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

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**FORM S-3  
REGISTRATION STATEMENT**  
*UNDER  
THE SECURITIES ACT OF 1933*

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

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**Delaware**  
(State or other jurisdiction of  
incorporation or organization)

**26-1824804**  
(I.R.S. Employer  
Identification Number)

**301 Binney St., Suite 402  
Cambridge, MA  
(617) 401-9975**  
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

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**Aoife M. Brennan**  
**President, Chief Executive Officer and Chief Medical Officer**  
**Synlogic, Inc.**  
**301 Binney St., Suite 402  
Cambridge, Massachusetts 02142  
(617) 401-9975**  
(Name, address, including zip code, and telephone number, including area code, of agent for service)

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*Copy to:*

**Lewis J. Geffen, Esq.  
Matthew J. Gardella, Esq.  
Daniel Bagliebter, Esq.  
Mintz, Levin, Cohn, Ferris, Glovsky & Popeo, P.C.  
One Financial Center  
Boston, Massachusetts 02111  
(617) 542-6000**

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**Approximate date of proposed sale to the public: From time to time after the effective date of this Registration Statement.**

If the only securities being registered on this form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer   
Non-accelerated filer

Accelerated filer   
Smaller reporting company   
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.

#### CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered <sup>(1)</sup>	Proposed Maximum Offering Price Per Share	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common Stock, par value \$0.001 per share	6,340,771 shares	\$4.80 <sup>(2)</sup>	\$30,435,701	\$3,688.81
Common Stock, par value \$0.001 per share, underlying warrants	2,548,117 shares	\$9.00 <sup>(3)</sup>	\$22,933,053	\$2,779.49

- (1) This Registration Statement registers 6,340,771 shares of common stock of the Registrant and 2,548,117 shares of common stock of the Registrant issuable upon the exercise of pre-funded warrants issued by the Registrant at an exercise price of \$0.01 per share. Pursuant to Rule 416(a) of the Securities Act of 1933, as amended, this Registration Statement shall also cover any additional shares of the Registrant's common stock that become issuable by reason of any stock dividend, stock split, recapitalization or other similar transaction effected without receipt of consideration that increases the number of the Registrant's outstanding shares of common stock.
- (2) Estimated solely for the purpose of calculating the registration fee according to Rule 457(c) under the Securities Act based on the average of the high and low prices of the Registrant's common stock reported on The Nasdaq Capital Market on August 7, 2019, which is within five business days prior to the filing of this registration statement.
- (3) With respect to the warrants offered by the selling stockholders named herein, represents the exercise price of the warrants for purposes of calculating the registration fee pursuant to Rule 457(g) under the Securities Act.

**The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until this Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.**

**The information in this prospectus is not complete and may be changed. A registration statement relating to these securities has been filed with the Securities and Exchange Commission. The selling stockholder may not sell these securities until the Securities and Exchange Commission declares the registration statement effective. This prospectus is not an offer to sell these securities and is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.**

**SUBJECT TO COMPLETION, DATED AUGUST 8, 2019**

**PROSPECTUS**



**8,888,888 Shares of  
Common Stock**

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The selling stockholder of Synlogic, Inc. (“Synlogic,” “we,” “us” or the “Company”) listed on page 8 of this prospectus may offer and resell under this prospectus up to 8,888,888 shares of our common stock, par value \$0.001 per share (the “Common Stock”). The number of shares offered for sale by the selling stockholder consists of (i) 6,340,771 shares of Common Stock (the “Common Shares”) and (ii) 2,548,117 shares of Common Stock (the “Warrant Shares” and together with the Common Shares, the “Shares”) issuable upon exercise of pre-funded warrants (the “Pre-Funded Warrants” and together with the Common Shares, the “Securities”). The Securities were issued to the selling stockholder in a private placement transaction that closed on June 11, 2019.

We are registering the resale of the Shares covered by this prospectus as required by the Subscription Agreement (defined herein) we entered into with the selling stockholder on June 11, 2019. The selling stockholder will receive all of the proceeds from any sales of the Shares offered hereby. We will not receive any of the proceeds, but we will incur expenses in connection with the offering. To the extent the Pre-Funded Warrants are exercised, if at all, we will receive the exercise price of the Pre-Funded Warrants.

The selling stockholder may sell the Shares through public or private transactions at market prices prevailing at the time of sale or at negotiated prices. The timing and amount of any sale are within the sole discretion of the selling stockholder. Our registration of the Shares covered by this prospectus does not mean that the selling stockholder will offer or sell any of the Shares. For further information regarding the possible methods by which the Shares may be distributed, see “[Plan of Distribution](#)” beginning on page 9 of this prospectus.

Our Common Stock is listed on The Nasdaq Capital Market under the symbol “SYBX.” The last reported sale price of our Common Stock on August 7, 2019 was \$4.79 per share.

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*Investing in our Common Stock is highly speculative and involves a significant degree of risk. Please consider carefully the specific factors set forth under “[Risk Factors](#)” beginning on page 4 of this prospectus and in our filings with the Securities and Exchange Commission.*

**Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the accuracy or adequacy of the disclosures in this prospectus. Any representation to the contrary is a criminal offense.**

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**The date of this prospectus is \_\_\_\_\_, 2019**

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**ABOUT THIS PROSPECTUS**

This prospectus is part of a registration statement that we have filed with the Securities and Exchange Commission (the “SEC”) pursuant to which the selling stockholder named herein may, from time to time, offer and sell or otherwise dispose of the Shares covered by this prospectus. You should not assume that the information contained in this prospectus is accurate on any date subsequent to the date set forth on the front cover of this prospectus or that any information we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus is delivered or Shares are sold or otherwise disposed of on a later date. It is important for you to read and consider all information contained in this prospectus, including the documents incorporated by reference therein, in making your investment decision. You should also read and consider the information in the documents to which we have referred you under “Where You Can Find Additional Information” and “Information Incorporated by Reference” in this prospectus.

