# 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 11, 2019**

# SYNLOGIC, INC.
**(Exact name of registrant as specified in its charter)**

| Delaware | 001-37566 | 26-1824804 |
|---|---|---|
| (State or other jurisdiction of incorporation) | (Commission File Number) | (IRS Employer Identification No.) |

| 301 Binney St., Suite 402<br>Cambridge, MA | 02142 |
|---|---|
| (Address of principal executive offices) | (Zip Code) |

**Registrant's telephone number, including area code: (617) 401-9975**

**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 (see General Instruction A.2. below):

☐ 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** | **SYBX** | **The Nasdaq Capital Market** |

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (17 CFR §230.405) or Rule 12b-2 of the Securities Exchange Act of 1934 (17 CFR §240.12b-2).

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.**

***Private Placement of Securities***

On June 11, 2019, Synlogic, Inc. (the "**Company**") entered into a Subscription Agreement (the "**Subscription Agreement**") with Ginkgo Bioworks, Inc. ("**Ginkgo**"), providing for the issuance and sale by the Company to Ginkgo of an aggregate of (i) 6,340,771 shares (the "**Shares**") of the Company's common stock, par value $0.001 per share (the "**Common Stock**"), at a purchase price per Share of $9.00, and (ii) pre-funded warrants to purchase an aggregate of 2,548,117 shares of Common Stock (the "**Pre-Funded Warrants**") at an exercise price of $9.00 per Share (the "**Offering**"), with $8.99 of such exercise price paid at the closing of the Offering. The gross proceeds to the Company will be approximately $80 million. The closing of the Offering took place on June 11, 2019.

The Company intends to use the proceeds of the Offering to progress and expand its pipeline, including initiating four new programs in the first six months following the closing of the Offering and five new programs in the next 12 months following the closing of the Offering.

The Pre-Funded Warrants are exercisable for one share of Common Stock at an exercise price of $0.01 per Pre-Funded Warrant, subject to adjustment for stock splits, reverse splits, and similar capital transactions as described in the Pre-Funded Warrants. The Pre-Funded Warrants may be exercised at any time until all of the Pre-Funded Warrants are exercised in full.

Pursuant to the Subscription Agreement, the Company is obligated, among other things, to file a registration statement with the U.S. Securities and Exchange Commission (the "**SEC**") within 60 days following the closing of the Offering and for purposes of registering the Shares and the shares of Common Stock issuable upon exercise of the Pre-Funded Warrants for resale by Ginkgo, and use its commercially reasonable efforts to have the registration statement declared effective as soon as practicable after filing, and in any event no later than 30 days after filing such registration statement with the SEC, or in the event the SEC reviews and has written comments to the registration statement, within 90 days following the receipt of such written comments. The Subscription Agreement contains customary terms and conditions for a transaction of this type, including certain customary cash penalties on the Company for its failure to satisfy specified filing and effectiveness time periods.

In addition, pursuant to the Subscription Agreement, Ginkgo agreed that for a period of 180 days after the date of the Subscription Agreement, it will not, without the prior written consent of the Company, (i) directly or indirectly, offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase or otherwise transfer or dispose of any Shares of Pre-Funded Warrants, (ii) enter into any swap or any other agreement or any transaction that transfers, in whole or in part, directly or indirectly, the economic consequence of ownership of any Shares or Pre-Funded Warrants, whether any such swap or transaction described in clause (i) or (ii) above is to be settled by delivery of Shares or Pre-Funded Warrants, in cash or otherwise or (iii) publicly announce an intention to effect any such swap, agreement or other transaction described in clauses (i) and (ii).

Ginkgo also agreed, pursuant to the terms of the Subscription Agreement, to a customary standstill provision for a period of 180 days from the date of the Subscription Agreement, prohibiting Ginkgo, either alone or together with any other person, from taking certain actions with respect to the Company, including, among other things, initiating or supporting any proposal or indication of interest for, or offer with respect to any transaction involving the acquisition of greater than 50% of the voting securities or all or substantially all of the Company's assets, seeking to change or control the management or Board of Directors of the Company, soliciting proxies or publicly seeking election of or publicly seeking to place a director on the Board, or publicly seeking the removal of any director of the Company.

The Shares, the Pre-Funded Warrants and the shares of Common Stock issuable upon the exercise of the Pre-Funded Warrants (the "**Warrant Shares**") are being offered and sold without registration under the Securities Act of 1933, as amended (the "**Securities Act**"), pursuant to the exemption provided in Section 4(a)(2) under the Securities Act and Regulation D promulgated thereunder and similar exemptions under applicable state laws in reliance on the following facts: no general solicitation was used in offer or sale of such securities; the recipient of the securities had adequate access to information about the Company, through pre-existing relationships or otherwise; and such securities were issued as restricted securities with restricted legends referring to the Securities Act. No such securities may be offered or sold in the United States in the absence of an effective registration statement or exemption from applicable registration requirements.

The foregoing descriptions of the Pre-Funded Warrants and the Subscription Agreement do not purport to be complete and are qualified in their entirety by reference to the copy of each of the Form of Pre-Funded Warrant and the Form of Subscription Agreement, which are attached hereto as Exhibits 4.1, and 10.1, respectively, and which are incorporated herein by reference.

The representations, warranties and covenants contained in the Subscription Agreement were made solely for the benefit of the parties to the Subscription Agreement and may be subject to limitations agreed upon by the contracting parties. Accordingly, the Subscription Agreement is incorporated herein by reference only to provide investors with information regarding the terms of the Subscription Agreement and not to provide investors with any other factual information regarding the Company or its business, and should be read in conjunction with the disclosures in the Company's periodic reports and other filings with the SEC.

***Foundry Terms of Service Agreement***

Also on June 11, 2019, Synlogic Operating Company, Inc., a wholly-owned subsidiary of the Company (**"OpCo"**) entered into a Foundry Terms of Service Agreement (the "**TSA**") with Ginkgo for the research and development of engineered microbial therapeutic products and related services. Under the TSA, OpCo made a prepayment to Ginkgo in the amount of $30,000,000 for services to be provided by Ginkgo over a five-year term, which may be extended for up to three (3) additional years, subject to the satisfaction of specified conditions. Upon the expiration of such initial term and, if applicable, such additional period, any portion of OpCo's prepayment that has not been used to purchase services from Ginkgo will be retained by Ginkgo.

Under the TSA, the parties will enter into mutually agreed individual technical development plans (each, a "**TDP**") focused on the development of an engineered microbial strain (which, upon identification and final selection by OpCo, will become the "**Collaboration Strain**" under such TDP). Each TDP will include a mutually agreed scope of work and budget for the services to be provided by Ginkgo under such TDP, with activities under the TDP to be overseen by a joint steering committee. Ginkgo is obligated not to unreasonably decline to approve TDPs requested by OpCo, to use commercially reasonable efforts to make Ginkgo resources and capacity available for the performance of TDPs requested by OpCo and to use commercially reasonable efforts to perform its services in accordance with each applicable TDP. The pricing for the services provided by Ginkgo will be determined using a cost-based accounting methodology employed by Ginkgo generally across its foundry services business plus a specified margin.

Under the TSA, Ginkgo grants to OpCo, under Ginkgo's rights in intellectual property arising from the services ("**Foreground IP**") (a) a license to exploit products comprising each Collaboration Strain (each, a "**Company Product**") in the field of human and veterinary diagnostics and therapeutics (the "**Licensed Field**"), which license is exclusive or non-exclusive, depending on the specified Foreground IP and (b) a non-exclusive license for all other uses in the Licensed Field.

Under the TSA, OpCo grants to Ginkgo, under OpCo's rights in certain Foreground IP (a) a non-exclusive license for uses in the Licensed Field, subject to OpCo's exclusive rights in the Licensed Field, and (b) an exclusive license for uses outside the Licensed Field. Certain specified treatment, dosage and formulation intellectual property in the Foreground IP will be owned solely by OpCo and is not subject to the licenses granted to Ginkgo.

Ginkgo will have the right to terminate the TSA if a specified insolvency event affecting OpCo occurs or if OpCo undergoes a change of control in a transaction with a specified Ginkgo competitor. In such termination scenarios OpCo will lose any remaining unused portion of its prepaid services credit.

OpCo will have the right to terminate the TSA or any TDP for convenience upon prior written notice. If OpCo terminates the TSA for convenience, OpCo will lose any remaining unused portion of its prepaid services credit.

OpCo will have the right to terminate the TSA for a specified insolvency event affecting Ginkgo or if Ginkgo undergoes a change of control in a transaction with a competitor of OpCo. In such termination scenarios, OpCo will be entitled to a refund from Ginkgo of any unused portion of OpCo's prepaid services credit.

OpCo will have a one-time right to terminate the TSA at the end of the first three years of the term if certain specified criteria for those three years are not met. If OpCo exercises such right to terminate, OpCo will be entitled to a refund from Ginkgo of any unused portion of its prepaid services credit, up to a maximum refund of $10,000,000.

The foregoing description of the material terms of the Foundry TSA does not purport to be complete and is subject to, and is qualified in its entirety by, reference to the Foundry TSA, which will be filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ending June 30, 2019 and is incorporated by reference herein. Portions of the Foundry TSA may be subject to a FOIA Confidential Treatment Request to the SEC pursuant to Rule 24b-2 under the Securities Exchange Act of 1934, as amended (the "**Exchange Act**").

**Item 3.02 Unregistered Sale of Equity Securities**

The information under Item 1.01 of this Current Report on Form 8-K regarding the Shares, the Pre-Funded Warrants and the Warrant Shares is incorporated herein by reference.

**Item 7.01 Regulation FD Disclosure.**

In addition, on June 12, 2019, the Company updated its investor presentation (the "**Investor Presentation**"), which the Company expects to use in connection with general corporate presentations and will be made available on the Company's website or distributed by the Company in hardcopy or electronic form.

A copy of the Company's updated Investor Presentation is attached as Exhibit 99.1 to this Current Report on Form 8-K. The Investor Presentation is current as of June 12, 2019, and the Company disclaims any obligation to update the Investor Presentation after such date.

On June 12, 2019, the Company issued a press release announcing the Offering and the Foundry Terms of Service Agreement, a copy of which is attached hereto as Exhibit 99.2 and is incorporated by reference into this Item 7.01 of this Current Report on Form 8-K.

In accordance with General Instruction B.2 on Form 8-K, the information set forth in this Item 7.01 and the Investor Presentation and press release attached to this report as Exhibit 99.1 and Exhibit 99.2 are "furnished" and shall not be deemed to be "filed" for purposes of Section 18 of the Exchange Act or otherwise subject to the liabilities of that Section, nor shall such information be deemed incorporated by reference in any filing under the Exchange Act or the Securities Act.

**Item 9.01 Financial Statements and Exhibits**

(d) Exhibits

| Exhibit No. | Description |
|---|---|
| 4.1 | Pre-Funded Warrant |
| 10.1 | Subscription Agreement, dated as of June 11, 2019, by and between Synlogic, Inc. and Ginkgo Bioworks, Inc. |
| 99.1 | Investor Presentation of Synlogic, Inc., dated June 12, 2019. |
| 99.2 | Press Release of Synlogic, Inc. dated June 12, 2019. |

**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 hereunto duly authorized.

SYNLOGIC, INC.

Date: June 12, 2019

By: /s/ Todd Shegog
Name: Todd Shegog
Title: Chief Financial Officer

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.

CLASS A WARRANT NO. 2019-1
DATE OF ISSUANCE: June 11, 2019
EXPIRATION DATE: June 11, 2044

NUMBER OF SHARES: 2,548,117
(subject to adjustment hereunder)

CLASS A WARRANT TO PURCHASE SHARES
OF COMMON STOCK OF
SYNLOGIC, INC.

This Class A Warrant (the "Warrant") is issued by Synlogic, Inc., a Delaware corporation (the "Company"), to GINKGO BIOWORKS, INC., or its registered assigns (including any successors or assigns, the "Holder"), and is subject to the terms and conditions set forth below. The Warrant is being issued pursuant to that certain Subscription Agreement by and among the Company and the Holder dated as of June 11, 2019 (the "Subscription Agreement").

1. EXERCISE OF WARRANT.

(a) Number and Exercise Price of Warrant Shares; Expiration Date. Subject to the terms and conditions set forth herein, the Holder is entitled to purchase from the Company up to 2,548,117 shares of the Company's Common Stock, $0.001 par value per share (the "Common Stock") (as adjusted from time to time pursuant to the provisions of this Warrant) (the "Warrant Shares") on or before 5:00 p.m. New York City time on June 11, 2044 (the "Expiration Date"). The aggregate exercise price of this Warrant of $22,933,053.00, except for a nominal exercise price of $0.01 per Warrant Share, was paid to the Company on or prior to the Date of Issuance, and, consequently, no additional consideration (other than the nominal exercise price of $0.01 per Warrant Share) shall be required to be paid by the Holder to effect any exercise of this Warrant. The Holder shall not be entitled to return or refund of all, or any portion, of such pre-paid aggregate exercise price under any circumstance or for any reason whatsoever, including in the

event this Warrant shall not have been exercised prior to the Expiration Date. The remaining unpaid exercise price per share of Common Stock under this Warrant shall be $0.01, subject to adjustment as provided herein (the "Exercise Price"). Capitalized terms used and not otherwise defined herein shall have the meanings set forth in that certain Subscription Agreement dated as of June 11, 2019, among the Company and the purchasers signatory thereto.

(b) Method of Exercise. While this Warrant remains outstanding and exercisable in accordance with Section 1(a) above, the Holder may exercise this Warrant in whole or in part in accordance with Section 5 by either:

(1) wire transfer to the Company or cashier's check drawn on a United States bank made payable to the order of the Company, or

(2) exercising of the right to credit the Exercise Price against the Fair Market Value (as defined below) of the Warrant Shares (as defined below) at the time of exercise (the "Net Exercise") pursuant to Section 1(c).

(c) Net Exercise. At any time the Holder may elect to exercise this Warrant by Net Exercise pursuant to this Section 1(c). At any time that this Warrant may be exercised by Net Exercise pursuant to this Section 1(c), if the Company shall receive written notice from the Holder at the time of exercise of this Warrant that the Holder elects to Net Exercise the Warrant, the Company shall deliver to such Holder (without payment by the Holder of any exercise price in cash) that number of Warrant Shares computed using the following formula:

$$X = \frac{Y\,(A - B)}{A}$$

Where

X = The number of Warrant Shares to be issued to the Holder.

Y = The number of Warrant Shares purchasable under this Warrant or, if only a portion of the Warrant is being exercised, the portion of the Warrant being cancelled (at the date of such calculation).

A = The Fair Market Value of one share of Common Stock (at the date of such calculation).

B = The Exercise Price (as adjusted to the date of such calculations).

The "Fair Market Value" of one share of Common Stock shall mean (x) the last reported sale price and, if there are no sales, the last reported bid price, of the Common Stock on the last trading day prior to the date of exercise on the trading market on which the Common Stock is listed as reported by Bloomberg Financial Markets (or a comparable reporting service of national reputation selected by the Company and reasonably acceptable to the Holder if Bloomberg Financial Markets is not then reporting sales prices of the Common Stock) (collectively, "Bloomberg"), or (y) if the foregoing does not apply, the last sales price of such security in the over-the-counter market on the pink sheets by Pink Sheets LLC (formerly the National Quotation Bureau, Inc.) (the "pink sheets") or bulletin board for such security as reported by Bloomberg, or if no sales price is so reported, the last bid price of the Common Stock as reported by Bloomberg or (z) if the fair market value cannot be calculated on any of the foregoing bases, the fair market value determined by the Company's Board of Directors in good faith.

(d) Disputes. In the case of a dispute as to the determination of the Exercise Price or the arithmetic calculation of the Warrant Shares, the Company shall promptly issue to the Holder the number of Warrant Shares that are not disputed.

(e) Deemed Exercise. In the event that immediately prior to the close of business on the Expiration Date, the Fair Market Value of one share of Common Stock (as determined in accordance with Section 1(c) above) is greater than the then applicable Exercise Price, this Warrant shall be deemed to be automatically exercised on a net exercise issue basis pursuant to Section 1(c) above, and the Company shall deliver the applicable number of shares of Common Stock to the Holder pursuant to the provisions of Section 1(c) above and this Section 1(e).

2. **CERTAIN ADJUSTMENTS.**

(a) Adjustment of Number of Warrant Shares and Exercise Price. The number and kind of Warrant Shares purchasable upon exercise of this Warrant and the Exercise Price shall be subject to adjustment from time to time as follows:

(1) Subdivisions, Combinations and Other Issuances. If the Company shall at any time after the Date of Issuance but prior to the Expiration Date subdivide (by any stock split, stock dividend, recapitalization or otherwise) its shares of capital stock of the same class as the Warrant Shares into a greater number of shares, the Exercise Price in effect immediately prior to such subdivision will be proportionately reduced and the number of Warrant Shares will be proportionately increased but the aggregate Exercise Price payable for the total number of Warrant Shares purchasable under this Warrant (as adjusted) shall remain the same. If the Company shall at any time after the Date of Issuance but prior to the Expiration Date subdivide (by any stock split, stock dividend, recapitalization or otherwise) its shares of capital stock of the same class as the Warrant Shares into a smaller number of shares, the Exercise Price in effect immediately prior to such combination will be proportionately increased and the number of Warrant Shares will be proportionately decreased but the aggregate Exercise Price payable for the total number of Warrant Shares purchasable under this Warrant (as adjusted) shall remain the same. Any adjustment under this Section 2(a)(1) shall become effective at the close of business on the date the subdivision or combination becomes effective, or as of the record date of such dividend, or in the event that no record date is fixed, upon the making of such dividend.

(2) Reorganizations or Mergers. In case of any reclassification, capital reorganization or change in the capital stock of the Company (other than as a result of a subdivision, combination or stock dividend provided for in Section 2(a)(1) above) that occurs after the Date of Issuance, then, as a condition of such reclassification, reorganization or change, lawful provision shall be made, and duly executed documents evidencing the same from the Company or its successor shall be delivered to the Holder, so that the Holder shall thereafter have the right at any time prior to the expiration of this Warrant to purchase, at a total price equal to that payable upon the exercise of this Warrant, the kind and amount of shares of stock and/or other securities or property (including, if applicable, cash) receivable in connection with such reclassification, reorganization or change by a holder of the same number and type of securities as were purchasable as Warrant Shares by the Holder immediately prior to such reclassification, reorganization or change. In any such case, appropriate provisions shall be made with respect to the rights and interest of the Holder so that the provisions hereof shall thereafter be applicable with respect to any shares of stock or other securities or property deliverable upon exercise hereof, and appropriate adjustments shall be made to the Exercise Price payable hereunder, provided the aggregate Exercise Price shall remain the same (and, for the avoidance of doubt, this Warrant shall be exclusively exercisable for such shares of stock and/or other securities or property from and after the consummation of such reclassification or other change in the capital stock of the Company).

(3) Rights Upon Distribution of Assets. If the Company shall declare or make any dividend, other distribution of its assets (or rights to acquire its assets) or evidences of its indebtedness to holders of shares of Common Stock generally (which dividend or other distribution has not already been given to the Holder with respect to the Warrant Shares), by way of return of capital or otherwise not addressed by this Section 2 above (including, without limitation, any distribution of cash, stock or other securities, property or options by way of a dividend, spin off, subdivision, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction) (a "Distribution"), at any time after the issuance of this Warrant and prior to the Expiration Date, then, in each such case the Holder shall be entitled (subject to the following proviso) 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 or restrictions on exercise of this Warrant, including, without limitation, the Beneficial Ownership Limitation) immediately before the date on 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 the Holder shall only be permitted to take delivery of such Distribution if and to the extent the Holder exercises some or all of the Warrant (the portion of delivery of the Distribution shall be based on the pro rata portion of the Warrant Shares issuable upon the portion of the Warrant exercised as compared to the maximum number of Warrant Shares issuable upon complete exercise of the Warrant (without regard to any limitations or restrictions on exercise of this Warrant, including, without limitation, the Beneficial Ownership Limitation)), provided that, to the extent that the 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 the Warrant, at which time the Company shall issue to the Holder the pro-rata portion of such Distribution equivalent to that

portion of this Warrant then exercised. Notwithstanding anything to the contrary contained herein, to the extent that the Holder's right to participate in any such Distribution would result in the Holder and its affiliates exceeding the Beneficial Ownership Limitation, if applicable pursuant to Section 5(c) herein, then the Holder shall not be entitled to participate in such Distribution to the extent of the Beneficial Ownership Limitation (and shall not be entitled to beneficial ownership of such shares of Common Stock as a result of such Distribution (and beneficial ownership) to the extent of any such excess) and the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time or times, if ever, as its right thereto would not result in the Holder and its affiliates exceeding the Beneficial Ownership Limitation, at which time or times the Holder shall be granted such Distribution (and any Distributions declared or made on such initial Distribution or on any subsequent Distribution held similarly in abeyance) to the same extent as if there had been no such limitation).

(b) Notice of Adjustment. When any adjustment is required to be made in the number or kind of shares purchasable upon exercise of the Warrant, or in the Exercise Price, the Company shall promptly notify the Holder of such event and of the number of Warrant Shares or other securities or property thereafter purchasable upon exercise of this Warrant.

(c) Calculations. No adjustment in the Exercise Price shall be required unless such adjustment would require an increase or decrease of at least $0.01 in such price; provided, however, that any adjustment which by reason of this Section 2(c) is not required to be made shall be carried forward and taken into account in any subsequent adjustments under this Section 2. All calculations under this Section 2 shall be made by the Company in good faith and shall be made to the nearest cent or to the nearest one hundredth of a share, as applicable. No adjustment need be made for a change in the par value or no par value of the Company's Common Stock.

(d) Treatment of Warrant upon a Change of Control.

(1) If, at any time while this Warrant is outstanding, there is a Change of Control (as defined below), then the Holder shall have the right thereafter to receive, upon exercise of this Warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Change of Control if it had been, immediately prior to such Change of Control, the holder of the number of Warrant Shares then issuable upon exercise in full of this Warrant (the "Alternate Consideration"). 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 Change of Control, 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 Change of Control, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any exercise of this Warrant following such Change of Control. Any successor to the Company or surviving entity in such Change of Control shall issue to the Holder a new warrant substantially in the form of this Warrant and consistent with the foregoing provisions and evidencing the Holder's right to purchase the Alternate Consideration for the aggregate Exercise Price upon exercise thereof.

(2) Notice of a Change of Control. The Company shall provide written notice to the Holder of a Change of Control reasonably promptly after public announcement thereof (and, in any event, not less than ten (10) trading days prior to the consummation of such Change of Control) and such notice shall include (i) the projected date of consummation of the Change of Control to the extent known at the time such notice is delivered and (ii) the expected consideration to be received by the Company's stockholders in such Change of Control.

(3) As used in this Warrant, a "Change of Control" shall mean (i) a merger or consolidation of the Company with another entity, in which the Company is not the survivor or the stockholders of the Company immediately prior to such merger or consolidation do not own, directly or indirectly, at least 50% of the voting securities of the surviving entity, (ii) the sale, assignment, transfer, conveyance or other disposal of all or substantially all of the properties or assets or all or a majority of the outstanding voting securities of the Company, (iii) a purchase, tender or exchange offer accepted by the holders of a majority of the outstanding voting shares of capital stock of the Company directly or indirectly, in one or more related transactions, (iv) a "person" or "group" (as these terms are used for purposes of Section 13(d) and 14(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act")) is or shall become the "beneficial owner" (as defined in Rule 13d-3 under the Exchange Act), directly or indirectly, of at least a majority of the outstanding shares of Common Stock of the Company through a stock purchase agreement or other business combination (including, without limitation, a reorganization, reclassification, spin off or scheme of arrangement) with another person, or (v) the Company has elected to reorganize, recapitalize or reclassify its Common Stock (other than to change domicile).

