securities issued pursuant to acquisitions or strategic transactions, but not a transaction in which the Company is issuing securities primarily for the purpose of raising capital or to an entity whose primary business is investing in securities; (d) issuance of shares of Common Stock under the registration statement on Form S-3 filed by the Company on March 22, 2023; (e) issuance of securities pursuant to the Open Market Sale Agreement, dated August 24, 2020, by and between the Company and Jefferies LLC or any amendment thereto or replacement thereof or any similar agreement, and the filing, amendment or supplement of any related registration statement or prospectus; (f) issuances and other transactions pursuant to the Gilead Agreements (including, without limitation, pursuant to Gilead’s exercise of its rights under Section 5.3 and/or Article 6 of the Gilead IRA); and (g) issuances pursuant to this Agreement and the Warrants.

“FCPA” means the Foreign Corrupt Practices Act of 1977, as amended.

“FDA” shall have the meaning ascribed to such term in Section 3.1(t).

“FDA Laws” shall have the meaning ascribed to such term in Section 3.1(t).

“GAAP” shall have the meaning ascribed to such term in Section 3.1(g).

“Gilead Agreements” shall mean the Common Stock Purchase Agreement, dated as of October 15, 2023, between the Company and Gilead Sciences, Inc. (“Gilead”); the Investor Rights Agreement, dated as of October 15, 2023, between the Company and Gilead (the “Gilead IRA”); the Option, License and Collaboration Agreement, dated as of October 15, 2023, between the Company and Gilead; the Securities Purchase Agreement, dated June 17, 2024, between the Company and Gilead; and that certain Warrant, dated June 17, 2024, between the Company and Gilead; in each case, as amended or supplemented from time to time.

“Intellectual Property Rights” shall have the meaning ascribed to such term in Section 3.1(k).

“Liens” means a lien, charge, pledge, security interest, encumbrance, right of first refusal, preemptive right or other restriction.

“Material Adverse Effect” shall mean a material adverse effect on the condition (financial or otherwise), results of operations, business, management, properties or prospects of the Company and its Subsidiaries taken as a whole or on the performance by the Company of its obligations under this Agreement.

“Material Permits” shall have the meaning ascribed to such term in Section 3.1(j).

“Per Share Purchase Price” equals \$15.46, subject to adjustment for reverse and forward stock splits, stock dividends, stock combinations and other similar transactions of the Common Stock that occur after the date of this Agreement and prior to the Closing.

“Person” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

“Proceeding” means an action, claim, suit, investigation or proceeding (including, without limitation, an informal investigation or partial proceeding, such as a deposition), whether commenced or threatened.

“Prospectus” means the base prospectus included in the Registration Statement at the time of effectiveness.

“Prospectus Supplement” means the supplement to the Prospectus complying with Rule 424(b) of the Securities Act that is filed with the Commission with respect to the Shares and Warrants (and the Warrant Shares).

“Purchaser Party” shall have the meaning ascribed to such term in Section 4.3.

“Registration Statement” means the effective registration statement filed with the Commission (File No. 333-270760), which registered the sale of the Shares and Warrants (and the Warrant Shares) to the Purchaser.

“Required Approvals” shall have the meaning ascribed to such term in Section 3.1(d).

“Rule 144” means Rule 144 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“Rule 424” means Rule 424 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“SEC Reports” shall have the meaning ascribed to such term in Section 3.1(g).

“Securities” means the Shares, the Warrants and the Warrant Shares.

“Securities Act” means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

“Shares” means the shares of Common Stock issued or issuable to the Purchaser pursuant to this Agreement.

“Short Sales” means all “short sales” as defined in Rule 200 of Regulation SHO under the Exchange Act (but shall not be deemed to include locating and/or borrowing shares of Common Stock).

“Subscription Amount” means, the aggregate amount to be paid for Shares and Warrants purchased hereunder as specified below the Purchaser’s name on the signature page of this Agreement and next to the heading “Subscription Amount,” in United States dollars and in immediately available funds.

“Subsidiary” means any subsidiary of the Company, and shall, where applicable, also include any direct or indirect subsidiary of the Company formed or acquired after the date hereof.

“Trading Day” means a day on which the principal Trading Market is open for trading.

“Trading Market” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE American, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market, the New York Stock Exchange, the Pink Open Market, OTCQB or the OTCQX (or any successors to any of the foregoing).

“Transaction Documents” means this Agreement, the Warrants, all exhibits and schedules thereto and hereto and any other documents or agreements executed in connection with the transactions contemplated hereunder.

“Transfer Agent” means Equiniti Trust Company, LLC, the current transfer agent of the Company, with a mailing address of 48 Wall Street, Floor 23, New York, NY 10005, or any successor transfer agent of the Company.

“Variable Rate Transaction” shall have the meaning ascribed to such term in Section 4.6(b).

“Warrants” means, collectively, the Common Stock purchase warrants delivered to the Purchaser at the Closing in accordance with Section 2.2(a) hereof, which Warrants shall be exercisable immediately and have a term of exercise equal to five (5) years, in the form of Exhibit A attached hereto.

“Warrant Shares” means the shares of Common Stock issuable upon exercise of the Warrants.

ARTICLE II. PURCHASE AND SALE

2.1 Closing. On the Closing Date, upon the terms and subject to the conditions set forth herein, substantially concurrent with the execution and delivery of this Agreement by the parties hereto, the Company agrees to sell, and the Purchaser agrees to purchase, up to an aggregate of \$9,809,370 of Shares and Warrants. The Purchaser shall deliver to the Company, via wire transfer, immediately available funds equal to the Subscription Amount, and the Company shall deliver to the Purchaser its Shares and a Warrant, as determined pursuant to Section 2.2(a), and the Company and the Purchaser shall deliver the other items set forth in Section 2.2 deliverable at the Closing. Upon satisfaction of the covenants and conditions set forth in Sections 2.2 and 2.3, the Closing shall take place remotely by electronic transfer of the Closing documentation.

2.2 Deliveries.

(a) On or prior to the Closing Date, the Company shall deliver or cause to be delivered to the Purchaser the following:

- (i) this Agreement duly executed by the Company;
- (ii) a legal opinion of Company Counsel, in the form agreed upon between Company Counsel and the Purchaser;
- (iii) the Company shall have provided the Purchaser with the Company’s wire instructions, executed by the Chief Executive Officer or Chief Financial Officer;

(iv) a copy of the irrevocable instructions to the Transfer Agent instructing the Transfer Agent to deliver, on an expedited basis, the number of Shares equal to the Purchaser's Subscription Amount divided by the Per Share Purchase Price, registered in the name of the Purchaser; and

(v) a Warrant registered in the name of the Purchaser to purchase up to a number of shares of Common Stock equal to 100% of the Purchaser's Shares, with an exercise price equal to \$17.00, subject to adjustment therein.

(b) On or prior to the Closing Date, the Purchaser shall deliver or cause to be delivered to the Company, as applicable, the following:

(i) this Agreement duly executed by such Purchaser; and

(ii) the Purchaser's Subscription Amount.

2.3 Closing Conditions.

(a) The obligations of the Company hereunder in connection with the Closing are subject to the following conditions being met:

(i) the accuracy in all material respects (or, to the extent representations or warranties are qualified by materiality, in all respects) on the Closing Date of the representations and warranties of the Purchaser contained herein (unless as of a specific date therein in which case they shall be accurate in all material respects (or, to the extent representations or warranties are qualified by materiality, in all respects) as of such date);

(ii) all obligations, covenants and agreements of the Purchaser required to be performed at or prior to the Closing Date shall have been performed; and

(iii) the delivery by the Purchaser of the items set forth in Section 2.2(b) of this Agreement.

(b) The respective obligations of the Purchaser hereunder in connection with the Closing are subject to the following conditions being met:

(i) the accuracy in all material respects (or, to the extent representations or warranties are qualified by materiality or Material Adverse Effect, in all respects) when made and on the Closing Date of the representations and warranties of the Company contained herein (unless as of a specific date therein in which case they shall be accurate in all material respects or, to the extent representations or warranties are qualified by materiality or Material Adverse Effect, in all respects) as of such date);

(ii) all obligations, covenants and agreements of the Company required to be performed at or prior to the Closing Date shall have been performed;

(iii) the delivery by the Company of the items set forth in Section 2.2(a) of this Agreement;

(iv) there shall have been no Material Adverse Effect with respect to the Company;

ARTICLE III. REPRESENTATIONS AND WARRANTIES

3.1 Representations and Warranties of the Company. Except as set forth in the SEC Reports or in the Disclosure Schedules, which Disclosure Schedules shall be deemed a part hereof and shall qualify any representation or otherwise made herein to the extent of the disclosure contained in the corresponding section of the Disclosure Schedules, the Company hereby makes the following representations and warranties to the Purchaser:

(a) Organization and Qualification. The Company and each of its Subsidiaries has been duly organized and are validly existing and in good standing under the laws of their respective jurisdictions of organization. The Company and each of its Subsidiaries are duly licensed or qualified to do business and are in good standing in each jurisdiction in which their respective ownership or lease of property or the conduct of their respective businesses requires such license or qualification, and have all corporate power and authority necessary to own or hold their respective properties and to conduct their respective businesses, except where the failure to be so qualified or in good standing or have such power or authority would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. The Company does not own or control, directly or indirectly, any corporation, association or other entity other than the Subsidiaries listed in the most recent Exhibit 21 filed with the Commission or as otherwise disclosed in the Disclosure Schedules.

(b) Authorization; Enforcement. The Company has the requisite corporate power and authority to enter into and to consummate the transactions contemplated by this Agreement and each of the other Transaction Documents and otherwise to carry out its obligations hereunder and thereunder. The execution and delivery of this Agreement and each of the other Transaction Documents to which the Company is a party and the consummation by it of the transactions contemplated hereby and thereby have been duly authorized by all necessary action on the part of the Company and no further action is required by the Company, the Company's board of directors or the Company's stockholders in connection herewith or therewith other than in connection with the Required Approvals (as defined below). This Agreement and each other Transaction Document to which the Company is a party has been (or upon delivery will have been) duly executed by the Company and, when delivered in accordance with the terms hereof and thereof, will constitute the valid and binding obligation of the Company enforceable against the Company in accordance with its terms, except (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law.

(c) No Conflicts. The execution, delivery and performance by the Company of this Agreement and each other Transaction Document to which the Company is a party and the consummation by the Company of the transactions contemplated hereby and thereby (including the issuance and sale of the Securities) will not (i) conflict with or result in a breach or violation of any provision of the Company's organizational documents or the organizational documents of any of the Subsidiaries, each as in effect on the date hereof and the Closing Date, (ii) conflict with or result in a breach or violation of the terms or provisions of, or constitute a default under, result in the termination, modification or acceleration of, or result in the creation or imposition of any Lien upon any property, right or asset of the Company or any of its Subsidiaries pursuant to, any indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which the Company or any of its Subsidiaries is a party or by which the Company or any of its Subsidiaries is bound or to which any property, right or asset of the Company or any of its Subsidiaries is subject, or (iii) result in the violation of any law or statute or any judgment, order, rule or regulation of any court or arbitrator or governmental or regulatory authority, except, in the case of clauses (ii) and (iii) above, for any such conflict, breach, violation, default, lien, charge or encumbrance that would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect

(d) Filings, Consents and Approvals. The Company is not required to obtain any consent, waiver, authorization or order of, give any notice to, or make any filing or registration with, any court or other federal, state, local or other governmental authority or other Person in connection with the execution, delivery and performance by the Company of the Transaction Documents, other than: (i) the filings required pursuant to Section 4.2 of this Agreement; (ii) the filing with the Commission of the Prospectus Supplement; (iii) the notice and/or application(s) to each applicable Trading Market for the issuance and sale of the Securities and the listing of the Shares and Warrant Shares for trading thereon in the time and manner required thereby; and (iv) as applicable, the filing of Form D with the Commission and such filings as are required to be made under applicable state securities laws (collectively, the "Required Approvals").

(e) Issuance of the Securities. The Securities are duly authorized and, when issued and paid for in accordance with the applicable Transaction Documents and the Prospectus Supplement, will be duly and validly issued, fully paid and nonassessable, free and clear of all Liens imposed by the Company. The Warrant Shares, when issued in accordance with the terms of the Transaction Documents and the Prospectus Supplement, will be validly issued, fully paid and nonassessable, free and clear of all Liens imposed by the Company. The Company has reserved from its duly authorized capital stock the maximum number of shares of Common Stock issuable, as of the date of this Agreement, pursuant to this Agreement and the Warrants. The Company has prepared and filed the Registration Statement in conformity with the requirements of the Securities Act, which became effective on April 14, 2023, including the Prospectus. The Shares and Warrants will be issued pursuant to the Registration Statement. The Company was at the time of the filing of the Registration Statement, and is as of the date hereof, eligible to use Form S-3. The Registration Statement is effective under the Securities Act, and no stop order preventing or suspending the effectiveness of the Registration Statement or suspending or preventing the use of the Prospectus has been issued by the Commission and no proceedings for that purpose have been instituted or, to the knowledge of the Company, are threatened by the Commission. At the time the Registration Statement became effective, at the date of this

Agreement and at the applicable Closing Date, the Registration Statement complied and will comply in all material respects with the requirements of the Securities Act and the rules thereunder and did not contain and will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein not misleading; and, the Prospectus, at the time the Prospectus was filed and on the Closing Date complied and will comply in all material respects with the requirements of the Securities Act and the rules thereunder and did not and will not include any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(f) Capitalization. The authorized capital of the Company consists of: (i) 150,000,000 shares of Common Stock of which, (A) as of June 14, 2024, 5,531,561 shares were issued and outstanding, (B) as of March 31, 2024, 130,546 shares were reserved for issuance pursuant to the Company's equity incentive plans (including its stockholder approved equity compensation plans and outstanding equity compensation arrangements that have not been approved by the Company's stockholders), and (C) as of March 31, 2024, 1,130,448 shares were issuable upon the exercise of stock options outstanding and vesting of restricted stock units, and (ii) 5,000,000 shares of designated preferred stock, none of which shares of preferred stock are issued and outstanding. Except as described or referred to in the SEC Reports, there are not: (i) any outstanding options, warrants, rights (including conversion or preemptive rights), or instruments convertible into or exchangeable for, or other agreements pursuant to which the Company is or may become obligated to issue, sell or repurchase any shares of its capital stock or any other securities of the Company other than equity securities that may have been granted pursuant to its equity incentive plans, which plans are described in the SEC Reports; or (ii) any restrictions on the transfer of capital stock of the Company other than pursuant to federal or state securities laws or as set forth in this Agreement. There are no outstanding securities or instruments of the Company or any Subsidiary that contain any redemption or similar provisions, and there are no contracts, commitments, understandings or arrangements by which the Company or any Subsidiary is or may become bound to redeem a security of the Company or such Subsidiary. The Company does not have any stock appreciation rights or "phantom stock" plans or agreements or any similar plan or agreement. All of the outstanding shares of capital stock of the Company are duly authorized, validly issued, fully paid and nonassessable, have been issued in compliance with all federal and state securities laws, and none of such outstanding shares was issued in violation of any preemptive rights or similar rights to subscribe for or purchase securities. There are no stockholders agreements, voting agreements or other similar agreements with respect to the Company's capital stock to which the Company is a party or, to the knowledge of the Company, between or among any of the Company's stockholders.

(g) SEC Reports: Financial Statements. The Company has filed all reports, schedules, forms, statements and other documents required to be filed by the Company under the Securities Act and the Exchange Act, including pursuant to Section 13(a) or 15(d) thereof, since January 1, 2023 (the foregoing materials, including the exhibits thereto and documents incorporated by reference therein, being collectively referred to herein as the "SEC Reports"). As of their respective dates, the SEC Reports complied in all material respects with the requirements of the Securities Act and the Exchange Act, as applicable, at the time of filing, and none of the SEC Reports, when filed, contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in

the light of the circumstances under which they were made, not misleading. The Company has never been an issuer subject to Rule 144(i) under the Securities Act. The financial statements of the Company included in the SEC Reports comply in all material respects with applicable accounting requirements and the rules and regulations of the Commission with respect thereto as in effect at the time of filing. Such financial statements have been prepared in accordance with United States generally accepted accounting principles applied on a consistent basis during the periods involved (“GAAP”), except as may be otherwise specified in such financial statements or the notes thereto and except that unaudited financial statements may not contain all footnotes required by GAAP, and fairly present in all material respects the financial position of the Company and its consolidated Subsidiaries as of and for the dates thereof and the results of operations and cash flows for the periods then ended, subject, in the case of unaudited statements, to normal, immaterial, year-end audit adjustments.

(h) Material Changes; Undisclosed Events, Liabilities or Developments. Since the date of the latest audited financial statements included in the Company’s Annual Report on Form 10-K, filed with the Commission on March 28, 2024, except as specifically disclosed in a subsequent SEC Report, (i) there has not been any change in the capital stock (other than (x) the issuance of Common Stock upon exercise of stock options and warrants or vesting of restricted stock units described as outstanding in, and the grant of options and awards under existing equity incentive plans and (y) the issuance of Common Stock upon purchase under the Company’s employee stock purchase plan), short-term debt or long-term debt of the Company or any of its Subsidiaries, or any dividend or distribution of any kind declared, set aside for payment, paid or made by the Company on any class of capital stock, (ii) there has been no event, occurrence or development that has had or that would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect; (iii) except for the Transaction Documents, neither the Company nor any of its Subsidiaries has entered into any transaction or agreement (whether or not in the ordinary course of business) that is material to the Company and its Subsidiaries taken as a whole or incurred any liability or obligation, direct or contingent, that is material to the Company and its Subsidiaries taken as a whole and (iv) neither the Company nor any of its Subsidiaries has sustained any loss or interference with its business that is material to the Company and its Subsidiaries taken as a whole and that is either from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor disturbance or dispute or any action, order or decree of any court or arbitrator or governmental or regulatory authority.