We have not authorized anyone to give any information or to make any representation to you other than those contained or incorporated by reference in this prospectus. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus. This prospectus does not constitute an offer to sell or the solicitation of an offer to buy any of our shares of Common Stock other than the Shares covered hereby, nor does this prospectus constitute an offer to sell or the solicitation of an offer to buy any securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. Persons who come into possession of this prospectus in jurisdictions outside the United States are required to inform themselves about, and to observe, any restrictions as to the offering and the distribution of this prospectus applicable to those jurisdictions.

Unless we have indicated otherwise, or the context otherwise requires, references in this prospectus to “Synlogic,” the “Company,” “we,” “us” and “our” refer to Synlogic, Inc.

## PROSPECTUS SUMMARY

This summary description about us and our business highlights selected information contained elsewhere in this prospectus or incorporated by reference into this prospectus. It does not contain all the information you should consider before investing in our securities. Important information is incorporated by reference into this prospectus. To understand this offering fully, you should read carefully the entire prospectus, including “Risk Factors” and “Cautionary Note Regarding Forward-Looking Statements,” together with the additional information described under “Information Incorporated by Reference.”

### Business

We are a clinical-stage biopharmaceutical company focused on advancing our proprietary drug discovery and development platform to create Synthetic Biotic™ medicines, which are designed using synthetic biology to genetically reprogram beneficial microbes to treat metabolic and inflammatory diseases and cancer. Synthetic Biotic medicines are generated by applying the principles and tools of synthetic biology to engineer beneficial microbes to perform or deliver critical therapeutic functions. As living medicines, Synthetic Biotic medicines can be designed to sense a local disease context within a patient’s body and to respond by metabolizing a toxic substance, compensating for missing or damaged metabolic pathways in patients, or by delivering combinations of therapeutic factors. Our goal is to lead in the discovery and development of Synthetic Biotic therapies as living medicines capable of robust and precise pathway complementation and delivery of therapeutic benefit to patients.

We believe that our Synthetic Biotic platform has potential to address both metabolic and immune-mediated diseases and we are evaluating these medicines at different sites of action via different routes of administration, either orally or via injection. While we have designed and created a number of bacterial strains that could potentially be used therapeutically in a range of diseases, our initial focus is on metabolic diseases that could potentially be treated following oral delivery of a living medicine to the gut. This includes metabolic diseases, which include rare genetic diseases as well as metabolic diseases caused by organ dysfunction. When delivered orally, Synthetic Biotic medicines are designed to act from the gut to compensate for a dysfunctional metabolic pathway that results in the toxic accumulation of a metabolite with the intended consequence of reducing the systemic levels of the metabolite. We believe that success in our lead programs in rare metabolic diseases will enable us to demonstrate the potential of our oral Synthetic Biotic medicines to address metabolic dysfunction while bringing meaningful change to the lives of patients suffering from these debilitating conditions.

Our two lead therapeutic programs are being developed for the treatment of hyperammonemia and phenylketonuria (“PKU”). SYN1020, our first therapeutic program to enter clinical trials, is an oral therapy intended for the treatment of hyperammonemia, which includes patients with liver disease such as hepatic encephalopathy (“HE”) and patients with urea cycle disorders (“UCD”). In these conditions ammonia accumulates in the body and becomes toxic, leading to neurocognitive crisis and risk of long-term cognitive or behavioral impairment, coma or death. SYN1020 has received both Fast Track Designation and orphan drug designation for UCD from the U.S. Food and Drug Administration (“FDA”). We initiated a Phase 1 clinical trial in June 2017 to evaluate the safety and tolerability of SYN1020 in healthy volunteers. In November 2017, we announced top-line data from this study that demonstrated that SYN1020 was safe and well-tolerated and achieved proof-of-mechanism. In March 2018, we initiated a clinical trial in patients with cirrhosis and elevated blood ammonia to evaluate the safety and tolerability of SYN1020 as well as the ability of this Synthetic Biotic medicine to lower systemic levels of ammonia. We expect to have top-line data from this study in the third quarter of 2019. Upon receipt of satisfactory evidence of ammonia lowering in patients with cirrhosis, we will determine the clinical development path for SYN1020 for the treatment of conditions resulting in hyperammonemia.

SYN1618, our second program to enter clinical trials, is an oral therapy intended for the treatment of PKU, a rare metabolic disease in which the amino acid phenylalanine (“Phe”) accumulates in the body as a result of genetic defects. Elevated levels of Phe are toxic to the brain and can lead to neurological dysfunction. SYN1618 is designed to function in the gut of patients to reduce excess Phe, with the goal of lowering levels in the blood and other tissues. SYN1618 has received both Fast Track designation and orphan drug designation for PKU from the FDA. We initiated a Phase 1 / 2a clinical trial for SYN1618 in April 2018 and announced top-line data from this study in September 2018 that demonstrated that SYN1618 was safe and well-tolerated and achieved proof-of- mechanism in healthy volunteers. On July 15, 2019, we announced positive top-line clinical data from patient cohorts of the Phase 1/2a study of SYN1618 indicating that a statistically significant increase in biomarkers of SYN1618 activity was observed in SYN1618-treated subjects but not in those treated with placebo. The full data set from the Phase 1/2a study will be discussed in an oral presentation at the upcoming annual symposium of the Society for the Study of Inborn Errors of Metabolism (SSIEM) to be held in Rotterdam, September 3-6, 2019.

We have developed a portfolio of immuno-oncology (“IO”) programs designed to deliver activities to modify the tumor microenvironment, activate the immune system and result in tumor reduction, and we envision that multiple engineered functions could be combined in one Synthetic Biotic medicine. These products could also be used in combination with other cancer therapies such as check-point inhibitors. In November 2018, we announced the selection of our first Synthetic Biotic clinical IO candidate, SYNBI891, and have advanced it into preclinical studies to enable filing of an IND application with the FDA in the second half of 2019. SYNBI891 is an intratumorally administered Synthetic Biotic medicine designed to act as a dual innate activator of the immune system by stimulation via the *E.coli* Nissle chassis and production of cyclic di-AMP, an activator of the STING pathway.