3. **NO STOCKHOLDER RIGHTS.** Until the exercise of this Warrant, the Holder shall not have, nor exercise, any rights as a stockholder of the Company (including without limitation the right to notification of stockholder meetings or the right to receive any notice or other communication concerning the business and affairs of the Company), except as provided in Section 8 below.

4. **COVENANT TO PERFORM; NON-CIRCUMVENTION.** The Company hereby covenants and agrees that the Company will at all times in good faith carry out all the provisions of this Warrant and will not, by amendment of its certificate of incorporation, bylaws or other organizational documents or through a Change of Control, dissolution, sale of assets or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant. Without limiting the generality of the foregoing, the Company (i) shall not increase the par value of any shares of Common Stock receivable upon the exercise of this Warrant above the Exercise Price then in effect, (ii) shall take such actions as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable shares of Common Stock upon the exercise of this Warrant, and (iii) shall, so long as this Warrant is outstanding, take action necessary to reserve and keep available out of its authorized and unissued shares of Common Stock, solely for the purpose of effecting the exercise of this Warrant, 100% of the number of shares of Common Stock issuable upon exercise of this Warrant then outstanding.

5. **MECHANICS OF EXERCISE.**

(a) Delivery of Warrant Shares Upon Exercise. This Warrant may be exercised by the Holder hereof upon the delivery of a Notice of Exercise (the "Exercise Notice") attached hereto as Exhibit A properly completed and duly executed by the Holder hereof, at the office of the Company together with this Warrant and payment in full of the Exercise Price (unless the Holder has elected to Net Exercise) then in effect with respect to the number of Warrant Shares as to which the Warrant is being exercised. This Warrant shall be deemed to have been exercised immediately prior to the close of business on the date of its surrender for exercise as provided above, and the person entitled to receive the Warrant Shares issuable upon such exercise shall be treated for all purposes as the holder of such shares of record as of the close of business on such date. Notwithstanding anything herein to the contrary (although the Holder may surrender the Warrant to, and receive a replacement Warrant from, the Company), 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 the final Exercise Notice is delivered to the Company. Execution and delivery of the Exercise Notice with respect to less than all of the 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. On or before the second (2nd) trading day following the date on which the Company has received each of the Exercise Notice, this Warrant and the aggregate Exercise Price (or confirmation from the Company of the number of shares of Warrant Shares issuable in connection with a duly executed and delivered notice of Net Exercise), the Company shall transmit an acknowledgment of confirmation of receipt of the Exercise Notice to the Company's transfer agent ("Transfer Agent"). The Company shall deliver any objection to the Exercise Notice on or before the second trading day following the date on which the Company has received the Exercise Notice. On or before the second (2nd) trading day following the date on which the Company has received the Exercise Notice and the aggregate Exercise Price (the "Share Delivery Date"), the Company shall (X) provided that the Transfer Agent is participating in The Depository Trust Company ("DTC") Fast Automated Securities Transfer Program and either (i) there is an effective registration statement permitting the issuance of the Warrant Shares to or resale of the Warrant Shares by the Holder or (ii) this Warrant is being exercised via cashless exercise and Rule 144 is available, upon the request of the Holder, credit such aggregate number of Warrant Shares to which the Holder is entitled pursuant to such exercise to the Holder's or its designee's balance account with DTC through its Deposit Withdrawal Agent Commission system, or (Y) if the Transfer Agent is not participating in the DTC Fast Automated Securities Transfer Program, and (y) there is not an effective registration statement permitting the issuance of the Warrant Shares to or resale of the Warrant Shares by the Holder or (z) this Warrant is being exercised via cashless exercise and Rule 144 is not available, upon the request of the Holder, issue and dispatch by first class mail, postage prepaid, to the address as specified in the Exercise Notice, a certificate, registered in the

Company's share register in the name of the Holder or its designee, for the number of shares of Common Stock to which the Holder is entitled pursuant to such exercise. Upon delivery of the Exercise Notice and the payment of the aggregate Exercise Price (or a duly executed and delivered notice of Net Exercise), 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 such Warrant Shares are credited to the Holder's DTC account or the date of delivery of the certificates or book-entry position evidencing such Warrant Shares, as the case may be. The Company shall pay any and all taxes (other than taxes based upon the income of the Holder) which may be payable with respect to the issuance and delivery of Warrant Shares upon exercise of this Warrant; provided, that the Company shall not be required to pay any tax that may be payable in respect of any transfer involved in the issue and delivery of shares of Common Stock in any name other than that of the Holder, in either case with respect to any income or transfer tax due by the Holder with respect to such shares of Common Stock issued upon exercise of this Warrant.

(b) Company's Failure to Timely Deliver Securities. If the Company shall fail for any reason or for no reason to issue to the Holder by the Share Delivery Date in compliance with the terms of this Section 5, a certificate or book entry position for the number of shares of Common Stock to which the Holder is entitled and register such shares of Common Stock on the Company's share register or to credit the Holder's balance account with DTC for such number of shares of Common Stock to which the Holder is entitled upon the Holder's exercise of this Warrant, and if on or after such trading day the Holder purchases (in an open market transaction or otherwise) shares of Common Stock to deliver in satisfaction of a sale by the Holder of shares of Common Stock issuable upon such exercise that the Holder anticipated receiving from the Company, then the Company shall, within three (3) trading days after the Holder's request and in the Holder's discretion, either (i) pay cash to the Holder in an amount equal to the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased (the "Buy-In Price"), at which point the Company's obligation to deliver such certificate or evidence of book entry position (and to issue such Warrant Shares) shall terminate, or (ii) promptly honor its obligation to deliver to the Holder a certificate or certificates or evidence of book entry position representing such Warrant Shares and pay cash to the Holder in an amount equal to the excess (if any) of the Buy-In Price over the product of (A) such number of shares of Common Stock, times (B) the sale price of the Common Stock at which the sell order giving rise to such purchase obligation was executed.

(c) Holder's Exercise Limitation. Notwithstanding anything to the contrary contained in this Warrant, this Warrant shall not be exercisable by the Holder pursuant to Section 1 or otherwise, to the extent (but only 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 person, "Attribution Parties")), would beneficially own in excess of 19.99% of the number of shares of Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock issuable upon exercise of this Warrant (the "Beneficial

Ownership Limitation"). No prior inability to exercise this Warrant pursuant to this paragraph shall have any effect on the applicability of the provisions of this paragraph with respect to any subsequent determination of exercisability. For purposes of the calculation of the Beneficial Ownership Limitation, the aggregate number of shares of Common Stock beneficially owned by the Holder and its 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 Attribution Parties and (ii) exercise or conversion of the unexercised or nonconverted portion of any other securities of the Company (including, without limitation, any other convertible notes or convertible preferred stock or warrants) subject to a limitation on conversion or exercise analogous to the limitation contained herein beneficially owned by the Holder or any of its Attribution Parties. Except as set forth in the preceding sentence, for purposes of this section, 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. 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 5(c), in determining the number of outstanding shares of Common Stock, the 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 Securities and Exchange 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 Company's transfer agent setting forth the number of shares of Common Stock outstanding. The determination of whether the exercise of this Warrant is permitted under this section shall be made by the Holder in such Holder's sole discretion, and the submission of an Exercise Notice shall be conclusively deemed to constitute such Holder's determination that the exercise of the Warrant identified in such Exercise Notice is permitted under this section. 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 Attribution Parties since the date as of which such number of outstanding shares of Common Stock was reported. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 5(c) 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. Upon the reasonable written request of the Holder, the Company shall within three (3) trading days confirm orally or in writing to the Holder the number of shares of Common Stock then outstanding, including by virtue of any prior conversion or exercise of convertible or exercisable securities into Common Stock, including, without limitation, pursuant to this Warrant or securities issued pursuant to the Purchase Agreement.

6. **CERTIFICATE OF ADJUSTMENT**. Whenever the Exercise Price or number or type of securities issuable upon exercise of this Warrant is adjusted, as herein provided, the Company shall, at its expense, promptly deliver to the Holder a certificate of an officer of the Company setting forth the nature of such adjustment and showing in detail the facts upon which such adjustment is based.

7. **NOTICES.** In the event of:

(a) any taking by the Company of a record of the holders of any class of securities for the purpose of determining the holders thereof who are entitled to receive any dividend (other than a cash dividend payable out of earned surplus of the Company) or other distribution, or any right to subscribe for, purchase or otherwise acquire any shares of stock of any class or any other securities or property, or to receive any other right; or

(b) any voluntary or involuntary dissolution, liquidation or winding-up of the Company,

then and in each such event the Company will promptly mail or cause to be delivered to the Holder (or a permitted transferee) a notice specifying (i) the date on which any such record is to be taken for the purpose of such dividend, distribution or right, and stating the amount and character of such dividend, distribution or right, and (ii) the date on which any such dissolution, liquidation or winding-up is to take place, and the time, if any, as of which the holders of record of Common Stock (or other securities) shall be entitled to exchange their shares of Common Stock (or other securities) for securities or other property deliverable upon such dissolution, liquidation or winding-up. Such notice shall be delivered at least ten (10) calendar days prior to the date therein specified.

(c) Whenever any other notice is required to be given under this Warrant, unless otherwise provided herein, the Company shall provide prompt written notice of all actions taken pursuant to this Warrant, including in reasonable detail a description of such action and the reason therefore.

8. **REPLACEMENT OF WARRANTS.** On receipt of evidence reasonably satisfactory to the Company of the loss, theft, destruction or mutilation of this Warrant and, in the case of any such loss, theft or destruction of this Warrant, on delivery of an indemnity agreement reasonably satisfactory in form and amount to the Company or, in the case of any such mutilation, on surrender and cancellation of such Warrant, the Company at its expense will execute and deliver, in lieu thereof, a new Warrant of like tenor.

9. **ISSUANCE OF NEW WARRANTS.** Whenever the Company is required to issue a new Warrant pursuant to the terms of this Warrant, such new Warrant (i) shall be of like tenor with this Warrant, (ii) shall represent, as indicated on the face of such new Warrant, the right to purchase the Warrant Shares then underlying this Warrant (or in the case of a new Warrant being issued pursuant to Sections 8 or 9, the Warrant Shares designated by the Holder which, when added to the number of shares of Common Stock underlying the other new Warrants issued in connection with such issuance, does not exceed the number of Warrant Shares then underlying this Warrant), (iii) shall have an issuance date, as indicated on the face of such new Warrant which is the same as the Date of Issuance, and (iv) shall have the same rights and conditions as this Warrant.

10. **NO FRACTIONAL SHARES.** No fractional Warrant Shares or scrip representing fractional shares will be issued upon exercise of this Warrant. In lieu of any fractional shares which would otherwise be issuable, the Company shall pay cash equal to the product of such fraction multiplied by the Fair Market Value of one Warrant Share.

11. **AMENDMENT AND WAIVER.** Except as otherwise provided herein, the provisions of this Warrant may be amended and the Company may take any action herein prohibited, or omit to perform any act herein required to be performed by it, only if the Company has obtained the written consent of the Holder.

12. **TRADING DAYS.** If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall be other than a day on which the Common Stock is traded (which for the avoidance of doubt includes a Saturday, Sunday or a legal U.S. holiday) on The Nasdaq Capital Market, or, if The Nasdaq Capital Market is not the principal trading market for the Common Stock or other such securities, as applicable, then on the principal securities exchange or securities market on which the Common Stock is then traded, then such action may be taken or such right may be exercised on the next succeeding day on which the Common Stock is so traded.

13. **TRANSFERS; EXCHANGES.**

(a) Subject to compliance with applicable federal and state securities laws and Section 7 hereof, this Warrant may be transferred by the Holder with respect to all of the Warrant Shares purchasable hereunder; provided, however, that with respect to any transfer within 180 days of the Date of Issuance, such transferee shall agree to be bound by Section 3.2(h) of the Subscription Agreement with respect to the Warrant Shares that have been so transferred. For a transfer of this Warrant as an entirety by Holder, upon surrender of this Warrant to the Company, together with the Notice of Assignment in the form attached hereto as Exhibit B properly completed and duly executed by the Holder, the Company shall issue a new Warrant of the same denomination to the assignee. Upon surrender of this Warrant to the Company, together with the Notice of Assignment in the form attached hereto as Exhibit B properly completed and duly executed by the Holder accompanied by a signature guarantee from an eligible guarantor institution participating in a signature guarantee program approved by the Securities Transfer Association (a “signature guarantee”), for transfer of this Warrant

with respect to a portion of the Warrant Shares purchasable hereunder, the Company will forthwith issue and deliver upon the order of the Holder a new warrant (in accordance with Section 9), registered as the Holder may request, representing the right to purchase the number of Warrant Shares being transferred by the Holder and, if less than the total number of Warrant Shares then underlying this Warrant is being transferred, a new Warrant (in accordance with Section 9) to the Holder representing the right to purchase the number of Warrant Shares not being transferred.

(b) This Warrant is exchangeable, without expense, at the option of the Holder, upon presentation and surrender hereof to the Company for other warrants of different denominations entitling the holder thereof to purchase in the aggregate the same number of shares of Common Stock purchasable hereunder. This Warrant may be combined with other warrants that carry the same rights upon presentation hereof at the office of the Company designated for such purpose together with a written notice specifying the denominations in which new warrants are to be issued to the Holder and signed by the Holder hereof. The term "Warrants" as used herein includes any warrants into which this Warrant may be divided or exchanged. All Warrant Certificates surrendered for the purpose of transfer, split up, combination or exchange, when surrendered to the Company shall be accompanied by a signature guarantee from an eligible guarantor institution participating in a signature guarantee program approved by the Securities Transfer Association.

(c) If, at the time of the surrender of this Warrant in connection with any transfer of this Warrant permitted pursuant to Section 13(a), 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 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, provide to the Company an opinion of counsel selected by the Holder 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 Warrant under the Securities Act.

(d) 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, except pursuant to sales registered or exempted under the Securities Act.

14. **GOVERNING LAW; VENUE.** All questions concerning the construction, validity, enforcement and interpretation of this Warrant shall be governed by and construed and enforced in accordance with the internal laws of the State of New York, without regard to the principles of conflicts of law thereof. With respect to any disputes arising out of or related to this Warrant, the parties consent to the exclusive jurisdiction of, and venue in, the state courts in the State of New York (or in the event of exclusive federal jurisdiction, the courts of the Southern District of New York). Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, 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 Warrant 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. EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY AND ALL RIGHT TO TRIAL BY JURY IN ANY LEGAL PROCEEDING ARISING OUT OF OR RELATING TO THIS WARRANT OR THE TRANSACTIONS CONTEMPLATED HEREBY.

15. **DISPUTE RESOLUTION.** In the case of a dispute as to the determination of the Exercise Price, the arithmetic calculation of the Warrant Shares or under Sections 2 or 6, the disputing party shall submit the disputed determinations or arithmetic calculations to the other party. If the Holder and the Company are unable to agree upon such determination or calculation of the Exercise Price or the Warrant Shares within three (3) trading days of such disputed determination or arithmetic calculation being submitted to the non-disputing party, then the Company shall, within two (2) trading days submit the dispute to an independent, reputable accountant. The Company shall cause, at the expense of the prevailing party, the accountant to perform the determinations or calculations and notify the Company and the Holder of the results no later than ten (10) trading days from the time it receives the disputed determinations or calculations. Such accountant's determination or calculation shall be binding upon all parties absent demonstrable error.

16. **REMEDIES, OTHER OBLIGATIONS, BREACHES AND INJUNCTIVE RELIEF.** The remedies provided in this Warrant shall be cumulative and in addition to all other remedies available under this Warrant, at law or in equity (including a decree of specific performance and/or other injunctive relief), and nothing herein shall limit the right of the Holder to pursue actual damages for any failure by the Company to comply with the terms of this Warrant.

17. **CONSTRUCTION; HEADINGS.** This Warrant shall be deemed to be jointly drafted by the Company and the Holder and shall not be construed against any person as the drafter hereof. The headings of this Warrant are for convenience of reference and shall not form part of, or affect the interpretation of, this Warrant.

18. **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 the Holder. The provisions of this Warrant are intended to be for and the benefit of any Holder from time to time of this Warrant and shall be enforceable by the Holder or holder of Warrant Shares.

19. **RESTRICTIONS.** The Holder acknowledges that the Warrant Shares acquired upon the exercise of this Warrant, if not registered, must comply with the applicable restrictions upon resale imposed by state and federal securities laws.

20. **MISCELLANEOUS.** All notices, requests, consents and other communications hereunder shall be in writing, shall be sent by confirmed electronic mail, or mailed by first-class registered or certified airmail, or nationally recognized overnight express courier, postage prepaid, and shall be deemed given when so sent in the case of electronic mail transmission, or when so received in the case of mail or courier, and addressed as follows: (a) if to the Company, at 301 Binney St., Suite 402, Cambridge, MA 02142, Attention: Chief Financial Officer; with a copy to (which shall not constitute notice) Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., One Financial Center, Boston, MA 02111, Attention: Lewis Geffen, Esq. and Daniel Bagliebter, Esq. and (b) if to the Holder, at such address or addresses (including copies to counsel) as may have been furnished by the Holder to the Company in writing. The invalidity or unenforceability of any provision hereof shall in no way affect the validity or enforceability of any other provisions.

[Signature Page Follows]

**IN WITNESS WHEREOF**, this Common Stock Purchase Warrant is issued effective as of the date first set forth above.

**SYNLOGIC, INC.**

By: /s/ Aoife Brennan
Name: Aoife Brennan
Title: President and Chief Executive Officer

SIGNATURE PAGE TO
WARRANT NO. 2019-1

**EXHIBIT A**

NOTICE OF INTENT TO EXERCISE
(To be signed only upon exercise of Warrant)

To: Synlogic, Inc.

The undersigned, the Holder of the attached Warrant, hereby irrevocably elects to exercise the purchase right represented by such Warrant for, and to purchase thereunder, _____ shares of Common Stock of Synlogic, Inc., a Delaware corporation (the "Company"), and (choose one)

_____ herewith makes payment of USD _____ thereof

or

_____ elects to Net Exercise the Warrant pursuant to Section 1(b)(2) thereof.

The undersigned requests that the certificates or book entry position evidencing the shares to be acquired pursuant to such exercise be issued in the name of, and delivered to _____, whose address is _____.

By its delivery of this Exercise Notice, the undersigned represents and warrants to the Company that in giving effect to the exercise evidenced hereby the Holder will not beneficially own in excess of the number of shares of Common Stock (as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended) permitted to be owned under Section 5(c) of the Warrant to which this notice relates.

By its signature below the undersigned hereby represents and warrants that it is an "accredited investor" as defined in Rule 501(a) of Regulation D promulgated under the Securities Act of 1933, as amended, and agrees to be bound by the terms and conditions of the attached Warrant as of the date hereof, including Section 7 thereof.

DATED: _____

(Signature must conform in
all respects to name of the Holder
as specified on the face of the
Warrant)

_____

[Holder Name]
Address: _____

_____

**EXHIBIT B**

NOTICE OF ASSIGNMENT FORM

FOR VALUE RECEIVED, [Holder Name] (the "Assignor") hereby sells, assigns and transfers all of the rights of the undersigned Assignor under the attached Warrant with respect to the number of shares of common stock of Synlogic, Inc., a Delaware corporation (the "Company"), covered thereby set forth below, to the following "Assignee" and, in connection with such transfer, represents and warrants to the Company that the transfer is in compliance with Section 13 of the Warrant and applicable federal and state securities laws:

NAME OF ASSIGNEE ADDRESS

Number of shares:_____

Dated:_____ Signature:_____

ASSIGNEE ACKNOWLEDGMENT

The undersigned Assignee acknowledges that it has reviewed the attached Warrant and by its signature below it hereby represents and warrants that it is an "accredited investor" as defined in Rule 501(a) of Regulation D promulgated under the Securities Act of 1933, as amended, and agrees to be bound by the terms and conditions of the Warrant as of the date hereof, including, without limitation, Section 13 thereof.

Signature:_____

By: _____
Its: _____

Address:

_____

_____

_____

[Signature guarantee]

**SUBSCRIPTION AGREEMENT**

This Subscription Agreement (this "***Agreement***") is dated as of June 11, 2019 (the "***Effective Date***"), among Synlogic, Inc., a Delaware corporation (the "***Company***"), and each purchaser identified on the signature pages hereto (each a "***Purchaser***" and collectively the "***Purchasers***").

WHEREAS, the Company and the Purchasers are executing and delivering this Agreement in reliance upon the exemption from securities registration afforded by Section 4(a)(2) of the Securities Act of 1933, as amended (the "***Securities Act***"), and Rule 506 of Regulation D as promulgated by the United States Securities and Exchange Commission (the "***Commission***") under the Securities Act.

WHEREAS, each Purchaser wishes to purchase, and the Company wishes to sell, upon the terms and conditions stated in this Agreement, at the Closing (as defined below) (i) that aggregate number of shares of Common Stock (as defined below) set forth opposite such Purchaser's name on **Exhibit A** (the "***Shares***") and/or (ii) pre-funded warrants (the "***Pre-Funded Warrants***") to acquire up to that number of additional shares of Common Stock (as exercised, collectively, the "***Pre-Funded Warrant Shares***") set forth opposite such Purchaser's name on **Exhibit A**, in substantially the form attached hereto as **Exhibit B**.

The Shares, the Pre-Funded Warrants and the Pre-Funded Warrant Shares collectively are referred to herein as the "**Securities**".

**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 each Purchaser agree as follows:

**1. DEFINITIONS**

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

"***Closing***" means the closing of the purchase and sale of the Shares and the Pre-Funded Warrants on the Closing Date pursuant to **Section 2.1** of this Agreement.

"***Closing Date***" means June 11, 2019.

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

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

"***Foundry Terms of Service Agreement***" means the Foundry Terms of Service Agreement between the Company and Ginkgo Bioworks, Inc., dated the date hereof.

"***GAAP***" means U.S. generally accepted accounting principles consistently applied.

"***Governmental Entity***" shall mean any national, federal, state, county, municipal, local or foreign government, or any political subdivision, court, body, agency or regulatory authority thereof, and any person exercising executive, legislative, judicial, regulatory, taxing or administrative functions of or pertaining to any of the foregoing.

"***Material Adverse Effect***" means a circumstance that (i) could reasonably be expected to have a material adverse effect on the performance of this Agreement or the consummation of any of the transactions contemplated hereby or (ii) could reasonably be expected to have a material adverse effect on the condition (financial or otherwise), prospects, earnings, business or properties of the Company.

"***Registration Statement***" means a registration statement or registration statements of the Company filed under the Securities Act pursuant to Section 4 hereof.

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

"***Share Purchase Price***" means $9.00 per share.

"***Short Sales***" means all "short sales" as defined in Rule 200 of Regulation SHO of the Exchange Act, but shall be deemed to not include the location and/or reservation of borrowable shares of Common Stock.