(i) Litigation. There are no actions, suits or proceedings by or before any court, arbitrator, governmental or administrative agency or regulatory authority (federal, state, county, local or foreign) pending, nor, to the Company’s knowledge, any investigations by or before any court, arbitrator, governmental or administrative agency or regulatory authority (federal, state, county, local or foreign) to which the Company or any of its Subsidiaries is a party or to which any property of the Company or any of its Subsidiaries is the subject that, individually or in the aggregate, if determined adversely to the Company or any of its Subsidiaries, would, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect and, to the Company’s knowledge, no such actions, suits, proceedings or investigations are threatened by any court, arbitrator, governmental or administrative agency or regulatory authority (federal, state, county, local or foreign).

(j) Regulatory Permits. The Company and the Subsidiaries possess all certificates, authorizations and permits issued by the appropriate federal, state, local or foreign regulatory authorities necessary to conduct their respective businesses as currently conducted, except where the failure to possess such permits would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect (“Material Permits”), and neither the Company nor any Subsidiary has received any written notice of any revocation or suspension of any such Material Permit.

(k) Intellectual Property. The Company and the Subsidiaries have, or have rights to use, all patents, patent applications, trademarks, trademark applications, service marks, trade names, trade secrets, inventions, copyrights, licenses and other intellectual property rights and similar rights necessary or required for use in connection with their respective businesses as described in the SEC Reports and which the failure to so would, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect (collectively, the “Intellectual Property Rights”). None of, and neither the Company nor any Subsidiary has received a notice (written or otherwise) that any of, the Intellectual Property Rights has expired, terminated or been abandoned, or is expected to expire or terminate or be abandoned, within two (2) years from the date of this Agreement. Neither the Company nor any Subsidiary has received, since the date of the latest audited financial statements included within the SEC Reports, a written notice of a claim or otherwise has any knowledge that the Intellectual Property Rights violate or infringe upon the rights of any Person, except as would not have, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. To the knowledge of the Company, all such Intellectual Property Rights are enforceable and there is no existing infringement by another Person of any of the Intellectual Property Rights. The Company and its Subsidiaries have taken reasonable security measures to protect the secrecy, confidentiality and value of all of their intellectual properties, except where failure to do so would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(l) Sarbanes-Oxley; Internal Accounting Controls. There is and has been no failure on the part of the Company to comply in all material respects with any applicable provisions of the Sarbanes-Oxley Act of 2002 and the rules and regulations promulgated thereunder. The Company maintains an effective system of “disclosure controls and procedures” (as defined in Rule 13a-15(e) of the Exchange Act) that complies with the requirements of the Exchange Act and the listing rules of the Principal Market and that has been designed to ensure that information required to be disclosed by the Company in reports that it files or submits under the Exchange Act or the listing rules of the Principal Market, as applicable, is recorded, processed, summarized and reported within the time periods specified in the Commission’s rules and forms, including controls and procedures designed to ensure that such information is accumulated and communicated to the Company’s management as appropriate to allow timely decisions regarding required disclosure. The Company has carried out evaluations of the effectiveness of its disclosure controls and procedures as required by Rule 13a-15 of the Exchange Act. The Company maintains a system of “internal control over financial reporting” (as defined in Rule 13a-15(f) of the Exchange Act) that comply with the requirements of the Exchange Act and have been designed by, or under the supervision of, its principal executive and principal financial officers, or persons performing similar functions, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP. The Company maintains internal accounting controls sufficient to provide reasonable assurance that (i)

transactions are executed in accordance with management's general or specific authorizations, (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP and to maintain asset accountability, (iii) access to assets is permitted only in accordance with management's general or specific authorization, (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences and (v) interactive data in eXtensible Business Reporting Language included or incorporated by reference in the SEC Reports fairly presents the information called for in all material respects and is prepared in accordance with the Commission's rules and guidelines applicable thereto. Based on the Company's most recent evaluation of its internal controls over financial reporting pursuant to Rule 13a-15(c) of the Exchange Act, there are no material weaknesses in the Company's internal controls. Since the date of the latest audited financial statements of the Company, there has been no change in the Company's internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting. The Company's auditors and the audit committee of the Company's board of directors have been advised of: (i) all significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which have adversely affected or are reasonably likely to adversely affect the Company's ability to record, process, summarize and report financial information and (ii) any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal controls over financial reporting.

(m) Investment Company. Neither the Company nor any of its Subsidiaries is or, after giving effect to the offering and sale of the Securities, will be, an "investment company" or an entity "controlled" by an "investment company," as such terms are defined in the Investment Company Act of 1940, as amended.

(n) Listing and Maintenance Requirements. The Common Stock is listed on the Principal Market, and the Company has taken no action designed to, or which to its knowledge is likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act. Except for that certain notice from the Principal Market received on or about September 27, 2023, related to the minimum bid price requirement, the Company has not received any notification that the Commission is contemplating terminating such listing.

(o) Disclosure. Except with respect to the material terms and conditions of the transactions contemplated by the Transaction Documents, the Company confirms that neither it nor any other Person acting on its behalf has provided the Purchaser or its agents or counsel with any information that it believes constitutes or might constitute material, non-public information. The Company understands and confirms that the Purchaser will rely on the foregoing representation in effecting transactions in securities of the Company. All of the disclosure furnished by or on behalf of the Company to the Purchaser regarding the Company and its Subsidiaries, their respective businesses and the transactions contemplated hereby, does not contain any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements made therein, in the light of the circumstances under which they were made, not misleading. The press releases disseminated by the Company during the twelve months preceding the date of this Agreement taken as a whole do not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made and when made, not misleading.

(p) Tax Status. Since January 1, 2018, the Company and each of its Subsidiaries have filed all income and other material tax returns required to have been filed by them with all appropriate Governmental Authorities and timely paid all taxes shown thereon, except as currently being contested in good faith and for which adequate reserves have been created in the financial statements of the Company, if such reserves are determined to be necessary or advisable by the Company. There are no unpaid assessments against the Company or any of its Subsidiaries nor any basis for the assessment of any additional taxes, penalties or interest for any fiscal period or audits by any federal, state or local taxing authority, except as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(q) Foreign Corrupt Practices. Neither the Company nor any Subsidiary nor, to the Company's knowledge, any agent other person acting on behalf of the Company or any Subsidiary has (i) violated or is in violation of any applicable provision of the U.S. Foreign Corrupt Practices Act of 1977, as amended; (ii) illegally promised, offered, provided, paid, promised to pay or give, attempted to provide or authorized the provision of any payment or gift, or anything of value, directly or indirectly, to any person for the purpose of obtaining or retaining business, influencing any act or decision of the recipient, or securing any improper advantage; or (iii) made any payment of funds of the Company or any Subsidiary or received or retained any funds in violation of the FCPA.

(r) Acknowledgment Regarding Purchaser's Purchase of Securities. The Company acknowledges and agrees that the Purchaser is acting solely in the capacity of an arm's length purchaser with respect to the Transaction Documents and the transactions contemplated thereby. The Company further acknowledges that no Purchaser is acting as a financial advisor or fiduciary of the Company (or in any similar capacity) with respect to the Transaction Documents and the transactions contemplated thereby and any advice given by the Purchaser or any of their respective representatives or agents in connection with the Transaction Documents and the transactions contemplated thereby is merely incidental to the Purchaser's purchase of the Securities. The Company further represents to the Purchaser that the Company's decision to enter into this Agreement and the other Transaction Documents has been based solely on the independent evaluation of the transactions contemplated hereby by the Company and its representatives.

(s) Acknowledgment Regarding Purchaser's Trading Activity. Anything in this Agreement or elsewhere herein to the contrary notwithstanding (except for Sections 3.2(g) and 4.11 hereof), it is understood and acknowledged by the Company that: (i) the Purchaser has not been asked by the Company to agree, nor has the Purchaser agreed, to desist from purchasing or selling, long and/or short, securities of the Company, or "derivative" securities based on securities issued by the Company or to hold the Securities for any specified term, (ii) past or future open market or other transactions by the Purchaser, specifically including, without limitation, Short Sales or "derivative" transactions, before or after the closing of this or future private placement transactions, may negatively impact the market price of the Company's publicly traded securities, (iii) the Purchaser, and counter-parties in "derivative" transactions to which any the Purchaser is a party, directly or indirectly, presently may have a

“short” position in the Common Stock and (iv) the Purchaser shall not be deemed to have any affiliation with or control over any arm’s length counterparty in any “derivative” transaction. The Company further understands and acknowledges that (y) the Purchaser may engage in hedging activities at various times during the period that the Securities are outstanding, including, without limitation, during the periods that the value of the Warrant Shares deliverable with respect to Securities are being determined, and (z) such hedging activities (if any) could reduce the value of the existing stockholders’ equity interests in the Company at and after the time that the hedging activities are being conducted. The Company acknowledges that such aforementioned hedging activities do not constitute a breach of any of the Transaction Documents.

(t) Regulatory Compliance. To the extent applicable, the Company is, and since January 1, 2020 has been, in material compliance with the Federal Food, Drug and Cosmetic Act (21 U.S.C. §§ 301 et seq.), the Public Health Service Act (42 U.S.C. §§ 262 et seq.), and implementing regulations promulgated or issued thereunder by the United States Food and Drug Administration (the “FDA”), and all comparable federal, state, or foreign Laws applicable to the Company and its businesses (collectively, “FDA Laws”). Since January 1, 2020, neither the Company nor any Subsidiary has received any FDA Form 483, warning letter, untitled letter or other written correspondence or notice from the FDA or any comparable Governmental Authority alleging or asserting noncompliance with any FDA Laws. To the extent applicable, neither the Company nor any Subsidiary nor, to the knowledge of the Company, any of its officers, employees, agents or clinical investigators (with respect to such agents’ or investigators’ services performed at the direction of the Company) has (i) made an untrue statement of a material fact or fraudulent statement to the FDA or any comparable Governmental Authority, (ii) failed to disclose a material fact required to be disclosed to the FDA or any comparable Governmental Authority, or (iii) committed any prohibited act that (in any such case) would reasonably be expected to provide a basis for the FDA to invoke its policy with respect to “Fraud, Untrue Statements of Material Facts, Bribery, and Illegal Gratuities” set forth in 56 Fed. Reg. 46191 (September 10, 1991) and any amendments thereto. Neither the Company nor any Subsidiary nor, to the knowledge of the Company, any of its officers, employees, or agents (with respect to such agents’ services performed for the Company) have been convicted of any crime or engaged in any conduct that has resulted in or would reasonably be expected to result in (i) debarment under 21 U.S.C. Section 335a or any similar law or (ii) exclusion under 42 U.S.C. Section 1320a-7 or any similar law. Neither the Company nor any Subsidiary is a party to any corporate integrity agreements, monitoring agreements, consent decrees, settlement Orders or similar agreements with or imposed by the FDA or any comparable Governmental Authority.

(u) Office of Foreign Assets Control. Neither the Company nor any Subsidiary nor, to the Company’s knowledge after reasonable due inquiry, any director, officer, agent, employee or affiliate of the Company or any Subsidiary is currently subject to any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Treasury Department (“OFAC”).

(v) Money Laundering. The operations of the Company and its Subsidiaries are and have been conducted at all times in compliance with applicable financial record-keeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, applicable money laundering statutes and applicable rules and regulations thereunder (collectively, the “Money Laundering Laws”), and no Action or Proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any Subsidiary with respect to the Money Laundering Laws is pending or, to the knowledge of the Company or any Subsidiary, threatened.

3.2 Representations and Warranties of the Purchaser. The Purchaser hereby represents and warrants as of the date hereof and as of the Closing Date to the Company as follows (unless as of a specific date therein, in which case they shall be accurate as of such date):

(a) Organization; Authority; Conflict. The Purchaser is either an individual or an entity duly incorporated or formed, validly existing and in good standing under the laws of the jurisdiction of its incorporation or formation with full right, corporate, partnership, limited liability company or similar power and authority to enter into and to consummate the transactions contemplated by the Transaction Documents and otherwise to carry out its obligations hereunder and thereunder. The execution and delivery of the Transaction Documents and performance by the Purchaser of the transactions contemplated by the Transaction Documents have been duly authorized by all necessary corporate, partnership, limited liability company or similar action, as applicable, on the part of the Purchaser. Each Transaction Document to which it is a party has been duly executed by the Purchaser, and when delivered by the Purchaser in accordance with the terms hereof, will constitute the valid and legally binding obligation of the Purchaser, enforceable against it in accordance with its terms, except (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law. The execution, delivery and performance by each the Purchaser of the Transaction Documents and the consummation by Purchaser of the transactions contemplated thereby will not (i) in the case that Purchaser is a corporation, partnership, limited liability company or other entity, result in a violation of the organizational documents of Purchaser, (ii) conflict with, or constitute a default (or an event which with notice or lapse of time or both would become a default) under, or give to others any rights of termination, amendment, acceleration or cancellation of, any agreement, indenture or instrument to which the Purchaser is a party, or (iii) result in a violation of any law, rule, regulation, order, judgment or decree (including federal and state securities laws) applicable to the Purchaser, except in the case of clauses (ii) and (iii) above, for such conflicts, defaults, rights or violations which would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect on the ability of the Purchaser to perform its obligations hereunder.

(b) Certain Transactions and Confidentiality. Other than consummating the transactions contemplated hereunder, the Purchaser has not, nor has any Person acting on behalf of or pursuant to any understanding with the Purchaser, directly or indirectly executed any purchases or sales, including Short Sales, of the securities of the Company during the period commencing as of the time that the Purchaser first received a term sheet (written or oral) from the Company or any other Person representing the Company setting forth the material terms of the transactions contemplated hereunder and ending immediately prior to the execution hereof. Notwithstanding the foregoing, in the case the Purchaser is a multi-managed investment vehicle whereby separate portfolio managers manage separate portions of the Purchaser's assets and the portfolio managers have no direct knowledge of the investment decisions made by the portfolio managers managing other portions of the Purchaser's assets, the representation set forth above shall only apply with respect to the portion of assets managed by the portfolio manager that made

the investment decision to purchase the Securities covered by this Agreement. Other than to other Persons party to this Agreement or to the Purchaser's representatives, including, without limitation, its officers, directors, partners, legal and other advisors, employees, agents and Affiliates, the Purchaser has maintained the confidentiality of all disclosures made to it in connection with this transaction (including the existence and terms of this transaction). Notwithstanding the foregoing, for the avoidance of doubt, nothing contained herein shall constitute a representation or warranty, or preclude any actions, with respect to locating or borrowing shares in order to effect Short Sales or similar transactions in the future.

(c) Residency. The Purchaser's residence (if an individual) or offices in which its investment decision with respect to the Securities was made (if an entity) are located at the address immediately below Purchaser's name on its signature page.

(d) Representations by Non-United States persons. If the Purchaser is not a United States person, the Purchaser hereby represents that the Purchaser has satisfied the laws of the Purchaser's jurisdiction in connection with any invitation to subscribe for the Securities or any use of the Transaction Documents, including (i) the legal requirements within the Purchaser's jurisdiction for the purchase of the Securities, (ii) any foreign exchange restrictions applicable to such purchase, (iii) any governmental or other consents that may need to be obtained and (iv) the income tax and other tax consequences, if any, that may be relevant to the purchase, holding, redemption, sale or transfer of the Securities. The Purchaser's subscription and payment for, and the Purchaser's continued beneficial ownership of, the Securities will not violate any applicable securities or other laws of the Purchaser's jurisdiction.

(e) Anti-Money Laundering Laws. The Purchaser represents and warrants to, and covenants with, the Company that: (i) the Purchaser is in compliance with the regulations administered by the U.S. Department of the Treasury ("Treasury") Office of Foreign Assets Control; (ii) the Purchaser, its subsidiaries, officers, and directors, and to the Purchaser's knowledge, its controlled affiliates, employees, and agents, are not on the List of Specially Designated Nationals and Blocked Persons maintained by Treasury and have not been designated by Treasury as a financial institution of primary money laundering concern subject to special measures under Section 311 of the USA PATRIOT Act, Pub. L. 107-56; (iii) the Purchaser is in compliance in all material respects with applicable anti money laundering laws and regulations and has implemented anti money laundering procedures that are designed to comply with applicable anti-money laundering laws and regulations, including, as applicable, the requirements of the Bank Secrecy Act, as amended by the USA PATRIOT Act, Pub. L. 107 56; and (iv) to the best of its knowledge none of the funds to be provided by the Purchaser are being tendered on behalf of a person or entity who has not been identified to the Purchaser.

The Company acknowledges and agrees that the representations contained in this Section 3.2 shall not modify, amend or affect the Purchaser's right to rely on the Company's representations and warranties contained in this Agreement or any representations and warranties contained in any other Transaction Document or any other document or instrument executed and/or delivered in connection with this Agreement or the consummation of the transactions contemplated hereby. Notwithstanding the foregoing, for the avoidance of doubt, nothing contained herein shall constitute a representation or warranty, or preclude any actions, with respect to locating or borrowing shares in order to effect Short Sales or similar transactions in the future.

ARTICLE IV.
OTHER AGREEMENTS OF THE PARTIES

4.1 Furnishing of Information. Until the earlier of the time that (i) the Purchaser no longer owns Securities or (ii) the Warrants have expired, the Company covenants to timely file (or obtain extensions in respect thereof and file within the applicable grace period) all reports required to be filed by the Company after the date hereof pursuant to the Exchange Act unless the Company is not then subject to the reporting requirements of the Exchange Act.