Our early-stage metabolic pipeline includes discovery-stage product candidates for rare metabolic diseases, GI and immune disorders with high unmet needs. We are also leveraging our proprietary technology platform to develop Synthetic Biotic medicines to treat a broader range of human diseases, including metabolic diseases, inflammation and cancer. Synthetic Biotic medicines can be designed to locally deliver combinations of complementary therapeutics to treat these complex disease states.

To progress our pipeline, we collaborate with key disease experts who have developed robust models of relevant diseases to guide selection of our development candidates and to inform our translational medicine strategy. We focus on indications with clear biomarkers associated with disease progression that enable straightforward, early and ongoing assessment of potential clinical benefit throughout the development process. Our collaboration and intellectual property strategies additionally focus on building or leveraging existing third-party expertise in therapeutic research, preclinical and clinical development, manufacturing and commercialization, while also enhancing our industry-leading position in synthetic biology and metabolic engineering.

We have a collaboration with AbbVie S.à.r.l. (“AbbVie”) to develop Synthetic Biotic medicines for the treatment of inflammatory bowel disease (“IBD”) such as Crohn’s disease and ulcerative colitis. We have also established a technology collaboration with Ginkgo Bioworks, a privately held high-throughput synthetic biology company, to enable the discovery of new living medicines. In June 2019, we expanded our collaboration and entered into an agreement with Ginkgo for the research and development of engineered microbial therapeutic products. Under the agreement we made a prepayment to Ginkgo of \$30.0 million for its foundry services that will be provided to us over an initial term of five years. Upon the expiration of such initial term and, if applicable, such additional period, any portion of our prepayment that has not been used to purchase services from Ginkgo will be retained by Ginkgo. We may enter into additional strategic partnerships in the future to maximize the value of our programs and our Synthetic Biotic platform.

#### **Corporate Information**

We were originally incorporated in the State of Delaware in December 2007 under the name “Mirna Therapeutics, Inc.” We carry on our business directly and through our subsidiaries.

On August 28, 2017, Synlogic, Inc., formerly known as Mirna Therapeutics, Inc. (NASDAQ: MIRN) (“Mirna”), completed its business combination with Synlogic, Inc. in accordance with the terms of the Agreement and Plan of Merger and Reorganization, dated as of May 15, 2017, by and among Mirna, Meerkat Merger Sub, Inc. (“Merger Sub”), and Private Synlogic, pursuant to which Merger Sub merged with and into Private Synlogic, with Private Synlogic surviving as a wholly owned subsidiary of Mirna.

Our Internet address is [www.synlogictx.com](http://www.synlogictx.com). We have included our website address as a factual reference and do not intend it to be an active link to our website. The information that can be accessed through our website is not part of this prospectus, and investors should not rely on any such information in deciding whether to purchase our Common Stock.

## THE OFFERING

<b>Shares of Common Stock that may be Offered by the Selling Stockholder</b>	Up to 8,888,888 shares of Common Stock.
<b>Shares of Common Stock to be outstanding after this Offering</b>	31,719,719 shares of Common Stock (34,267,836 shares of Common Stock if the Pre-Funded Warrants are exercised in full)
<b>Use of Proceeds</b>	We will not receive any proceeds from the sale of the Common Stock by the selling stockholder. However, if the Pre-Funded Warrants are exercised in full, we would receive gross proceeds of approximately \$25,481. We currently intend to use such proceeds, if any, for working capital and general corporate purposes.
<b>Offering Price</b>	The selling stockholder may sell all or a portion of the Shares through public or private transactions at prevailing market prices or at privately negotiated prices.
<b>Nasdaq Capital Market Symbol</b>	SYBX
<b>Risk Factors</b>	Investing in our Common Stock involves a high degree of risk. See " <a href="#">Risk Factors</a> " beginning on page 4 of this prospectus, and any other risk factors described in the documents incorporated by reference herein, for a discussion of certain factors to consider carefully before deciding to invest in our Common Stock.

When we refer to the selling stockholder in this prospectus, we are referring to the selling stockholder identified in this prospectus and, as applicable, its donees, pledgees, transferees or other successors-in-interest selling shares of Common Stock or interests in shares of Common Stock received after the date of this prospectus from a selling stockholder as a gift, pledge, partnership distribution or other transfer.

The number of shares of Common Stock expected to be outstanding after this offering and, unless otherwise indicated, the information in this prospectus supplement are based on 31,719,719 shares of Common Stock outstanding as of June 30, 2019, and excludes:

- 2,509,746 shares issuable upon the exercise of options outstanding as of June 30, 2019 at a weighted average exercise price of \$10.34 per share;
- 1,000,156 shares reserved for issuance under the 2015 Equity Incentive Award Plan and the 2017 Plan; and
- 1,118 shares of unvested restricted stock forfeited subsequent to June 30, 2019.

## **RISK FACTORS**

An investment in our Common Stock involves a high degree of risk. Prior to making a decision about investing in our Common Stock, you should carefully consider the risks, uncertainties and assumptions discussed under Item 1A, “Risk Factors,” in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018 filed with the SEC on March 12, 2019, as updated by our subsequent filings with the SEC under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), which are incorporated herein by reference, together with the information in this prospectus and any other information incorporated by reference into this prospectus. See “Where You Can Find More Information” and “Incorporation of Certain Information by Reference.” Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our business, financial condition or results of operations. The occurrence of any of these known or unknown risks might cause you to lose all or part of your investment in our Common Stock.

## THE PRIVATE PLACEMENT

On June 11, 2019, we entered into the Subscription Agreement with Ginkgo providing for the issuance and sale by us to Ginkgo of the Common Shares at a purchase price per Common Share of \$9.00, and the Pre-Funded Warrants at an exercise price of \$9.00 per share of Common Stock (the "Private Placement"), with \$8.99 of such exercise price paid at the closing of the Private Placement. The gross proceeds to us were approximately \$80 million. The closing of the Private Placement took place on June 11, 2019.

We intend to use the proceeds of the Private Placement to progress and expand our pipeline, including initiating four new programs in the first six months following the closing of the Private Placement and five new programs in the next 12 months following the closing of the Private Placement.

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 June 11, 2044.