"***Trading Day***" means a day on which the Common Stock is traded on a Trading Market.

"***Trading Market***" means the following markets or exchanges on which (and if) 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; or the New York Stock Exchange.

"***Transaction Documents***" means this Agreement, the Pre-Funded Warrants and any other documents or agreements executed and delivered to the Purchasers in connection with the transactions contemplated hereunder.

**2. PURCHASE AND SALE**

**2.1 Closing**.

**(a)** At the Closing, upon the terms set forth herein, the Company hereby agrees to issue and sell to each Purchaser, and each Purchaser agrees to purchase from the Company, severally and not jointly, the Shares set forth opposite such Purchaser's name on **Exhibit A** hereto, at a purchase price equal to the Share Purchase Price per share of Common Stock.

**(b)** At the Closing, upon the terms set forth herein, the Company hereby agrees to issue and sell to Ginkgo or one or more of its affiliates (collectively, "***Ginkgo***"), and Ginkgo agrees to purchase from the Company, Pre-Funded Warrants as set forth on **Exhibit A** hereto, at a purchase price equal to the Share Purchase Price per share of Common Stock, of which all but $0.01 of the Share Purchase Price per share of Common Stock will be paid on the Closing Date.

**(c)** At the Closing, each Purchaser shall deliver to the Company via wire transfer immediately available funds equal to its aggregate purchase price set forth opposite such Purchaser's name on **Exhibit A** hereto and the Company shall deliver to each Purchaser its respective Securities and the other items set forth in **Section 2.2** of this Agreement deliverable at the Closing on the Closing Date. The Closing shall occur at 10:00 a.m. (New York City Time) on the Closing Date or such other time and location as the parties shall mutually agree.

**2.2 Deliveries; Closing Conditions.**

**(a)** At the Closing, the Company will deliver or cause to be delivered to each Purchaser certificate(s) or book-entry shares representing the Common Stock, purchased by such Purchaser, registered in the Purchaser's name. Such delivery shall be against payment of the purchase price therefor by the Purchaser by wire transfer of immediately available funds to the Company in accordance with the Company's written wiring instructions.

**(b)** At the Closing, the Company will deliver or cause to be delivered to Ginkgo the Pre-Funded Warrants purchased by Ginkgo registered in Ginkgo's name. Such delivery shall be against payment of the purchase price therefor by the Ginkgo by wire transfer of immediately available funds to the Company in accordance with the Company's written wiring instructions.

**(c)** The respective obligations of the Company, on the one hand, and the Purchasers, on the other hand, hereunder in connection with the Closing are subject to the following conditions being met:

**(i)** the accuracy in all material respects on the Closing Date of the representations and warranties contained herein (unless made as of a specified date therein) of the Company (with respect to the obligations of the Purchasers) and the Purchasers (with respect to the obligations of the Company);

**(ii)** all obligations, covenants and agreements of the Company (with respect to the obligations of the Purchasers) and the Purchasers (with respect to the obligations of the Company) required to be performed at or prior to the Closing Date shall have been performed in all material respects;

**(iii)** Purchasers shall have received a certificate of the Secretary of the Company, dated as of the Closing Date in form and substance reasonably satisfactory to the Purchasers;

**(iv)** Purchasers shall have received a certificate signed by the Chief Executive Officer of the Company, dated as of the Closing Date in form and substance reasonably satisfactory to the Purchasers; and

**(v)** Purchasers shall have received an opinion of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., counsel for the Company, dated as of the Closing Date, in a form reasonably satisfactory to the Purchasers.

**3. REPRESENTATIONS AND WARRANTIES**

**3.1 Representations and Warranties of the Company**. Assuming the accuracy of the representations and warranties of the Purchasers set forth in Section 3.2 of this Agreement and except as set forth in the SEC Reports (defined below), which disclosures serve to qualify these representations and warranties in their entirety, the Company represents and warrants to the Purchasers that the statements contained in this Section 3.1 are true and correct as of the date of the Closing Date:

**(a)** The Company was not and is not an Ineligible Issuer (as defined in Rule 405), without taking account of any determination by the Commission pursuant to Rule 405 that it is not necessary that the Company be considered an Ineligible Issuer.

**(b)** The Company has been duly incorporated and is validly existing as a corporation in good standing under the laws of the jurisdiction in which it is chartered or organized with full corporate power and authority to own or lease, as the case may be, and to operate its properties and conduct its business, and to execute and deliver the Transaction Documents, to be dated as of the Closing Date. The Company is duly qualified to do business as a foreign corporation and is in good standing under the laws of each jurisdiction which requires such qualification except where the failure to be so qualified or to be in good standing would not result in a Material Adverse Effect. The Company has no subsidiaries other than Synlogic IBDCo, Inc., Synlogic Operating Company, Inc. and Synlogic Securities Corporation.

**(c)** As of the date hereof, the authorized capital stock of the Company consists of 255,000,000 shares of capital stock, of which 250,000,000 are designated as Common Stock and 5,000,000 are designated as preferred stock, $0.001 par value per share. As of March 31, 2019: (i) 25,378,948 shares of Common Stock were issued and outstanding; (ii) no shares of preferred stock were issued and outstanding; (iii) 2,747,043 shares of Common Stock were issuable (and such number was reserved for issuance) upon exercise of options to purchase Common Stock outstanding as of such date; and (iv) no shares of Common Stock were issuable (and such number was reserved for issuance) upon exercise of warrants to purchase Common Stock outstanding as of such date.

**(d)** The outstanding shares of Common Stock have been duly and validly authorized and issued and are fully paid and nonassessable; the Shares and the Pre-Funded Warrant Shares have been duly and validly authorized and, when issued and delivered to and paid for by the Purchasers pursuant to this Agreement or upon exercise of the Pre-Funded Warrants in accordance therewith, will be fully paid and nonassessable; the certificates for the securities are in valid form; the holders of outstanding shares of capital stock of the Company are not entitled to preemptive or other rights to subscribe for the Securities, except for any such rights as have been effectively waived or complied with; and, except as set forth in Section 3.1(c) above, no options, warrants or other rights to purchase, agreements or other obligations to issue, or rights to convert any obligations into or exchange any securities for, shares of capital stock of or ownership interests in the Company are outstanding.

**(e)** The Pre-Funded Warrants have been duly authorized by the Company and, when executed and delivered by the Company, will be valid and binding agreements of the Company, enforceable against the Company in accordance with their terms, except as the enforcement thereof may be limited by bankruptcy, insolvency, reorganization, moratorium, fraudulent conveyance or other similar laws relating to or affecting the rights and remedies of creditors or by general equitable principles. The Pre-Funded Warrant Shares have been validly reserved for issuance upon exercise of the Pre-Funded Warrants. The issuance of the Pre-Funded Warrant Shares is not subject to any preemptive rights, rights of first refusal or other similar rights to subscribe for or purchase the Pre-Funded Warrants.

**(f)** This Agreement has been duly authorized, executed and delivered by the Company.

**(g)** The Company is not and, after giving effect to the offering and sale of the Securities and the application of the proceeds as described in Section 5.4 of this Agreement, will not be an "investment company" as defined in the Investment Company Act of 1940, as amended.

**(h)** No consent, approval, authorization, filing with or order of any court or governmental agency or body is required in connection with the transactions contemplated herein, except as may be required under the Securities Act, blue sky laws of any jurisdiction in connection with the purchase of the Securities by the Purchasers.

**(i)** Neither the issue and sale of the Securities, nor the consummation of any other of the transactions contemplated by any Transaction Document nor the fulfillment of the terms thereof, will conflict with, result in a breach or violation of, or imposition of any lien, charge or encumbrance upon any property or assets of the Company pursuant to, (i) the charter or by-laws of the Company, (ii) the terms of any indenture, contract, lease, mortgage, deed of trust, note agreement, loan agreement or other agreement, obligation, condition, covenant or instrument to which the Company is a party or bound or to which its property is subject, or (iii) any statute, law, rule, regulation, judgment, order or decree applicable to the Company of any court, regulatory body, administrative agency, governmental body, arbitrator or other authority having jurisdiction over the Company or any of its properties (the items listed in subclause (iii), collectively, "***Applicable Laws***").

**(j)** The Company's Common Stock is registered under Section 12 of the Exchange Act. The Company has filed all reports, schedules, forms, statements and other documents required to be filed by the Company under the Exchange Act, including pursuant to Section 13(a) or 15(d) thereof, since January 1, 2018 (the foregoing materials, including the exhibits thereto and documents incorporated by reference therein, being collectively referred to herein as the "***SEC Reports***") on a timely basis or has received a valid extension of such time of filing and has filed any such SEC Reports prior to the expiration of any such extension. As of their respective dates, the SEC Reports complied in all material respects with the requirements of the Exchange Act and, in each case, to the rules promulgated thereunder, as applicable, 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.

**(k)** The financial statements and the related notes 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 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 consolidated financial position of the Company as of and for the dates thereof and the consolidated 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.

**(l)** No action, suit or proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or its property is pending or, to the knowledge of the Company, threatened that is likely to have a Material Adverse Effect, whether or not arising from transactions in the ordinary course of business.

**(m)** The Company owns or leases all such properties as are reasonably necessary to the conduct of its operations as presently conducted in all material respects.

**(n)** The Company is not in violation or default of (i) any provision of its charter or bylaws, (ii) the terms of any indenture, contract, lease, mortgage, deed of trust, note agreement, loan agreement or other agreement, obligation, condition, covenant or instrument to which it is a party or bound or to which its property is subject, or (iii) any Applicable Laws, except in the case of clauses (ii) and (iii), as would not reasonably be expected to have a Material Adverse Effect.

**(o)** KPMG LLP, who have certified certain financial statements of the Company and delivered their report with respect to the audited financial statements included in the SEC Reports, are independent public accountants with respect to the Company within the meaning of the Securities Act and the applicable published rules and regulations thereunder.

**(p)** There are no transfer taxes or other similar fees or charges under Federal law or the laws of any state, or any political subdivision thereof, required to be paid in connection with the execution and delivery of this Agreement, or the issuance by the Company or sale by the Company of the Securities.

**(q)** The Company has filed all tax returns that are required to be filed or has requested extensions thereof (except in any case in which the failure so to file would not have a Material Adverse Effect, whether or not arising from transactions in the ordinary course of business) and has paid all taxes required to be paid by it and any other assessment, fine or penalty levied against it, to the extent that any of the foregoing is due and payable, except for any such assessment, fine or penalty that is currently being contested in good faith or as would not have a Material Adverse Effect.

**(r)** No labor dispute with the employees of the Company or its subsidiaries exists or, to the knowledge of the Company, is imminent, and the Company is not aware of any existing or imminent labor disturbance by the employees of any of its or its subsidiaries' principal suppliers, manufacturers, customers or contractors, which, in either case, would result in a Material Adverse Effect.

**(s)** The Company is insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as the Company reasonably believes are prudent and customary in the businesses in which it is engaged; all policies of insurance and fidelity or surety bonds insuring the Company or its business, assets, employees, officers and directors are in full force and effect; the Company is in compliance with the terms of such policies and instruments in all material respects; and there are no claims by the Company under any such policy or instrument as to which any insurance company is denying liability or defending under a reservation of rights clause; the Company has not been refused any insurance coverage sought or applied for; and the Company has no reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business at a cost that would not have a Material Adverse Effect, whether or not arising in the ordinary course of business.

**(t)** The Company possesses all licenses, certificates, permits and other authorizations issued by all applicable authorities necessary to conduct its business, and the Company has not received any notice of proceedings relating to the revocation or modification of any such certificate, authorization or permit which, singly or in the aggregate, if the subject of an unfavorable decision, ruling or finding, would have a Material Adverse Effect.

**(u)** Except as described in the SEC Reports, the Company: (A) is and at all times has been in material compliance with all statutes, rules or regulations of the U.S. Food and Drug Administration (the "***FDA***") and other comparable Governmental Entities applicable to the ownership, testing, development, manufacture, packaging, processing, use, distribution, marketing, labeling, promotion, sale, offer for sale, storage, import, export or disposal of any product under development, manufactured or distributed by the Company ("***Product Laws***"); (B) has not received any FDA Form 483, notice of adverse finding, warning letter, untitled letter or other correspondence or written notice from the FDA or any other Governmental Entity alleging or asserting material noncompliance with any Product Laws or any licenses, certificates, approvals, clearances, exemptions, authorizations, permits and supplements or amendments thereto required by any such Product Laws ("***Authorizations***"); (C) possesses all material Authorizations and such Authorizations are valid and in full force and effect and the Company is not in material violation of any term of any such Authorizations; (D) has not received written notice of any claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from the FDA or any other Governmental Entity or third party alleging that any product operation or activity is in material violation of any Product Laws or Authorizations and has no knowledge that the FDA or any other Governmental Entity or third party is considering any such claim, litigation, arbitration, action, suit, investigation or proceeding; (E) has not received notice that the FDA or any other Governmental Entity has taken, is taking or intends to take action to limit, suspend, modify or revoke any material Authorizations and has no knowledge that the FDA or any other Governmental Entity is considering such action; and (F) has filed, obtained, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Product Laws or Authorizations and that all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were materially complete and correct on the date filed (or were corrected or supplemented by a subsequent submission).

**(v)** The Company has operated and currently is in compliance with all applicable health care laws, rules and regulations to the extent they apply to the Company and its current activities (except where such failure to operate or non-compliance would not, singly or in the aggregate, result in a Material Adverse Effect), including, without limitation, (i) the Federal, Food, Drug and Cosmetic Act (21 U.S.C. §§ 301 et seq.); (ii) all applicable federal, state, local and all applicable foreign healthcare related fraud and abuse laws, including, without limitation, the federal Anti-kickback Statute (42 U.S.C. § 1320a-7b(b)), the U.S. Physician Payments Sunshine Act (42 U.S.C. § 1320a-7h), the civil False Claims Act (31 U.S.C. §§ 3729 et seq.), the criminal False Claims Law (42 U.S.C. § 1320a-7b(a)), all criminal laws relating to healthcare fraud and abuse, including but not limited to 18 U.S.C. Sections 286 and 287, the healthcare fraud criminal provisions under the U.S. Health Insurance Portability and Accountability Act of 1996 ("***HIPAA***") (42 U.S.C. Section 1320d et seq.), the exclusion laws (42 U.S.C. § 1320a-7), and the civil monetary penalties law (42 U.S.C. § 1320a-7a); (iii) HIPAA, as amended by the Health Information Technology for Economic Clinical Health Act (42 U.S.C. Section 17921 et seq.); (iv) the regulations promulgated pursuant to such laws; and (v) any other similar local, state, federal, or foreign laws (collectively, the "***Health Care Laws***"). Neither the Company, nor to the Company's knowledge, any of its officers, directors, employees or agents have engaged in activities which are, as applicable, cause for false claims liability, civil penalties, or mandatory or permissive exclusion from Medicare, Medicaid, or any other state or federal healthcare program. The Company has not received written notice or other correspondence of any claim, action, suit, audit, survey, proceeding, hearing, enforcement, investigation, arbitration or other action ("***Action***") from any court or arbitrator or Governmental Entity or third party alleging that any product operation or activity is in violation of any Health Care Laws, and, to the Company's knowledge, no such claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action is threatened. The Company is not a party to and does not have any ongoing reporting obligations pursuant to any corporate integrity agreement, deferred prosecution agreement, monitoring agreement, consent decree, settlement order, plan of correction or similar agreement imposed by any Governmental Entity. Additionally, neither the Company, nor to the Company's knowledge, any of its employees, officers or directors, has been excluded, suspended, disqualified, or debarred from participation in any U.S. state or federal health care program or human clinical research or, to the knowledge of the Company, is subject to a governmental inquiry, investigation, proceeding, or other similar action that could reasonably be expected to result in debarment, suspension, disqualification, or exclusion.

**(w)** The nonclinical studies and clinical trials conducted by or, to the Company's knowledge, on behalf of the Company were and, if still ongoing, are being conducted in all material respects in accordance with experimental protocols, procedures and controls pursuant to accepted professional scientific standards and all Authorizations and Product Laws, including, without limitation, the Federal Food, Drug and Cosmetic Act and the rules and regulations promulgated thereunder (collectively, "***FFDCA***"); the descriptions of the results of such nonclinical studies and clinical trials contained in the SEC Reports are, to the Company's knowledge, accurate and complete in all material respects and fairly present the data derived from such nonclinical studies and clinical trials; except to the extent disclosed in the SEC Reports, the Company is not aware of any nonclinical studies or clinical trials, the results of which the Company believes reasonably call into question any study or trial results described or referred to in the SEC Reports when viewed in the context in which such results are described; and, except to the extent disclosed in the SEC Reports, the Company has not received any

written notices or other correspondence from the FDA or any other Governmental Entity requiring the termination or suspension of any studies or clinical trials conducted by or on behalf of the Company, other than ordinary course communications with respect to modifications in connection with the design and implementation of such studies or trials, copies of which communications have been made available to you.

**(x)** The Company owns or has valid, binding and enforceable licenses or other rights under the patents, patent applications, licenses, inventions, copyrights, know-how (including trade secrets and other unpatented and/or unpatentable proprietary or confidential information, systems or procedures), trademarks, service marks, trade names or other intellectual property necessary for, or used in the conduct, or the proposed conduct, of the business of the Company (collectively, the "***Intellectual Property***"); the patents, trademarks, and copyrights, if any, included within the Intellectual Property are valid, enforceable, and subsisting; other than as disclosed in the SEC Reports and as contemplated by the Foundry Terms of Service Agreement, (A) the Company is not obligated to pay a material royalty, grant a license to, or provide other material consideration to any third party in connection with the Intellectual Property, (B) the Company has not received any notice of any claim of infringement, misappropriation or conflict with any asserted rights of others with respect to any of the Company's drug candidates, services, processes or Intellectual Property, (C) to the knowledge of the Company, neither the sale nor use of any of the discoveries, inventions, drug candidates, services or processes of the Company referred to in the SEC Reports do or will, to the knowledge of the Company, infringe, misappropriate or violate any right or valid patent claim of any third party, (D) none of the technology employed by the Company has been obtained or is being used by the Company in material violation of any contractual obligation binding on the Company or, to the Company's knowledge, upon any of its officers, directors or employees or otherwise in violation of the rights of any persons, (E) to the knowledge of the Company, no third party has any ownership right in or to any Intellectual Property that is owned by the Company, other than any co-owner of any patent constituting Intellectual Property who is listed on the records of the U.S. Patent and Trademark Office (the "***USPTO***") and any co-owner of any patent application constituting Intellectual Property who is named in such patent application, and, to the knowledge of the Company, no third party has any ownership right in or to any Intellectual Property in any field of use that is exclusively licensed to the Company, other than any licensor to the Company of such Intellectual Property, (F) to the knowledge of the Company, there is no material infringement by third parties of any Intellectual Property, (G) there is no pending or, to the Company's knowledge, threatened action, suit, proceeding or claim by others challenging the Company's rights in or to any Intellectual Property, and (H) there is no pending or, to the Company's knowledge, threatened action, suit, proceeding or claim by others challenging the validity or scope of any Intellectual Property. The Company is in compliance in all material respects with the terms of each agreement pursuant to which Intellectual Property has been licensed to the Company, and all such agreements are in full force and effect.

**(y)** All patents and patent applications owned by or licensed to the Company or under which the Company has rights have, to the knowledge of the Company, been duly and properly filed and maintained; to the knowledge of the Company, the parties prosecuting such patent applications have complied with their duty of candor and disclosure to the USPTO in connection with such applications; and the Company is not aware of any facts required to be disclosed to the USPTO that were not disclosed to the USPTO and which would preclude the grant of a patent in connection with any

such application or would reasonably be expected to form the basis of a finding of invalidity with respect to any patents that have issued with respect to such applications. To the Company's knowledge, all patents and patent applications owned by the Company and filed with the USPTO or any foreign or international patent authority (the "***Company Patent Rights***") and all patents and patent applications in-licensed by the Company and filed with the USPTO or any foreign or international patent authority (the "***In-licensed Patent Rights***") have been duly and properly filed; the Company believes it has complied with its duty of candor and disclosure to the USPTO for the Company Patent Rights and, to the Company's knowledge, the licensors of the In-licensed Patent Rights have complied with their duty of candor and disclosure to the USPTO for the In-licensed Patent Rights.

**(z)** [Reserved]

**(aa)** The Company maintains a system of 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 generally accepted accounting principles and to maintain asset accountability; (iii) access to assets is permitted only in accordance with management's general or specific authorization; and (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. The Company's internal controls over financial reporting are effective and the Company is not aware of any material weakness in its internal controls over financial reporting.

**(bb)** The Company maintains "disclosure controls and procedures" (as such term is defined in Rule 13a-15(e) under the Exchange Act); such disclosure controls and procedures are effective.

**(cc)** The Company has not taken, directly or indirectly, any action designed to or that would constitute or that might reasonably be expected to cause or result in, under the Exchange Act or otherwise, stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Securities.

**(dd)** Except as described in the SEC Reports or would not, singly or in the aggregate, result in a Material Adverse Effect, (A) neither the Company nor any subsidiary has violated or is in violation of any Applicable Laws relating to pollution or protection of human health, the environment (including, without limitation, ambient air, surface water, groundwater, land surface or subsurface strata) or wildlife, including, without limitation, laws and regulations relating to the release or threatened release of chemicals, pollutants, contaminants, wastes, toxic substances, hazardous substances, petroleum or petroleum products, asbestos-containing materials or mold (collectively, "***Hazardous Materials***") or to the manufacture, processing, distribution, use, treatment, storage, disposal, transport or handling of Hazardous Materials (collectively, "***Environmental Laws***"), (B) the Company and its subsidiaries have all permits, authorizations and approvals required for their operations under any applicable Environmental Laws and are each in compliance with their requirements, (C) there are no pending or, to the knowledge of the Company threatened, administrative, regulatory or judicial Actions relating to any Environmental Law against the Company or any subsidiary and (D) to the Company's knowledge, there are no events or

circumstances that would reasonably be expected to form the basis of an order for clean-up or remediation, or an Action by any private party or Governmental Entity, against or affecting the Company or any subsidiary relating to Hazardous Materials or any Environmental Laws.

**(ee)** In the ordinary course of its business, the Company periodically reviews the effect of Environmental Laws on the business, operations and properties of the Company, in the course of which it identifies and evaluates associated costs and liabilities (including, without limitation, any capital or operating expenditures required for clean-up, closure of properties or compliance with Environmental Laws, or any permit, license or approval, any related constraints on operating activities and any potential liabilities to third parties). On the basis of such review, the Company has reasonably concluded that such associated costs and liabilities would not, singly or in the aggregate, have a Material Adverse Effect, whether or not arising from transactions in the ordinary course of business.