4.2 Securities Laws Disclosure; Publicity. The Company shall file, within the timeframe required under applicable Commission rules, (a) one or more Current Reports on Form 8-K with the Commission describing the terms of the transactions contemplated by the Transaction Documents and including as exhibits to such Form 8-K this Agreement (such Form or Forms 8-K, collectively, the “Announcing Form 8-K”) and (b) the Prospectus Supplement with the Commission pursuant to Rule 424(b). The Company shall not, and shall cause each of its Subsidiaries and its and each of their respective officers, directors, employees and agents to not, provide the Purchaser with any material non-public information regarding the Company or any of its Subsidiaries from and after the filing of the Announcing Form 8-K with the Commission without the express prior written consent of the Purchaser, unless prior thereto the Purchaser shall have executed a written agreement regarding the confidentiality and use of such information. Subject to the foregoing, neither the Company nor the Purchaser shall issue any press releases or any other public statements with respect to the transactions contemplated hereby or disclosing the name of the Purchaser; provided, however, that the Company shall be entitled, without the prior approval of the Purchaser, to make any press release or other public disclosure with respect to such transactions (i) in substantial conformity with the Announcing Form 8-K and contemporaneously therewith and (ii) as is required by applicable law and regulations (provided that the Purchaser shall be consulted by the Company in connection with any such press release or other public disclosure prior to its release and shall be provided with a copy thereof), and provided further, that the Company may issue any other announcement or press release regarding the transactions contemplated hereby, so long as such announcement or press release does not disclose the name of the Purchaser. The Company understands and confirms that the Purchaser shall be relying on the foregoing covenant in effecting transactions in Securities of the Company.

4.3 Indemnification of Purchaser. Subject to the provisions of this Section 4.3, the Company will indemnify and hold the Purchaser and its directors, officers, shareholders, members, partners, employees and agents (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title), each Person who controls the Purchaser (within the meaning of Section 15 of the Securities Act and Section 20 of the Exchange Act), and the directors, officers, shareholders, agents, members, partners or employees (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title) of such controlling persons (each, a “Purchaser Party”) harmless from any and all losses, liabilities, obligations, claims, contingencies, damages, costs and expenses, including all judgments, amounts paid in settlements, court costs and reasonable attorneys’ fees and costs of investigation that any

the Purchaser Party may suffer or incur as a result of or relating to (a) any breach of any of the representations, warranties, covenants or agreements made by the Company in this Agreement or in the other Transaction Documents or (b) any action instituted against the Purchaser Parties in any capacity (including a Purchaser Party's status as an investor), or any of them or their respective Affiliates, by the Company or any stockholder of the Company who is not an Affiliate of the Purchaser Party, arising out of or relating to any of the transactions contemplated by the Transaction Documents. For the avoidance of doubt, the indemnification provided herein is intended to, and shall also cover, direct claims brought by the Company against the Purchaser Parties; provided, however, that such indemnification shall not cover any loss, claim, damage or liability to the extent it is finally judicially determined to be attributable to the Purchaser Party's breach of any of the representations, warranties, covenants or agreements made by the Purchaser Party in any Transaction Document or any conduct by a Purchaser Party which is finally judicially determined to constitute fraud, gross negligence or willful misconduct. If any action shall be brought against the Purchaser Party in respect of which indemnity may be sought pursuant to this Agreement, the Purchaser Party shall promptly notify the Company in writing, and, except with respect to direct claims brought by the Company, the Company shall have the right to assume the defense thereof with counsel of its own choosing reasonably acceptable to the Purchaser Party. The Purchaser Party shall have the right to employ separate counsel in any such action and participate in the defense thereof, but the fees and expenses of such counsel shall be at the expense of the Purchaser Party except to the extent that (i) the employment thereof has been specifically authorized by the Company in writing, (ii) the Company has failed after a reasonable period of time to assume such defense and to employ counsel or (iii) in such action there is, in the reasonable opinion of counsel to the applicable Purchaser Party (which may be internal counsel), a material conflict on any material issue between the position of the Company and the position of the Purchaser Party, in which case the Company shall be responsible for the reasonable fees and expenses of no more than one such separate counsel. The Company will not be liable to the Purchaser Party under this Agreement for any settlement by a Purchaser Party effected without the Company's prior written consent, which shall not be unreasonably withheld or delayed. In addition, if the Purchaser Party takes actions to collect amounts due under any Transaction Documents or to enforce the provisions of any Transaction Documents, then the Company shall pay the costs incurred by the Purchaser Party for such collection, enforcement or action, including, but not limited to, attorneys' fees and disbursements. The indemnification and other payment obligations required by this Section 4.3 shall be made by periodic payments of the amount thereof during the course of the investigation, defense, collection, enforcement or action, as and when bills are received or are incurred; provided, that if the Purchaser Party is finally judicially determined not to be entitled to indemnification or payment under this Section 4.3, the Purchaser Party shall promptly reimburse the Company for any payments that are advanced under this sentence. The indemnity agreements contained herein shall be in addition to any cause of action or similar right of the Purchaser Party against the Company or others and any liabilities the Company may be subject to pursuant to law.

4.4 Reservation of Common Stock. As of the date hereof, the Company has reserved, and the Company shall continue to reserve and keep available at all times, free of preemptive rights, a sufficient number of shares of Common Stock for the purpose of enabling the Company to issue Shares pursuant to this Agreement and Warrant Shares pursuant to any exercise of the Warrants.

4.5 Listing of Common Stock. The Company hereby agrees to use best efforts to maintain the listing or quotation of the Common Stock on the Trading Market on which it is currently listed, and concurrently with the Closing, the Company shall apply to list or quote all of the Shares and Warrant Shares on such Trading Market and promptly secure the listing of all of the Shares and Warrant Shares on such Trading Market. The Company further agrees, if the Company applies to have the Common Stock traded on any other Trading Market, it will then include in such application all of the Shares and Warrant Shares, and will take such other action as is necessary to cause all of the Shares and Warrant Shares to be listed or quoted on such other Trading Market as promptly as possible. The Company will then take all action reasonably necessary to continue the listing and trading of its Common Stock on a Trading Market and will comply in all respects with the Company's reporting, filing and other obligations under the bylaws or rules of the Trading Market. The Company agrees to maintain the eligibility of the Common Stock for electronic transfer through the Depository Trust Company or another established clearing corporation, including, without limitation, by timely payment of fees to the Depository Trust Company or such other established clearing corporation in connection with such electronic transfer.

4.6 Subsequent Equity Sales.

(a) From the date hereof until sixty (60) days after the Closing Date, neither the Company nor any Subsidiary shall (i) issue, enter into any agreement to issue or announce the issuance or proposed issuance of any shares of Common Stock or Common Stock Equivalents or (ii) file any registration statement (or any amendment or supplement thereto that registers additional securities), in each case, other than the Prospectus Supplement or the filing of a registration statement on Form S-8.

(b) From the date hereof until sixty (60) days after the Closing Date, the Company shall be prohibited from effecting or entering into an agreement to effect any issuance by the Company or any of its Subsidiaries of Common Stock or Common Stock Equivalents (or a combination of units thereof) involving a Variable Rate Transaction. "Variable Rate Transaction" means a transaction in which the Company (i) issues or sells any debt or equity securities that are convertible into, exchangeable or exercisable for, or include the right to receive, additional shares of Common Stock either (A) at a conversion price, exercise price or exchange rate or other price that is based upon, and/or varies with, the trading prices of or quotations for the shares of Common Stock at any time after the initial issuance of such debt or equity securities or (B) with a conversion, exercise or exchange price that is subject to being reset at some future date after the initial issuance of such debt or equity security or upon the occurrence of specified or contingent events directly or indirectly related to the business of the Company or the market for the Common Stock, in each case, other than pursuant to customary anti-dilution provisions or (ii) enters into, or effects a transaction under, any agreement, including, but not limited to, an "equity line of credit" or an "at-the-market offering", whereby the Company may issue securities at a future determined price, regardless of whether shares pursuant to such agreement have actually been issued and regardless of whether such agreement is subsequently canceled, in each case, other than customary preemption, participation or co-investment rights; provided, however, that, notwithstanding the foregoing, from the date hereof until one (1) year after the Closing Date, the Company shall be prohibited from entering into and/or issuing shares of Common Stock in an unregistered "equity line of credit" transaction

(which, for the avoidance of doubt, does not include an “at-the-market” offering under a registration statement on Form S-3). The Purchaser shall be entitled to obtain injunctive relief against the Company to preclude any such issuance in violation of this paragraph, which remedy shall be in addition to any right to collect damages.

(c) Notwithstanding the foregoing, this Section 4.6 shall not apply in respect of an Exempt Issuance.

4.7 Certain Transactions and Confidentiality. The Purchaser covenants that neither it, nor any Affiliate acting on its behalf or pursuant to any understanding with it will execute any purchases or sales, including Short Sales, of any of the Company’s securities during the period commencing with the execution of this Agreement and ending at such time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 4.2. The Purchaser covenants that until such time as the transactions contemplated by this Agreement are publicly disclosed by the Company pursuant to the initial press release as described in Section 4.2, the Purchaser will maintain the confidentiality of the existence and terms of this transaction (other than as disclosed to its legal and other representatives). Notwithstanding the foregoing and notwithstanding anything contained in this Agreement to the contrary, the Company expressly acknowledges and agrees that (i) the Purchaser makes no representation, warranty or covenant hereby that it will not engage in effecting transactions in any securities of the Company after the time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 4.2, (ii) the Purchaser shall not be restricted or prohibited from effecting any transactions in any securities of the Company in accordance with applicable securities laws from and after the time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 2 and (iii) the Purchaser shall not have any duty of confidentiality or duty not to trade in the securities of the Company to the Company, any of its Subsidiaries, or any of their respective officers, directors, employees, Affiliates or agent after the issuance of the initial press release as described in Section 4.2.

ARTICLE V. MISCELLANEOUS

5.1 Termination. In the event that the Closing shall not have occurred on or before the fifth (5th) Trading Day following the date of this Agreement due to the Company’s or the Purchaser’s failure to satisfy the conditions set forth in Section 2.1 above (and the nonbreaching party’s failure to waive such unsatisfied condition(s)), the nonbreaching party shall have the option to terminate this Agreement with respect to such breaching party at the close of business on such date without liability of any party to any other party.

5.2 Fees and Expenses. Except as expressly set forth in the Transaction Documents to the contrary, each party shall pay the fees and expenses of its advisers, counsel, accountants and other experts, if any, and all other expenses incurred by such party incident to the negotiation, preparation, execution, delivery and performance of this Agreement. The Company shall pay all Transfer Agent fees (including, without limitation, any fees required for same-day processing of any instruction letter delivered by the Company and any exercise notice delivered by the Purchaser), stamp taxes and other taxes and duties levied in connection with the delivery of any Securities to the Purchaser.

5.3 Entire Agreement. The Transaction Documents, together with the exhibits and schedules thereto, contain the entire understanding of the parties with respect to the subject matter hereof and thereof and supersede all prior agreements and understandings, oral or written, with respect to such matters, which the parties acknowledge have been merged into such documents, exhibits and schedules.

5.4 Notices. Any and all notices or other communications or deliveries required or permitted to be provided hereunder shall be in writing and shall be deemed given and effective on the earliest of: (a) the time of transmission, if such notice or communication is delivered via email attachment at the email address as set forth on the signature pages attached hereto at or prior to 5:30 p.m. (New York City time) on a Trading Day, (b) the next Trading Day after the time of transmission, if such notice or communication is delivered via email attachment at the email address as set forth on the signature pages attached hereto on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (c) the second (2nd) Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service or (d) upon actual receipt by the party to whom such notice is required to be given. The address for such notices and communications shall be as set forth on the signature pages attached hereto.

5.5 Amendments; Waivers. No provision of this Agreement may be waived, modified, supplemented or amended except in a written instrument signed, in the case of an amendment, by the Company and Purchaser which purchased at least 50.1% in interest of the Shares based on the initial Subscription Amount hereunder or, in the case of a waiver, by the party against whom enforcement of any such waived provision is sought. No waiver of any default with respect to any provision, condition or requirement of this Agreement shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of any party to exercise any right hereunder in any manner impair the exercise of any such right. Any amendment effected in accordance with this Section 5.5 shall be binding upon the Purchaser and holder of Securities and the Company.

5.6 Headings. The headings herein are for convenience only, do not constitute a part of this Agreement and shall not be deemed to limit or affect any of the provisions hereof.

5.7 Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the parties and their successors and permitted assigns. The Company may not assign this Agreement or any rights or obligations hereunder without the prior written consent of the Purchaser (other than by merger or other operation of law). The Purchaser may assign any or all of its rights under this Agreement to any Person to whom the Purchaser assigns or transfers any Securities, provided that such transferee agrees in writing to be bound, with respect to the transferred Securities, by the provisions of the Transaction Documents that apply to the "Purchaser."

5.8 No Third-Party Beneficiaries. This Agreement is intended for the benefit of the parties hereto and their respective successors and permitted assigns and is not for the benefit of, nor may any provision hereof be enforced by, any other Person, except as otherwise set forth in Section 4.3 and this Section 5.8.

5.9 Governing Law. All questions concerning the construction, validity, enforcement and interpretation of the Transaction Documents shall be governed by and construed and enforced in accordance with the internal laws of the State of New York. Each party agrees that all legal Proceedings concerning the interpretations, enforcement and defense of the transactions contemplated by this Agreement and any other Transaction Documents (whether brought against a party hereto or its respective affiliates, directors, officers, shareholders, partners, members, employees or agents) shall be commenced exclusively in the state and federal courts sitting in the City of New York. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of New York, Borough of Manhattan for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein (including with respect to the enforcement of any of the Transaction Documents), and hereby irrevocably waives, and agrees not to assert in any Action or Proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such Action or Proceeding is improper or is an inconvenient venue for such Proceeding. Each party hereby irrevocably waives personal service of process and consents to process being served in any such Action or Proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by law. If any party shall commence an Action or Proceeding to enforce any provisions of the Transaction Documents, then, in addition to the obligations of the Company under Section 4.3, the prevailing party in such Action or Proceeding shall be reimbursed by the non-prevailing party for its reasonable attorneys' fees and other costs and expenses incurred with the investigation, preparation and prosecution of such Action or Proceeding.

5.10 Survival. Unless this agreement is terminated under Section 5.1, the representations and warranties contained herein shall survive the Closing and the delivery of the Securities.

5.11 Execution. This Agreement may be executed in two or more counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to each other party, it being understood that the parties need not sign the same counterpart. In the event that any signature is delivered by e-mail delivery of a “.pdf” format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such “.pdf” signature page were an original thereof.

5.12 Severability. If any term, provision, covenant or restriction of this Agreement is held by a court of competent jurisdiction to be invalid, illegal, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions set forth herein shall remain in full force and effect and shall in no way be affected, impaired or invalidated, and the parties hereto shall use their commercially reasonable efforts to find and employ an alternative means to achieve the same or

substantially the same result as that contemplated by such term, provision, covenant or restriction. It is hereby stipulated and declared to be the intention of the parties that they would have executed the remaining terms, provisions, covenants and restrictions without including any of such that may be hereafter declared invalid, illegal, void or unenforceable.

5.13 Replacement of Securities. If any certificate or instrument evidencing any Securities is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation thereof (in the case of mutilation), or in lieu of and substitution therefor, a new certificate or instrument, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction. The applicant for a new certificate or instrument under such circumstances shall also pay any reasonable third-party costs (including customary indemnity) associated with the issuance of such replacement Securities.

5.14 Remedies. In addition to being entitled to exercise all rights provided herein or granted by law, including recovery of damages, each of the Purchaser and the Company will be entitled to specific performance under the Transaction Documents. The parties agree that monetary damages may not be adequate compensation for any loss incurred by reason of any breach of obligations contained in the Transaction Documents and hereby agree to waive and not to assert in any Action for specific performance of any such obligation the defense that a remedy at law would be adequate.

5.15 Payment Set Aside. To the extent that the Company makes a payment or payments to the Purchaser pursuant to any Transaction Document or the Purchaser enforces or exercises its rights thereunder, and such payment or payments or the proceeds of such enforcement or exercise or any part thereof are subsequently invalidated, declared to be fraudulent or preferential, set aside, recovered from, disgorged by or are required to be refunded, repaid or otherwise restored to the Company, a trustee, receiver or any other Person under any law (including, without limitation, any bankruptcy law, state or federal law, common law or equitable cause of action), then to the extent of any such restoration the obligation or part thereof originally intended to be satisfied shall be revived and continued in full force and effect as if such payment had not been made or such enforcement or setoff had not occurred.

5.16 Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Business Day, then such action may be taken or such right may be exercised on the next succeeding Business Day.

5.17 Construction. The parties agree that each of them and/or their respective counsel have reviewed and had an opportunity to revise the Transaction Documents and, therefore, the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of the Transaction Documents or any amendments thereto. In addition, each and every reference to share prices and shares of Common Stock in any Transaction Document shall be subject to adjustment for reverse and forward stock splits, stock dividends, stock combinations and other similar transactions of the Common Stock that occur after the date of this Agreement.

5.18 **WAIVER OF JURY TRIAL**. IN ANY ACTION, SUIT, OR PROCEEDING IN ANY JURISDICTION BROUGHT BY ANY PARTY AGAINST ANY OTHER PARTY, THE PARTIES EACH KNOWINGLY AND INTENTIONALLY, TO THE GREATEST EXTENT PERMITTED BY APPLICABLE LAW, HEREBY ABSOLUTELY, UNCONDITIONALLY, IRREVOCABLY AND EXPRESSLY WAIVES FOREVER TRIAL BY JURY.

(Signature Pages Follow)

IN WITNESS WHEREOF, the parties hereto have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

ASSEMBLY BIOSCIENCES, INC.