Pursuant to the Subscription Agreement, we are obligated, among other things, to file a registration statement with the SEC within 60 days following the closing of the Private Placement for purposes of registering the Shares for resale by Ginkgo, and use our 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 us for our 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 our prior written consent, (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 or 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 us, 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 our assets, seeking to change or control our management or our board of directors (the "Board"), soliciting proxies or publicly seeking election of or publicly seeking to place a director on the Board, or publicly seeking the removal of any of our directors.

The foregoing descriptions of the Pre-Funded Warrants and the Subscription Agreement are not complete and are subject to and qualified in their entirety by reference to the Pre-Funded Warrants and the Subscription Agreement, respectively, copies of which are filed as exhibits hereto and 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 us or our business, and should be read in conjunction with the disclosures in our periodic reports and other filings with the SEC.

## CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference herein contain, forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the “Securities Act”), and Section 21E of the Exchange Act. These statements relate to future events or to our future financial performance and involve known and unknown risks, uncertainties and other factors which may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. Forward-looking statements may include, but are not limited to, statements about:

- the success of our research and development efforts;
- the success of our collaboration and services arrangements with third parties;
- the initiation, progress, timing, costs and results of clinical trials for our product candidates;
- the time and costs involved in obtaining regulatory approvals for our product candidates;
- the progress, timing and costs involved in developing manufacturing processes and agreements with third-party manufacturers;
- the rate of progress and cost of our commercialization activities;
- the expenses we incur in marketing and selling our product candidates;
- the revenue generated by sales of our product candidates;
- the emergence of competing or complementary technological developments;
- the costs of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights;
- the terms and timing of any additional collaborative, licensing or other arrangements that we may establish;
- the acquisition of businesses, products and technologies;
- our need to implement additional infrastructure and internal systems; and
- our need to add personnel and financial and management information systems to support our product development and potential future commercialization efforts, and to enable us to operate as a public company.

In some cases, you can identify forward-looking statements by terms such as “anticipate,” “believe,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “project,” “should,” “target,” “will,” “would” or other words that convey uncertainty of future events or outcomes to identify these forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. We discuss many of these risks in greater detail in our reports filed from time to time under the Securities Act and/or the Exchange Act, including the risks identified in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018 filed with the SEC on March 12, 2019, as updated by our subsequent filings with the SEC under the Exchange Act. We encourage you to read these filings as they are made. Also, these forward-looking statements represent our estimates and assumptions only as of the date of the document containing the applicable statement.

You should read this prospectus, the documents incorporated by reference herein, and any prospectus supplement or free writing prospectus that we have authorized for use in connection with this offering completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of the forward-looking statements in the foregoing documents by these cautionary statements.

Unless required by law, we undertake no obligation to update or revise any forward-looking statements to reflect new information or future events or developments. Thus, you should not assume that our silence over time means that actual events are bearing out as expressed or implied in such forward-looking statements.

## USE OF PROCEEDS

We will not receive any of the proceeds from the sale of the Common Stock by the selling stockholder named in this prospectus. The selling stockholder will receive all of the proceeds from this offering.

The holder of the Pre-Funded Warrants is not obligated to exercise the Pre-Funded Warrants, and we cannot predict whether the holder of the Pre-Funded Warrants will choose to exercise the Pre-Funded Warrants. If the Pre-Funded Warrants are exercised in full, we would receive gross proceeds of approximately \$25,481. We currently intend to use such proceeds, if any, for working capital and general corporate purposes.

## SELLING STOCKHOLDER

This prospectus relates to the sale or other disposition of up to 8,888,888 shares of Common Stock issued or issuable to the selling stockholder, which consist of (i) 6,340,771 Common Shares issued to the selling stockholder and (ii) 2,548,117 Warrant Shares issuable upon exercise of the Pre-Funded Warrants by the selling stockholder named below, and its donees, pledgees, transferees or other successors-in-interest selling shares of Common Stock or interests in shares of Common Stock received after the date of this prospectus from a selling stockholder as a gift, pledge, partnership distribution or other transfer. The shares of Common Stock covered hereby were issued by us in connection with the Subscription Agreement. See “The Private Placement” section on page 5 of this prospectus.

The table below sets forth information as of the date of this prospectus, to our knowledge, for the selling stockholder and other information regarding the beneficial ownership (as determined under Section 13(d) of the Exchange Act and the rules and regulations thereunder) of the shares of Common Stock held by the selling stockholder or the Warrant Shares that may be held by the selling stockholder upon exercise of the Pre-Funded Warrants. The second column lists the number of shares of Common Stock beneficially owned by the selling stockholder as of August 1, 2019. The third column lists the maximum number of shares of Common Stock that may be sold or otherwise disposed of by the selling stockholder pursuant to the registration statement of which this prospectus forms a part. The selling stockholder may sell or otherwise dispose of some, all or none of its shares. Pursuant to Rules 13d-3 and 13d-5 of the Exchange Act, beneficial ownership includes any shares of our Common Stock as to which a stockholder has sole or shared voting power or investment power, and also any shares of our Common Stock which the stockholder has the right to acquire within 60 days of August 1, 2019. The percent of beneficial ownership for the selling stockholder is based on 31,718,601 shares of our Common Stock outstanding as of August 1, 2019. Except as described below, to our knowledge, the selling stockholder has not been an officer or director of the Company or of our affiliates within the past three years or had any material relationship with us or our affiliates within the past three years. Our knowledge is based on information provided by the selling stockholder questionnaire in connection with the filing of this prospectus, as well as information obtained from relevant Schedule 13D and 13G filings.

The shares of Common Stock being covered hereby may be sold or otherwise disposed of from time to time during the period the registration statement of which this prospectus is a part remains effective, by or for the account of the selling stockholder. After the date of effectiveness, the selling stockholder may have sold or transferred, in transactions covered by this prospectus or in transactions exempt from the registration requirements of the Securities Act, some or all of its Common Stock.

Information about the selling stockholder may change over time. Any changed information will be set forth in an amendment to the registration statement or supplement to this prospectus, to the extent required by law.