**(ff)** None of the following events has occurred or exists: (i) a failure to fulfill the obligations, if any, under the minimum funding standards of Section 302 of the United States Employee Retirement Income Security Act of 1974, as amended ("***ERISA***"), and the regulations and published interpretations thereunder with respect to a Plan that is required to be funded, determined without regard to any waiver of such obligations or extension of any amortization period; (ii) an audit or investigation by the Internal Revenue Service, the U.S. Department of Labor, the Pension Benefit Guaranty Corporation or any other federal or state governmental agency or any foreign regulatory agency with respect to the employment or compensation of employees by any of the Company that would reasonably be expected to have a Material Adverse Effect; (iii) any breach of any contractual obligation, or any violation of law or applicable qualification standards, with respect to the employment or compensation of employees by the Company that would reasonably be expected to have a Material Adverse Effect; or (iv) a non-exempt prohibited transaction, within the meaning of Section 406 of ERISA or Section 4975 of the Code with respect to any Plan that would reasonably be expected to have a Material Adverse Effect. None of the following events has occurred or is reasonably likely to occur: (i) a material increase in the aggregate amount of contributions required to be made to all Plans in the current fiscal year of the Company compared to the amount of such contributions made in the most recently completed fiscal year of the Company; (ii) a material increase in the "accumulated post-retirement benefit obligations" (within the meaning of Statement of Financial Accounting Standards 106) of the Company as compared to the amount of such obligations in the most recently completed fiscal year of the Company; (iii) any event or condition giving rise to a liability under Title IV of ERISA that would reasonably be expected to have a Material Adverse Effect; or (iv) the filing of a claim by one or more employees or former employees of the Company related to their employment that would reasonably be expected to have a Material Adverse Effect. For purposes of this paragraph, the term "***Plan***" means a plan (within the meaning of Section 3(3) of ERISA) subject to Title IV of ERISA with respect to which the Company may have any liability.

**(gg)** There is and has been no failure on the part of the Company and any of the Company's directors or officers, in their capacities as such, to comply in all material respects with any provision of the Sarbanes-Oxley Act of 2002 and the rules and regulations promulgated in connection therewith (the "***Sarbanes-Oxley Act***"), including Section 402 relating to loans.

**(hh)** None of the Company, its subsidiaries or, to the knowledge of the Company, any director, officer, agent, employee, affiliate or other person acting on behalf of the Company or its subsidiaries is aware of or has taken any action, directly or indirectly, that would result in a violation by such persons of the Foreign Corrupt Practices Act of 1977, as amended, and the rules and regulations thereunder (the "***FCPA***"), including, without limitation, making use of the mails or any means or instrumentality of interstate commerce corruptly in furtherance of an offer, payment, promise to pay or authorization of the payment of any money, or other property, gift, promise to give, or authorization of the giving of anything of value to any "foreign official" (as such term is defined in the FCPA) or any foreign political party or official thereof or any candidate for foreign political office, in contravention of the FCPA and the Company has and, to the knowledge of the Company, its affiliates have conducted their businesses in compliance with the FCPA and have instituted and maintain policies and procedures designed to ensure, and which are reasonably expected to continue to ensure, continued compliance therewith.

**(ii)** The operations of the Company and its subsidiaries are and have been conducted at all times in compliance with applicable financial recordkeeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, the money laundering statutes of all applicable jurisdictions, the rules and regulations thereunder and any related or similar rules, regulations or guidelines, issued, administered or enforced by any Governmental Entity (collectively, the "***Money Laundering Laws***"); and no Action by or before any Governmental Entity involving the Company or its subsidiaries with respect to the Money Laundering Laws is pending or, to the knowledge of the Company, threatened.

**(jj)** None of the Company, its subsidiaries or, to the knowledge of the Company, any director, officer, agent, employee, affiliate or representative of the Company or its subsidiaries is an individual or entity ("***Person***") currently the subject or target of any sanctions administered or enforced by the United States Government (including, without limitation, the U.S. Department of the Treasury's Office of Foreign Assets Control), the United Nations Security Council, the European Union, Her Majesty's Treasury, or other relevant sanctions authority (collectively, "***Sanctions***"); and the Company will not directly or indirectly use the proceeds of the sale of the Securities, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partners or other Person, to fund any activities of or business with any Person, or in any country or territory, that, at the time of such funding, is the subject of Sanctions or in any other manner that will result in a violation by any Person (including any Person participating in the transaction, whether as an agent, advisor, investor or otherwise) of Sanctions.

**(kk)** None of the Company, its subsidiaries or, to the knowledge of the Company, any director, officer, agent, employee, affiliate or representative of the Company, is a Person that is, or is 50% or more owned or otherwise controlled by a Person that is: (i) the subject of any Sanctions; or (ii) located, organized or resident in a country or territory that is, or whose government is, the subject of Sanctions that broadly prohibit dealings with that country or territory (currently, Cuba, Iran, North Korea, Syria and the Crimea Region of the Ukraine) (collectively, "***Sanctioned Countries***" and each, a "***Sanctioned Country***").

**(ll)** Neither the Company nor any of its subsidiaries has engaged in any dealings or transactions with or for the benefit of a Sanctioned Person, or with or in a Sanctioned Country, in the preceding 3 years, nor does the Company have any plans to increase its dealings or transactions with Sanctioned Persons, or with or in Sanctioned Countries.

**(mm)** The Common Stock is listed on The Nasdaq Capital Market. The Company has taken no action designed to, or likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act or delisting the Common Stock from The Nasdaq Capital Market, nor has the Company received any notification that the Commission or The Nasdaq Capital Market is contemplating terminating such registration or listing. To the Company's knowledge, it is in compliance with all applicable listing requirements of The Nasdaq Capital Market.

**(nn)** Neither the Company, nor any of the Company's affiliates or any other person acting on the Company's behalf, has directly or indirectly engaged in any form of general solicitation or general advertising with respect to the Securities, nor have any of such persons made any offers or sales of any security of the Company, or any of the Company's affiliates or solicited any offers to buy any security of the Company, or any of the Company's or any affiliates under circumstances that would require registration of the Securities under the Securities Act or any other securities laws or cause this offering of Securities to be integrated with any prior offering of securities of the Company for purposes of the Securities Act in any manner that would affect the validity of the private placement exemption under the Securities Act for the offer and sale of the Securities hereunder.

**(oo)** The Company shall, at all times while any Pre-Funded Warrants are outstanding, use commercially reasonable efforts to maintain a registration statement covering the issue and sale of the Pre-Funded Warrant Shares upon exercise of the Pre-Funded Warrants such that the Pre-Funded Warrant Shares, when issued, will not be subject to resale and restrictions under the Securities Act except to the extent that the Pre-Funded Warrant Shares are owned by affiliates.

**(pp)** No "bad actor" disqualifying event described in Rule 506(d)(1)(i)-(viii) of the 1933 Act (a "***Disqualification Event***") is applicable to the Company or, to the Company's knowledge, any Company Covered Person (as defined below), except for a Disqualification Event as to which Rule 506(d)(2)(ii–iv) or (d)(3), is applicable. "***Company Covered Person***" means, with respect to the Company as an "issuer" for purposes of Rule 506 promulgated under the 1933 Act, any person listed in the first paragraph of Rule 506(d)(1).

**(qq)** The Company shall file a Form D with respect to the Securities as required under Regulation D and, to the extent the Form D is not publicly available on the Commission's EDGAR reporting system, to provide a copy thereof to each Purchaser promptly after such filing. The Company, on or before the Closing Date, shall take such action as the Company shall reasonably determine is necessary in order to obtain an exemption for or to qualify the Securities for sale and issuance to the Purchasers at the Closing pursuant to this Agreement under applicable securities or blue sky laws of the states of the United States (or to obtain an exemption from such qualification), and, if requested by a Purchaser, shall provide evidence of any material action so taken to such Purchaser on or prior to the Closing Date. The Company shall make all filings and reports relating to the offer and sale of the Securities required under applicable securities or blue sky laws of the states of the United States following the Closing Date.

**3.2 Representations, Warranties and Covenants of the Purchasers**. Each Purchaser, for itself and for no other Purchaser, hereby represents, warrants and covenants to the Company as of the Closing:

**(a)** Purchaser represents and warrants that: (i) Purchaser has all requisite legal and corporate or other power and capacity and has taken all requisite corporate or other action to execute and deliver this Agreement, to purchase the Securities and to carry out and perform all of its obligations under this Agreement; and (ii) this Agreement constitutes the legal, valid and binding obligation of the Purchaser, enforceable against the Purchaser in accordance with its terms, except (i) as limited by applicable bankruptcy, insolvency, reorganization, moratorium, fraudulent conveyance or other similar laws relating to or affecting the enforcement of creditors' rights generally.

**(b)** At the time such Purchaser was offered the Securities, it was, and as of the date hereof it is, and on each date on which it exercises any Pre-Funded Warrants, it will be either: (i) an "accredited investor" as defined in Rule 501(a)(1), (a)(2), (a)(3), (a)(7) or (a)(8) under the Securities Act or (ii) a "qualified institutional buyer" as defined in Rule 144A(a) under the Securities Act. Such Purchaser is not required to be registered as a broker-dealer under Section 15 of the Exchange Act. Such Purchaser has the authority and is duly and legally qualified to purchase and own the Securities. Such Purchaser is aware of the Company's business affairs and financial condition and has had access to and has acquired sufficient information about the Company to reach an informed and knowledgeable decision to acquire the Securities. Purchaser has such business and financial experience as is required to give it the capacity to protect its own interests in connection with the purchase of the Securities and such 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. Such Purchaser acknowledges that it has had the opportunity to review the Company's filings with the Commission 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 and (ii) 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. Such Purchaser has provided the information in the Accredited Investor Questionnaire attached hereto as Exhibit E (the "***Investor Questionnaire***"). The information set forth on the signature pages hereto and the Investor Questionnaire regarding Purchaser is true and complete in all respects. Except as disclosed in the Investor Questionnaire, Purchaser has had no position, office or other material relationship within the past three years with the Company or Persons (as defined below) known to Purchaser to be affiliates of the Company, and is not a member of the Financial Industry Regulatory Authority or an "associated person" (as such term is defined under the FINRA Membership and Registration Rules Section 1011).

**(c)** Each Purchaser is purchasing the Securities, and, if applicable, upon exercise of the Pre-Funded Warrants will acquire the Pre-Funded Warrant Shares issuable upon exercise of the Pre-Funded Warrants, for its own account, for investment purposes only, and not with a present view to, or for, resale, distribution or fractionalization thereof, in whole or in part, within the meaning of the Securities Act. Each Purchaser understands and acknowledges that the Securities are "restricted securities" and understands that its acquisition of the Securities has not been registered under the

Securities Act or registered or qualified under any state securities law in reliance on specific exemptions therefrom, which exemptions may depend upon, among other things, the bona fide nature of each Purchaser's investment intent as expressed herein. Each Purchaser will not, directly or indirectly, offer, sell, transfer or otherwise dispose of (or solicit any offers to buy, purchase or otherwise acquire or take a pledge of) the Securities except in compliance with the Securities Act and the rules and regulations promulgated thereunder.

**(d)** Each Purchaser represents and acknowledges that is has not been solicited to offer to purchase or to purchase any Securities by means of any general solicitation or advertising within the meaning of Regulation D under the Securities Act.

**(e)** Each Purchaser represents that it is not a person of the type described in Section 506(d) of Regulation D under the Securities Act that would disqualify the Company from engaging in a transaction pursuant to Section 506 of Regulation D under the Securities Act.

**(f)** Each Purchaser understands that the Securities being offered and sold to it in reliance on specific exemptions from the registration requirements of United States federal and state securities laws and that the Company is relying in part upon the truth and accuracy of, and each Purchaser's compliance with, the representations, warranties, agreements, acknowledgements and understandings of each Purchaser set forth herein in order to determine the availability of such exemptions and the eligibility of each Purchaser to acquire the Securities. Each Purchaser further acknowledges and understands that the Securities may not be resold or otherwise transferred except in a transaction registered under the Securities Act or unless an exemption from such registration is available.

**(g) Dispositions**.

**(i)** Each Purchaser will not, prior to the effectiveness of a Resale Registration Statement (as defined below), if then prohibited by law or regulation: (i) sell, offer to sell, solicit offers to buy, dispose of, loan or grant any right with respect to (collectively, a "***Disposition***") the Securities; or (ii) engage in any hedging or other transaction which is designed or could reasonably be expected to lead to or result in a Disposition of the Securities by the Purchaser or an affiliate.

**(ii)** As of the Closing Date, each Purchaser has not directly or indirectly, nor has any person acting on behalf of or pursuant to any understanding with the Purchaser, engaged in any purchases or sales of the Company's securities (including, without limitation, any Short Sales involving the Company's securities) since the time that the Purchaser was first contacted by the Company or any other person regarding the transactions contemplated hereby. Each Purchaser covenants that neither it nor any person acting on its behalf or pursuant to any understanding with it will engage in any purchases or sales of the Company's securities (including, without limitation, any Short Sales involving the Company's securities) prior to the time that the transactions contemplated by this Agreement are publicly disclosed.

**(h)** Each Purchaser agrees that for a period of 180 days from the date of this Agreement, each Purchaser will not, without the prior written consent of the Company, (i) directly or indirectly, offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or

contract to sell, grant any option, right or warrant to purchase or otherwise transfer or dispose of any Securities, (ii) enter into any swap or any other agreement or any transaction that transfers, in whole or in part, directly or indirectly, the economic consequence of ownership of any Securities, whether any such swap or transaction described in clause (i) or (ii) above is to be settled by delivery of Securities, in cash or otherwise or (iii) publicly announce an intention to effect any such swap, agreement or other transaction described in clauses (i) and (ii).

**(i)** Each Purchaser has independently evaluated the merits of its decision to purchase Securities pursuant to this Agreement. Each Purchaser understands that nothing in this Agreement or any other materials presented to such Purchaser in connection with the purchase and sale of the Securities constitutes legal, tax or investment advice.

**(j)** Each Purchaser will hold in confidence all information concerning this Agreement and the sale and issuance of the Securities until the Company has made a public announcement concerning this Agreement and the sale and issuance of the Securities, which shall be made not later than 5:30 pm New York time on the fourth Trading Day immediately after the signing of this Agreement.

**(k)** Each Purchaser understands that no United States federal or state agency or any other government or governmental agency has passed upon or made any recommendation or endorsement of the Securities.

**(l) Legend**.

**(i)** Each Purchaser understands that the Securities shall bear a restrictive legend in substantially the following form (and a stop transfer order may be placed against transfer of the certificates for the Securities):

> "THE SECURITIES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR THE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES OR IN ANY OTHER JURISDICTION. THE SECURITIES REPRESENTED HEREBY MAY NOT BE OFFERED, SOLD OR TRANSFERRED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT FOR THE SECURITIES UNDER APPLICABLE SECURITIES LAWS UNLESS OFFERED, SOLD OR TRANSFERRED PURSUANT TO AN AVAILABLE EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF THOSE LAWS."

**(ii)** The Company shall, at its sole expense, upon appropriate notice from any Purchaser stating that Securities have been sold pursuant to an effective Registration Statement, timely prepare and deliver certificates or book-entry shares representing the shares to be delivered to a transferee pursuant to the Registration Statement, which certificates or book-entry shares shall be free of any restrictive legends and in such denominations and registered in such names as such Purchaser may request. Further, the Company shall, at its sole expense, cause its legal counsel or other counsel satisfactory to the transfer agent: (i) while the Registration Statement is effective, to issue to the transfer agent a "blanket" legal opinion to

allow sales without restriction pursuant to the effective Registration Statement, and (ii) provide all other opinions as may reasonably be required by the transfer agent in connection with the removal of legends. A Purchaser may request that the Company remove, and the Company agrees to authorize the removal of, any legend from such shares, following the delivery by a Purchaser to the Company or the Company's transfer agent of a legended certificate representing such shares: (i) following any sale of such shares pursuant to Rule 144, (ii) if such shares are eligible for sale under Rule 144(b)(1), or (iii) following the time that the Registration Statement is declared effective. If a legend removal request is made pursuant to the foregoing, the Company will, no later than three business days following the delivery by a Purchaser to the Company or the Company's transfer agent of a legended certificate representing such shares (or a request for legend removal, in the case of shares issued in book-entry form), deliver or cause to be delivered to such Purchaser a certificate representing such shares that is free from all restrictive legends or an equivalent book-entry position, as requested by the Purchaser. Certificates for shares free from all restrictive legends may be transmitted by the Company's transfer agent to the Purchasers by crediting the account of the Purchaser's prime broker with the Depository Trust Company ("***DTC***") as directed by such Purchaser. The Company warrants that the shares shall otherwise be freely transferable on the books and records of the Company as and to the extent provided in this Agreement. If a Purchaser effects a transfer of the shares in accordance with Section 3.2(l)(ii), the Company shall permit the transfer and shall promptly instruct its transfer agent to issue one or more certificates or credit shares to the applicable balance accounts at DTC in such name and in such denominations as specified by such Purchaser to effect such transfer. Each Purchaser hereby agrees that the removal of the restrictive legend pursuant to this Section 3.2(l)(ii) is predicated upon the Company's reliance that such Purchaser will sell any such shares pursuant to either the registration requirements of the Securities Act, including any applicable prospectus delivery requirements, or an exemption therefrom.

**(m)** If Purchaser is not a United States person (as defined by Section 7701(a)(30) of the Code), Purchaser hereby represents that it has satisfied itself as to the full observance of the laws of its jurisdiction in connection with any invitation to subscribe for the Securities or any use of this Agreement, including (a) the legal requirements within its jurisdiction for the purchase of the Securities, (b) any foreign exchange restrictions applicable to such purchase or acquisition, (c) any government or other consents that may need to be obtained, and (d) 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 continued beneficial ownership of the Securities will not violate any applicable securities or other laws of the Purchaser's jurisdiction.

**(n)** Such Purchaser understands that no United States federal or state agency or any other governmental or state agency has passed on or made recommendations or endorsement of the Securities or the suitability of the investment in the Securities nor have such authorities passed upon or endorsed the merits of the offering of the Securities pursuant to this Agreement.

**(o)** The execution, delivery and performance of this Agreement and the consummation by such Purchaser of the transactions contemplated hereby and thereby or relating hereto or thereto do not and will not (i) result in a violation of such Purchaser's charter documents, bylaws or other organizational documents, if applicable, (ii) conflict with nor constitute a default (or an event which with notice or lapse of time or both would become a default) under any agreement to which such Purchaser is a party, nor (iii) result in a violation of any law, rule, or regulation, or any order, judgment

or decree of any court or governmental agency applicable to such Purchaser or its properties (except for such conflicts, defaults and violations as would not, individually or in the aggregate, have a material adverse effect on such Purchaser). Such Purchaser is not required to obtain any consent, authorization or order of, or make any filing or registration with, any court or governmental agency in order for it to execute, deliver or perform any of its obligations under this Agreement nor to purchase the Securities in accordance with the terms hereof, provided that for purposes of the representation made in this sentence, such Purchaser is assuming and relying upon the accuracy of the relevant representations and agreements of the Company herein.

**(p)** For a period of 180 days from the date hereof, each Purchaser shall not (and each Purchaser shall cause its directors, officers, managers, employees, controlled affiliates and representatives not to), directly or indirectly, do any of the following (unless specifically invited in writing to do so by the Company's Board of Directors (the "***Board***"); provided, however, that each Purchaser shall not be required to perform any of the following even if specifically invited to do so by the Board: (a) initiate or support any proposal or indication of interest for, or offer with respect to, any Acquisition Transaction (as defined below); (b) seek or propose to influence, advise, change or control the management, the Board, governing instruments or policies or affairs of the Company, including by means of a solicitation of proxies not conducted by the Company, or by seeking to influence, advise or direct the vote of any third-party holder of debt or voting securities of the Company; (c) initiate or support any proposal through a public communication for any Acquisition Transaction, recapitalization, reorganization, joint venture, liquidation, dissolution, spin-off or split-off, business combination or other extraordinary transaction involving the Company or any of the Company's subsidiaries or any of their debt, securities or assets; (d) publicly seek election of or publicly seek to place a director on the Board, or publicly seek the removal of any director of the Company, or call or seek to have called any meeting of the stockholders of the Company or any "referendum" (whether or not precatory) of the stockholders of the Company, wage a consent solicitation, or execute any written consent in lieu of a meeting of the stockholders of the Company in connection with the foregoing matters; (e) enter into any arrangements or understandings with or advise or assist any third party with respect to any of the foregoing prohibited actions listed in clauses (a) through (d), including through the formation, joining of or participation in a "group" with the meaning of Section 13(d)(3) of the Exchange Act (or act as a co-bidder under Rule 14e-3 of the Exchange Act), in furtherance of any of the foregoing; (f) advise, assist, encourage or knowingly finance any person in connection with any of the foregoing prohibited actions listed in clauses (a) through (e); (g) publicly disclose any plan, intention or proposal to do any of the prohibited actions listed in clauses (a) through (f); (h) make any public disclosure, or take any action that could require the Company to make any public disclosure, with respect to any of the prohibited actions listed in clauses (a) through (g); or (i) deposit any Company securities into a voting trust or subject them to any voting agreement. For purposes of this Section 3.2(p), (i) "Acquisition Transaction" means any transaction (whether merger, stock purchase, tender offer, asset purchase or otherwise) or possible transaction involving the acquisition of debt of the Company or greater than 50% of the Company's voting securities or all or substantially all of the Company's assets and (ii) "Public" (and other similar terms, such as "publicly") means outside of a Board meeting.

**4. REGISTRATION RIGHTS**

**4.1 Definitions**. For the purpose of this **Section 4**:

**(a)** the term "***Resale Registration Statement***" shall mean any registration statement required to be filed by **Section 4.2** below, and shall include any preliminary prospectus, final prospectus, exhibit or amendment included in or relating to such registration statements; and

**(b)** the term "***Registrable Shares***" means the Shares and the Pre-Funded Warrant Shares; *provided*, *however*, that a security shall cease to be a Registrable Share upon the earliest to occur of the following: (i) a Resale Registration Statement registering such security under the Securities Act has been declared or becomes effective and such security has been sold or otherwise transferred by the holder thereof pursuant to and in a manner contemplated by such effective Resale Registration Statement, (ii) such security is sold pursuant to Rule 144 under circumstances in which any legend borne by such security relating to restrictions on transferability thereof, under the Securities Act or otherwise, is removed by the Company, (iii) such security is eligible to be sold pursuant to Rule 144 without condition or restriction, including without any limitation as to volume of sales, and without the Holder complying with any method of sale requirements or notice requirements under Rule 144, or (iv) such security shall cease to be outstanding following its issuance.