Address for Notice:

Assembly Biosciences, Inc.
Attention: General Counsel
Two Tower Place, Seventh Floor
South San Francisco, CA 94080
Email: [***]

By: /s/ Jason A. Okazaki

Name: Jason A. Okazaki

Title: Chief Executive Officer and President

With a copy to (which shall not constitute notice):

Skadden, Arps, Meagher, Slate & Flom LLP
300 S Grand Ave #3400, Los Angeles, CA 90071
Attention: Michelle Gasaway

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK
SIGNATURE PAGE FOR PURCHASER FOLLOWS]

IN WITNESS WHEREOF, the undersigned have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

Name of Purchaser: Armistice Capital Master Fund Ltd.

Signature of Authorized Signatory of Purchaser: /s/ Steven Boyd

Name of Authorized Signatory: Steven Boyd

Title of Authorized Signatory: CIO of Armistice Capital, LLC, the Investment Manager

Email Address of Authorized Signatory: [***]

Address for Notice to Purchaser:

c/o Armistice Capital, LLC
510 Madison Avenue, 7th Floor
New York, NY 10022

[SIGNATURE PAGES CONTINUE]

SECURITIES PURCHASE AGREEMENT

This Securities Purchase Agreement (this “Agreement”) is dated as of June 17, 2024, between Assembly Biosciences, Inc., a Delaware corporation (the “Company”), and Gilead Sciences, Inc. (including its successors and assigns, the “Purchaser”).

WHEREAS, subject to the terms and conditions set forth in this Agreement and pursuant to Section 4(a)(2) of the Securities Act (as defined below), and/or Rule 506(c) promulgated thereunder, the Company desires to issue and sell to the Purchaser, and the Purchaser desires to purchase from the Company, securities of the Company as more fully described in this Agreement.

NOW, THEREFORE, IN CONSIDERATION of the mutual covenants contained in this Agreement, and for other good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, the Company and the Purchaser agree as follows:

ARTICLE I
DEFINITIONS

1.1 Definitions. In addition to the terms defined elsewhere in this Agreement, for all purposes of this Agreement, the following terms have the meanings set forth in this Section 1.1:

“Action” means an action, suit, inquiry, notice of violation, proceeding or investigation pending or, to the knowledge of the Company, threatened against or affecting the Company, any Subsidiary or any of their respective properties before or by any court, arbitrator, governmental or administrative agency or regulatory authority (federal, state, county, local or foreign).

“Affiliate” means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person, as such terms are used in and construed under Rule 405 under the Securities Act.

“Board of Directors” means the board of directors of the Company.

“Business Day” means any day other than Saturday, Sunday or other day on which commercial banks in The City of New York are authorized or required by law to remain closed.

“Closing” means the closing of the purchase and sale of the Securities pursuant to Section 2.1.

“Closing Date” means the Trading Day on which all of the Transaction Documents have been executed and delivered by the applicable parties thereto, and all conditions precedent to (i) the Purchaser’s obligations to pay the Subscription Amount and (ii) the Company’s obligations to deliver the Securities, in each case, have been satisfied or waived, but in no event later than the second (2nd) Trading Day following the date hereof.

“Commission” means the United States Securities and Exchange Commission.

“Common Stock” means the common stock of the Company, par value \$0.001 per share, and any other class of securities into which such securities may hereafter be reclassified or changed.

“Common Stock Equivalents” means any securities of the Company or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, right, option, warrant or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

“Company Counsel” means Skadden, Arps, Slate, Meagher & Flom LLP, with offices located at 300 South Grand Ave #3400, Los Angeles, CA 90071.

“Disclosure Schedules” means the Disclosure Schedules of the Company delivered concurrently herewith.

“Disqualification Event” shall have the meaning ascribed to such term in Section 3.1(aa).

“Exchange Act” means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“Exempt Issuance” means the (a) issuance of shares of Common Stock or options to employees, officers or directors of the Company pursuant to any stock, option or other plan or arrangement duly adopted for such purpose by the Board of Directors or a committee thereof, (b) issuance of securities upon the exercise or exchange of or conversion of any Securities issued hereunder and/or other securities exercisable or exchangeable for or convertible into shares of Common Stock issued and outstanding on the date of this Agreement, provided that such securities have not been amended since the date of this Agreement to increase the number of such securities or to decrease the exercise price, exchange price or conversion price of such securities (other than in connection with stock splits or combinations or otherwise pursuant to the terms of the agreements governing such securities (as such agreements are in effect as of the date of this Agreement)) or to extend the term of such securities, (c) issuance of securities issued pursuant to acquisitions or strategic transactions, but not a transaction in which the Company is issuing securities primarily for the purpose of raising capital or to an entity whose primary business is investing in securities; (d) issuance of shares of Common Stock under the registration statement on Form S-3 filed by the Company on March 22, 2023; (e) issuance of securities pursuant to the Open Market Sale Agreement, dated August 24, 2020, by and between the Company and Jefferies LLC or any amendment thereto or replacement thereof or any similar agreement, and the filing, amendment or supplement of any related registration statement or prospectus; (f) issuances of securities and other transactions pursuant to the Gilead Agreements (including, without limitation, pursuant to Gilead Sciences, Inc.’s exercise of its rights under Section 5.3 and/or Article 6 of the Gilead IRA); (g) issuances pursuant to the Securities Purchase Agreement and that certain warrant (including the shares of Common Stock underlying the warrants), each dated June 16, 2024, by and between the Company and Armistice Capital LLC; and (h) issuances pursuant to this Agreement and the Warrants.

“FCPA” means the Foreign Corrupt Practices Act of 1977, as amended.

“FDA” shall have the meaning ascribed to such term in Section 3.1(x).

“FDA Laws” shall have the meaning ascribed to such term in Section 3.1(x).

“GAAP” shall have the meaning ascribed to such term in Section 3.1(g).

“Gilead Agreements” shall mean the Common Stock Purchase Agreement, dated as of October 15, 2023, between the Company and Gilead Sciences, Inc., the Investor Rights Agreement, dated as of October 15, 2023, between the Company and Gilead Sciences, Inc. (the “Gilead IRA”) and the Option, License and Collaboration Agreement, dated as of October 15, 2023, between the Company and Gilead Sciences, Inc., each as amended or supplemented from time to time.

“Governmental Authority” means any multi-national, federal, state, local, municipal or other government authority of any nature (including any governmental division, subdivision, department, agency, bureau, branch, office, commission, council, court or other tribunal, as well as any securities exchange or securities exchange authority, including the Principal Market.

“Intellectual Property Rights” shall have the meaning ascribed to such term in Section 3.1(k).

“Issuer Covered Person” shall have the meaning ascribed to such term in Section 3.1(aa).

“Legend Removal Date” shall have the meaning ascribed to such term in Section 4.1(c).

“Liens” means a lien, charge pledge, security interest, encumbrance, right of first refusal, preemptive right or other restriction.

“Material Adverse Effect” shall mean a material adverse effect on the condition (financial or otherwise), results of operations, business, management, properties or prospects of the Company and its Subsidiaries taken as a whole or on the performance by the Company of its obligations under this Agreement.

“Material Permits” shall have the meaning ascribed to such term in Section 3.1(j).

“Per Share Purchase Price” equals \$15.46, subject to adjustment for reverse and forward stock splits, stock dividends, stock combinations and other similar transactions of the Common Stock that occur after the date of this Agreement and prior to the Closing.

“Person” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

“Principal Market” means the Nasdaq Global Select Market.

“Proceeding” means an action, claim, suit, investigation or proceeding (including, without limitation, an informal investigation or partial proceeding, such as a deposition), whether commenced or threatened.

“Purchaser Party” shall have the meaning ascribed to such term in Section 4.4.

“Required Approvals” shall have the meaning ascribed to such term in Section 3.1(d).

“Rule 144” means Rule 144 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“Rule 424” means Rule 424 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“SEC Reports” shall have the meaning ascribed to such term in Section 3.1(g).

“Securities” means the Shares, the Warrants and the Warrant Shares.

“Securities Act” means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

“Shares” means the shares of Common Stock issued or issuable to the Purchaser pursuant to this Agreement.

“Short Sales” means all “short sales” as defined in Rule 200 of Regulation SHO under the Exchange Act (but shall not be deemed to include locating and/or borrowing shares of Common Stock).

“Subscription Amount” means the aggregate amount to be paid for Shares and Warrants purchased hereunder as specified below the Purchaser’s name on the signature page of this Agreement and next to the heading “Subscription Amount,” in United States dollars and in immediately available funds.

“Subsidiary” means any entity in which the Company, directly or indirectly, owns at least 50% of the outstanding capital stock, equity or similar interests or voting power of such entity at the time of this Agreement or at any other applicable time of determination, whether directly or through any other Subsidiary.

“Trading Day” means a day on which the Principal Market is open for trading.

“Trading Market” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE American, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market, the New York Stock Exchange, the Pink Open Market, OTCQB or the OTCQX (or any successors to any of the foregoing).

“Transaction Documents” means this Agreement, the Warrants, all exhibits and schedules thereto and hereto and any other documents or agreements executed in connection with the transactions contemplated hereunder.

“Transfer Agent” means Equiniti Trust Company, LLC, the current transfer agent of the Company, with a mailing address of 48 Wall Street, Floor 23, New York, NY 10005, or any successor transfer agent of the Company.

“Variable Rate Transaction” shall have the meaning ascribed to such term in Section 4.7.

“Warrant Shares” means the shares of Common Stock issuable upon exercise of the Warrants.

“Warrants” means, collectively, the Common Stock purchase warrants delivered to the Purchaser at the Closing in accordance with Section 2.2(a) hereof, which Warrants shall be exercisable immediately and have a term of exercise equal to one year, in the form of Exhibit A attached hereto.

ARTICLE II

PURCHASE AND SALE

2.1 Closing. On the Closing Date, upon the terms and subject to the conditions set forth herein, substantially concurrent with the execution and delivery of this Agreement by the parties hereto, the Company agrees to sell, and the Purchaser agrees to purchase, up to an aggregate of \$2,775,070 of Shares and Warrants. The Purchaser shall deliver to the Company, via wire transfer, immediately available funds equal to the Purchaser’s Subscription Amount as set forth on the signature page hereto executed by the Purchaser, and the Company shall deliver to the Purchaser its Shares and a Warrant, as determined pursuant to Section 2.2(a), and the Company and the Purchaser shall deliver the other items set forth in Section 2.2 deliverable at the Closing. Upon satisfaction of the covenants and conditions set forth in Sections 2.2 and 2.3, the Closing shall take place remotely by electronic transfer of the Closing documentation.

2.2 Deliveries.

(a) On or prior to the Closing Date, the Company shall deliver or cause to be delivered to the Purchaser the following:

(i) this Agreement duly executed by the Company;

(ii) a legal opinion of Company Counsel, in the form agreed upon between Company Counsel and the Purchaser;

(iii) a copy of the irrevocable instructions to the Transfer Agent instructing the Transfer Agent to deliver, on an expedited basis, the number of Shares equal to the Purchaser's Subscription Amount divided by the Per Share Purchase Price, in book-entry form, registered in the name of the Purchaser;

(iv) a Warrant registered in the name of the Purchaser to purchase up to a number of shares of Common Stock equal to 100% of the Purchaser's Shares, with an exercise price equal to \$17.00, subject to adjustment therein; and

(v) the Company shall have provided the Purchaser with the Company's wire instructions, executed by the Chief Executive Officer or Chief Financial Officer.

(b) On or prior to the Closing Date, the Purchaser shall duly execute and deliver or cause to be delivered this Agreement and the Subscription Amount to the Company:

2.3 Closing Conditions.

(a) The obligations of the Company hereunder in connection with the Closing are subject to the following conditions being met:

(i) the accuracy in all material respects (or, to the extent representations or warranties are qualified by materiality, in all respects) on the Closing Date of the representations and warranties of the Purchaser contained herein (unless as of a specific date therein in which case they shall be accurate in all material respects (or, to the extent representations or warranties are qualified by materiality, in all respects) as of such date);

(ii) all obligations, covenants and agreements of the Purchaser required to be performed at or prior to the Closing Date shall have been performed;

(iii) the delivery by the Purchaser of the items set forth in Section 2.2(b) of this Agreement.

(b) The respective obligations of the Purchaser hereunder in connection with the Closing are subject to the following conditions being met:

(i) the accuracy in all material respects (or, to the extent representations or warranties are qualified by materiality or Material Adverse Effect, in all respects) when made and on the Closing Date of the representations and warranties of the Company contained herein (unless as of a specific date therein in which case they shall be accurate in all material respects (or, to the extent representations or warranties are qualified by materiality or Material Adverse Effect, in all respects) as of such date);

(ii) all obligations, covenants and agreements of the Company required to be performed at or prior to the Closing Date shall have been performed;

(iii) the delivery by the Company of the items set forth in Section 2.2(a) of this Agreement; and

(iv) there shall have been no Material Adverse Effect with respect to the Company.

ARTICLE III
REPRESENTATIONS AND WARRANTIES

3.1 Representations and Warranties of the Company. Except as contained in the SEC Reports or in the Disclosure Schedules, which Disclosure Schedules shall be deemed a part hereof and shall qualify any representation or otherwise made herein to the extent of the disclosure contained in the corresponding section of the Disclosure Schedules, the Company hereby makes the following representations and warranties to the Purchaser:

(a) Organization and Qualification. The Company and each of its Subsidiaries has been duly organized and are validly existing and in good standing under the laws of their respective jurisdictions of organization. The Company and each of its Subsidiaries are duly licensed or qualified to do business and are in good standing in each jurisdiction in which their respective ownership or lease of property or the conduct of their respective businesses requires such license or qualification, and have all corporate power and authority necessary to own or hold their respective properties and to conduct their respective businesses, except where the failure to be so qualified or in good standing or have such power or authority would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. The Company does not own or control, directly or indirectly, any corporation, association or other entity other than the Subsidiaries listed in the most recent Exhibit 21 filed with the Commission or as otherwise disclosed in the Disclosure Schedules.

(b) Authorization; Enforcement. The Company has the requisite corporate power and authority to enter into and to consummate the transactions contemplated by this Agreement and each of the other Transaction Documents and otherwise to carry out its obligations hereunder and thereunder. The execution and delivery of this Agreement and each of the other Transaction Documents to which the Company is a party and the consummation by it of the transactions contemplated hereby and thereby have been duly authorized by all necessary action on the part of the Company and no further action is required by the Company, the Company's board of directors or the Company's stockholders in connection herewith or therewith other than in connection with the Required Approvals (as defined below). This Agreement and each other Transaction Document to which the Company is a party has been (or upon delivery will have been) duly executed by the Company and, when delivered in accordance with the terms hereof and thereof, will constitute the valid and binding obligation of the Company enforceable against the Company in accordance with its terms, except (i) as limited by general equitable principles and

applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law.

(c) No Conflicts. The execution, delivery and performance by the Company of this Agreement and each other Transaction Document to which the Company is a party and the consummation by the Company of the transactions contemplated hereby and thereby (including the issuance and sale of the Securities) will not (i) conflict with or result in a breach or violation of any provision of the Company's organizational documents or the organizational documents of any of the Subsidiaries, each as in effect on the date hereof and the Closing Date, (ii) conflict with or result in a breach or violation of the terms or provisions of, or constitute a default under, result in the termination, modification or acceleration of, or result in the creation or imposition of any Lien upon any property, right or asset of the Company or any of its Subsidiaries pursuant to, any indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which the Company or any of its Subsidiaries is a party or by which the Company or any of its Subsidiaries is bound or to which any property, right or asset of the Company or any of its Subsidiaries is subject, or (iii) result in the violation of any law or statute or any judgment, order, rule or regulation of any court or arbitrator or governmental or regulatory authority, except, in the case of clauses (ii) and (iii) above, for any such conflict, breach, violation, default, lien, charge or encumbrance that would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect

(d) Filings, Consents and Approvals. The Company is not required to obtain any consent, waiver, authorization or order of, give any notice to, or make any filing or registration with, any court or other federal, state, local or other governmental authority or other Person in connection with the execution, delivery and performance by the Company of the Transaction Documents, other than: (i) the filings required pursuant to Section 4.3 of this Agreement; (ii) the notice and/or application(s) to each applicable Trading Market for the issuance and sale of the Securities and the listing of the Shares and Warrant Shares for trading thereon in the time and manner required thereby; and (iii) as applicable, the filing of Form D with the Commission and such filings as are required to be made under applicable state securities laws (collectively, the "Required Approvals").

(e) Issuance of the Securities. The Securities are duly authorized and, when issued and paid for in accordance with the applicable Transaction Documents, will be duly and validly issued, fully paid and nonassessable, free and clear of all Liens imposed by the Company other than restrictions on transfer provided for in the Transaction Documents and applicable state and federal securities laws. The Warrant Shares, when issued in accordance with the terms of the Transaction Documents, will be validly issued, fully paid and nonassessable, free and clear of all Liens imposed by the Company other than restrictions on transfer provided for in the Transaction Documents and applicable state and federal securities laws. The Company has reserved from its duly authorized capital stock the maximum number of shares of Common Stock issuable, as of the date of this Agreement, pursuant to this Agreement and the Warrants.