	Shares of Common Stock Beneficially Owned Before this Offering		Number of Shares of Common Stock Being Offered	Shares of Common Stock To Be Beneficially Owned Upon Completion of this Offering	
	Number	Percentage <sup>(1)</sup>		Number	Percentage
<b>Selling Stockholder</b>					
Ginkgo Bioworks, Inc. <sup>(2)</sup>	6,340,771	19.99%	8,888,888	0	—

(1) Based on a denominator equal to the sum of (a) 31,718,601 shares of our Common Stock outstanding on August 1, 2019, and (b) the number of shares of Common Stock issuable upon exercise or conversion of convertible securities that are currently exercisable or convertible or are exercisable or convertible within 60 days of August 1, 2019 beneficially owned by Ginkgo Bioworks, Inc.

(2) Consists of 6,340,771 Common Shares held by Ginkgo Bioworks, Inc. and 2,548,117 Warrant Shares issuable upon the exercise of Pre-Funded Warrants held by Ginkgo Bioworks, Inc. The selling stockholder’s address is 27 Drydock Avenue, 8th Floor, Boston, Massachusetts 02210. The shares of Common Stock included in the table report the number of shares of Common Stock that would be issuable upon exercise of the Pre-Funded Warrants after giving effect to the 19.99% beneficial ownership limitation included in such Pre-Funded Warrants.

## PLAN OF DISTRIBUTION

The selling stockholder, which as used herein includes donees, pledgees, transferees or other successors-in-interest selling shares of Common Stock or interests in shares of Common Stock received after the date of this prospectus from the selling stockholder as a gift, pledge, partnership distribution or other transfer, may, from time to time, sell, transfer or otherwise dispose of any or all of its shares of Common Stock or interests in shares of Common Stock on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These dispositions may be at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices.

The selling stockholder may use any one or more of the following methods when disposing of shares or interests therein:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- short sales effected after the date the registration statement of which this prospectus is a part is declared effective by the SEC;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- broker-dealers may agree with the selling stockholder to sell a specified number of such shares at a stipulated price per share;
- a combination of any such methods of sale; and
- any other method permitted by applicable law.

The selling stockholder may, from time to time, pledge or grant a security interest in some or all of the shares of Common Stock or Pre-Funded Warrants owned by it and, if it defaults in the performance of its secured obligations, the pledgees or secured parties may offer and sell such shares of Common Stock or Pre-Funded Warrants, from time to time, under this prospectus, or under an amendment to this prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act amending the list of selling stockholders to include the pledgee, transferee or other successors in interest as selling stockholder under this prospectus. The selling stockholder also may transfer the shares of Common Stock or Pre-Funded Warrants in other circumstances, in which case the transferees, pledgees or other successors in interest will be the selling beneficial owners for purposes of this prospectus.

In connection with the sale of our Common Stock or interests therein, the selling stockholder may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the Common Stock in the course of hedging the positions it assumes. The selling stockholder may also sell shares of our Common Stock short and deliver these securities to close out its short positions, or loan or pledge the Common Stock to broker-dealers that in turn may sell these securities. The selling stockholder may also enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The aggregate proceeds to the selling stockholder from the sale of the Common Stock offered by it will be the purchase price of the Common Stock less discounts or commissions, if any. The selling stockholder reserves the right to accept and, together with its agents from time to time, to reject, in whole or in part, any proposed purchase of Common Stock to be made directly or through agents. We will not receive any of the proceeds from this offering. Upon any exercise of the Pre-Funded Warrants by payment of cash, however, we will receive the exercise price of the Pre-Funded Warrants.

The selling stockholder also may resell all or a portion of the shares of Common Stock in open market transactions in reliance upon Rule 144 under the Securities Act, provided that it meets the criteria and conforms to the requirements of that rule.

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The selling stockholder and any underwriters, broker-dealers or agents that participate in the sale of the Common Stock or interests therein may be “underwriters” within the meaning of Section 2(11) of the Securities Act. Any discounts, commissions, concessions or profit they earn on any resale of the shares may be underwriting discounts and commissions under the Securities Act. Selling stockholders who are “underwriters” within the meaning of Section 2(11) of the Securities Act will be subject to the prospectus delivery requirements of the Securities Act.

To the extent required, the shares of our Common Stock to be sold, the name of the selling stockholder, the respective purchase prices and public offering prices, the names of any agents, dealer or underwriter, any applicable commissions or discounts with respect to a particular offer will be set forth in an accompanying prospectus supplement or, if appropriate, a post-effective amendment to the registration statement that includes this prospectus.

In order to comply with the securities laws of some states, if applicable, the Common Stock may be sold in these jurisdictions only through registered or licensed brokers or dealers. In addition, in some states the Common Stock may not be sold unless it has been registered or qualified for sale or an exemption from registration or qualification requirements is available and is complied with.

We have advised the selling stockholder that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of shares of Common Stock in the market and to the activities of the selling stockholder and its affiliates. In addition, to the extent applicable we will make copies of this prospectus (as it may be supplemented or amended from time to time) available to the selling stockholder for the purpose of satisfying the prospectus delivery requirements of the Securities Act. The selling stockholder may indemnify any broker-dealer that participates in transactions involving the sale of the shares of Common Stock against certain liabilities, including liabilities arising under the Securities Act.

We will pay certain expenses of the registration of the shares of Common Stock pursuant to the Subscription Agreement, including, without limitation, SEC filing fees and expenses of compliance with state securities or “blue sky” laws; provided, however, that the selling stockholder will pay all underwriting discounts and selling commissions, if any and any related legal expenses incurred by it. We will indemnify the selling stockholder against certain liabilities, including some liabilities under the Securities Act, in accordance with the Subscription Agreement, or the selling stockholder will be entitled to contribution. We may be indemnified by the selling stockholder against civil liabilities, including liabilities under the Securities Act, that may arise from any written information furnished to us by the selling stockholder specifically for use in this prospectus, in accordance with the Subscription Agreement, or we may be entitled to contribution.

We have agreed with the selling stockholder to keep the registration statement of which this prospectus constitutes a part effective until the earlier of (i) such time as all of the shares covered by this prospectus have been disposed of pursuant to and in accordance with the registration statement or (ii) the date on which all of the shares may be sold without restriction pursuant to Rule 144 of the Securities Act.