**4.2 Registration Procedures and Expenses**. The Company shall:

**(a)** use commercially reasonable efforts to file a Resale Registration Statement (the "***Mandatory Registration Statement***") with the Commission on or before the date 60 days following the Closing Date (the "***Filing Date***") to register the applicable Registrable Shares on Form S-3 under the Securities Act (providing for shelf registration of such Registrable Shares under Commission Rule 415);

**(b)** use its commercially reasonable efforts to cause each Mandatory Registration Statement to be declared effective within 30 days following each Filing Date (or, in the event the staff of the Commission (the "***Staff***") reviews and has written comments to any Mandatory Registration Statement, within 90 days following the receipt of such written comments) (the earlier of the foregoing or the applicable date set forth in Section 4.2(h), the "***Effectiveness Date***"), such efforts to include, without limiting the generality of the foregoing, preparing and filing with the Commission any financial statements or other information that is required to be filed prior to the effectiveness of such Mandatory Registration Statement;

**(c)** notwithstanding anything contained in this Agreement to the contrary, in the event that the Commission limits the amount of Registrable Shares or otherwise requires a reduction in the number of Registrable Shares that may be included and sold by the Purchasers in a Mandatory Registration Statement (in each case, subject to Section 4.3), then the Company shall prepare and file (i) within 20 business days of the first date or time that such excluded Registrable Shares may then be included in a Resale Registration Statement if the Commission shall have notified the Company that certain Registrable Shares were not eligible for inclusion in such Resale Registration Statement or (ii) in all other cases, within 30 days following the date that the Company becomes aware that such additional Resale Registration Statement is required (the "***Additional Filing Date***"), a Resale Registration Statement (any such Resale Registration Statement registering such excluded Registrable Shares, an "***Additional Registration Statement***"

and, together with the Mandatory Registration Statement, a "***Resale Registration Statement***") to register any Registrable Shares that have been excluded (or, if applicable, the maximum number of such excluded Registrable Shares that the Company is permitted to register for resale on such Additional Registration Statement consistent with Commission guidance), if any, from being registered on the Mandatory Registration Statement;

**(d)** use its commercially reasonable efforts to cause any such Additional Registration Statement to be declared effective as promptly as practicable following the Additional Filing Date, such efforts to include, without limiting the generality of the foregoing, preparing and filing with the Commission any financial statements or other information that is required to be filed prior to the effectiveness of any such Additional Registration Statement;

**(e)** prepare and file with the Commission such amendments and supplements to such Resale Registration Statements and the prospectus used in connection therewith as may be necessary to keep such Resale Registration Statements continuously effective and free from any material misstatement or omission to state a material fact therein until termination of such obligation as provided in **Section 4.7** below, subject to the Company's right to suspend pursuant to **Section 4.6**;

**(f)** furnish to the Purchasers such number of copies of prospectuses in conformity with the requirements of the Securities Act and such other documents as the Purchasers may reasonably request, in order to facilitate the public sale or other disposition of all or any of the Registrable Shares by the Purchasers;

**(g)** file such documents as may be required of the Company for normal securities law clearance for the resale of the Registrable Shares in such states of the United States as may be reasonably requested by the Purchasers and use its commercially reasonable efforts to maintain such blue sky qualifications during the period the Company is required to maintain effectiveness of the Resale Registration Statements; *provided*, *however,* that the Company shall not be required in connection with this **Section 4.2(g)** to qualify as a foreign corporation or execute a general consent to service of process in any jurisdiction in which it is not now so qualified or has not so consented;

**(h)** upon notification by the Commission that a Resale Registration Statement will not be reviewed or is not subject to further review by the Commission, the Company shall within three business days following the date of such notification request acceleration of such Resale Registration Statement (with the requested effectiveness date to be not more than two business days later);

**(i)** upon notification by the Commission that that a Resale Registration Statement has been declared effective by the Commission, the Company shall file the final prospectus under Rule 424 of the Securities Act ("***Rule 424***") within the applicable time period prescribed by Rule 424;

**(j)** advise the Purchasers promptly:

**(i)** of the effectiveness of a Resale Registration Statement or any post-effective amendments thereto;

**(ii)** of any request by the Commission for amendments to a Resale Registration Statement or amendments to the prospectus or for additional information relating thereto;

**(iii)** of the issuance by the Commission of any stop order suspending the effectiveness of a Resale Registration Statement under the Securities Act or of the suspension by any state securities commission of the qualification of the Registrable Shares for offering or sale in any jurisdiction, or the initiation of any proceeding for any of the preceding purposes; and

**(iv)** of the existence of any fact and the happening of any event that makes any statement of a material fact made in a Resale Registration Statement, the prospectus and amendment or supplement thereto, or any document incorporated by reference therein, untrue, or that requires the making of any additions to or changes in a Resale Registration Statement or the prospectus in order to make the statements therein not misleading;

**(k)** cause all Registrable Shares to be listed on each securities exchange, if any, on which equity securities by the Company are then listed; and

**(l)** bear all expenses in connection with the procedures in paragraphs (a) through (k) of this Section 4.2 and the registration of the Registrable Shares on such Resale Registration Statement and the satisfaction of the blue sky laws of such states.

**4.3 Rule 415; Cutback.**

If at any time the Staff takes the position that the offering of some or all of the Registrable Shares in a Registration Statement is not eligible to be made on a delayed or continuous basis under the provisions of Rule 415 under the Securities Act or requires any Purchaser to be named as an "underwriter," the Company shall (in consultation with legal counsel to Ginkgo) use its commercially reasonable efforts to persuade the Commission that the offering contemplated by the Registration Statement is a valid secondary offering and not an offering "by or on behalf of the issuer" as defined in Rule 415 and that none of the Purchasers is an "underwriter." In the event that, despite the Company's commercially reasonable efforts and compliance with the terms of this Section 4.3, the Staff refuses to alter its position, the Company shall (i) remove from the Registration Statement such portion of the Registrable Shares (the "***Cut Back Shares***") and/or (ii) agree to such restrictions and limitations on the registration and resale of the Registrable Shares as the Staff may require to assure the Company's compliance with the requirements of Rule 415 (collectively, the "***SEC Restrictions***"); provided, however, that the Company shall not agree to name any Purchaser as an "underwriter" in such Registration Statement without the prior written consent of such Purchaser. Any cutback imposed on the Purchasers pursuant to this Section 4.3 shall be allocated among the Purchasers on a pro rata basis, unless the SEC Restrictions otherwise require or provide or the Purchasers holding a majority of the Registrable Shares otherwise agree. No liquidated damages shall accrue as to any Cut Back Shares until such date as the Company is able to effect the registration of such Cut Back Shares in accordance with any SEC Restrictions (such date, the "***Restriction Termination Date***" of such Cut Back Shares). From and after the

Restriction Termination Date applicable to any Cut Back Shares, all of the provisions of this Section 4 shall again be applicable to such Cut Back Shares; provided, however, that (x) the Filing Deadline for the Registration Statement including such Cut Back Shares shall be 20 business days after such Restriction Termination Date, and (y) the Effectiveness Deadline with respect to such Cut Back Shares shall be the 90th day immediately after the Restriction Termination Date or the 120th day if the Staff reviews such Registration Statement (but in any event no later than three Business Days from the Staff indicating it has no further comments on such Registration Statement).

**4.4 Effect of Failure to File and Obtain and Maintain Effectiveness of Registration Statement**. If either: (a) a Registration Statement covering the applicable Registrable Shares required to be covered thereby and required to be filed by the Company pursuant to this Agreement is: (i) not filed with the Commission on or before the applicable Filing Date (a "***Filing Failure***"), or (ii) not declared effective by the Commission on or before the Effectiveness Date (an "***Effectiveness Failure***"), or (b) at any time after the Effectiveness Date, sales of the applicable Registrable Shares required to be included on such Registration Statement cannot be made (other than (i) as permitted under Section 4.6, or (ii) if the Registration Statement is on Form S-1, for a period of 15 days following the date the Company files a post-effective amendment to incorporate the Company's Annual Report on Form 10-K) pursuant to such Registration Statement (including, without limitation, because of a failure to keep such Registration Statement effective, to disclose such information as is necessary for sales to be made pursuant to such Registration Statement or to register a sufficient number of shares of Common Stock) (a "***Maintenance Failure***"), then, in satisfaction of the damages to any holder of Registrable Shares by reason of any such delay in or reduction of its ability to sell the underlying shares of Common Stock, the Company shall pay to each holder of Registrable Shares relating to such Registration Statement an amount in cash equal to 1.0% of such holder's pro rata interest in the aggregate purchase price applicable to such Registrable Shares that are not then registered on each of the following dates: (x) the day of a Filing Failure and on every 30th day (prorated for periods totaling less than 30 days) thereafter until such Filing Failure is cured; (y) the day of an Effectiveness Failure and on every 30th day (prorated for periods totaling less than 30 days) thereafter until such Effectiveness Failure is cured; and (z) the initial day of a Maintenance Failure and on every 30th day (prorated for periods totaling less than 30 days) thereafter until such Maintenance Failure is cured. The payments to which a holder shall be entitled pursuant to this Section 4.4 are referred to herein as "***Registration Delay Payments***"; provided that no Registration Delay Payments shall be required following such time as when the Company's registration obligations terminate under Section 4.7, and provided further that in no event shall the aggregate Registration Delay Payments accruing under this Section 4.4 exceed 10% of a holder's aggregate purchase price. The first such Registration Delay Payment shall be paid within three business days after the event or failure giving rise to such Registration Delay Payment occurred and all other Registration Delay Payments shall be paid on the earlier of (I) the last day of the calendar month during which such Registration Delay Payments are incurred and (II) the third business day after the event or failure giving rise to the Registration Delay Payments is cured. If a given Purchaser elects to receive the Registration Delay Payments as a remedy for any Filing Failure, Effectiveness Failure or Maintenance Failure, then such Registration Delay Payments shall be the sole recourse of those electing Purchasers for any Filing Failure, Effectiveness Failure or Maintenance Failure (and, for the avoidance of doubt, this sentence shall not limit the rights of any Purchaser that does not elect to receive, or does not receive, the Registration Delay Payments).

**4.5 Indemnification**.

**(a)** The Company agrees to indemnify and hold harmless the Purchasers, and the partners, members, officers and directors of the Purchasers and each person, if any, who controls the Purchasers within the meaning of the Securities Act or the Exchange Act, from and against any losses, claims, damages or liabilities to which they may become subject (under the Securities Act or otherwise) insofar as such losses, claims, damages or liabilities (or actions or proceedings in respect thereof) arise out of, or are based upon, any material breach of this Agreement by the Company or any untrue statement or alleged untrue statement of a material fact contained in a Resale Registration Statement or any omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading or arise out of any failure by the Company to fulfill any undertaking included in a Resale Registration Statement and the Company will, as incurred, reimburse the Purchasers, and their partners, members, officers, directors or controlling Persons for any legal or other expenses reasonably incurred in investigating, defending or preparing to defend any such action, proceeding or claim; *provided, however,* that the Company shall not be liable in any such case to the extent that such loss, claim, damage or liability (collectively, "***Loss***") arises out of, or is based upon: (i) an untrue statement or omission or alleged untrue statement or omission made in such Resale Registration Statement in reliance upon and in conformity with written information furnished to the Company by or on behalf of the Purchasers, or their partners, members, officers, directors or controlling persons specifically for use in preparation of a Resale Registration Statement; or (ii) any breach of this Agreement by the Purchasers; *provided further, however,* that the Company shall not be liable to the Purchasers (or any partner, member, officer, director or controlling Person of the Purchasers) to the extent that any such Loss is caused by an untrue statement or omission or alleged untrue statement or omission made in any preliminary prospectus if either (i) (A) any Purchaser failed to send or deliver a copy of the final prospectus with or prior to, or any Purchaser failed to confirm that a final prospectus was deemed to be delivered prior to (in accordance with Rule 172 of the Securities Act), the delivery of written confirmation of the sale by a Purchaser to the Person asserting the claim from which such Loss resulted and (B) the final prospectus corrected such untrue statement or omission, (ii) (X) such untrue statement or omission is corrected in an amendment or supplement to the prospectus and (Y) having previously been furnished by or on behalf of the Company with copies of the prospectus as so amended or supplemented or notified by the Company that such amended or supplemented prospectus has been filed with the Commission, in accordance with Rule 172 of the Securities Act, any Purchaser thereafter fails to deliver such prospectus as so amended or supplemented, with or prior to or a Purchaser fails to confirm that the prospectus as so amended or supplemented was deemed to be delivered prior to (in accordance with Rule 172 of the Securities Act), the delivery of written confirmation of the sale by a Purchaser to the person asserting the claim from which such Loss resulted or (iii) a Purchaser sold Registrable Shares in violation of such Purchasers' covenant contained in **Section 3.2** of this Agreement.

**(b)** The Purchasers agree, severally and not jointly, to indemnify and hold harmless the Company (and each Person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, each officer of the Company who signs a Resale

Registration Statement and each director of the Company), from and against any Losses to which the Company (or any such officer, director or controlling person) may become subject (under the Securities Act or otherwise), insofar as such Losses (or actions or proceedings in respect thereof) arise out of, or are based upon, any material breach of this Agreement by the Purchasers or untrue statement or alleged untrue statement of a material fact contained in a Resale Registration Statement (or any omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading in each case, on the effective date thereof), if, and only to the extent, such untrue statement or omission or alleged untrue statement or omission was made in reliance upon and in conformity with written information furnished by or on behalf of the Purchasers specifically for use in preparation of a Resale Registration Statement, and the Purchasers, severally and not jointly, will reimburse the Company (and each of its officers, directors or controlling persons) for any legal or other expenses reasonably incurred in investigating, defending or preparing to defend any such action, proceeding or claim; *provided, however,* that in no event shall any indemnity under this **Section 4.5(b)** be greater in amount than the dollar amount of the proceeds received by the Purchasers upon the sale of such Registrable Shares.

**(c)** Promptly after receipt by any indemnified person of a notice of a claim or the beginning of any action in respect of which indemnity is to be sought against an indemnifying person pursuant to this **Section 4.5**, such indemnified person shall notify the indemnifying person in writing of such claim or of the commencement of such action, and, subject to the provisions hereinafter stated, in case any such action shall be brought against an indemnified person and such indemnifying person shall have been notified thereof, such indemnifying person shall be entitled to participate therein, and, to the extent that it shall wish, to assume the defense thereof, with counsel reasonably satisfactory to such indemnified person. After notice from the indemnifying person to such indemnified person of its election to assume the defense thereof, such indemnifying person shall not be liable to such indemnified person for any legal expenses subsequently incurred by such indemnified person in connection with the defense thereof; *provided, however,* that if there exists or shall exist a conflict of interest that would make it inappropriate in the reasonable judgment of the indemnified person for the same counsel to represent both the indemnified person and such indemnifying person or any affiliate or associate thereof, the indemnified person shall be entitled to retain its own counsel at the expense of such indemnifying person; provided, further, that no indemnifying person shall be responsible for the fees and expense of more than one separate counsel for all indemnified parties. The indemnifying party shall not settle an action without the consent of the indemnified party, which consent shall not be unreasonably withheld.

**(d)** If the indemnification provided for in this **Section 4.5** is held by a court of competent jurisdiction to be unavailable to an indemnified party with respect to any Losses referred to herein, the indemnifying party, in lieu of indemnifying such indemnified party thereunder, shall to the extent permitted by applicable law contribute to the amount paid or payable by such indemnified party as a result of such Loss in such proportion as is appropriate to reflect the relative fault of the indemnifying party on the one hand and of the indemnified party on the other, as well as any other relevant equitable considerations; provided, that in no event shall any contribution by an indemnifying party hereunder be greater in amount than the dollar amount of the proceeds received by such indemnifying party upon the sale of such Registrable Shares.

**4.6 Prospectus Suspension**. Each Purchaser acknowledge that there may be times when the Company must suspend the use of the prospectus forming a part of a Resale Registration Statement until such time as an amendment to a Resale Registration Statement has been filed by the Company and declared effective by the Commission, or until such time as the Company has filed an appropriate report with the Commission pursuant to the Exchange Act. Each Purchaser hereby covenants that it will not sell any Registrable Shares pursuant to said prospectus during the period commencing at the time at which the Company gives the Purchasers notice of the suspension of the use of said prospectus and ending at the time the Company gives the Purchasers notice that the Purchasers may thereafter effect sales pursuant to said prospectus; provided, that such suspension periods shall in no event exceed 60 days in any 12 month period and that, in the good faith judgment of the Board, the Company would, in the absence of such delay or suspension hereunder, be required under state or federal securities laws to disclose any corporate development, a potentially significant transaction or event involving the Company, or any negotiations, discussions, or proposals directly relating thereto, in either case the disclosure of which would reasonably be expected to have a Material Adverse Effect upon the Company or its stockholders.

**4.7 Termination of Obligations**. The obligations of the Company pursuant to **Section 4.2** hereof shall cease and terminate, with respect to any Registrable Shares, upon the earlier to occur of (a) such time such Registrable Shares have been resold, or (b) such time as such Registrable Shares no longer remain Registrable Shares pursuant to **Section 4.1(b)** hereof.

**4.8 Reporting Requirements**.

**(a)** With a view to making available the benefits of certain rules and regulations of the Commission that may at any time permit the sale of the Securities to the public without registration or pursuant to a registration statement on Form S-3, the Company agrees to use:

**(i)** make and keep public information available, as those terms are understood and defined in Rule 144;

**(ii)** file with the Commission in a timely manner all reports and other documents required of the Company under the Securities Act and the Exchange Act; and

**(iii)** so long as a Purchaser owns Registrable Shares, to furnish to such Purchaser upon request (A) a written statement by the Company as to whether it is in compliance with the reporting requirements of Rule 144, the Securities Act and the Exchange Act, or whether it is qualified as a registrant whose securities may be resold pursuant to Commission Form S-3, (B) a copy of the most recent annual or quarterly report of the Company and such other reports and documents so filed by the Company and (C) such other information as may be reasonably requested to permit the Purchaser to sell such securities pursuant to Rule 144.

**4.9 Blue Sky**. The Company shall obtain and maintain all necessary blue sky law permits and qualifications, or secured exemptions therefrom, required by any state for the offer and sale of Registrable Shares; provided, however, that the Company shall not be obligated to file any general consent to service of process or to qualify as a foreign corporation or as a dealer in securities in any jurisdiction in which it is not so qualified or to subject itself to taxation in respect of doing business in any jurisdiction in which it is not otherwise so subject.

## 5. OTHER AGREEMENTS OF THE PARTIES

**5.1 Integration**. Except as contemplated by the terms of this Agreement, the Company shall not sell, offer for sale or solicit offers to buy or otherwise negotiate in respect of any security (as defined in Section 2 of the Securities Act) that would be integrated with the offer or sale of the Securities such that the rules of the Trading Market would require shareholder approval of this transaction prior to the closing of such other transaction unless shareholder approval is obtained before the closing of such subsequent transaction.

**5.2 Securities Laws Disclosure; Publicity**. The Company shall: (a) issue a press release disclosing the material terms of the transactions contemplated hereby promptly following the execution and delivery hereof (the "***Press Release***"), and (b) by 5:30 p.m. (New York City time) on the fourth Trading Day following the date hereof, file a Current Report on Form 8-K disclosing the material terms of the transactions contemplated hereby (the "***Form 8-K***"). From and after the issuance of the Press Release, no Purchaser shall be in possession of any material, non-public information received from the Company or any of their respective officers, directors or employees that is not disclosed in the Press Release.

**5.3 Non-Public Information**. Except with respect to the material terms and conditions of the transactions contemplated by the Transaction Documents, the Company covenants and agrees that neither it nor any other person acting on its behalf will provide any Purchaser or its agents or counsel with any information that the Company believes constitutes material non-public information.

**5.4 Use of Proceeds**. The Company will use the proceeds from the offering to progress and expand its pipeline, including initiating four new programs in the first six months following the Closing Date and five new programs in the next 12 months following the Closing Date.

**5.5 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 the Shares and the Pre-Funded Warrant Shares.

**5.6 Share Purchase Price**. The Company and Purchaser agree that the Share Purchase Price is not less than the fair market value per share of the Shares purchased by Purchaser pursuant to **Section 2.1**.

## 6. MISCELLANEOUS

**6.1 Termination**. This Agreement may be terminated by any Purchaser, as to such Purchaser's obligations hereunder only and without any effect whatsoever on the obligations between the Company and the other Purchasers, by written notice to the other parties, if the Closing has not been consummated within ten calendar days from the Effective Date through no fault of such Purchaser; *provided*, *however*, that no such termination will affect the right of any party to sue for any breach by the other party (or parties).

**6.2 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. Notwithstanding the foregoing, the Company shall pay all transfer agent fees, stamp taxes and other taxes and duties levied in connection with the delivery of any Securities to the Purchasers.

**6.3 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 supersede all prior agreements and understandings, oral or written, with respect to such subject matter, which the parties acknowledge have been merged into such documents, exhibits and schedules.

**6.4 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 upon actual receipt via mail, courier or confirmed email 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.

**6.5 Amendments; Waivers**. No provision of this Agreement may be waived or amended except in a written instrument signed, in the case of an amendment, by (a) the Company and (b) Purchasers holding at least a majority of the Shares and the Pre-Funded Warrant Shares (as a single class on an as-converted to Common Stock basis) and then-held by a Purchaser 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.

**6.6 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.

**6.7 Successors and Assigns**. This Agreement shall be binding upon and inure to the benefit of the parties and their permitted successors and assigns. The Company may not assign this Agreement or any rights or obligations hereunder without the prior written consent of each Purchaser (other than by merger). The Purchasers may not assign this Agreement or any rights or obligations hereunder without the prior written consent of the Company (other than by merger).

**6.8 Third-Party Beneficiaries**. This Agreement is intended for the benefit of the parties hereto and their respective permitted successors and assigns and is not for the benefit of, nor may any provision hereof be enforced by, any other person.

**6.9 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, without regard to the principles of conflicts of law thereof. 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, employees or agents) shall be commenced exclusively in the state and federal courts sitting in the State of New York. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the State of New York 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 suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such suit, 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 suit, 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 either party shall commence an action or proceeding to enforce any provisions of the Transaction Documents, then the prevailing party in such action or proceeding shall be reimbursed by the other party for its reasonable attorneys' fees and other costs and expenses incurred with the investigation, preparation and prosecution of such action or proceeding.

**6.10 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 on this Agreement is delivered by facsimile transmission or by e-mail delivery of a ".pdf" format data file, such signature shall create a legally 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.

**6.11 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.

**6.12 Rescission and Withdrawal Right**. Notwithstanding anything to the contrary contained in (and without limiting any similar provisions of) any of the other Transaction Documents, whenever any Purchaser exercises a right, election, demand or option under a Transaction Document and the

Company does not timely perform its related obligations within the periods therein provided, then such Purchaser may rescind or withdraw, in its sole discretion from time to time upon written notice to the Company, any relevant notice, demand or election in whole or in part without prejudice to its future actions and rights.

**6.13 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 and customary and reasonable indemnity or bond, if requested. 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.

**6.14 Independent Nature of Purchasers' Obligations and Rights**. The obligations of each Purchaser under any Transaction Document are several and not joint with the obligations of any other Purchaser, and no Purchaser shall be responsible in any way for the performance or non-performance of the obligations of any other Purchaser under any Transaction Document. Nothing contained herein or in any other Transaction Document, and no action taken by any Purchaser pursuant thereto, shall be deemed to constitute the Purchasers as a partnership, an association, a joint venture or any other kind of entity, or create a presumption that the Purchasers are in any way acting in concert or as a group with respect to such obligations or the transactions contemplated by the Transaction Documents. Each Purchaser shall be entitled to independently protect and enforce its rights, including without limitation, the rights arising out of this Agreement or out of the other Transaction Documents, and it shall not be necessary for any other Purchaser to be joined as an additional party in any proceeding for such purpose.

**6.15 Construction**. The parties agree that each of them and/or their respective counsel has 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 hereto.