(f) Capitalization. The authorized capital of the Company consists of: (i) 150,000,000 shares of Common Stock of which, (A) as of June 14, 2024, 5,531,561 shares were issued and outstanding, (B) as of March 31, 2024, 130,546 shares were reserved for issuance pursuant to the Company's equity incentive plans (including its stockholder approved equity compensation plans and outstanding equity compensation arrangements that have not been approved by the Company's stockholders), and (C) as of March 31, 2024, 1,130,448 shares were issuable upon the exercise of stock options outstanding and vesting of restricted stock units, and (ii) 5,000,000 shares of designated preferred stock, none of which shares of preferred stock are issued and outstanding. Except as described or referred to in the SEC Reports, there are not: (i) any outstanding options, warrants, rights (including conversion or preemptive rights), or instruments convertible into or exchangeable for, or other agreements pursuant to which the Company is or may become obligated to issue, sell or repurchase any shares of its capital stock or any other securities of the Company other than equity securities that may have been granted pursuant to its equity incentive plans, which plans are described in the SEC Reports; or (ii) any restrictions on the transfer of capital stock of the Company other than pursuant to federal or state securities laws or as set forth in this Agreement. There are no outstanding securities or instruments of the Company or any Subsidiary that contain any redemption or similar provisions, and there are no contracts, commitments, understandings or arrangements by which the Company or any Subsidiary is or may become bound to redeem a security of the Company or such Subsidiary. The Company does not have any stock appreciation rights or "phantom stock" plans or agreements or any similar plan or agreement. All of the outstanding shares of capital stock of the Company are duly authorized, validly issued, fully paid and nonassessable, have been issued in compliance with all federal and state securities laws, and none of such outstanding shares was issued in violation of any preemptive rights or similar rights to subscribe for or purchase securities. There are no stockholders agreements, voting agreements or other similar agreements with respect to the Company's capital stock to which the Company is a party or, to the knowledge of the Company, between or among any of the Company's stockholders.

(g) SEC Reports; Financial Statements. The Company has filed all reports, schedules, forms, statements and other documents required to be filed by the Company under the Securities Act and the Exchange Act, including pursuant to Section 13(a) or 15(d) thereof, since January 1, 2023 (the foregoing materials, including the exhibits thereto and documents incorporated by reference therein, being collectively referred to herein as the "SEC Reports"). As of their respective dates, the SEC Reports complied in all material respects with the requirements of the Securities Act and the Exchange Act, as applicable, at the time of filing, and none of the SEC Reports, when filed, contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The Company has never been an issuer subject to Rule 144(i) under the Securities Act. The financial statements of the Company included in the SEC Reports comply in all material respects with applicable accounting requirements and the rules and regulations of the Commission with respect thereto as in effect at the time of filing. Such financial statements have been prepared in accordance with United States generally accepted accounting principles applied on a consistent basis during the periods involved ("GAAP"), except as may be otherwise specified in such financial statements or the notes thereto and except that unaudited financial statements may not contain all footnotes required by GAAP, and fairly present in all material respects the financial position of the Company and its consolidated Subsidiaries as of and for the dates thereof and the results of operations and cash flows for the periods then ended, subject, in the case of unaudited statements, to normal, immaterial, year-end audit adjustments.

(h) Material Changes; Undisclosed Events, Liabilities or Developments. Since the date of the latest audited financial statements included in the Company's Annual Report on Form 10-K, filed with the Commission on March 28, 2024, except as specifically disclosed in a subsequent SEC Report, (i) there has not been any change in the capital stock (other than (x) the issuance of Common Stock upon exercise of stock options and warrants or vesting of restricted stock units described as outstanding in, and the grant of options and awards under existing equity incentive plans and (y) the issuance of Common Stock upon purchase under the Company's employee stock purchase plan), short-term debt or long-term debt of the Company or any of its Subsidiaries, or any dividend or distribution of any kind declared, set aside for payment, paid or made by the Company on any class of capital stock, (ii) there has been no event, occurrence or development that has had or that would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect; (iii) except for the Transaction Documents, neither the Company nor any of its Subsidiaries has entered into any transaction or agreement (whether or not in the ordinary course of business) that is material to the Company and its Subsidiaries taken as a whole or incurred any liability or obligation, direct or contingent, that is material to the Company and its Subsidiaries taken as a whole and (iv) neither the Company nor any of its Subsidiaries has sustained any loss or interference with its business that is material to the Company and its Subsidiaries taken as a whole and that is either from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor disturbance or dispute or any action, order or decree of any court or arbitrator or governmental or regulatory authority.

(i) Litigation. There are no actions, suits or proceedings by or before any court, arbitrator, governmental or administrative agency or regulatory authority (federal, state, county, local or foreign) pending, nor, to the Company's knowledge, any investigations by or before any court, arbitrator, governmental or administrative agency or regulatory authority (federal, state, county, local or foreign) to which the Company or any of its Subsidiaries is a party or to which any property of the Company or any of its Subsidiaries is the subject that, individually or in the aggregate, if determined adversely to the Company or any of its Subsidiaries, would, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect and, to the Company's knowledge, no such actions, suits, proceedings or investigations are threatened by any court, arbitrator, governmental or administrative agency or regulatory authority (federal, state, county, local or foreign).

(j) Regulatory Permits. The Company and the Subsidiaries possess all certificates, authorizations and permits issued by the appropriate federal, state, local or foreign regulatory authorities necessary to conduct their respective businesses as currently conducted, except where the failure to possess such permits would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect ("Material Permits"), and neither the Company nor any Subsidiary has received any written notice of any revocation or suspension of any such Material Permit.

(k) Intellectual Property. The Company and the Subsidiaries have, or have rights to use, all patents, patent applications, trademarks, trademark applications, service marks, trade names, trade secrets, inventions, copyrights, licenses and other intellectual property rights and similar rights necessary or required for use in connection with their respective businesses as described in the SEC Reports and which the failure to so would, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect (collectively, the "Intellectual Property").

Rights”). None of, and neither the Company nor any Subsidiary has received a notice (written or otherwise) that any of, the Intellectual Property Rights has expired, terminated or been abandoned, or is expected to expire or terminate or be abandoned, within two (2) years from the date of this Agreement. Neither the Company nor any Subsidiary has received, since the date of the latest audited financial statements included within the SEC Reports, a written notice of a claim or otherwise has any knowledge that the Intellectual Property Rights violate or infringe upon the rights of any Person, except as would not have, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. To the knowledge of the Company, all such Intellectual Property Rights are enforceable and there is no existing infringement by another Person of any of the Intellectual Property Rights. The Company and its Subsidiaries have taken reasonable security measures to protect the secrecy, confidentiality and value of all of their intellectual properties, except where failure to do so would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(l) Sarbanes-Oxley; Internal Accounting Controls. There is and has been no failure on the part of the Company to comply in all material respects with any applicable provisions of the Sarbanes-Oxley Act of 2002 and the rules and regulations promulgated thereunder. The Company maintains an effective system of “disclosure controls and procedures” (as defined in Rule 13a-15(e) of the Exchange Act) that complies with the requirements of the Exchange Act and the listing rules of the Principal Market and that has been designed to ensure that information required to be disclosed by the Company in reports that it files or submits under the Exchange Act or the listing rules of the Principal Market, as applicable, is recorded, processed, summarized and reported within the time periods specified in the Commission’s rules and forms, including controls and procedures designed to ensure that such information is accumulated and communicated to the Company’s management as appropriate to allow timely decisions regarding required disclosure. The Company has carried out evaluations of the effectiveness of its disclosure controls and procedures as required by Rule 13a-15 of the Exchange Act. The Company maintains a system of “internal control over financial reporting” (as defined in Rule 13a-15(f) of the Exchange Act) that comply with the requirements of the Exchange Act and have been designed by, or under the supervision of, its principal executive and principal financial officers, or persons performing similar functions, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP. The Company maintains internal accounting controls sufficient to provide reasonable assurance that (i) transactions are executed in accordance with management’s general or specific authorizations, (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP and to maintain asset accountability, (iii) access to assets is permitted only in accordance with management’s general or specific authorization, (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences and (v) interactive data in eXtensible Business Reporting Language included or incorporated by reference in the SEC Reports fairly presents the information called for in all material respects and is prepared in accordance with the Commission’s rules and guidelines applicable thereto. Based on the Company’s most recent evaluation of its internal controls over financial reporting pursuant to Rule 13a-15(c) of the Exchange Act, there are no material weaknesses in the Company’s internal controls. Since the date of the latest audited financial statements of the Company, there has been no change in the Company’s internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company’s internal control over financial reporting. The Company’s auditors and the audit

committee of the Company's board of directors have been advised of: (i) all significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which have adversely affected or are reasonably likely to adversely affect the Company's ability to record, process, summarize and report financial information and (ii) any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal controls over financial reporting.

(m) Private Placement. Assuming the accuracy of the Purchaser's representations and warranties set forth in Section 3.2 and the Placement Agent's compliance with the Engagement Letter (as defined below), no registration under the Securities Act is required for the offer and sale of the Securities by the Company to the Purchaser as contemplated hereby. The issuance and sale of the Securities hereunder does not contravene the rules and regulations of the Trading Market.

(n) Investment Company. Neither the Company nor any of its Subsidiaries is or, after giving effect to the offering and sale of the Securities, will be, an "investment company" or an entity "controlled" by an "investment company," as such terms are defined in the Investment Company Act of 1940, as amended.

(o) Registration Rights. Other than the Purchaser, no Person has any right to cause the Company or any Subsidiary to effect the registration under the Securities Act of any securities of the Company or any Subsidiary.

(p) Listing and Maintenance Requirements. The Common Stock is listed on the Principal Market, and the Company has taken no action designed to, or which to its knowledge is likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act. Except for that certain notice from the Principal Market received on or about September 27, 2023, related to the minimum bid price requirement, the Company has not received any notification that the Commission is contemplating terminating such listing.

(q) Disclosure. Except with respect to the material terms and conditions of the transactions contemplated by the Transaction Documents, the Company confirms that neither it nor any other Person acting on its behalf has provided the Purchaser or its agents or counsel with any information that it believes constitutes or might constitute material, non-public information. The Company understands and confirms that the Purchaser will rely on the foregoing representation in effecting transactions in securities of the Company. All of the disclosure furnished by or on behalf of the Company to the Purchaser regarding the Company and its Subsidiaries, their respective businesses and the transactions contemplated hereby, does not contain any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements made therein, in the light of the circumstances under which they were made, not misleading. The press releases disseminated by the Company during the twelve months preceding the date of this Agreement taken as a whole do not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made and when made, not misleading.

(r) No Integrated Offering. The Company has not, directly or through any agent, sold, offered for sale, solicited offers to buy or otherwise negotiated in respect of, any security (as defined in the Securities Act) that is or will be integrated with the Securities sold pursuant to this Agreement in a manner that would require the registration of the Securities under the Securities Act. None of the Company nor any of its affiliates has offered the Securities or any similar securities during the six months prior to the date hereof to anyone other than the Purchaser. The Company has no intention to offer the Securities or any similar security during the six months from the date hereof.

(s) Tax Status. Since January 1, 2018, the Company and each of its Subsidiaries have filed all income and other material tax returns required to have been filed by them with all appropriate Governmental Authorities and timely paid all taxes shown thereon, except as currently being contested in good faith and for which adequate reserves have been created in the financial statements of the Company, if such reserves are determined to be necessary or advisable by the Company. There are no unpaid assessments against the Company or any of its Subsidiaries nor any basis for the assessment of any additional taxes, penalties or interest for any fiscal period or audits by any federal, state or local taxing authority, except as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(t) No General Solicitation. Neither the Company nor any Person acting on its behalf has offered or sold the Securities by any form of general solicitation or general advertising, including, but not limited to, the following: (1) any advertisement, article, notice or other communication published in any newspaper, magazine, or similar media or broadcast over television or radio; (2) any website posting or widely distributed e-mail; or (3) any seminar or meeting whose attendees have been invited by any general solicitation or general advertising.

(u) Foreign Corrupt Practices. Neither the Company nor any Subsidiary nor, to the Company's knowledge, any agent other person acting on behalf of the Company or any Subsidiary has (i) violated or is in violation of any applicable provision of the U.S. Foreign Corrupt Practices Act of 1977, as amended; (ii) illegally promised, offered, provided, paid, promised to pay or give, attempted to provide or authorized the provision of any payment or gift, or anything of value, directly or indirectly, to any person for the purpose of obtaining or retaining business, influencing any act or decision of the recipient, or securing any improper advantage; or (iii) made any payment of funds of the Company or any Subsidiary or received or retained any funds in violation of the FCPA.

(v) Acknowledgment Regarding Purchaser's Purchase of Securities. The Company acknowledges and agrees that the Purchaser is acting solely in the capacity of an arm's length purchaser with respect to the Transaction Documents and the transactions contemplated thereby. The Company further acknowledges that the Purchaser is not acting as a financial advisor or fiduciary of the Company (or in any similar capacity) with respect to the Transaction Documents and the transactions contemplated thereby and any advice given by the Purchaser or its representatives or agents in connection with the Transaction Documents and the transactions contemplated thereby is merely incidental to the Purchaser's purchase of the Securities. The Company further represents to the Purchaser that the Company's decision to enter into this Agreement and the other Transaction Documents has been based solely on the independent evaluation of the transactions contemplated hereby by the Company and its representatives.

(w) Acknowledgment Regarding Purchaser's Trading Activity. Anything in this Agreement or elsewhere herein to the contrary notwithstanding (except for Sections 3.2(g) and 4.11 hereof), it is understood and acknowledged by the Company that: (i) the Purchaser has not been asked by the Company to agree, nor has the Purchaser agreed, to desist from purchasing or selling, long and/or short, securities of the Company, or "derivative" securities based on securities issued by the Company or to hold the Securities for any specified term, (ii) past or future open market or other transactions by the Purchaser, specifically including, without limitation, Short Sales or "derivative" transactions, before or after the closing of this or future private placement transactions, may negatively impact the market price of the Company's publicly traded securities, (iii) the Purchaser, and counter-parties in "derivative" transactions to which any the Purchaser is a party, directly or indirectly, presently may have a "short" position in the Common Stock and (iv) the Purchaser shall not be deemed to have any affiliation with or control over any arm's length counter-party in any "derivative" transaction. The Company further understands and acknowledges that (y) the Purchaser may engage in hedging activities at various times during the period that the Securities are outstanding, including, without limitation, during the periods that the value of the Warrant Shares deliverable with respect to Securities are being determined, and (z) such hedging activities (if any) could reduce the value of the existing stockholders' equity interests in the Company at and after the time that the hedging activities are being conducted. The Company acknowledges that such aforementioned hedging activities do not constitute a breach of any of the Transaction Documents.

(x) Regulatory Compliance. To the extent applicable, the Company is, and since January 1, 2020 has been, in material compliance with the Federal Food, Drug and Cosmetic Act (21 U.S.C. §§ 301 et seq.), the Public Health Service Act (42 U.S.C. §§ 262 et seq.), and implementing regulations promulgated or issued thereunder by the United States Food and Drug Administration (the "FDA"), and all comparable federal, state, or foreign Laws applicable to the Company and its businesses (collectively, "FDA Laws"). Since January 1, 2020, neither the Company nor any Subsidiary has received any FDA Form 483, warning letter, untitled letter or other written correspondence or notice from the FDA or any comparable Governmental Authority alleging or asserting noncompliance with any FDA Laws. To the extent applicable, neither the Company nor any Subsidiary nor, to the knowledge of the Company, any of its officers, employees, agents or clinical investigators (with respect to such agents' or investigators' services performed at the direction of the Company) has (i) made an untrue statement of a material fact or fraudulent statement to the FDA or any comparable Governmental Authority, (ii) failed to disclose a material fact required to be disclosed to the FDA or any comparable Governmental Authority, or (iii) committed any prohibited act that (in any such case) would reasonably be expected to provide a basis for the FDA to invoke its policy with respect to "Fraud, Untrue Statements of Material Facts, Bribery, and Illegal Gratuities" set forth in 56 Fed. Reg. 46191 (September 10, 1991) and any amendments thereto. Neither the Company nor any Subsidiary nor, to the knowledge of the Company, any of its officers, employees, or agents (with respect to such agents' services performed for the Company) have been convicted of any crime or engaged in any conduct that has resulted in or would reasonably be expected to result in (i) debarment under 21 U.S.C. Section 335a or any similar law or (ii) exclusion under 42 U.S.C. Section 1320a-7 or any similar law. Neither the Company nor any Subsidiary is a party to any corporate integrity agreements, monitoring agreements, consent decrees, settlement Orders or similar agreements with or imposed by the FDA or any comparable Governmental Authority.

(y) Office of Foreign Assets Control. Neither the Company nor any Subsidiary nor, to the Company's knowledge after reasonable due inquiry, any director, officer, agent, employee or affiliate of the Company or any Subsidiary is currently subject to any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Treasury Department ("OFAC").

(z) Money Laundering. The operations of the Company and its Subsidiaries are and have been conducted at all times in compliance with applicable financial record-keeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, applicable money laundering statutes and applicable rules and regulations thereunder (collectively, the "Money Laundering Laws"), and no Action or Proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any Subsidiary with respect to the Money Laundering Laws is pending or, to the knowledge of the Company or any Subsidiary, threatened.

(aa) No Disqualification Events. With respect to the Securities to be offered and sold hereunder in reliance on Rule 506 under the Securities Act, none of the Company, any of its predecessors, any affiliated issuer, any director, executive officer, other officer of the Company participating in the offering of the Securities contemplated by this Agreement, or to the Company's knowledge, any beneficial owner of 20% or more of the Company's outstanding voting equity securities, calculated on the basis of voting power, nor any promoter (as that term is defined in Rule 405 under the Securities Act) connected with the Company in any capacity at the time of sale (each, an "Issuer Covered Person" and, together, "Issuer Covered Persons") is subject to any of the "Bad Actor" disqualifications described in Rule 506(d)(1)(i) to (viii) under the Securities Act (a "Disqualification Event"), except for a Disqualification Event covered by Rule 506(d)(2) or (d)(3). The Company has exercised reasonable care to determine whether any Issuer Covered Person is subject to a Disqualification Event.