## LEGAL MATTERS

The validity of the shares of Common Stock offered in this prospectus has been passed upon for us by Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., Boston, Massachusetts.

## EXPERTS

The consolidated financial statements of Synlogic, Inc. as of December 31, 2018 and 2017, and for each of the years in the two-year period ended December 31, 2018, have been incorporated by reference herein in reliance upon the report of KPMG LLP, independent registered public accounting firm, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

## WHERE YOU CAN FIND ADDITIONAL INFORMATION

We are subject to the information requirements of the Exchange Act and we therefore file periodic reports, proxy statements and other information with the SEC relating to our business, financial statements and other matters. The SEC maintains web site that contains reports, proxy and information statements and other information regarding issuers like us that file electronically with the SEC. The address of the SEC's web site is <http://www.sec.gov>.

This prospectus constitutes part of a registration statement filed under the Securities Act with respect to the shares of Common Stock covered hereby. As permitted by the SEC's rules, this prospectus omits some of the information, exhibits and undertakings included in the registration statement. You may read and copy the information omitted from this prospectus but contained in the registration statement, as well as the periodic reports and other information we file with the SEC, at the web site of the SEC referred to above. You may also access our filings with the SEC on our web site, which is located at <https://www.synlogictx.com/>. The information contained on our web site is not part of this prospectus.

Statements contained in this prospectus as to the contents of any contract or other document are not necessarily complete, and in each instance we refer you to the copy of the contract or other document filed or incorporated by reference as an exhibit to the registration statement or as an exhibit to our Exchange Act filings, each such statement being qualified in all respects by such reference.

## INFORMATION INCORPORATED BY REFERENCE

We are allowed to incorporate by reference information contained in documents that we file with the SEC. This means that we can disclose important information to you by referring you to those documents and that the information in this prospectus is not complete and you should read the information incorporated by reference for more detail. Information in this prospectus supersedes information incorporated by reference that we filed with the SEC prior to the date of this prospectus, while information that we file later with the SEC will automatically update and supersede the information in this prospectus.

We incorporate by reference the documents listed below and any future filings we will make with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act (i) after the date of the initial filing of the registration statement of which this prospectus is a part and prior to effectiveness of such registration statement and (ii) from the date of this prospectus but prior to the termination of the offering of the securities covered by this prospectus (other than Current Reports or portions thereof furnished under Item 2.02 or 7.01 of Form 8-K):

- our Annual Report on [Form 10-K](#) for the fiscal year ended December 31, 2018, filed with the SEC on March 12, 2019;
- our definitive proxy statement on [Schedule 14A](#), which was filed with the SEC on April 18, 2019 (excluding those portions that are not incorporated by reference into our Annual Report on Form 10-K for the year ended December 31, 2018);
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2019 and June 30, 2019, filed with the SEC on [May 9, 2019](#) and [August 8, 2019](#), respectively;
- our Current Reports on Form 8-K filed with the SEC on [February 12, 2019](#), [March 7, 2019](#), [June 5, 2019](#) and [June 12, 2019](#); and

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- the description of our Common Stock set forth in the registration statement on [Form 8-A](#) registering our Common Stock under Section 12 of the Exchange Act, which was filed with the SEC on September 23, 2015, including any amendments or reports filed for purposes of updating such description.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, a copy of any or all of the information that is incorporated by reference in this prospectus but not delivered with this prospectus, including exhibits that are specifically incorporated by reference in such documents. You may request a copy of such documents, which will be provided to you at no cost, by writing or telephoning us at the following address or telephone number:

SYNLOGIC, INC.  
301 Binney St., Suite 402  
Cambridge, MA  
Attention: Chief Executive Officer  
Telephone: (617) 401-9975

**8,888,888 Shares**



**Common Stock**

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**PROSPECTUS**

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, 2019

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**PART II**  
**INFORMATION NOT REQUIRED IN PROSPECTUS**

**ITEM 14. OTHER EXPENSES OF ISSUANCE AND DISTRIBUTION**

The following table sets forth the fees and expenses incurred and to be incurred in connection with the registration of the securities being registered hereby, all of which will be borne by us. Except for the SEC registration fee, all amounts are estimates.

SEC Registration Fee	\$ 6,468.30
Accounting Fees and Expenses	\$ 50,000
Legal Fees and Expenses	\$ 20,000
Printing Expenses	\$ 5,000
Total	\$ 81,468.30

**ITEM 15. INDEMNIFICATION OF OFFICERS AND DIRECTORS**

Section 102 of the General Corporation Law of the State of Delaware (the “Delaware General Corporation Law”) permits a corporation to eliminate the personal liability of directors of a corporation to the corporation or its stockholders for monetary damages for a breach of fiduciary duty as a director, except where the director breached his duty of loyalty, failed to act in good faith, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of Delaware corporate law or obtained an improper personal benefit.

Section 145 of the Delaware General Corporation Law authorizes a court to award, or a corporation’s board of directors to grant, indemnity to directors and officers in terms sufficiently broad to permit such indemnification under certain circumstances for liabilities, including reimbursement for expenses incurred, arising under the Securities Act.

**Section 145 of the Delaware General Corporation Law states:**

(a) A corporation shall have power to indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation) by reason of the fact that the person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys’ fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with such action, suit or proceeding if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe the person’s conduct was unlawful. The termination of any action, suit or proceeding by judgment, order, settlement, conviction, or upon a plea of nolo contendere or its equivalent, shall not, of itself, create a presumption that the person did not act in good faith and in a manner which the person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had reasonable cause to believe that the person’s conduct was unlawful.

(b) A corporation shall have power to indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor by reason of the fact that the person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against expenses (including attorneys’ fees) actually and reasonably incurred by the person in connection with the defense or settlement of such action or suit if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation and except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

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(c) To the extent that a present or former director or officer of a corporation has been successful on the merits or otherwise in defense of any action, suit or proceeding referred to in subsections (a) and (b) of this section, or in defense of any claim, issue or matter therein, such person shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection therewith.