**6.16 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.

**[Remainder of page intentionally left blank.]**

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

**SYNLOGIC, INC.**

/s/ Aoife Brennan
Name: Aoife Brennan
Title: President and Chief Executive Officer

Address for Notice: 301 Binney St., Suite 402
Cambridge, MA 02142

Email: aoife@synlogictx.com
Attention: Aoife Brennan

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

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.
One Financial Center
Boston, MA 02111
Email: ljgeffen@mintz.com; dabagliebter@mintz.com
Attention: Lewis J. Geffen; Daniel A. Bagliebter

**PURCHASERS:**

**GINKGO BIOWORKS, INC.:**

By: /s/ Jason Kelly
Name: Jason Kelly
Title: Chief Executive Officer

Address: 27 Drydock Avenue
8th Floor
Boston, MA 02210

Contact: Jason Kelly

Email: jason@ginkgobioworks.com

**EXHIBIT A**

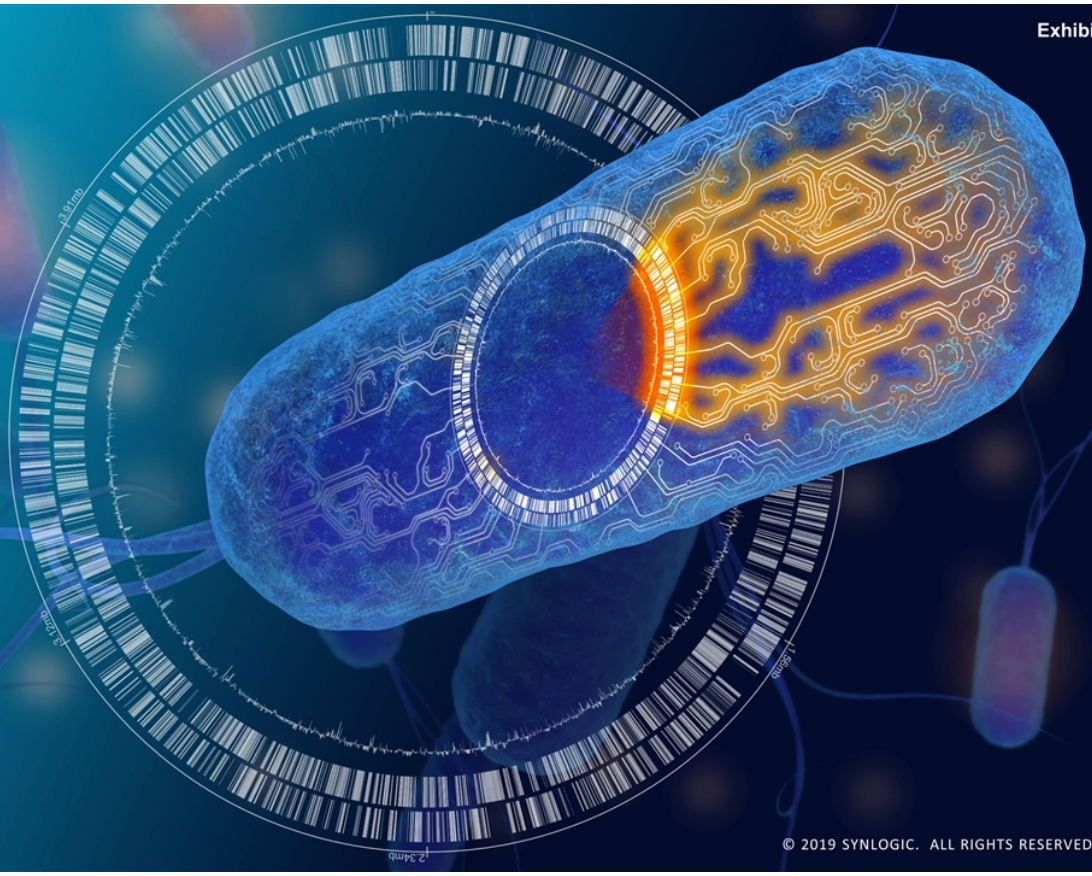
**CLOSING SCHEDULE**

| Name | Shares of Common Stock to be Purchased | Aggregate Purchase Price for Common Stock | Pre-Funded Warrants to be Purchased | Aggregate Purchase Price for Pre-Funded Warrant | Aggregate Purchase Price for Common Stock and Pre-Funded Warrants |
|---|---|---|---|---|---|
| Ginkgo Bioworks, Inc. | 6,340,771 | $57,066,939.00 | 2,548,117 | $22,907,571.83 | $79,974,510.83 |

Exhibit 99.1

# Synlogic

## DESIGNED FOR LIFE



June 2019
Corporate Presentation

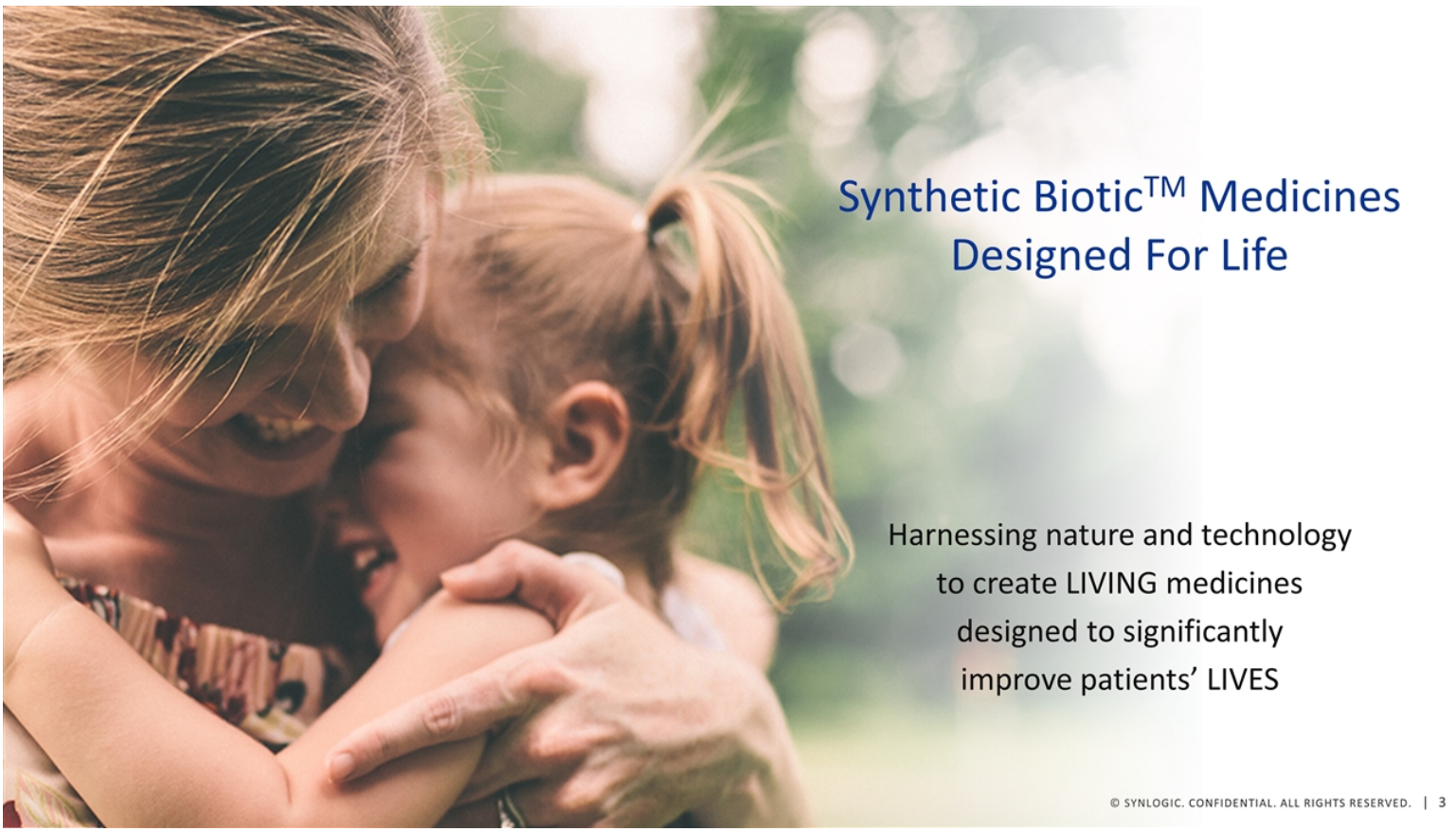
synlogic

# Forward Looking Statements

This presentation contains “forward-looking statements” that involve substantial risks and uncertainties for purposes of the safe harbor provided by the Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical facts, included in this presentation regarding strategy, future operations, future financial position, future revenue, projected expenses, prospects, plans and objectives of management are forward-looking statements. In addition, when or if used in this presentation, the words “may,” “could,” “should,” “anticipate,” “believe,” “estimate,” “expect,” “intend,” “plan,” “predict” and similar expressions and their variants may identify forward-looking statements. Examples of forward-looking statements include, but are not limited to, the approach we are taking to discover and develop novel therapeutics using synthetic biology; statements regarding the potential of our platform to develop therapeutics to address a wide range of diseases, including: inborn errors of metabolism, liver disease, inflammatory and immune disorders, and cancer; the future clinical development of Synthetic Biotic medicines; the potential of our technology to treat hyperammonemia and phenylketonuria; the expected timing of our anticipated clinical trial initiations; the benefit of orphan drug and fast track status; the adequacy of our capital to support our future operations and our ability to successfully initiate and complete clinical trials; the results of our collaborations; and the difficulty in predicting the time and cost of development of our product candidates. Actual results could differ materially from those contained in any forward-looking statement as a result of various factors, including, without limitation: the uncertainties inherent in the preclinical development process; our ability to protect our intellectual property rights; and legislative, regulatory, political and economic developments, as well as those risks identified under the heading “Risk Factors” in our filings with the SEC. The foregoing review of important factors that could cause actual events to differ from expectations should not be construed as exhaustive and should be read in conjunction with statements that are included herein and elsewhere, including the risk factors included in our Annual Report on Form 10-K filed with the SEC on May 9, 2019. The forward-looking statements contained in this presentation reflect our current views with respect to future events. We anticipate that subsequent events and developments will cause our views to change. However, while we may elect to update these forward-looking statements in the future, we specifically disclaim any obligation to do so. These forward-looking statements should not be relied upon as representing our view as of any date subsequent to the date hereof.



# Synthetic Biotic™ Medicines Designed For Life

Harnessing nature and technology
to create LIVING medicines
designed to significantly
improve patients' LIVES

# Synthetic Biotic™ Medicines
# A Novel Class of Engineered Living Medicines

**SYNTHETIC**

- Designed genetic circuits to execute biological functions
- Degradation of disease-causing metabolites
- Production of therapeutic molecules

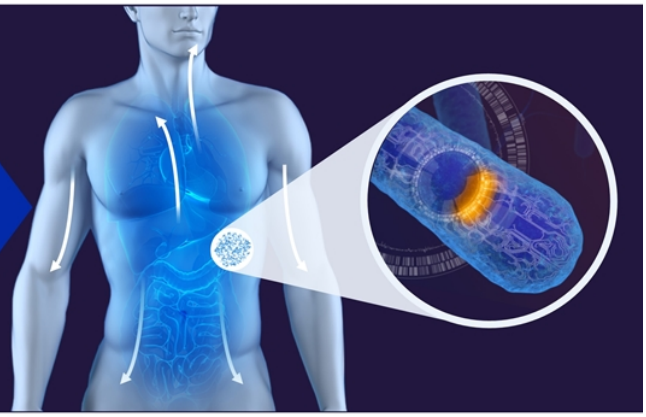
**BIOTIC**

- Bacterial chassis
- Non-pathogenic
- Amenable to genetic manipulation

**PATHWAYS, COMBINATIONS, BIOMARKERS**

**PROGRAMMABLE POTENCY AND CONTROL**

**LOCAL ACTIVITY, REDUCED SYSTEMIC TOXICITY**





# Synthetic Biotic Portfolio: Breadth and Potential

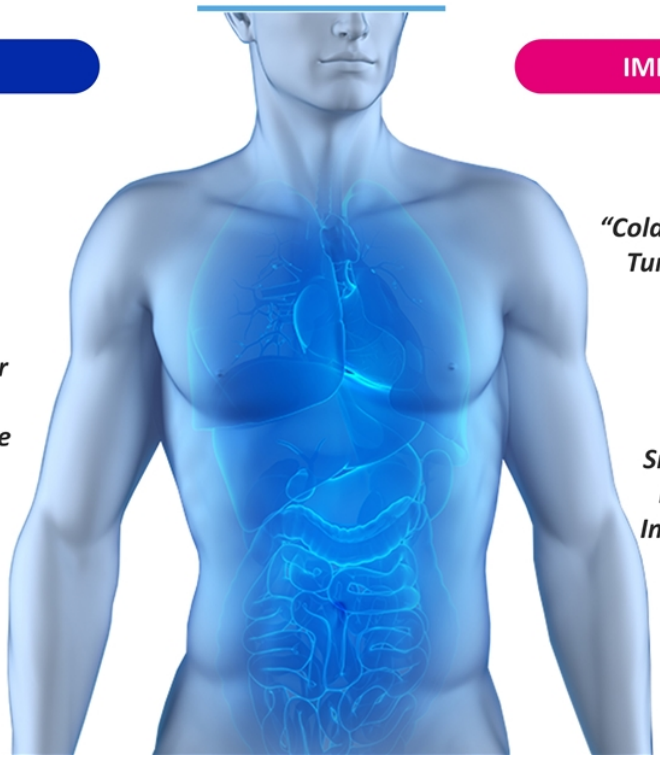
Initial Applications Designed to Target Different Sites of Action in Metabolic and Immunomodulatory Diseases

**METABOLIC DISEASES**

Rare Metabolic Disease

Broad Metabolic Disease

***Small or Large Intestine***



**IMMUNOMODULATION**

***"Cold" Solid Tumors***

Immuno-Oncology

***Small or Large Intestine***

Inflammatory and Autoimmune

synlogic

# Platform Collaboration to Accelerate Development of Synlogic's Synthetic Biotic Medicines

synlogic

GINKGO BIOWORKS™
THE ORGANISM COMPANY

- Provides access to Ginkgo's industrial scale, high-throughput strain optimization and screening
- Enables screening and identification of higher quality optimized candidates, increasing potential for success
- Delivers novel tools for increased candidate potency
- Includes equity investment at a premium, extending runway through multiple milestones

Builds off validated pilot program initiated in 2017

# Platform Collaboration to Accelerate Development of Synlogic's Synthetic Biotic Medicines

GINKGO BIOWORKS™
THE ORGANISM COMPANY

- Industry leader in the construction and editing of microbial strains and organisms
- Leaders in non-therapeutic commercial applications of synthetic biology
- Comprehensive database of microbial genome sequences and unparalleled automated foundry

Rapid prototyping and screening enables efficient iteration through 1000's of microbial strains

Top-tier platform companies and collaborations

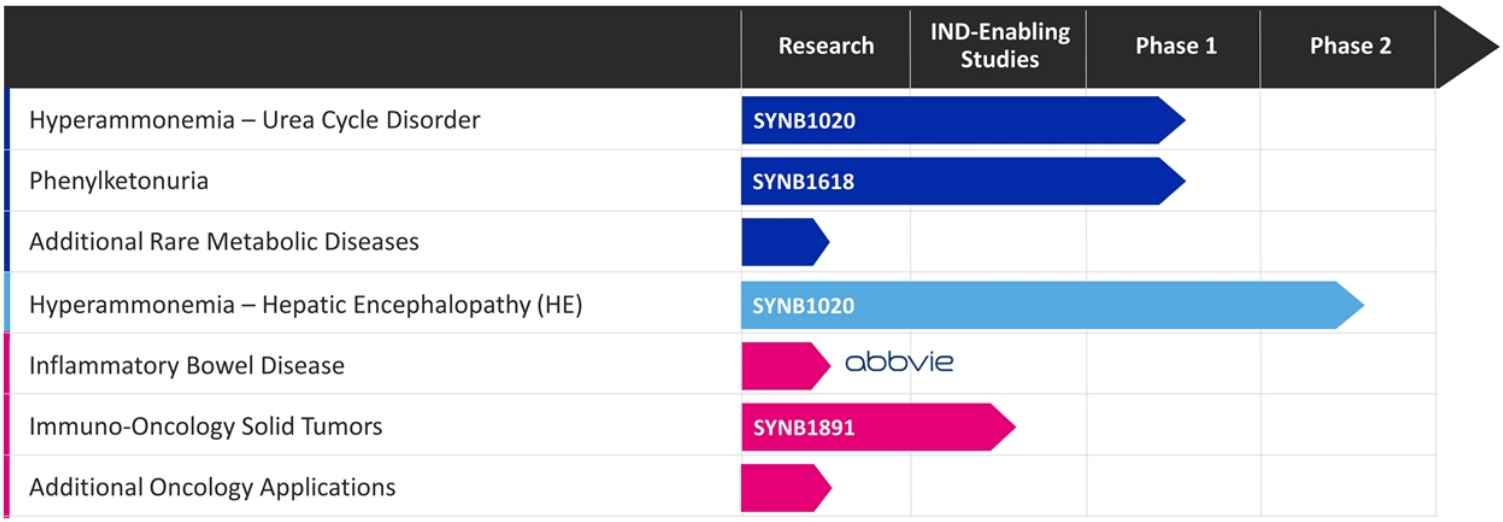
JOYN BIO · motif · BAYER · Roche · CRONOS GROUP

High-quality investor base

Viking · CASCADE INVESTMENT GROUP, INC. · Y · GENERAL ATLANTIC · SENATOR

# Investing in Development of a Robust Pipeline for Range of Diseases




**Rare Metabolic Diseases**
**Broad Metabolic Disease**
**Immunomodulation**

synlogic

# SYNB1020 for Hyperammonemia Indications

Characterized by Systemic Ammonia Accumulation

## HEPATIC ENCEPHALOPATHY (HE)

**Neuropsychiatric complication in patients with end-stage liver disease (cirrhosis)**

- Liver dysfunction leads to ammonia accumulation
- Toxic to brain, leading to HE crisis & hospitalization

**Patients:**

- 165,000 diagnosed overt patients in US
- Up to 70% of patients with cirrhosis characterized as covert (subclinical)

**Treatment:**

- Lactulose: laxative with significant side effects
- Rifaximin: reduction in overt HE recurrence

**Target Profile to Address Unmet Need:**

- Reduce episodes of hospitalization
- Improve cognitive outcomes, Quality of Life

## UREA CYCLE DISORDERS (UCD)

**Genetic defects in Urea Cycle**

- Deficiency in one of the six enzymes
- Nitrogen accumulates as toxic ammonia leading to metabolic crisis

**Patients:**

- ~2,000 diagnosed in US; similar in EU

**Treatment:**

- Ammonia scavengers: Buphenyl® (sodium phenylbutyrate), Ravicti® (glycerol phenylbuterate)
- Low protein diet with amino acid supplements

**Target Profile to Address Unmet Need:**

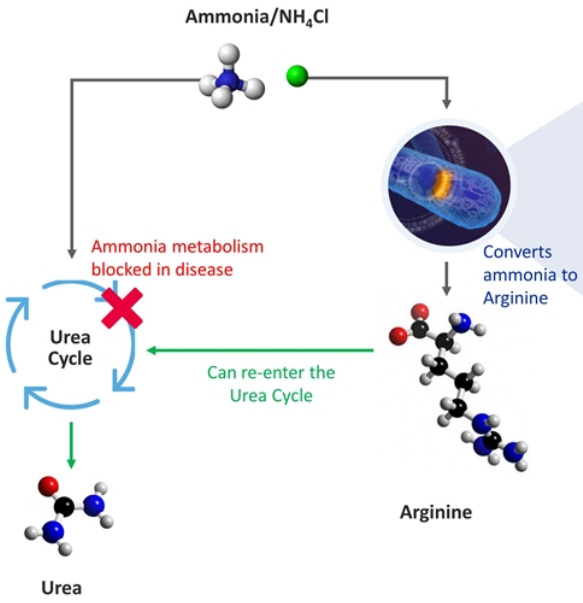
- Maintain blood ammonia in normal range, avoid crisis
- Protein liberalization: 50-100% more per day
- Oral administration



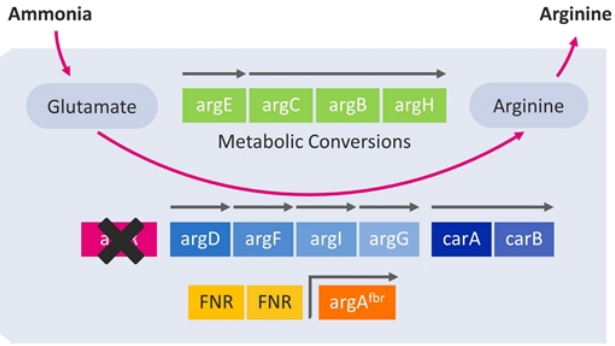
 

# SYNB1020 Mechanism of Action:

Conversion of Toxic Ammonia into Beneficial Arginine for the Treatment of UCD and HE




**Engineered Probiotic Bacteria: *E. coli* Nissle**
Components of Synthetic Genetic Circuit



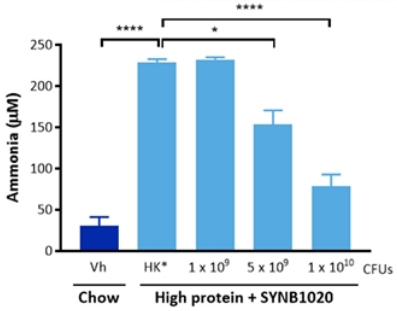

- Under normal conditions, the **urea cycle metabolizes ammonia into urea**
- In UCD and HE, ammonia is not efficiently metabolized via urea cycle. **SYNB1020 provides an alternative mechanism**

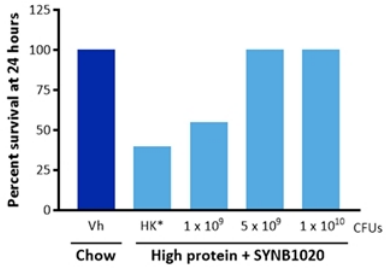

 

# SYNB1020 data recently published in *Science Translational Medicine*

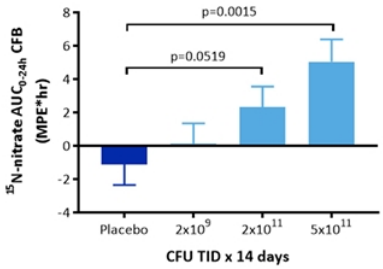
*In vivo* data in mouse models and healthy volunteers demonstrate mechanism of action