(bb) Placement. Other than the Placement Agent, the Company has not dealt with any broker, finder, commission agent, placement agent or arranger in connection with the sale of the Securities and the transactions contemplated by this Agreement, and the Company is not under any obligation to pay any broker's fee or commission in connection with such transactions other than to the Placement Agent. Neither the Company nor any of its affiliates nor any other person acting on its behalf (other than its officers acting in such capacity) has solicited offers for, or offered or sold, the Securities other than through the Placement Agent.

3.2 Representations and Warranties of the Purchaser. The Purchaser hereby represents and warrants as of the date hereof and as of the Closing Date to the Company as follows (unless as of a specific date therein, in which case they shall be accurate as of such date):

(a) Organization; Authority; Conflict. The Purchaser is either an individual or an entity duly incorporated or formed, validly existing and in good standing under the laws of the jurisdiction of its incorporation or formation with full right, corporate, partnership, limited liability company or similar power and authority to enter into and to consummate the transactions contemplated by the Transaction Documents and otherwise to carry out its obligations hereunder and thereunder. The execution and delivery of the Transaction Documents and performance by the Purchaser of the transactions contemplated by the Transaction Documents have been duly authorized by all necessary corporate, partnership, limited liability company or similar action, as

applicable, on the part of the Purchaser. Each Transaction Document to which it is a party has been duly executed by the Purchaser, and when delivered by the Purchaser in accordance with the terms hereof, will constitute the valid and legally binding obligation of the Purchaser, enforceable against it in accordance with its terms, except (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law. The execution, delivery and performance by each the Purchaser of the Transaction Documents and the consummation by Purchaser of the transactions contemplated thereby will not (i) in the case that Purchaser is a corporation, partnership, limited liability company or other entity, result in a violation of the organizational documents of Purchaser, (ii) conflict with, or constitute a default (or an event which with notice or lapse of time or both would become a default) under, or give to others any rights of termination, amendment, acceleration or cancellation of, any agreement, indenture or instrument to which the Purchaser is a party, or (iii) result in a violation of any law, rule, regulation, order, judgment or decree (including federal and state securities laws) applicable to the Purchaser, except in the case of clauses (ii) and (iii) above, for such conflicts, defaults, rights or violations which would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect on the ability of the Purchaser to perform its obligations hereunder.

(b) Own Account. The Purchaser is purchasing the Securities for its own account or for one or more separate accounts maintained by it for the benefit of one or more other Institutional Accredited Investors and not with a view to the distribution thereof in violation of the securities laws, provided that the disposition of the Purchaser's property shall at all times be within the Purchaser's control. The Purchaser understands that the Securities have not been registered under the Securities Act and may be resold only if registered pursuant to the provisions of the Securities Act or if an exemption from registration is available, except under circumstances where neither such registration nor such an exemption is required by law, and that the Issuer is not required to register the Securities. The Purchaser further represents and warrants that the Purchaser (a) will not sell, transfer or otherwise dispose of the Securities or any interest therein except in a registered transaction or in a transaction exempt from or not subject to the registration requirements of the Securities Act and (b) was given the opportunity to ask questions and receive answers concerning the terms and conditions of the offering and to obtain any additional information which the Company possesses or can acquire without unreasonable effort or expense.

(c) Purchaser Status. At the time the Purchaser was offered the Securities, it was, and as of the date hereof it is, and on each date on which it exercises any Warrants, it will be an "accredited investor" as defined in Rule 501(a)(1), (a)(2), (a)(3), (a)(7), (a)(8), (a)(9), (a)(12), or (a)(13) under the Securities Act.

(d) Experience of The Purchaser. The Purchaser, either alone or together with its representatives, has such knowledge, sophistication and experience in business and financial matters so as to be capable of evaluating the merits and risks of the prospective investment in the Securities, and has so evaluated the merits and risks of such investment. The Purchaser is able to bear the economic risk of an investment in the Securities and, at the present time, is able to afford a complete loss of such investment. The Purchaser further acknowledges and understands that its investment in the Securities involves a significant degree of risk, including, without limitation: (i)

an investment in the Company is speculative, and only Purchasers who can afford the loss of their entire investment should consider investing in the Company and the Securities; (ii) the Purchaser may not be able to liquidate its investment; (iii) transferability of the Securities is extremely limited; (iv) in the event of a disposition of the Securities, the Purchaser could sustain the loss of its entire investment; and (v) that no United States federal or state agency or any other government or governmental agency has passed on or made any recommendation or endorsement of the Securities or the fairness or suitability of the investment in the Securities nor have such authorities passed upon or endorsed the merits of the offering of the Securities.

(e) General Solicitation. The Purchaser is not, to the Purchaser's knowledge, purchasing the Securities as a result of any advertisement, article, notice or other communication regarding the Securities published in any newspaper, magazine or similar media or broadcast over television or radio or presented at any seminar or, to the knowledge of the Purchaser, any other general solicitation or general advertisement.

(f) Access to Information. The Purchaser acknowledges that it has had the opportunity to review the Transaction Documents (including all exhibits and schedules thereto) and the SEC Reports and has been afforded (i) the opportunity to ask such questions as it has deemed necessary of, and to receive answers from, representatives of the Company concerning the terms and conditions of the offering of the Securities and the merits and risks of investing in the Securities; (ii) access to information about the Company and its financial condition, results of operations, business, properties, management and prospects sufficient to enable it to evaluate its investment; and (iii) the opportunity to obtain such additional information that the Company possesses or can acquire without unreasonable effort or expense that is necessary to make an informed investment decision with respect to the investment. The Purchaser acknowledges and agrees that neither the Placement Agent nor any Affiliate of the Placement Agent has provided the Purchaser with any information or advice with respect to the Securities nor is such information or advice necessary or desired. Neither the Placement Agent nor any Affiliate has made or makes any representation as to the Company or the quality of the Securities and the Placement Agent and any Affiliate may have acquired non-public information with respect to the Company which the Purchaser agrees need not be provided to it. In connection with the issuance of the Securities to the Purchaser, neither the Placement Agent nor any of its Affiliates has acted as a financial advisor or fiduciary to the Purchaser. Other than the Placement Agent, no Person will, to the Purchaser's knowledge, have, as a result of the transactions contemplated by this Agreement, any valid right, interest or claim against or upon the Company or any other Purchaser for any commission, fee or other compensation pursuant to any agreement, arrangement or understanding entered into by or on behalf of the Purchaser. The purchase of Securities by the Purchaser has not been solicited by or through anyone other than the Company or the Placement Agent.

(g) Certain Transactions and Confidentiality. Other than consummating the transactions contemplated hereunder, the Purchaser has not, nor has any Person acting on behalf of or pursuant to any understanding with the Purchaser, directly or indirectly executed any purchases or sales, including Short Sales, of the securities of the Company during the period commencing as of the time that the Purchaser first received a term sheet (written or oral) from the Company or any other Person representing the Company setting forth the material terms of the transactions contemplated hereunder and ending immediately prior to the execution hereof. Notwithstanding the foregoing, in the case the Purchaser is a multi-managed investment vehicle

whereby separate portfolio managers manage separate portions of the Purchaser's assets and the portfolio managers have no direct knowledge of the investment decisions made by the portfolio managers managing other portions of the Purchaser's assets, the representation set forth above shall only apply with respect to the portion of assets managed by the portfolio manager that made the investment decision to purchase the Securities covered by this Agreement. Other than to other Persons party to this Agreement or to the Purchaser's representatives, including, without limitation, its officers, directors, partners, legal and other advisors, employees, agents and Affiliates, the Purchaser has maintained the confidentiality of all disclosures made to it in connection with this transaction (including the existence and terms of this transaction). Notwithstanding the foregoing, for the avoidance of doubt, nothing contained herein shall constitute a representation or warranty, or preclude any actions, with respect to locating or borrowing shares in order to effect Short Sales or similar transactions in the future.

(h) Residency. The Purchaser's residence (if an individual) or offices in which its investment decision with respect to the Securities was made (if an entity) are located at the address immediately below Purchaser's name on its signature page.

(i) Representations by Non-United States persons. If the Purchaser is not a United States person, the Purchaser hereby represents that the Purchaser has satisfied the laws of the Purchaser's jurisdiction in connection with any invitation to subscribe for the Securities or any use of the Transaction Documents, including (i) the legal requirements within the Purchaser's jurisdiction for the purchase of the Securities, (ii) any foreign exchange restrictions applicable to such purchase, (iii) any governmental or other consents that may need to be obtained and (iv) the income tax and other tax consequences, if any, that may be relevant to the purchase, holding, redemption, sale or transfer of the Securities. The Purchaser's subscription and payment for, and the Purchaser's continued beneficial ownership of, the Securities will not violate any applicable securities or other laws of the Purchaser's jurisdiction.

(j) No "Bad Actor" Disqualification Events. Neither the Purchaser, nor any of its predecessors, any director, executive officer, other officer of the Purchaser participating in the offering of the Securities contemplated by this Agreement, or to the Purchaser's knowledge, any beneficial owner of 20% or more of the Company's outstanding voting equity securities, calculated on the basis of voting power, nor any promoter (as that term is defined in Rule 405 under the Securities Act) connected with the Purchaser in any capacity at the time of sale is subject to a Disqualification Event, except for a Disqualification Event covered by Rule 506(d)(2) or (d)(3). The Purchaser has exercised reasonable care to determine whether any Covered Person is subject to a Disqualification Event.

(k) Anti-Money Laundering Laws. The Purchaser represents and warrants to, and covenants with, the Company that: (i) the Purchaser is in compliance with the regulations administered by the U.S. Department of the Treasury ("Treasury") Office of Foreign Assets Control; (ii) the Purchaser, its subsidiaries, officers, and directors, and to the Purchaser's knowledge, its controlled affiliates, employees, and agents, are not on the List of Specially Designated Nationals and Blocked Persons maintained by Treasury and have not been designated by Treasury as a financial institution of primary money laundering concern subject to special measures under Section 311 of the USA PATRIOT Act, Pub. L. 107-56; (iii) the Purchaser is in compliance in all material respects with applicable anti money laundering laws and regulations

and has implemented anti money laundering procedures that are designed to comply with applicable anti-money laundering laws and regulations, including, as applicable, the requirements of the Bank Secrecy Act, as amended by the USA PATRIOT Act, Pub. L. 107 56; and (iv) to the best of its knowledge none of the funds to be provided by the Purchaser are being tendered on behalf of a person or entity who has not been identified to the Purchaser.

The Company acknowledges and agrees that the representations contained in this Section 3.2 shall not modify, amend or affect the Purchaser's right to rely on the Company's representations and warranties contained in this Agreement or any representations and warranties contained in any other Transaction Document or any other document or instrument executed and/or delivered in connection with this Agreement or the consummation of the transactions contemplated hereby. Notwithstanding the foregoing, for the avoidance of doubt, nothing contained herein shall constitute a representation or warranty, or preclude any actions, with respect to locating or borrowing shares in order to effect Short Sales or similar transactions in the future.

ARTICLE IV

OTHER AGREEMENTS OF THE PARTIES

4.1 Transfer Restrictions.

(a) The Securities may only be disposed of in compliance with state and federal securities laws. In connection with any transfer of Securities other than pursuant to an effective registration statement or Rule 144, to the Company or to an Affiliate of a Purchaser or in connection with a pledge as contemplated in Section 4.1(b), the Company may require the transferor thereof to provide to the Company an opinion of counsel selected by the transferor and reasonably acceptable to the Company, the form and substance of which opinion shall be reasonably satisfactory to the Company, to the effect that such transfer does not require registration of such transferred Securities under the Securities Act. As a condition of transfer, any such transferee shall agree in writing to be bound by the terms of this Agreement and shall have the rights and obligations of a Purchaser under this Agreement.

(b) The Purchaser agree to the imprinting, so long as is required by this Section 4.1, of a legend on (or a book-entry notation with respect to) the Securities in the following form:

THIS SECURITY HAS BEEN ACQUIRED FOR INVESTMENT AND WITHOUT A VIEW TO DISTRIBUTION AND HAS NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933 (THE "ACT"), OR UNDER STATE SECURITIES LAWS. NO TRANSFER, SALE, ASSIGNMENT, PLEDGE, HYPOTHECATION OR OTHER DISPOSITION OF THIS SECURITY OR ANY INTEREST OR PARTICIPATION THEREIN MAY BE MADE EXCEPT (A) PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE ACT OR (B) PURSUANT TO AN EXEMPTION FROM REGISTRATION UNDER THE ACT AND APPLICABLE STATE SECURITIES LAWS AND, IN THE CASE OF CLAUSE (B), UNLESS THE ISSUER RECEIVES AN OPINION OF COUNSEL IN FORM AND SUBSTANCE SATISFACTORY TO THE ISSUER TO THE EFFECT THAT REGISTRATION IS NOT REQUIRED UNDER THE ACT AND APPLICABLE STATE SECURITIES LAWS. IN

ADDITION, ANY SUCH TRANSFER OR OTHER DISPOSITION IS SUBJECT TO THE CONDITIONS CONTAINED IN A PURCHASE AGREEMENT, DATED JUNE 17, 2024. A COPY OF SUCH CONDITIONS WILL BE PROVIDED TO THE HOLDER HEREOF UPON REQUEST.

(c) Certificates evidencing the Shares and Warrant Shares shall not contain any legend (including the legend set forth in Section 4.1(b) hereof), (i) following any sale of such Shares or Warrant Shares pursuant to Rule 144 (assuming cashless exercise of the Warrants) to a Person that is not an Affiliate of the Company, (ii) if such Shares or Warrant Shares are held by a non-Affiliate of the Company and are eligible for sale under Rule 144 (assuming cashless exercise of the Warrants), without the requirement for the Company to be in compliance with the current public information required under Rule 144 as to such Shares and Warrant Shares and without volume or manner-of-sale or any other restrictions, or (iii) if such legend is not required under applicable requirements of the Securities Act (including judicial interpretations and pronouncements issued by the staff of the Commission). In the event that the legend is no longer required on the Shares or the Warrant Shares pursuant to the prior sentence, the Company shall request its counsel to issue a legal opinion to the Transfer Agent to effect the removal of the legend hereunder, in which case the Company and the selling holder provide the Company's counsel with any and all documentation necessary to providing such opinion. If all or any portion of a Warrant is exercised at a time when there is an effective registration statement to cover the resale of the Warrant Shares, or if such Shares or Warrant Shares may be sold under Rule 144 and the Company is then in compliance with the current public information required under Rule 144 (assuming cashless exercise of the Warrants), or if the Shares or Warrant Shares may be sold under Rule 144 without the requirement for the Company to be in compliance with the current public information required under Rule 144 as to such Shares or Warrant Shares or if such legend is not otherwise required under applicable requirements of the Securities Act (including judicial interpretations and pronouncements issued by the staff of the Commission) then such Warrant Shares shall be issued free of all legends. The Company agrees that at such time as such legend is no longer required under this Section 4.1(c), it will, no later than the earlier of (i) two (2) Trading Days and (ii) the number of Trading Days comprising the Standard Settlement Period (as defined below), in each case, following the delivery by a Purchaser to the Company or the Transfer Agent of a certificate representing Shares or Warrant Shares, as the case may be, issued with a restrictive legend (such date, the "Legend Removal Date"), deliver or cause to be delivered to the Purchaser a certificate representing such shares that is free from all restrictive and other legends. The Company may not make any notation on its records or give instructions to the Transfer Agent that enlarge the restrictions on transfer set forth in this Section 4.1(c). Certificates for Securities subject to legend removal hereunder shall be transmitted by the Transfer Agent to the Purchaser by crediting the account of the Purchaser's prime broker with the Depository Trust Company System, as an agent of the Company, as directed by the Purchaser. For the avoidance of doubt, such transmittal referred to in the prior sentence shall not be considered a settlement of the Warrant Shares. As used herein, "Standard Settlement Period" means the standard settlement period, expressed in a number of Trading Days, on the Company's primary Trading Market with respect to the Common Stock as in effect on the date of delivery of a certificate representing Shares or Warrant Shares, as the case may be, issued with a restrictive legend.

(d) The Purchaser agrees with the Company that it will sell its Securities pursuant to either the registration requirements of the Securities Act, including any applicable prospectus delivery requirements, or an exemption therefrom, and that if Securities are sold pursuant to a registration statement, they will be sold in compliance with the plan of distribution set forth therein, and acknowledges that the removal of the restrictive legend from certificates representing Securities as set forth in this Section 4.1 is predicated upon the Company's reliance upon this understanding.

4.2 Furnishing of Information; Public Information. Until the earlier of the time that (i) the Purchaser no longer owns Securities or (ii) the Warrants have expired, the Company covenants to timely file (or obtain extensions in respect thereof and file within the applicable grace period) all reports required to be filed by the Company after the date hereof pursuant to the Exchange Act unless the Company is not then subject to the reporting requirements of the Exchange Act.

4.3 Securities Laws Disclosure; Publicity. The Company shall file, within the timeframe required under applicable Commission rules, one or more Current Reports on Form 8-K with the Commission describing the terms of the transactions contemplated by the Transaction Documents and including as exhibits to such Form 8-K this Agreement (such Form or Forms 8-K, collectively, the "Announcing Form 8-K"). The Company shall not, and shall cause each of its Subsidiaries and its and each of their respective officers, directors, employees and agents to not, provide the Purchaser with any material non-public information regarding the Company or any of its Subsidiaries from and after the filing of the Announcing Form 8-K with the Commission without the express prior written consent of the Purchaser, unless prior thereto the Purchaser shall have executed a written agreement regarding the confidentiality and use of such information. Subject to the foregoing, neither the Company nor the Purchaser shall issue any press releases or any other public statements with respect to the transactions contemplated hereby or disclosing the name of the Purchaser; provided, however, that the Company shall be entitled, without the prior approval of the Purchaser, to make any press release or other public disclosure with respect to such transactions (i) in substantial conformity with the Announcing Form 8-K and contemporaneously therewith and (ii) as is required by applicable law and regulations (provided that the Purchaser shall be consulted by the Company in connection with any such press release or other public disclosure prior to its release and shall be provided with a copy thereof), and provided further, that the Company may issue any other announcement or press release regarding the transactions contemplated hereby, so long as such announcement or press release does not disclose the name of the Purchaser. The Company understands and confirms that the Purchaser shall be relying on the foregoing covenant in effecting transactions in Securities of the Company.