(d) Any indemnification under subsections (a) and (b) of this section (unless ordered by a court) shall be made by the corporation only as authorized in the specific case upon a determination that indemnification of the present or former director, officer, employee or agent is proper in the circumstances because the person has met the applicable standard of conduct set forth in subsections (a) and (b) of this section. Such determination shall be made, with respect to a person who is a director or officer of the corporation at the time of such determination:

- (1) By a majority vote of the directors who are not parties to such action, suit or proceeding, even though less than a quorum; or
- (2) By a committee of such directors designated by majority vote of such directors, even though less than a quorum; or
- (3) If there are no such directors, or if such directors so direct, by independent legal counsel in a written opinion; or
- (4) By the stockholders.

(e) Expenses (including attorneys' fees) incurred by an officer or director of the corporation in defending any civil, criminal, administrative or investigative action, suit or proceeding may be paid by the corporation in advance of the final disposition of such action, suit or proceeding upon receipt of an undertaking by or on behalf of such director or officer to repay such amount if it shall ultimately be determined that such person is not entitled to be indemnified by the corporation as authorized in this section. Such expenses (including attorneys' fees) incurred by former directors and officers or other employees and agents of the corporation or by persons serving at the request of the corporation as directors, officers, employees or agents of another corporation, partnership, joint venture, trust or other enterprise may be so paid upon such terms and conditions, if any, as the corporation deems appropriate.

(f) The indemnification and advancement of expenses provided by, or granted pursuant to, the other subsections of this section shall not be deemed exclusive of any other rights to which those seeking indemnification or advancement of expenses may be entitled under any bylaw, agreement, vote of stockholders or disinterested directors or otherwise, both as to action in such person's official capacity and as to action in another capacity while holding such office. A right to indemnification or to advancement of expenses arising under a provision of the certificate of incorporation or a bylaw shall not be eliminated or impaired by an amendment to the certificate of incorporation or the bylaws after the occurrence of the act or omission that is the subject of the civil, criminal, administrative or investigative action, suit or proceeding for which indemnification or advancement of expenses is sought, unless the provision in effect at the time of such act or omission explicitly authorizes such elimination or impairment after such action or omission has occurred.

(g) A corporation shall have power to purchase and maintain insurance on behalf of any person who is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against any liability asserted against such person and incurred by such person in any such capacity, or arising out of such person's status as such, whether or not the corporation would have the power to indemnify such person against such liability under this section.

(h) For purposes of this section, references to "the corporation" shall include, in addition to the resulting corporation, any constituent corporation (including any constituent of a constituent) absorbed in a consolidation or merger which, if its separate existence had continued, would have had power and authority to indemnify its directors, officers, and employees or agents, so that any person who is or was a director, officer, employee or agent of such constituent corporation, or is or was serving at the request of such constituent corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, shall stand in the same position under this section with respect to the resulting or surviving corporation as such person would have with respect to such constituent corporation if its separate existence had continued.

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(i) For purposes of this section, references to “other enterprises” shall include employee benefit plans; references to “fines” shall include any excise taxes assessed on a person with respect to any employee benefit plan; and references to “serving at the request of the corporation” shall include any service as a director, officer, employee or agent of the corporation which imposes duties on, or involves services by, such director, officer, employee or agent with respect to an employee benefit plan, its participants or beneficiaries; and a person who acted in good faith and in a manner such person reasonably believed to be in the interest of the participants and beneficiaries of an employee benefit plan shall be deemed to have acted in a manner “not opposed to the best interests of the corporation” as referred to in this section.

(j) The indemnification and advancement of expenses provided by, or granted pursuant to, this section shall, unless otherwise provided when authorized or ratified, continue as to a person who has ceased to be a director, officer, employee or agent and shall inure to the benefit of the heirs, executors and administrators of such a person.

(k) The Court of Chancery is hereby vested with exclusive jurisdiction to hear and determine all actions for advancement of expenses or indemnification brought under this section or under any bylaw, agreement, vote of stockholders or disinterested directors, or otherwise. The Court of Chancery may summarily determine a corporation’s obligation to advance expenses (including attorneys’ fees).

As permitted by Delaware law, our amended and restated certificate of incorporation limits or eliminates the personal liability of our directors to the maximum extent permitted by Delaware law.

Our amended and restated bylaws provide for indemnification of our directors and executive officers to the maximum extent permitted by the Delaware General Corporation Law.

In addition, we have entered into indemnification agreements with each of our current directors and executive officers and we intend to enter into new indemnification agreements with certain of our current directors and each of our executive officers. These agreements will require us to indemnify these individuals to the fullest extent permitted under Delaware law against liabilities that may arise by reason of their service to us and to advance expenses incurred as a result of any proceeding against them as to which they could be indemnified. We also intend to enter into indemnification agreements with our future directors and executive officers.

We also maintain standard policies of insurance under which coverage is provided to our directors and officers against losses arising from claims made by reason of breach of duty or other wrongful act, and to us with respect to payments which may be made by us to such directors and officers pursuant to the above indemnification provisions or otherwise as a matter of law.

The above discussion of our amended and restated certificate of incorporation, our amended and restated bylaws, our indemnification agreements with our current directors and executive officers and Sections 102 and 145 of the Delaware General Corporation Law is not intended to be exhaustive and is respectively qualified in its entirety by such amended and restated certificate of incorporation, such amended and restated bylaws, such indemnification agreements and such statutes.

To the extent that our directors, officers and controlling persons are indemnified under the provisions contained in our amended and restated certificate of incorporation, Delaware law or contractual arrangements against liabilities arising under the Securities Act, we have been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

### **ITEM 16. EXHIBITS**

The exhibits to this registration statement are listed in the Exhibit Index to this registration statement, which Exhibit Index is hereby incorporated by reference.