## MOUSE MODEL

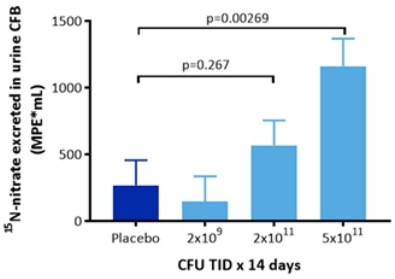



## PLASMA NITRATE




## URINARY NITRATE



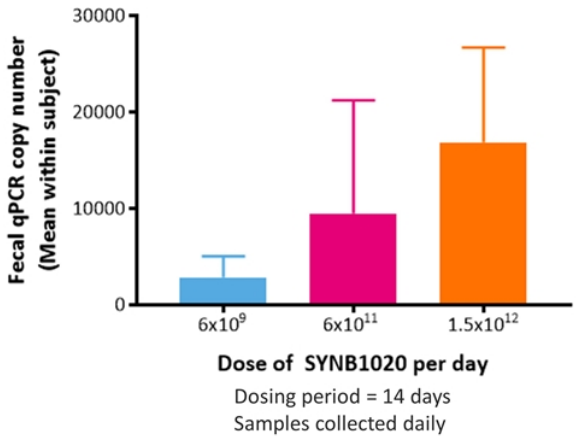

synlogic

# SYNB1020 Clinical Data in Healthy Volunteers

Dose-dependent Increase in SYNB1020 in Feces, Clearance on Cessation of Dosing

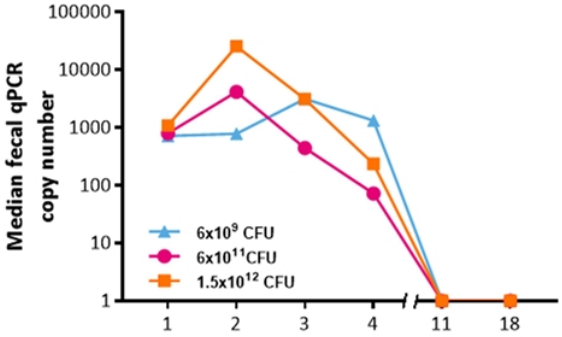
## DOSE-DEPENDENT INCREASE IN FECES




**Dose of SYNB1020 per day**

Dosing period = 14 days
Samples collected daily

## CLEARANCE




**Days since last dose**

Dosing period = 14 days



# SYNB1020 Clinical Development

Hepatic Encephalopathy Phase 1b/2a in Patients with Cirrhosis and Elevated Ammonia

| PROGRAM | 2018 Q1 | 2018 Q2 | 2018 Q3 | 2018 Q4 | 2019 Q1 | 2019 Q2 | 2019 Q3 | 2019 Q4 |
|---|---|---|---|---|---|---|---|---|
| Hepatic Encephalopathy | | Phase 1b / 2a | | | | | | |

**Hepatic Encephalopathy Clinical Trial**

- Randomized, double-blind placebo-controlled study ongoing at multiple sites in the US
- Primary outcome: establish safety/tolerability in patients with cirrhosis and elevated ammonia
- Secondary outcome: reduction of ammonia

**Urea Cycle Disorders**
(Plans to continue development in UCD dependent on data from Ph 1b/2a HE study)


synlogic

[1] *MELD score: scoring system model for end-stage liver disease*

# SYNB1618 for Phenylketonuria (PKU)

**Goal**: Managing Plasma Phe Levels

**PKU is a rare inherited amino acid metabolism disorder**

- Causes build up of amino acid phenylalanine (Phe) in the body
- Today, less than half of adults are at or below target Phe levels of 120-360 μmol / L
- If left untreated, symptoms include cognitive impairment, convulsions, behavioral problems, skin rash

**Patients:**

- 16,500 diagnosed in US, similar in EU5

**Treatment:**

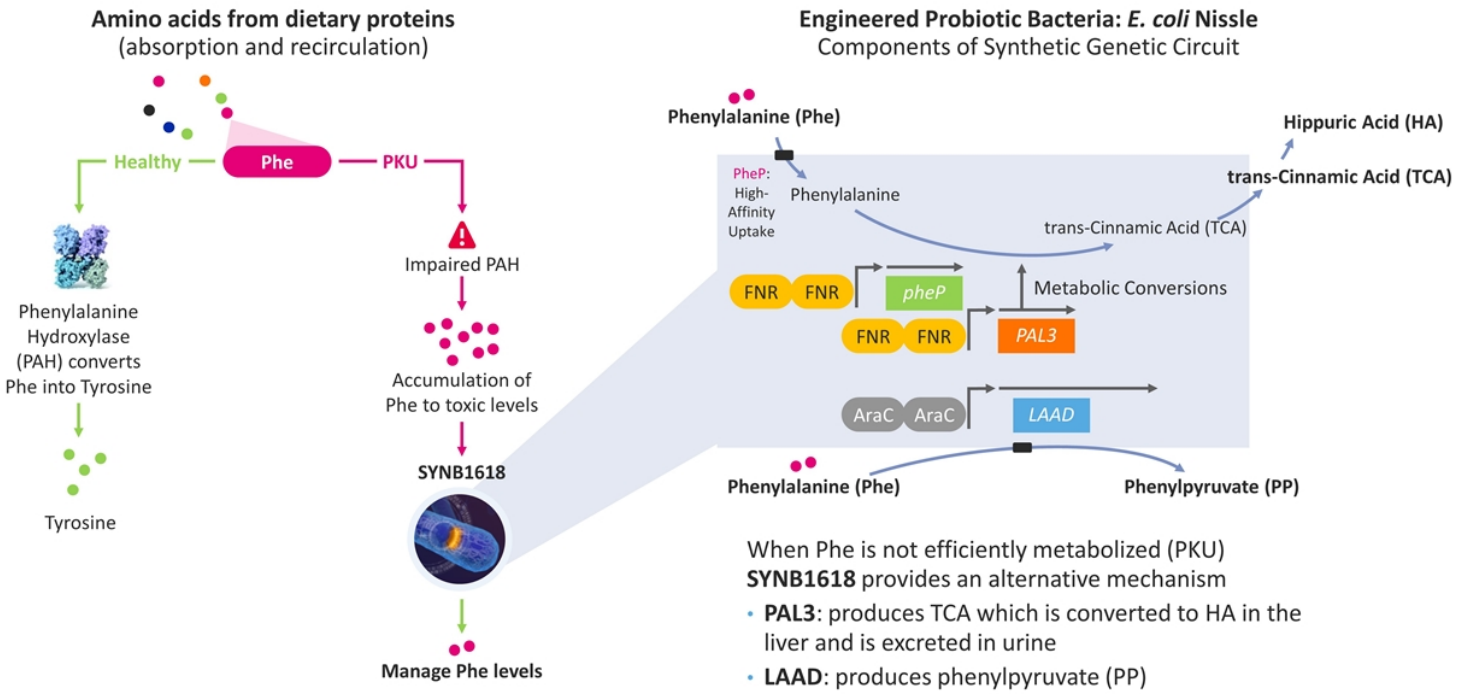
- Phenylalanine is found in all proteins therefore low protein diet is followed (no meat, dairy, nuts, eggs)
- KUVAN® (sapropterin dihydrochloride): PAH cofactor. 20-40% of patients are responders
- Palynziq™ (pegvaliase-pqpz): injectable, pegylated, bacterial enzyme (phenylalanine ammonia-lyase or PAL) for treatment of adult patients

**Target Profile to Address Unmet Need:**

- Manage Phe below target levels to prevent irreversible cognitive damage
- Increase natural protein intake: classic PKU patients' natural protein intake is typically less than 10g
- Oral dosing without systemic toxicity

# SYNB1618 Mechanism of Action




When Phe is not efficiently metabolized (PKU) **SYNB1618** provides an alternative mechanism

- **PAL3**: produces TCA which is converted to HA in the liver and is excreted in urine
- **LAAD**: produces phenylpyruvate (PP)

# SYNB1618 Preclinical Characterization

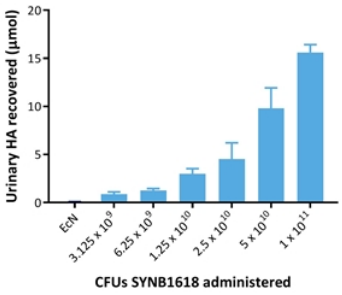
Biomarkers Demonstrate Activity of SYNB1618 in Mouse Model of PKU and Healthy NHPs

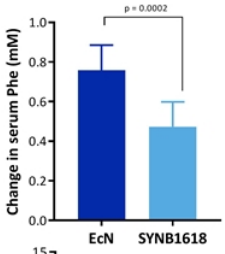
nature biotechnology

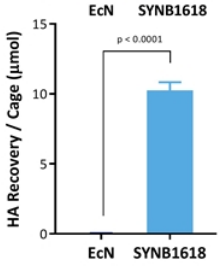
Development of synthetic live bacterial therapeutic for the human metabolic disease phenylketonuria

*Vincent M Isabella et al, Synlogic, Inc.*

## *IN VIVO* EFFICACY IN (PKU) PAH$^{enu2/enu2}$ MOUSE

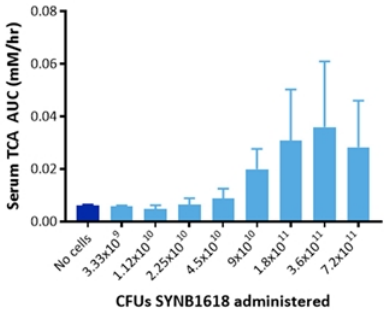


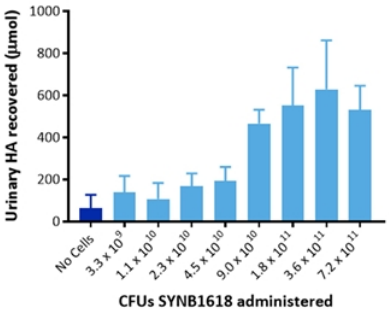




*Nat. Biotechnol. 2018 Oct;36(9):857-864*

## DOSE RESPONSE IN HEALTHY NHPs




synlogic

# SYNB1618 in the Clinic: Safety

Interim Analysis of Phase 1/2a SAD/MAD Study Demonstrates Safety and Clearance in Healthy Volunteers

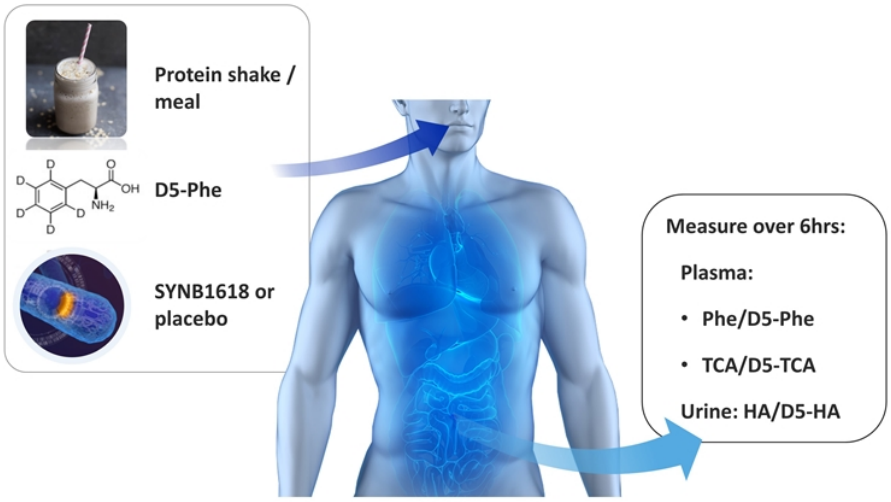
| 56 healthy volunteers | Received at least one dose of SYNB1618 or placebo | Adults<br>Age range: 18-62 yrs old |
|---|---|---|

- ✓ There were no treatment-related serious adverse events, no systemic toxicity or infections
- ✓ Treatment-emergent adverse events were either mild or moderate in severity, and reversible. Most adverse events were GI-related
- ✓ Single dose MTD was defined as $2x10^{11}$ CFU. Doses above this level were associated with dose-limiting GI adverse events
- ✓ All subjects cleared the bacteria. There was no evidence of colonization, and no subject required antibiotics

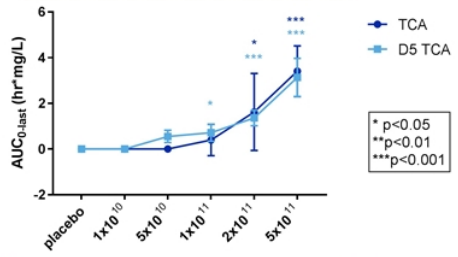
Based on pharmacodynamic data and tolerability profile, a dose of $7x10^{10}$ CFU was identified for the second part of the study in PKU patients

# SYNB1618 in the Clinic: Activity

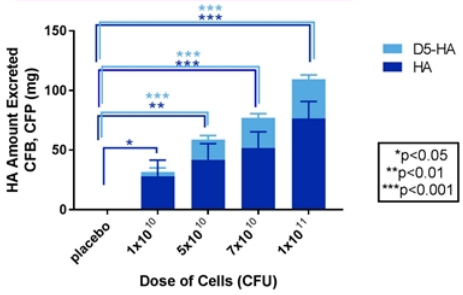
Statistically Significant Dose-dependent Activity of SYNB1618 in Healthy Volunteers




**TCA AUC SINGLE DOSE RESPONSE**




**MAD URINARY HA AND D5-HA**

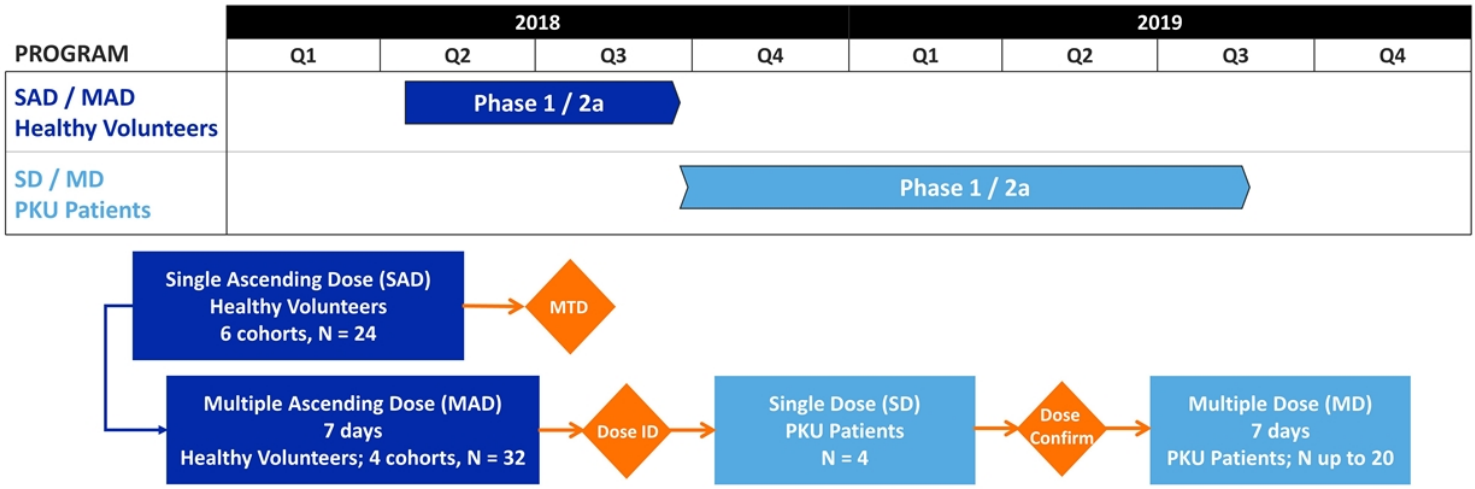



*Key: HA: Hippurate, D5-HA: labeled HA, CFB: change from baseline, CFP: change from placebo*

# SYNB1618 Clinical Development

Phase 1/2a in Healthy Volunteers with Patient Cohort







**PKU Clinical Trial Design**

- Randomized, double-blind placebo-controlled study ongoing at multiple sites in the US
- Primary outcome: establish safety/tolerability following single and multiple doses in HV and PKU patients
- Secondary outcome: SYNB1618 kinetics in feces
- Exploratory: change from baseline in plasma and urinary biomarkers

# Immuno-Oncology

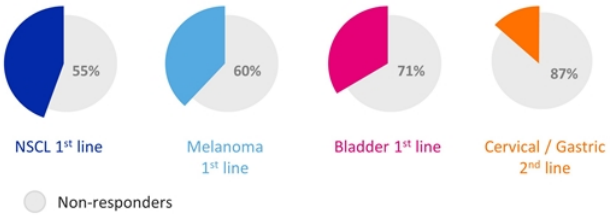
# Synlogic Vision for Immuno-Oncology

Expand the Benefits of Immunotherapy Broadly Across Tumor Types

**CHECKPOINT INHIBITORS HAVE TREATMENT FAILURES**

For indications where immune checkpoint inhibitors are indicated, 55-87% of patients fail to respond

**Failure Rates for Select FDA Approved CPI Monotherapy**




Other tumors, where CPIs are not indicated, show little-to-no response to checkpoint inhibitors

**Bacteria Recognized as Earliest Immunotherapy**

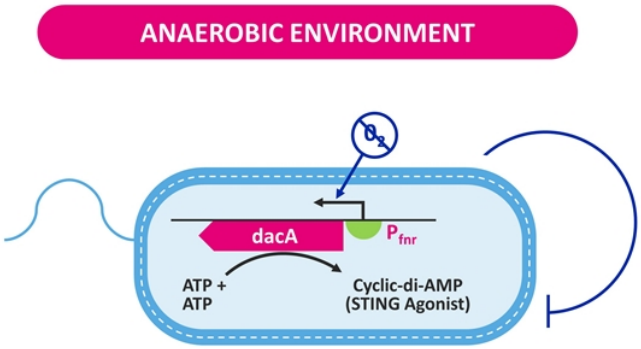
"Nature often gives us hints to her profoundest secrets, and it is possible that she has given us a hint in which, if we will but follow, may lead us on to the solution of this difficult problem."

**DR. WILLIAM B. COLEY**
IMMUNO-ONCOLOGY PIONEER

**Enable broad response and remission through engagement of multiple immunomodulatory pathways to enhance tumor inflammation and promote robust T cell responses**

# Dual Innate Immune Activator: Synthetic Biotic Medicine Producing STING Agonist (SYNB1891)

- Synthetic biology applied to confer activities for efficacy and control for safety
- Designed as a dual innate immune activator: combined benefit of bacterial chassis and STING agonist
- The dacA gene is integrated into genome under the control of inducible promoter ($P_{fnr}$) to produce c-di-AMP (CDA)
- Dual biosafety feature via auxotrophies – no proliferation in tumor, systemic circulation or environment
- Learnings inform future combinations



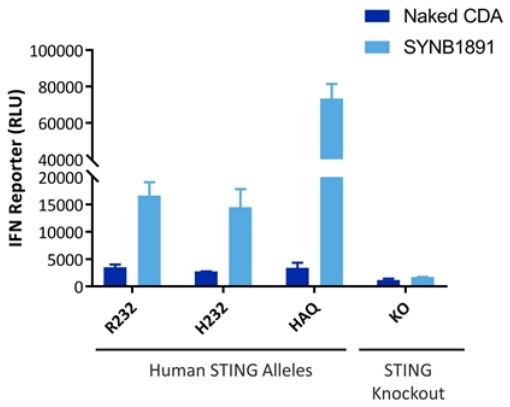

**Auxotrophies**

- Diaminopimelic acid (DAP)
- Thymidine

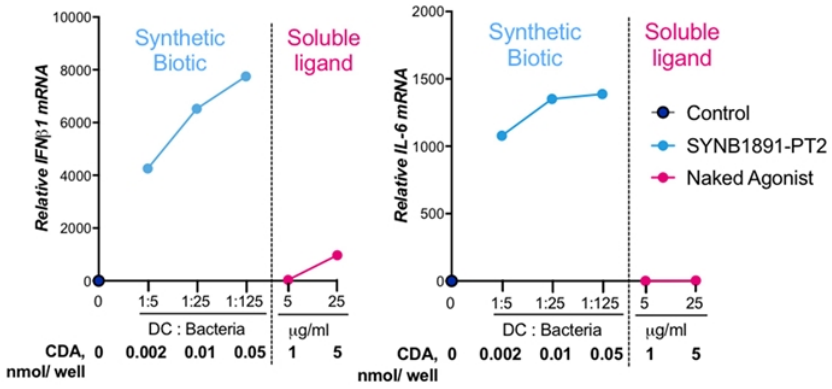
# SYNB1891 *In Vitro* Characterization

Interferon Production Across Multiple Human STING Alleles – Activity Greater than Naked STING Agonist

**REPORTER HUMAN MONOCYTIC LINE**




**HUMAN PRIMARY DENDRITIC CELLS**

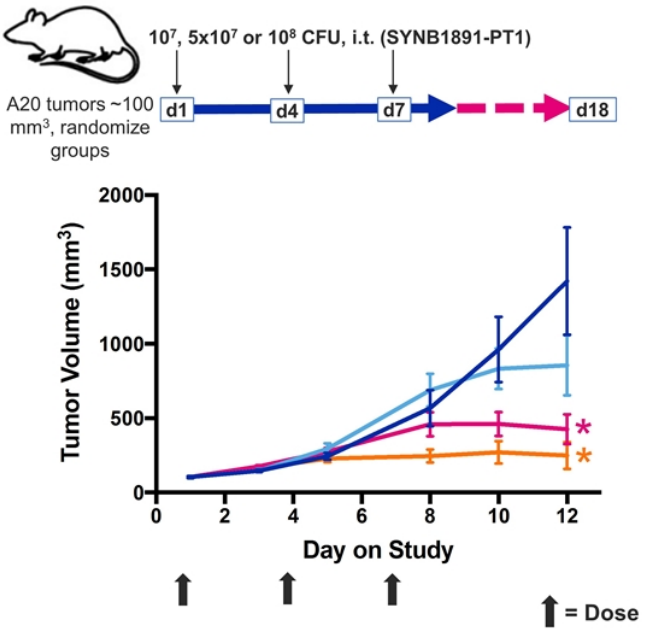


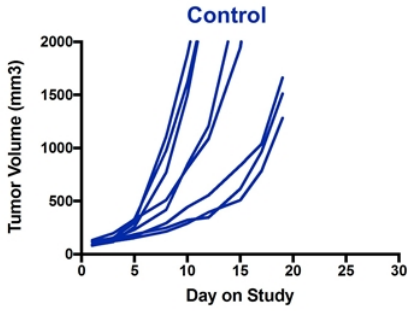


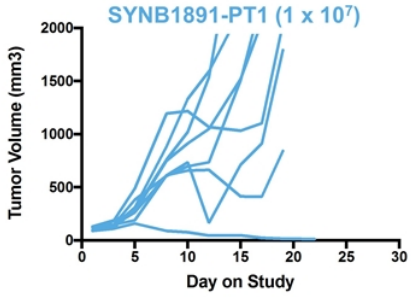

 

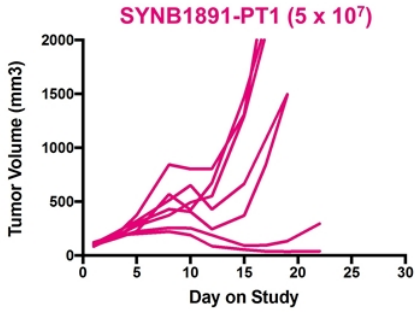
# SYNB1891 *In Vivo* Characterization

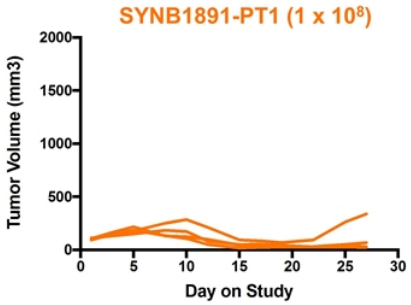
Dose-dependent Anti-tumor Activity of SYNB1891 Prototype Strain (PT1) as a Single Agent