4.4 Indemnification of Purchasers. Subject to the provisions of this Section 4.4, the Company will indemnify and hold the Purchaser and its directors, officers, shareholders, members, partners, employees and agents (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title), each Person who controls the Purchaser (within the meaning of Section 15 of the Securities Act and Section 20 of the Exchange Act), and the directors, officers, shareholders, agents, members, partners or employees (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title) of such controlling persons (each, a "Purchaser Party") harmless from any and all losses, liabilities, obligations, claims, contingencies, damages, costs and expenses, including all judgments, amounts

paid in settlements, court costs and reasonable attorneys' fees and costs of investigation that any the Purchaser Party may suffer or incur as a result of or relating to (a) any breach of any of the representations, warranties, covenants or agreements made by the Company in this Agreement or in the other Transaction Documents or (b) any action instituted against the Purchaser Parties in any capacity (including a Purchaser Party's status as an investor), or any of them or their respective Affiliates, by the Company or any stockholder of the Company who is not an Affiliate of the Purchaser Party, arising out of or relating to any of the transactions contemplated by the Transaction Documents. For the avoidance of doubt, the indemnification provided herein is intended to, and shall also cover, direct claims brought by the Company against the Purchaser Parties; provided, however, that such indemnification shall not cover any loss, claim, damage or liability to the extent it is finally judicially determined to be attributable to any Purchaser Party's breach of any of the representations, warranties, covenants or agreements made by the Purchaser Party in any Transaction Document or any conduct by a Purchaser Party which is finally judicially determined to constitute fraud, gross negligence or willful misconduct. If any action shall be brought against any Purchaser Party in respect of which indemnity may be sought pursuant to this Agreement, the Purchaser Party shall promptly notify the Company in writing, and, except with respect to direct claims brought by the Company, the Company shall have the right to assume the defense thereof with counsel of its own choosing reasonably acceptable to the Purchaser Party. Any Purchaser Party shall have the right to employ separate counsel in any such action and participate in the defense thereof, but the fees and expenses of such counsel shall be at the expense of the Purchaser Party except to the extent that (i) the employment thereof has been specifically authorized by the Company in writing, (ii) the Company has failed after a reasonable period of time to assume such defense and to employ counsel or (iii) in such action there is, in the reasonable opinion of counsel to the applicable Purchaser Party (which may be internal counsel), a material conflict on any material issue between the position of the Company and the position of the Purchaser Party, in which case the Company shall be responsible for the reasonable fees and expenses of no more than one such separate counsel. The Company will not be liable to any Purchaser Party under this Agreement for any settlement by a Purchaser Party effected without the Company's prior written consent, which shall not be unreasonably withheld or delayed. In addition, if any Purchaser Party takes actions to collect amounts due under any Transaction Documents or to enforce the provisions of any Transaction Documents, then the Company shall pay the costs incurred by the Purchaser Party for such collection, enforcement or action, including, but not limited to, attorneys' fees and disbursements. The indemnification and other payment obligations required by this Section 4.4 shall be made by periodic payments of the amount thereof during the course of the investigation, defense, collection, enforcement or action, as and when bills are received or are incurred; provided, that if any Purchaser Party is finally judicially determined not to be entitled to indemnification or payment under this Section 4.4, the Purchaser Party shall promptly reimburse the Company for any payments that are advanced under this sentence. The indemnity agreements contained herein shall be in addition to any cause of action or similar right of any Purchaser Party against the Company or others and any liabilities the Company may be subject to pursuant to law.

4.5 Reservation of Common Stock. As of the date hereof, the Company has reserved, and the Company shall continue to reserve and keep available at all times, free of preemptive rights, a sufficient number of shares of Common Stock for the purpose of enabling the Company to issue Shares pursuant to this Agreement and Warrant Shares pursuant to any exercise of the Warrants.

4.6 Listing of Common Stock. The Company hereby agrees to use best efforts to maintain the listing or quotation of the Common Stock on the Trading Market on which it is currently listed, and concurrently with the Closing, the Company shall apply to list or quote all of the Shares and Warrant Shares on such Trading Market and promptly secure the listing of all of the Shares and Warrant Shares on such Trading Market. The Company further agrees, if the Company applies to have the Common Stock traded on any other Trading Market, it will then include in such application all of the Shares and Warrant Shares, and will take such other action as is necessary to cause all of the Shares and Warrant Shares to be listed or quoted on such other Trading Market as promptly as possible. The Company will then take all action reasonably necessary to continue the listing and trading of its Common Stock on a Trading Market and will comply in all respects with the Company's reporting, filing and other obligations under the bylaws or rules of the Trading Market. The Company agrees to maintain the eligibility of the Common Stock for electronic transfer through the Depository Trust Company or another established clearing corporation, including, without limitation, by timely payment of fees to the Depository Trust Company or such other established clearing corporation in connection with such electronic transfer.

4.7 Subsequent Equity Sales.

(a) From the date hereof until sixty (60) days after the Closing Date, neither the Company nor any Subsidiary shall (i) issue, enter into any agreement to issue or announce the issuance or proposed issuance of any shares of Common Stock or Common Stock Equivalents or (ii) file any registration statement (or any amendment or supplement thereto that registers additional securities), in each case, other than as contemplated pursuant to the Gilead IRA or the filing of a registration statement on Form S-8.

(b) From the date hereof until sixty (60) days after the Closing Date, the Company shall be prohibited from effecting or entering into an agreement to effect any issuance by the Company or any of its Subsidiaries of Common Stock or Common Stock Equivalents (or a combination of units thereof) involving a Variable Rate Transaction. "Variable Rate Transaction" means a transaction in which the Company (i) issues or sells any debt or equity securities that are convertible into, exchangeable or exercisable for, or include the right to receive, additional shares of Common Stock either (A) at a conversion price, exercise price or exchange rate or other price that is based upon, and/or varies with, the trading prices of or quotations for the shares of Common Stock at any time after the initial issuance of such debt or equity securities or (B) with a conversion, exercise or exchange price that is subject to being reset at some future date after the initial issuance of such debt or equity security or upon the occurrence of specified or contingent events directly or indirectly related to the business of the Company or the market for the Common Stock, in each case, other than pursuant to customary anti-dilution provisions or (ii) enters into, or effects a transaction under, any agreement, including, but not limited to, an "equity line of credit" or an "at-the-market offering", whereby the Company may issue securities at a future determined price, regardless of whether shares pursuant to such agreement have actually been issued and regardless of whether such agreement is subsequently canceled, in each case, other than customary preemption, participation or co-investment rights; provided, however, that, notwithstanding the

foregoing, from the date hereof until one (1) year after the Closing Date, the Company shall be prohibited from entering into and/or issuing shares of Common Stock in an unregistered “equity line of credit” transaction (which, for the avoidance of doubt, does not include an “at-the-market” offering under a registration statement on Form S-3). The Purchaser shall be entitled to obtain injunctive relief against the Company to preclude any such issuance in violation of this paragraph, which remedy shall be in addition to any right to collect damages.

(c) Notwithstanding the foregoing, this Section 4.7 shall not apply in respect of an Exempt Issuance.

4.8 Certain Transactions and Confidentiality. The Purchaser covenants that neither it, nor any Affiliate acting on its behalf or pursuant to any understanding with it will execute any purchases or sales, including Short Sales, of any of the Company’s securities during the period commencing with the execution of this Agreement and ending at such time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 4.3. The Purchaser covenants that until such time as the transactions contemplated by this Agreement are publicly disclosed by the Company pursuant to the initial press release as described in Section 4.3, the Purchaser will maintain the confidentiality of the existence and terms of this transaction (other than as disclosed to its legal and other representatives). Notwithstanding the foregoing and notwithstanding anything contained in this Agreement to the contrary, the Company expressly acknowledges and agrees that (i) no Purchaser makes any representation, warranty or covenant hereby that it will not engage in effecting transactions in any securities of the Company after the time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 4.3, (ii) the Purchaser shall not be restricted or prohibited from effecting any transactions in any securities of the Company in accordance with applicable securities laws from and after the time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 4.3 and (iii) no Purchaser shall have any duty of confidentiality or duty not to trade in the securities of the Company to the Company, any of its Subsidiaries, or any of their respective officers, directors, employees, Affiliates or agent after the issuance of the initial press release as described in Section 4.3.

ARTICLE V

MISCELLANEOUS

5.1 Termination. In the event that the Closing shall not have occurred on or before the fifth (5th) Trading Day following the date of this Agreement due to the Company’s or the Purchaser’s failure to satisfy the conditions set forth in Section 2.1 above (and the nonbreaching party’s failure to waive such unsatisfied condition(s)), the nonbreaching party shall have the option to terminate this Agreement with respect to such breaching party at the close of business on such date without liability of any party to any other party

5.2 Fees and Expenses. Except as expressly set forth in the Transaction Documents to the contrary, each party shall pay the fees and expenses of its advisers, counsel, accountants and other experts, if any, and all other expenses incurred by such party incident to the negotiation, preparation, execution, delivery and performance of this Agreement. The Company shall pay all Transfer Agent fees (including, without limitation, any fees required for same-day processing of any instruction letter delivered by the Company and any exercise notice delivered by a Purchaser), stamp taxes and other taxes and duties levied in connection with the delivery of any Securities to the Purchaser.

5.3 Entire Agreement. The Transaction Documents, together with the exhibits and schedules thereto, contain the entire understanding of the parties with respect to the subject matter hereof and thereof and supersede all prior agreements and understandings, oral or written, with respect to such matters, which the parties acknowledge have been merged into such documents, exhibits and schedules.

5.4 Notices. Any and all notices or other communications or deliveries required or permitted to be provided hereunder shall be in writing and shall be deemed given and effective on the earliest of: (a) the time of transmission, if such notice or communication is delivered via facsimile at the facsimile number or email attachment at the email address as set forth on the signature pages attached hereto at or prior to 5:30 p.m. (New York City time) on a Trading Day, (b) the next Trading Day after the time of transmission, if such notice or communication is delivered via email attachment at the email address as set forth on the signature pages attached hereto on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (c) the second (2nd) Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service or (d) upon actual receipt by the party to whom such notice is required to be given. The address for such notices and communications shall be as set forth on the signature pages attached hereto.

5.5 Amendments; Waivers. No provision of this Agreement may be waived, modified, supplemented or amended except in a written instrument signed, in the case of an amendment, by the Company and Purchasers which purchased at least 50.1% in interest of the Shares based on the initial Subscription Amount hereunder or, in the case of a waiver, by the party against whom enforcement of any such waived provision is sought. No waiver of any default with respect to any provision, condition or requirement of this Agreement shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of any party to exercise any right hereunder in any manner impair the exercise of any such right. Any amendment effected in accordance with this Section 5.5 shall be binding upon the Purchaser and holder of Securities and the Company.

5.6 Headings. The headings herein are for convenience only, do not constitute a part of this Agreement and shall not be deemed to limit or affect any of the provisions hereof.

5.7 Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the parties and their successors and permitted assigns. The Company may not assign this Agreement or any rights or obligations hereunder without the prior written consent of the Purchaser (other than by merger or other operation of law). The Purchaser may assign any or all of its rights under this Agreement to any Person to whom the Purchaser assigns or transfers any Securities, provided that such transferee agrees in writing to be bound, with respect to the transferred Securities, by the provisions of the Transaction Documents that apply to the Purchaser.

5.8 No Third-Party Beneficiaries. This Agreement is intended for the benefit of the parties hereto and their respective successors and permitted assigns and is not for the benefit of, nor may any provision hereof be enforced by, any other Person, except as otherwise set forth in Section 4.4 and this Section 5.8.

5.9 Governing Law. All questions concerning the construction, validity, enforcement and interpretation of the Transaction Documents shall be governed by and construed and enforced in accordance with the internal laws of the State of New York. Each party agrees that all legal Proceedings concerning the interpretations, enforcement and defense of the transactions contemplated by this Agreement and any other Transaction Documents (whether brought against a party hereto or its respective affiliates, directors, officers, shareholders, partners, members, employees or agents) shall be commenced exclusively in the state and federal courts sitting in the City of New York. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of New York, Borough of Manhattan for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein (including with respect to the enforcement of any of the Transaction Documents), and hereby irrevocably waives, and agrees not to assert in any Action or Proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such Action or Proceeding is improper or is an inconvenient venue for such Proceeding. Each party hereby irrevocably waives personal service of process and consents to process being served in any such Action or Proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by law. If any party shall commence an Action or Proceeding to enforce any provisions of the Transaction Documents, then, in addition to the obligations of the Company under Section 4.4, the prevailing party in such Action or Proceeding shall be reimbursed by the non-prevailing party for its reasonable attorneys' fees and other costs and expenses incurred with the investigation, preparation and prosecution of such Action or Proceeding.

5.10 Survival. Unless this agreement is terminated under Section 5.1, the representations and warranties contained herein shall survive the Closing and the delivery of the Securities.

5.11 Execution. This Agreement may be executed in two or more counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to each other party, it being understood that the parties need not sign the same counterpart. In the event that any signature is delivered by email delivery of a ".pdf" format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such ".pdf" signature page were an original thereof.

5.12 Severability. If any term, provision, covenant or restriction of this Agreement is held by a court of competent jurisdiction to be invalid, illegal, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions set forth herein shall remain in full force and effect and shall in no way be affected, impaired or invalidated, and the parties hereto shall use their commercially reasonable efforts to find and employ an alternative means to achieve the same or substantially the same result as that contemplated by such term, provision, covenant or restriction. It is hereby stipulated and declared to be the intention of the parties that they would have executed the remaining terms, provisions, covenants and restrictions without including any of such that may be hereafter declared invalid, illegal, void or unenforceable.

5.13 Replacement of Securities. If any certificate or instrument evidencing any Securities is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation thereof (in the case of mutilation), or in lieu of and substitution therefor, a new certificate or instrument, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction. The applicant for a new certificate or instrument under such circumstances shall also pay any reasonable third-party costs (including customary indemnity) associated with the issuance of such replacement Securities.

5.14 Remedies. In addition to being entitled to exercise all rights provided herein or granted by law, including recovery of damages, the Purchaser and the Company will each be entitled to specific performance under the Transaction Documents. The parties agree that monetary damages may not be adequate compensation for any loss incurred by reason of any breach of obligations contained in the Transaction Documents and hereby agree to waive and not to assert in any Action for specific performance of any such obligation the defense that a remedy at law would be adequate.

5.15 Payment Set Aside. To the extent that the Company makes a payment or payments to the Purchaser pursuant to any Transaction Document or the Purchaser enforces or exercises its rights thereunder, and such payment or payments or the proceeds of such enforcement or exercise or any part thereof are subsequently invalidated, declared to be fraudulent or preferential, set aside, recovered from, disgorged by or are required to be refunded, repaid or otherwise restored to the Company, a trustee, receiver or any other Person under any law (including, without limitation, any bankruptcy law, state or federal law, common law or equitable cause of action), then to the extent of any such restoration the obligation or part thereof originally intended to be satisfied shall be revived and continued in full force and effect as if such payment had not been made or such enforcement or setoff had not occurred.

5.16 Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Business Day, then such action may be taken or such right may be exercised on the next succeeding Business Day.

5.17 Construction. The parties agree that each of them and/or their respective counsel have reviewed and had an opportunity to revise the Transaction Documents and, therefore, the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of the Transaction Documents or any amendments thereto. In addition, each and every reference to share prices and shares of Common Stock in any Transaction Document shall be subject to adjustment for reverse and forward stock splits, stock dividends, stock combinations and other similar transactions of the Common Stock that occur after the date of this Agreement.

5.18 **WAIVER OF JURY TRIAL**. IN ANY ACTION, SUIT, OR PROCEEDING IN ANY JURISDICTION BROUGHT BY ANY PARTY AGAINST ANY OTHER PARTY, THE PARTIES EACH KNOWINGLY AND INTENTIONALLY, TO THE GREATEST EXTENT PERMITTED BY APPLICABLE LAW, HEREBY ABSOLUTELY, UNCONDITIONALLY, IRREVOCABLY AND EXPRESSLY WAIVES FOREVER TRIAL BY JURY.

(Signature Pages Follow)

IN WITNESS WHEREOF, the parties hereto have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

ASSEMBLY BIOSCIENCES, INC.

Address for Notice:

Assembly Biosciences, Inc.
Attention: General Counsel
Two Tower Place, Seventh Floor
South San Francisco, CA 94080
Email: [***]

By: /s/ Jason A. Okazaki
Name: Jason A. Okazaki
Title: Chief Executive Officer and President

With a copy to (which shall not constitute notice):

Skadden, Arps, Meagher, Slate & Flom LLP
300 S Grand Ave #3400, Los Angeles, CA 90071
Attention: Michelle Gasaway

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK
SIGNATURE PAGE FOR PURCHASER FOLLOWS]

IN WITNESS WHEREOF, the undersigned have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

Name of Purchaser: Gilead Sciences, Inc.

Signature of Authorized Signatory of Purchaser: /s/ Andrew D. Dickinson

Name of Authorized Signatory: Andrew D. Dickinson

Title of Authorized Signatory: Chief Financial Officer

Address for Notice to Purchaser:

Gilead Sciences, Inc.
333 Lakeside Drive
Foster City, CA 94404
Attention: Alliance Management
Email: [***]

[SIGNATURE PAGES CONTINUE]

ASSEMBLY BIOSCIENCES, INC.