**EXHIBIT INDEX**

<u>Exhibit Number</u>	<u>Item</u>
3.1	<a href="#">Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed on October 6, 2015).</a>
3.2	<a href="#">Certificate of Amendment (Reverse Stock Split) to the Amended and Restated Certificate of Incorporation, dated August 25, 2017 (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on August 28, 2017).</a>
3.3	<a href="#">Certificate of Amendment (Name Change) to the Amended and Restated Certificate of Incorporation, dated August 25, 2017 (incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on August 28, 2017).</a>
3.4	<a href="#">Amended and Restated Bylaws of the Company (incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-K, filed on October 6, 2015).</a>
4.1	<a href="#">Pre-Funded Warrant (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on June 12, 2019).</a>
10.1	<a href="#">Subscription Agreement, dated as of June 11, 2019, by and between the Company and Ginkgo Bioworks, Inc. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on June 12, 2019).</a>
5.1*	<a href="#">Opinion of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.</a>
23.1*	<a href="#">Consent of KPMG LLP.</a>
23.2*	<a href="#">Consent of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. (contained in Exhibit 5.1 hereto).</a>
24.1*	<a href="#">Powers of Attorney (included in the signature page of this registration statement).</a>

\* Filed herewith.

**ITEM 17. UNDERTAKINGS**

The undersigned registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
  - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act;
  - (ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Securities and Exchange Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and
  - (iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

Provided however, that paragraphs (1)(i), (1)(ii) and (1)(iii) of this section do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to Section 13 or Section 15(d) of the Exchange Act are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

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(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act to any purchaser:

(i) If the registrant is relying on Rule 430B:

(A) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(B) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date; or

(ii) If the registrant is subject to Rule 430C, each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.

The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by a director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

## SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Cambridge, Commonwealth of Massachusetts, on August 8, 2019.

### SYNOLOGIC, INC.

By: /s/ Aoife M. Brennan

Aoife M. Brennan, President, Chief Executive Officer  
and Chief Medical Officer

## POWER OF ATTORNEY

Each person whose signature appears below hereby constitutes and appoints Aoife M. Brennan and Todd Shegog, and each of them, as his or her true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments and registration statements filed pursuant to Rule 462) to this registration statement, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto each said attorney-in-fact and agent, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that each said attorney-in-fact and agent or his or her substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement on Form S-3 has been signed by the following persons in the capacities and on the dates indicated.

<u>Name</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Aoife Brennan</u> Aoife Brennan	President, Chief Executive Officer, Chief Medical Officer (Principal Executive Officer) and Director	August 8, 2019
<u>/s/ Todd Shegog</u> Todd Shegog	Chief Financial Officer (Principal Financial and Principal Accounting Officer)	August 8, 2019
<u>/s/ Peter Barrett</u> Peter Barrett	Director	August 8, 2019
<u>/s/ Patricia Hurter</u> Patricia Hurter	Director	August 8, 2019
<u>/s/ Chau Khuong</u> Chau Khuong	Director	August 8, 2019
<u>/s/ Nick Leschly</u> Nick Leschly	Director	August 8, 2019
<u>/s/ Edward Mathers</u> Edward Mathers	Director	August 8, 2019
<u>/s/ Michael Powell</u> Michael Powell	Director	August 8, 2019
<u>/s/ Richard P. Shea</u> Richard P. Shea	Director	August 8, 2019



One Financial Center  
Boston, MA 02111  
617-542-6000  
www.mintz.com

August 8, 2019

Synlogic, Inc.  
301 Binney St., Suite 402  
Cambridge, Massachusetts 02142

Ladies and Gentlemen:

We have acted as legal counsel to Synlogic, Inc., a Delaware corporation (the "Company"), in connection with the preparation and filing with the Securities and Exchange Commission (the "Commission") of a Registration Statement on Form S-3 (the "Registration Statement") under the Securities Act of 1933, as amended (the "Securities Act"). The Registration Statement relates to the registration for resale by the selling stockholder named in the Registration Statement (the "Selling Stockholder") of up to an aggregate of 8,888,888 shares of the Company's common stock, \$0.001 par value per share ("Common Stock"), consisting of 6,340,771 shares of Common Stock (the "Common Shares") and 2,548,117 shares of Common Stock issuable upon the exercise of that certain outstanding pre-funded warrant (the "Pre-Funded Warrant") issued by the Company to the Selling Stockholder on June 11, 2019 (the "Warrant Shares"). This opinion is being rendered in connection with the filing of the Registration Statement with the Commission.

In connection with this opinion, we have examined and relied upon the Certificate of Incorporation and Bylaws of the Company, each as restated and/or amended to date, and such other documents as we have deemed necessary for purposes of rendering the opinions hereinafter set forth.

In our examination, we have assumed the genuineness of all signatures, the legal capacity of natural persons, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as certified or photostatic copies and the authenticity of the originals of such copies.

Our opinion is limited to the General Corporation Law of the State of Delaware and we express no opinion with respect to the laws of any other jurisdiction. No opinion is expressed herein with respect to the qualification of the Common Shares and Warrant Shares under the securities or blue sky laws of any state or any foreign jurisdiction.

Please note that we are opining only as to the matters expressly set forth herein, and no opinion should be inferred as to any other matters. This opinion is based upon currently existing statutes, rules, regulations and judicial decisions, and we disclaim any obligation to advise you of any change in any of these sources of law or subsequent legal or factual developments which might affect any matters or opinions set forth herein.

Based upon the foregoing, we are of the opinion that (i) the Common Shares are validly issued, fully paid and non-assessable and (ii) the Warrant Shares, when issued and delivered upon the exercise of the Pre-Funded Warrant in accordance with its terms, will be validly issued, fully paid and non-assessable.

We understand that you wish to file this opinion with the Commission as an exhibit to the Registration Statement in accordance with the requirements of Item 601(b)(5) of Regulation S-K promulgated under the Securities Act and to reference the firm's name under the caption "Legal Matters" in the prospectus which forms part of the Registration Statement, and we hereby consent thereto. In giving this consent, we do not admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission promulgated thereunder.

Very truly yours,

/s/ Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.

**Consent of Independent Registered Public Accounting Firm**

The Board of Directors  
Synlogic, Inc.

We consent to the use of our report incorporated by reference herein and to the reference to our firm under the heading "Experts" in the prospectus.

/s/ KPMG LLP

Cambridge, Massachusetts  
August 8, 2019