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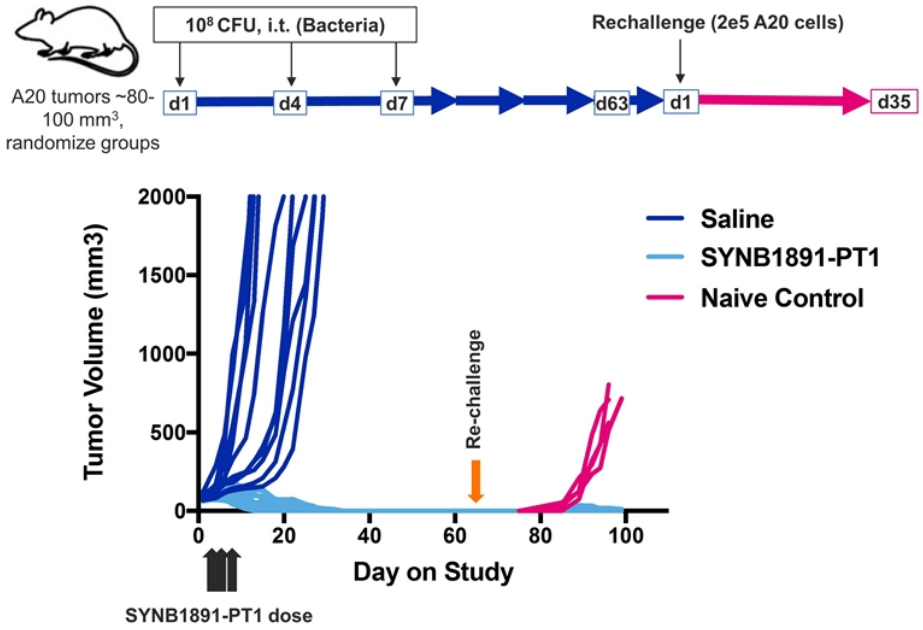
# SYNB1891 *In Vivo* Characterization

SYNB1891 Prototype Strain (PT1) Leads to Systemic Anti-tumor Immunity





# Dual Innate Immune Activator SYNB1891

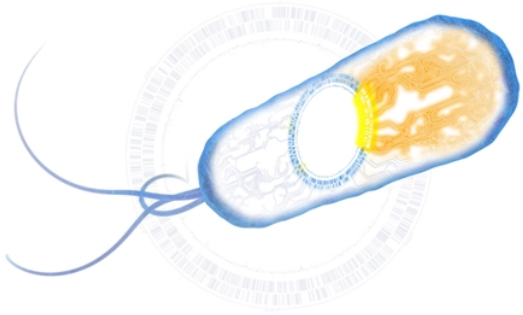
Designed to Locally Inflame the TME and Systemically Drive Tumor Antigen-Specific Immunity

## PROGRESS TOWARDS THE CLINIC

- Tumor Colonization without Leakage
- Enhanced Activity vs. Naked STING Agonist
- Intracellular Activation of STING and Bacterial-Induced Immune Pathways Within APCs
- Dose-dependent Anti-tumor Activity
- Immunological Memory
- Clinical trial material manufactured
- IND Submission 2H19

## PROMISE OVER OTHER APPROACHES

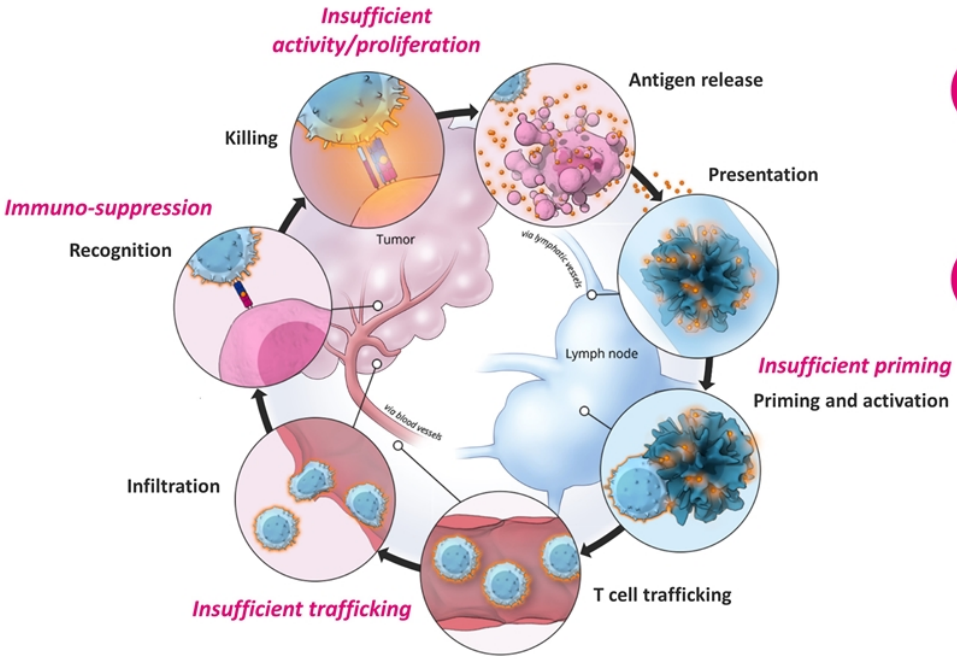
- STING Agonism in Target Cells that Drive Efficacy
- Sparing Cells Where STING Agonism is Detrimental
- Activation of Multiple Innate Immune Pathways
- Low Systemic Risk





# A Tumor Can Evade Multiple Critical Aspects of the Cancer-Immunity Cycle




**MONOTHERAPIES OFTEN FAIL TO OVERCOME TUMOR EVASION MECHANISMS**

Recognized Need to Combine Mechanisms to Broaden the Benefit of Immunotherapy

**ENGINEER LIVING SOLUTIONS: SYNTHETIC BIOTIC MEDICINES**

Rationally Designed for Combinatorial Effect

Locally Inflame the tumor microenvironment (TME)

Systemically Drive Tumor-Antigen Specific Immunity

*In Situ* Vaccination: Neo-antigen Priming and Sustained Immune Response

synlogic Adapted from Chen, Melman; Immunity 2013

# Additional Synthetic Biotic Effectors

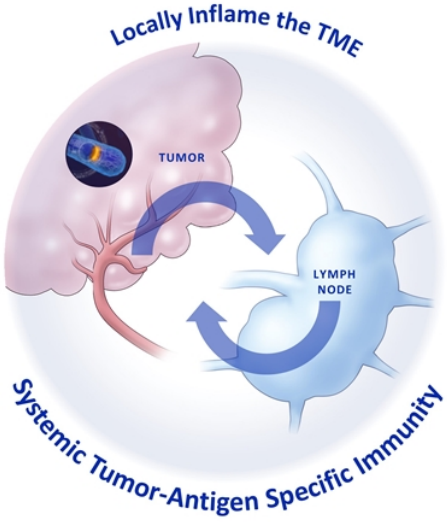
VISION: Rational Design to Locally Inflame the TME AND Systemically Drive Tumor-Antigen Specific Immunity

**RELIEVE IMMUNOSUPRESSION**

- Kyn Consumption
- Ade Consumption
- αPD-1 scFv

**PROMOTE TRAFFICKING**

- Chassis effect
- CXCL10
- Hyaluronidase




**PROMOTE AND SUSTAIN IMMUNE ACTIVATION**

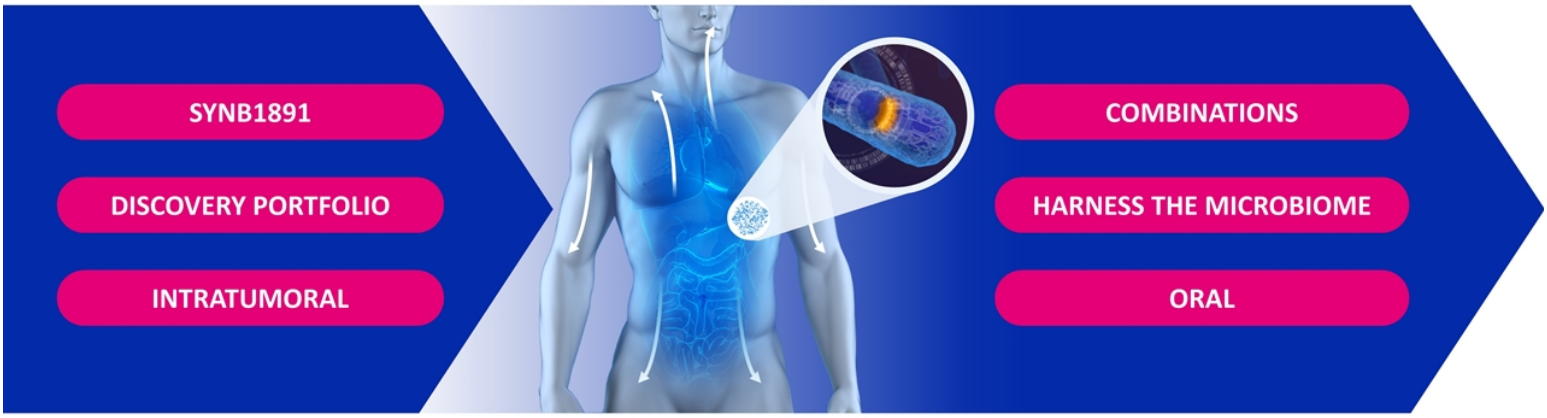
- IL-15; IL-12
- Arg Production
- 4-1BBL
- OX40L

**PRIME FOR TUMOR-ANTIGEN-SPECIFIC VACCINATION**

- Chassis effect
- 5FC→5FU
- STING
- αCD40 scFv/CD40L
- TNFα
- IFNγ
- αCD47 ScFv / Sirpα
- GM-CSF

# Broad Ambitions in Immuno-Oncology

Vision: Expand and Exceed the Effect of Cancer Immunotherapies

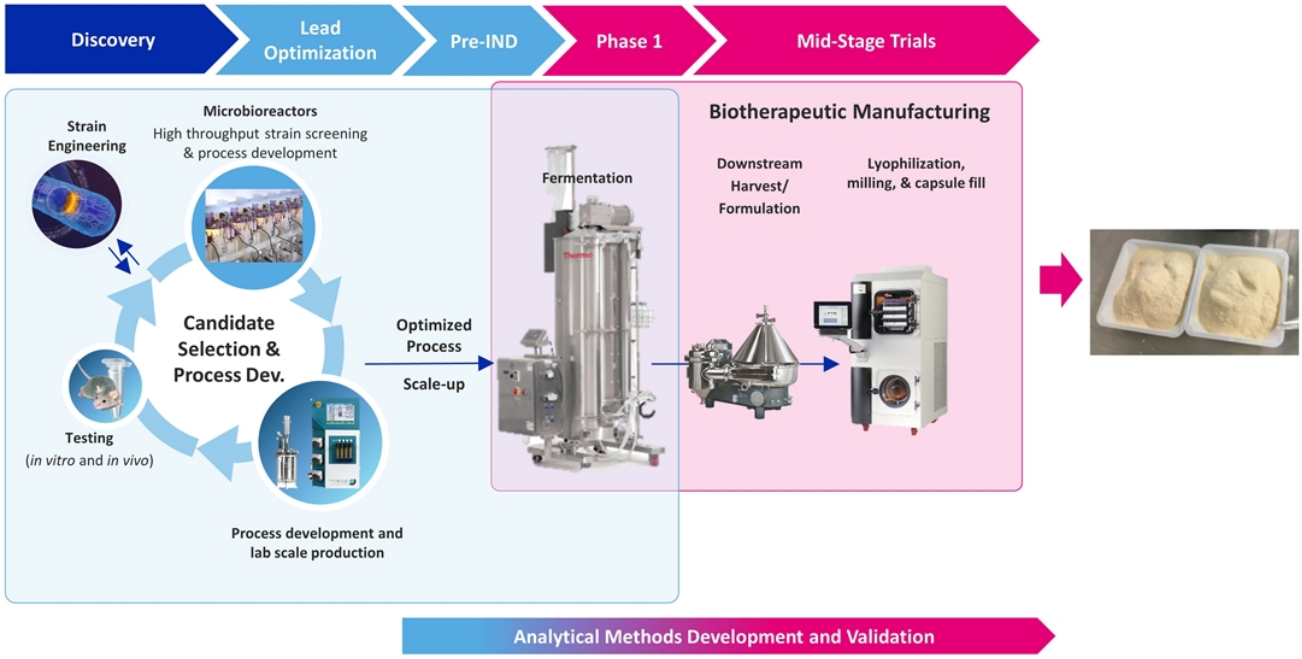




# Synlogic Internal GMP Manufacturing Capabilities

In-house Process Development and Clinical Manufacturing for Early & Mid-Stage Trials





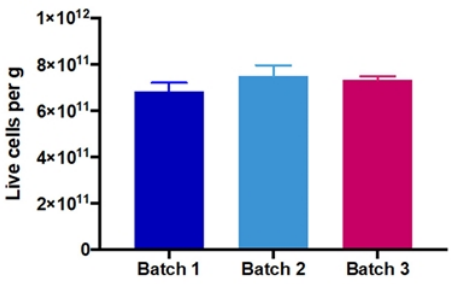
# Demonstrated Progress in Development of Lyophilized SYNB1618

- Improved fermentation process enables production of a solid formulation of SYNB1618 with minimal impact on cell viability or activity
- Lyophilized SYNB1618 is similarly active to frozen liquid in terms of consumption of Phe or production of TCA/HA i*n vitro* and *in vivo*
- New solid process material is expected to have improved quality attributes including less free protein and reduced viscosity
- Process is robust and reproducible at 30 L production scale
- Lyophilized SYNB1618 is stable for >90 days at 2-8 °C and >30 days at room temperature
- Suite build-out complete and ready to manufacture cGMP lyophilized SYNB1618

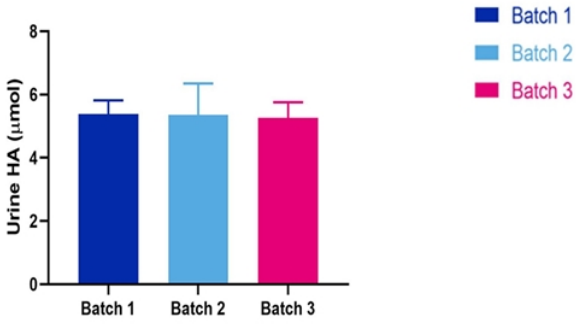

 

# Batch to Batch Consistency of SYNB1618 Solid Formulation

Viability



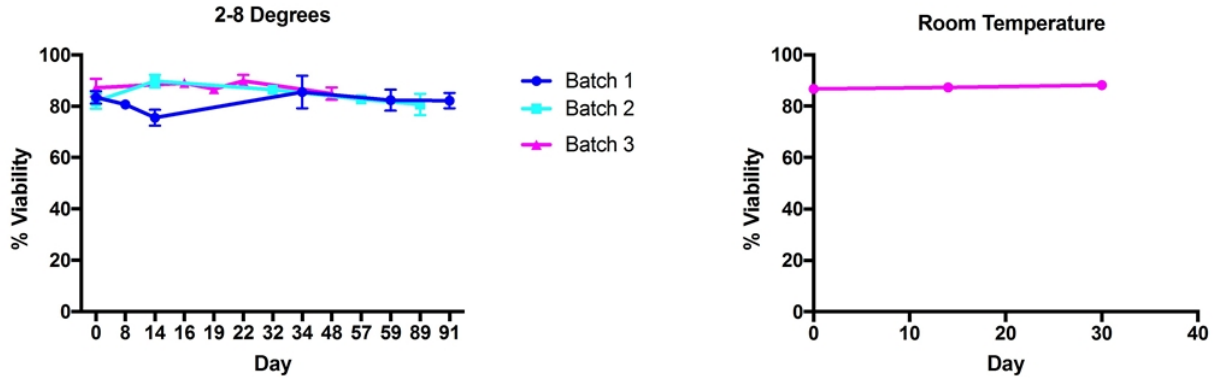

Activity in WT mice





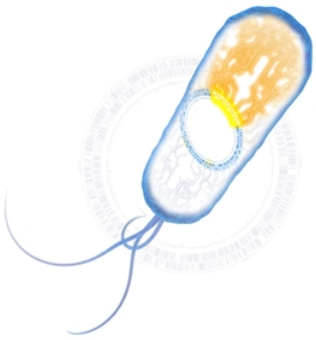
# Stability of SYNB1618 Solid Formulation





# 2019 Progress and Milestones



**SYNB1618 in PKU**

- ➢ Complete ongoing study in patients
- ➢ Data expected 3Q2019 (safety, tolerability and biomarkers)

**SYNB1020 in Hyperammonemia**

- ✓ Preclin. and HV clin. data published in *Sci. Transl. Med.*
- ➢ Complete ongoing study in patients with cirrhosis
- ➢ Data expected 3Q2019 (safety, tolerability and ammonia-lowering)
- ➢ With ammonia-lowering data define development plan

**SYNB1891 in Immuno-Oncology**

- ➢ IND submission 2H2019
- ✓ Clinical trial material manufactured

- ✓ Advance **AbbVie collaboration**
- ➢ Advance **preclinical pipeline**

# Synthetic Biotic™ Medicines Designed For Life

Harnessing nature and technology
to create LIVING medicines
designed to significantly
improve patients' LIVES

synlogic

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TEL: 617-401-9975
WEB: WWW.SYNLOGICTX.COM | EMAIL: INFO@SYNLOGICTX.COM

**Synlogic and Ginkgo Bioworks Establish Transformational Platform Collaboration for the Accelerated Development of Novel Synthetic Biotic™ Medicines**

*– Fuels development of Synlogic's growing pipeline of novel living medicines with technology access and $80.0 million equity investment at a premium –*

*– Applies Ginkgo's high-throughput synthetic biology platform services to human therapeutics –*

*– Synlogic to host a conference call at 8:00 am ET today –*

**CAMBRIDGE and BOSTON, MASS., June 12, 2019** – Synlogic, Inc. (Nasdaq: SYBX), a clinical-stage company applying synthetic biology to beneficial microbes to develop novel, living medicines and Ginkgo Bioworks, the organism company, today announced a platform collaboration to accelerate expansion and development of Synlogic's pipeline of Synthetic Biotic medicines using Ginkgo's cell programming platform.

The agreement provides an $80.0 million equity investment at a premium in Synlogic by Ginkgo and entry into a long-term strategic platform collaboration. Synlogic will use Ginkgo's cell programming platform for building and testing thousands of microbial strains to accelerate progression of early preclinical leads to drug candidates optimized for further clinical development.

"This collaboration significantly enhances Synlogic's Synthetic Biotic strain optimization capabilities and builds on the successful pilot program we began with Ginkgo in late 2017. It enables us to advance high-quality candidate strains into development more efficiently and provides technology and resources that will fuel pipeline expansion as we continue to advance our existing clinical programs," said Aoife Brennan, M.B., Ch.B., Synlogic's president and chief executive officer. "Ginkgo has built a world-class infrastructure for programming and optimizing microbial strains at a large scale which will be instrumental in the development of our portfolio of Synthetic Biotic medicines. We are excited to establish this agreement and to work together to advance meaningful treatments for patients."

"The ability to program living cells to sense and respond to treat complex diseases has great potential. Synlogic's platform for designing and developing living medicines that can treat a wide range of dynamic diseases has the potential to be transformative to the next generation of pharmaceuticals," said Jason Kelly, Ph.D., co-founder and chief executive officer of Ginkgo Bioworks. "Based on the success of our pilot work with the Synlogic team, we're doubling down on our collaboration to grow this powerful engine for the future of medicine together."

Ginkgo has purchased 6,340,771 shares of Synlogic common stock as well as pre-funded warrants to purchase up to 2,548,117 shares of Synlogic common stock, both at a price of $9.00 per share. Gross proceeds to Synlogic are approximately $80 million. The transactions were executed and closed on June 11, 2019. At the closing, under the foundry services agreement, Synlogic paid $30.0 million to Ginkgo for synthetic biology services to be provided over an initial period of five years which can be extended. Synlogic has exclusive rights to any Synthetic Biotic medicines that it develops as part of the collaboration and to intellectual property covering such products.

**Conference Call & Webcast Information**

Synlogic will host a conference call and live webcast today at 8:00 am ET today, Wednesday, June 12, 2019. To access the live webcast, please visit the "Event Calendar" page within the Investors and Media section of the Synlogic website. Alternatively, investors may listen to the call by dialing +1 (844) 815-2882 from locations in the United States or +1 (213) 660-0926 from outside the United States. The conference ID number is 1885643. For those unable to participate in the conference call or webcast, a replay will be available for 30 days on the Investors and Media section of the Synlogic website.

**About Synlogic**

Synlogic is pioneering the development of a novel class of living medicines, Synthetic Biotic™ medicines, based on its proprietary drug development platform. Synlogic leverages the tools and principles of synthetic biology to genetically engineer beneficial microbes to perform or deliver critical functions missing or damaged due to disease. Synthetic Biotic medicines are designed to act locally and have a systemic effect to address disease in patients. Synlogic's two lead programs, SYNB1020 and SYNB1618, are orally administered and target hyperammonemia as a result of liver damage or genetic disease, and phenylketonuria, respectively. Synlogic is also developing SYNB1891 as an intratumorally-administered Synthetic Biotic medicine for the treatment of cancer. In addition, the company is leveraging the broad potential of its platform to create additional Synthetic Biotic medicines for the treatment of liver disease, as well as inflammatory and immune disorders including Synlogic's collaboration with AbbVie to develop Synthetic Biotic-based treatments for inflammatory bowel disease (IBD). For more information, please visit www.synlogictx.com.

**About Ginkgo Bioworks**

Ginkgo Bioworks is the organism company, using the power of biology to build sustainable products in food, pharma, manufacturing, and more. Using sophisticated software and state of the art automation, Ginkgo's powerful platform for genetic engineering is making biology easier to engineer, enabling new products to be renewably manufactured with biology. Ginkgo's investors include Viking Global Investors, Y Combinator's Continuity Fund, Cascade Investment, and General Atlantic. For more information, visit ginkgobioworks.com.

**Forward-Looking Statements**

This press release contains “forward-looking statements” that involve substantial risks and uncertainties for purposes of the safe harbor provided by the Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical facts, included in this press release regarding strategy, future operations, future financial position, future revenue, projected expenses, prospects, plans and objectives of management are forward-looking statements. In addition, when or if used in this press release, the words “may,” “could,” “should,” “anticipate,” “believe,” “estimate,” “expect,” “intend,” “plan,” “predict” and similar expressions and their variants, as they relate to Synlogic may identify forward-looking statements. Examples of forward-looking statements, include, but are not limited to, statements regarding the potential of Synlogic’s platform to develop therapeutics to address a wide range of diseases, including: cancer, rare metabolic diseases, liver disease, and inflammatory and immune disorders; the future clinical development of Synthetic Biotic medicines; the approach Synlogic is taking to discover and develop novel therapeutics using synthetic biology; the potential of Synlogic’s technology to treat cancer, hyperammonemia, and phenylketonuria. Actual results could differ materially from those contained in any forward-looking statement as a result of various factors, including: the uncertainties inherent in the clinical and preclinical development process; the ability of Synlogic to protect its intellectual property rights; and legislative, regulatory, political and economic developments, as well as those risks identified under the heading “Risk Factors” in Synlogic’s filings with the SEC. The forward-looking statements contained in this press release reflect Synlogic’s current views with respect to future events. Synlogic anticipates that subsequent events and developments will cause its views to change. However, while Synlogic may elect to update these forward-looking statements in the future, Synlogic specifically disclaims any obligation to do so. These forward-looking statements should not be relied upon as representing Synlogic’s view as of any date subsequent to the date hereof.


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