AMENDMENT NO. 1 TO COMMON STOCK PURCHASE AGREEMENT

This Amendment No. 1 to Common Stock Purchase Agreement (this “Amendment”) is dated as of June 17, 2024, by and between Assembly Biosciences, Inc., a Delaware corporation (the “Company”), and Gilead Sciences, Inc., a Delaware corporation (“Gilead,” and together with the Company, the “Parties”). All capitalized terms not otherwise defined herein shall have the respective meanings set forth in that certain Common Stock Purchase Agreement, dated as of October 15, 2023, by and between the Company and Gilead (the “Agreement”).

WHEREAS, the Parties desire to amend certain terms in the Agreement.

WHEREAS, Section 5.4 of the Agreement provides that the Agreement may only be amended by a writing signed by an authorized officer of each of the Company and Gilead.

WHEREAS, the undersigned constitute the requisite parties.

NOW, THEREFORE, in consideration of the foregoing and mutual covenants contained in this Amendment, and for other good and valuable consideration the receipt and adequacy of which are hereby acknowledged, the Company and Gilead agree to amend the Agreement as follows:

1. Amendment.

- (a) Section 1.1.39 of the Agreement is hereby amended and restated in its entirety to read as follows:

“1.1.39 ‘Equity Financing Deadline’ means the date that is twelve (12) months after the date of this Agreement.”

- (b) Section 2.3.3 of the Agreement is hereby amended and restated in its entirety to read as follows:

“2.3.3 If both (i) the Stockholder Approval is obtained on or prior to the first anniversary of this Agreement and (ii) the Company completes the Equity Financing (as defined in the Investor Rights Agreement) on or prior to the Equity Financing Deadline (the occurrence of both (i) and (ii), the “Company Additional Shares Purchase Condition”), then at any time within fifteen (15) calendar days after the date on which the Company Additional Shares Purchase Condition occurs (such date, the “Company Additional Shares Purchase Right Date”), the Company may elect to cause, subject to the conditions set forth in Section 2.8, Gilead to purchase from the Company a number of shares of Common Stock equal to the Maximum Additional Shares at the Additional Shares Purchase Price by providing written notice to Gilead, which notice shall include the Company’s calculation of the Maximum Additional Shares (such right, the “Additional Shares Purchase Right” and such notice, the “Company Additional Shares Purchase Exercise Notice”). Gilead shall select the anticipated Additional Closing Date for the purchase of the Additional Shares

subject to the Company Additional Shares Purchase Exercise Notice and deliver written notice to the Company specifying such anticipated Additional Closing Date (the “Additional Shares Purchase Exercise Confirmation”), which date shall be (i) no earlier than the date that is two (2) Business Days after the date that Gilead delivers the Additional Shares Purchase Exercise Confirmation to the Company and (ii) no later than the date that is six (6) months after the date of the occurrence of the Company Additional Shares Purchase Condition is obtained. At any time during the Exercise Period, Gilead shall have a right (but not an obligation) to purchase from the Company, and the Company shall issue and sell to Gilead, the Maximum Additional Shares at the Additional Shares Purchase Price (such right, the “Gilead Additional Shares Purchase Right”). Gilead may exercise the Gilead Additional Shares Purchase Right by providing written notice to the Company specifying its calculation of the Maximum Additional Shares and specifying the anticipated Additional Closing Date (such notice, a “Gilead Additional Shares Purchase Notice” and, together with any Company Additional Shares Purchase Exercise Notice, an “Additional Shares Purchase Notice”). The Closing of the sale of Additional Shares (such closing, the “Additional Closing”) shall occur at 11:00 am (New York City time) on the date specified in the Additional Shares Purchase Exercise Confirmation or Gilead Additional Shares Purchase Notice, as applicable; provided, that if any of the conditions set forth in Section 2.8 have not been satisfied or (to the extent permitted by law) waived by such date and time (other than those conditions that by their terms are to be satisfied at the Additional Closing), the Additional Closing shall occur on the second (2nd) Business Day after satisfaction or (to the extent permitted by law) waiver of the conditions set forth in Section 2.8 (other than those conditions that by their terms are to be satisfied at the Additional Closing, but subject to the satisfaction or (to the extent permitted by law) waiver of those conditions), unless such other place, time and date shall be agreed in writing between the Company and Gilead (such date, the “Additional Closing Date”). The Additional Closing with respect to the exercise of the Gilead Additional Shares Purchase Right need not occur prior to the expiration of the Exercise Period, provided the Gilead Additional Shares Purchase Notice is provided prior to the expiration of the Exercise Period. Gilead may rescind or revoke a Gilead Additional Shares Purchase Notice at any time in its sole discretion prior to the Additional Closing Date. Notwithstanding anything to the contrary stated above, Gilead shall not be obligated to consummate the Additional Closing in respect of the Company Additional Shares Purchase Exercise Notice unless the conditions set forth in Section 2.8 have been satisfied on or prior to the date that is six (6) months after the date of the occurrence of the Company Additional Shares Purchase Condition (the “Outside Date”); provided that if, as of such date, the conditions set forth in Section 2.8.1(d) and Section 2.8.2(d) in respect of the Additional Closing have not been satisfied, then the Outside Date will automatically be extended until the date that is nine (9) months after the date of the occurrence of the Company Additional Shares Purchase Condition (and such date will then be the Outside Date); provided further, however, that if the primary cause of the failure of such conditions to

be satisfied is a breach by a Party of the obligations of such Party under Section 2.4, then the non-breaching Party may, in its sole discretion, determine whether or not to extend the Outside Date to the date that is nine (9) months after the date of the occurrence of the Company Additional Shares Purchase Condition (and whichever date is selected will then be the Outside Date).”

2. Representation and Acknowledgment. The Company hereby represents and warrants to Gilead that the Company sought and received the Stockholder Approval at a special meeting of the Company’s stockholders held on January 31, 2024 and, based upon the foregoing representation, Gilead hereby acknowledges and agrees that such actions were not a breach or violation of Section 2.3.2 of the Agreement.

3. Limited Effect. Except as specified in this Amendment, all terms and conditions of the Agreement shall continue in full force and effect.

4. Binding Nature. Pursuant to Section 5.4 of the Agreement, this Amendment shall be binding upon the Parties.

5. Entire Agreement. This Amendment together with the Agreement, the Collaboration Agreement, including the appendices and schedules attached thereto and the Ancillary Agreements (as defined in the Collaboration Agreement), and the Investor Rights Agreement contain the entire understanding of the Parties with respect to the subject matter hereof and thereof and supersede all prior agreements and understandings, oral or written, with respect to such matters, which the Parties acknowledge have been merged into such documents, exhibits and schedules.

6. Governing Law. This Amendment shall be governed by and construed under the substantive laws of the State of New York, excluding any conflicts or choice of law rule or principle that might otherwise refer construction or interpretation of this Amendment to the substantive law of another jurisdiction.

7. Counterparts; Electronic Execution. This Amendment may be executed in two or more counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to each other party, it being understood that the Parties need not sign the same counterpart. In the event that any signature is delivered by facsimile transmission or by e-mail delivery of a “.pdf” format data file (including any “.pdf” including any electronic signature covered by the U.S. federal ESIGN Act of 2000, Uniform Electronic Transactions Act, the Electronic Signatures and Records Act or other applicable law, e.g., a signature applied with DocuSign), such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile or “.pdf” signature page were an original thereof.

(Signature page follows)

IN WITNESS WHEREOF, the Parties hereto have caused this Amendment No. 1 to the Common Stock Purchase Agreement to be duly executed by their respective authorized signatories as of June 17, 2024.

Assembly Biosciences, Inc.

By: /s/ Jason A. Okazaki

Name: Jason A. Okazaki

Title: Chief Executive Officer and President

Gilead Sciences, Inc.

By: /s/ Andrew Dickinson

Name: Andrew Dickinson

Title: Chief Financial Officer

Signature Page to Amendment No. 1 to Common Stock Purchase Agreement

ASSEMBLY BIOSCIENCES, INC.

AMENDMENT NO. 1 TO INVESTOR RIGHTS AGREEMENT

This Amendment No. 1 to Investor Rights Agreement (this "Amendment") is dated as of June 17, 2024, by and between Assembly Biosciences, Inc., a Delaware corporation (the "Company"), and Gilead Sciences, Inc., a Delaware corporation ("Gilead," and together with the Company, the "Parties"). All capitalized terms not otherwise defined herein shall have the respective meanings set forth in that certain Investor Rights Agreement, dated as of October 15, 2023, by and between the Company and Gilead (the "Agreement").

WHEREAS, the Parties desire to amend certain terms in the Agreement.

WHEREAS, Section 8.4 of the Agreement provides that the Agreement may only be amended by a writing signed by an authorized officer of each of the Company and Gilead.

WHEREAS, the undersigned constitute the requisite parties.

NOW, THEREFORE, in consideration of the foregoing and mutual covenants contained in this Amendment, and for other good and valuable consideration the receipt and adequacy of which are hereby acknowledged, the Company and Gilead agree to amend the Agreement as follows:

1. Amendment.

- (a) Section 1.1.20 of the Agreement is hereby amended and restated in its entirety to read as follows:

"1.1.20 'Equity Financing' means the first Qualified Equity Financing that is consummated within twelve (12) months of the Effective Date."

- (b) Section 1.1.46 of the Agreement is hereby amended and restated in its entirety to read as follows:

"1.1.46 'Registrable Securities' means shares of Common Stock acquired by Gilead from the Company at any time (including any shares of Common Stock issued to Gilead upon conversion, exercise or exchange of any securities convertible into or exercisable or exchangeable for shares of Common Stock) and shares of Common Stock issued as a dividend or other distribution with respect to, in exchange for or in replacement of such shares; provided, however, that securities shall cease to be Registrable Securities if they (a) have been disposed of pursuant to a registration statement declared effective by the Commission, (b) have been sold in a transaction exempt from the registration and prospectus delivery requirements of the Securities Act so that all transfer restrictions and restrictive legends with respect thereto are removed upon the consummation of such sale or (c) are transferred by a Holder in violation of Article 5."

(c) Section 5.5 of the Agreement is hereby amended and restated in its entirety to read as follows:

“5.5 Equity Financing. The Company shall use good faith efforts to complete the Equity Financing within twelve (12) months of the Effective Date.”

2. Limited Effect. Except as specified in this Amendment, all terms and conditions of the Agreement shall continue in full force and effect.

3. Binding Nature. Pursuant to Section 8.4 of the Agreement, this Amendment shall be binding upon the Parties.

4. Entire Agreement. This Amendment together with the Agreement, the Collaboration Agreement, including the appendices and schedules attached thereto and the Ancillary Agreements (as defined in the Collaboration Agreement), and the Investor Rights Agreement contain the entire understanding of the Parties with respect to the subject matter hereof and thereof and supersede all prior agreements and understandings, oral or written, with respect to such matters, which the Parties acknowledge have been merged into such documents, exhibits and schedules.

5. Governing Law. This Amendment shall be governed by and construed under the substantive laws of the State of New York, excluding any conflicts or choice of law rule or principle that might otherwise refer construction or interpretation of this Amendment to the substantive law of another jurisdiction.

6. Counterparts; Electronic Execution. This Amendment may be executed in two or more counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to each other party, it being understood that the Parties need not sign the same counterpart. In the event that any signature is delivered by facsimile transmission or by e-mail delivery of a “.pdf” format data file (including any “.pdf” including any electronic signature covered by the U.S. federal ESIGN Act of 2000, Uniform Electronic Transactions Act, the Electronic Signatures and Records Act or other applicable law, e.g., a signature applied with DocuSign), such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile or “.pdf” signature page were an original thereof.

(Signature page follows)

IN WITNESS WHEREOF, the Parties hereto have caused this Amendment No. 1 to the Investor Rights Agreement to be duly executed by their respective authorized signatories as of June 17, 2024.

Assembly Biosciences, Inc.

By: /s/ Jason A. Okazaki
Name: Jason A. Okazaki
Title: Chief Executive Officer and President

Gilead Sciences, Inc.

By: /s/ Andrew Dickinson
Name: Andrew Dickinson
Title: Chief Financial Officer

Signature Page to Amendment No. 1 to Investor Rights Agreement

Assembly Biosciences Announces \$12.6 Million in Equity Financings

— *Funding supports advancement of antiviral portfolio, including four candidates in clinical development, and extends cash runway into Q1 2026* —

— *Anticipated near term interim data read outs include ABI-5366 Phase 1a in 3Q24 and Phase 1b in 1H25, and ABI-4334 Phase 1b by end of 2024* —

SOUTH SAN FRANCISCO, Calif., June 17, 2024 (GLOBE NEWSWIRE) — Assembly Biosciences, Inc. (“Assembly Bio”) (Nasdaq: ASMB), a biotechnology company developing innovative therapeutics targeting serious viral diseases, today announced that it has closed the issuance of shares of its common stock and warrants to Armistice Capital LLC (“Armistice Capital”), a healthcare-focused institutional investor, and Gilead Sciences, Inc. (“Gilead”), in separate equity financings that have resulted in aggregate gross proceeds to Assembly Bio of approximately \$12.6 million, before deducting expenses.

The sale of common stock to Gilead maintains Gilead’s ownership of 19.9 percent of the outstanding voting stock of Assembly Bio as of the date of closing pursuant to the terms of the Investor Rights Agreement entered into between Assembly Bio and Gilead in October 2023 (the “Investor Rights Agreement”). Assembly Bio and Gilead have also agreed to extend the time period to satisfy certain conditions related to Assembly Bio’s right to require Gilead to increase its ownership from 19.9 percent up to 29.9 percent of Assembly Bio’s outstanding voting stock at a premium.

“The Armistice and Gilead investments strengthen our balance sheet as we look to deliver important interim clinical data readouts expected by the end of the year and continue to advance our novel pipeline,” said Jason Okazaki, chief executive officer and president of Assembly Bio. “In addition, the amendment of our equity agreement terms with Gilead reflects our companies’ shared commitment to the advancement of our collaboration candidates in the coming years, with four candidates expected to be in clinic this year.”

Assembly Bio sold 634,500 shares of common stock and warrants to purchase up to 634,500 shares to Armistice Capital, and sold 179,500 shares of common stock and warrants to purchase up to 179,500 shares to Gilead, in each case, at a combined price of \$15.46 per share of common stock and accompanying warrant. The warrants have an exercise price of \$17.00 per share of common stock, will be immediately exercisable and will expire on June 18, 2029.

Assembly Bio currently expects to use the net proceeds from the equity financings for general corporate purposes.

The shares of common stock and warrants sold to Armistice Capital were issued in a registered direct offering pursuant to Assembly Bio's existing effective shelf registration statement on Form S-3 (File 333-270760) that was originally filed on March 22, 2023, and declared effective by the Securities and Exchange Commission ("SEC") on April 14, 2023.

The shares and warrants sold to Gilead were sold in a private placement. The securities sold to Gilead have not been registered under the Securities Act of 1933, as amended, or applicable state securities laws, and may not be offered or sold in the United States except pursuant to an effective registration statement or an applicable exemption from the registration requirements. Pursuant to the Investor Rights Agreement, as amended, Assembly Bio has agreed to file a registration statement with the Securities and Exchange Commission registering the resale of the shares of common stock issued to Gilead and the shares of common stock issuable upon exercise of the warrants issued to Gilead.

This press release shall not constitute an offer to sell or the solicitation of an offer to buy any securities described herein, nor shall there be any sale of these securities in any state or jurisdiction in which such offer, solicitation or sale would be unlawful prior to the registration or qualification under the securities laws of any such state or jurisdiction.

About Assembly Biosciences

Assembly Biosciences is a biotechnology company dedicated to the development of innovative small-molecule therapeutics designed to change the path of serious viral diseases and improve the lives of patients worldwide. Led by an accomplished team of leaders in virologic drug development, Assembly Bio is committed to improving outcomes for patients struggling with the serious, chronic impacts of herpesvirus, hepatitis B virus (HBV) and hepatitis delta virus (HDV) infections.

Forward-Looking Statements

The information in this press release contains forward-looking statements that are subject to certain risks and uncertainties that could cause actual results to materially differ. These forward-looking statements include all statements other than historical fact, including, without limitation, statements regarding the equity financings and the use of proceeds therefrom; and statements regarding the Company's future performance and clinical development plans. These risks and uncertainties include: Assembly Bio's ability to realize the potential benefits of its collaboration with Gilead, including all financial aspects of the collaboration and equity investments; Assembly Bio's ability to initiate and complete clinical studies involving its therapeutic product candidates, including studies contemplated by Assembly Bio's collaboration with Gilead, in the currently anticipated timeframes or at all; safety and efficacy data from clinical or nonclinical studies may not warrant further development of Assembly Bio's product candidates; clinical and nonclinical data presented at conferences may not differentiate Assembly Bio's product candidates from other companies' candidates; results of nonclinical studies may not be representative of disease behavior in a clinical setting and may not be

predictive of the outcomes of clinical studies; and other risks identified from time to time in Assembly Bio's reports filed with the U.S. Securities and Exchange Commission. You are urged to consider 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 to be uncertain and forward-looking. Assembly Bio intends such forward-looking statements to be covered by the safe harbor provisions contained in Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. More information about Assembly Bio's risks and uncertainties are more fully detailed under the heading "Risk Factors" in Assembly Bio's filings with the SEC, including its most recent Annual Report on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K. Except as required by law, Assembly Bio assumes no obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise.

Contacts

Investor and Corporate:

Shannon Ryan
SVP, Investor Relations, Corporate Affairs and Alliance Management
(415) 738-2992
sryan@assemblybio.com

Media:

Sam Brown Inc.
Hannah Hurdle
(805) 338-4752
ASMBMedia@sambrown.com