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

**FORM S-1
REGISTRATION STATEMENT**
Under
THE SECURITIES ACT OF 1933

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

Delaware
(State or other jurisdiction of
incorporation or organization)

2834
(Primary Standard Industrial
Classification Code Number)

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

**301 Binney St., Suite 402
Cambridge, MA 02142
(617) 401-9975**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Aoife Brennan, MB, BCh, BAO, MMSc
President and Chief Executive Officer
Synlogic, Inc.

**301 Binney Street, Suite 402
Cambridge, MA 02142
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Approximate date of commencement of proposed sale to public: As soon as practicable after this Registration Statement is declared effective.

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, 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 post-effective amendment filed pursuant to Rule 462(d) 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.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or 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

Accelerated filer

Non-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 7(a)(2)(B) of 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, as amended, or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

The information contained in this preliminary prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED SEPTEMBER 8, 2023

PRELIMINARY PROSPECTUS

SYNLOGIC, INC.

Shares of Common Stock

We are offering _____ shares of our common stock. Our common stock is listed on The Nasdaq Capital Market under the symbol "SYBX." The last reported sale price for our common stock on The Nasdaq Capital Market on _____, 2023 was \$ _____ per share. The actual number of securities, and the offering price per share, will be as determined between us and the underwriter at the time of pricing, and may be at a discount to the current market price. Therefore, the recent market price used throughout this prospectus may not be indicative of the actual public offering price for our common stock.

The Nasdaq Stock Market, LLC ("Nasdaq") has granted us an extension until December 4, 2023 to regain compliance with its minimum closing bid price requirement for continued listing on The Nasdaq Capital Market. To regain compliance, the closing bid price of our common stock must meet or exceed \$1.00 per share for a minimum of ten consecutive business days during the 180-calendar day grace period. At our special meeting of stockholders to be held on September 21, 2023, we are asking stockholders to approve a proposed amendment to our Amended and Restated Certificate of Incorporation to effect a reverse stock split of our outstanding common stock at a ratio of not less than 1-for-5 and not greater than 1-for-15, subject to and as determined by our Board of Directors. The primary reason we are seeking stockholder approval of the reverse stock split is to attempt to increase the per share market price of our common stock to exceed the minimum closing bid price requirement for continued listing on the Nasdaq Capital Market. We believe that if the reverse stock split proposal is not approved by our stockholders, it is likely that our common stock will be delisted from the Nasdaq Capital Market.

You should read this prospectus, together with the additional information described under the headings "Where You Can Find More Information" and "Incorporation of Documents by Reference," carefully before you invest in any of our securities.

Investing in our common stock involves a high degree of risk. See "[Risk Factors](#)" beginning on page 7 of this prospectus and in the documents incorporated by reference into this prospectus.

	Per Share	Total
Public offering price	\$ _____	\$ _____
Underwriting discounts and commissions ⁽¹⁾	\$ _____	\$ _____
Proceeds, before expenses, to us	\$ _____	\$ _____

(1) See the section entitled "*Underwriting*" beginning on page 28 of this prospectus for a description of the compensation payable to the underwriter.

We have also granted an option to the underwriter to purchase up to _____ additional shares of common stock on the same terms and conditions set forth above from us within 45 days after the date of this prospectus to cover over-allotments, if any.

Neither the Securities and Exchange Commission, or the SEC, nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The underwriter expects to deliver the shares of common stock to purchasers on or about _____, 2023.

Book-Running Manager

Chardan

The date of this prospectus is _____, 2023.

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You should rely only on the information we have included or incorporated by reference into this prospectus. Neither we nor the underwriter have authorized any dealer, salesman or other person to give any information or to make any representation other than those contained or incorporated by reference into this prospectus. You must not rely upon any information or representation not contained or incorporated by reference into this prospectus. This prospectus does not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor does this prospectus constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction.

You should not assume the information contained in this prospectus is accurate on any date subsequent to the date set forth on the front of the document or that any information we have incorporated by reference herein is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus is delivered, or securities are sold, on a later date.

No action is being taken in any jurisdiction outside the United States to permit a public offering of our common stock or possession or distribution of this prospectus in that jurisdiction. Person 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 this offering and the distribution of this prospectus applicable to that jurisdiction.

“Synlogic, Inc.,” “Synlogic,” the Synlogic logo, and other trademarks or service marks of Synlogic appearing in this prospectus are the property of our company. Other third-party logos and product/trade names are registered trademarks or trade names of their respective companies. Solely for convenience, trademarks and tradenames referred to in this prospectus appear (after the first usage) without the ® and ™ symbols, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or that the applicable owner will not assert its rights, to these trademarks and tradenames.

This prospectus contains or incorporates by reference summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed or have been incorporated by reference as exhibits to the registration statement of which this prospectus forms a part, and you may obtain copies of those documents as described in this prospectus under the heading “*Where You Can Find More Information.*”

PROSPECTUS SUMMARY

This summary highlights information contained in other parts of this prospectus. Because it is only a summary, it does not contain all the information you should consider before investing in our securities and it is qualified in its entirety by, and should be read in conjunction with, the more detailed information appearing elsewhere in this prospectus and the information incorporated by reference herein. You should read all such documents carefully, especially the risk factors and our audited consolidated financial statements and the related notes included herein, before deciding to buy our securities. Unless the context requires otherwise, references in this prospectus to “Synlogic,” “Company,” “we,” “us” and “our” refer to Synlogic, Inc. and our subsidiaries.

Company Overview

We are a clinical-stage biotechnology company advancing novel, oral, non-systemically absorbed biotherapeutics to transform the care of serious diseases in need of new treatment options. Our late-stage pipeline is focused on rare metabolic diseases, led by labafenogene marselecobac (previously referred to as SYNBI934), currently being studied as a potential treatment for phenylketonuria (PKU) in Synpheny-3, a global, pivotal Phase 3 study. Additional product candidates address diseases including homocystinuria (HCU), enteric hyperoxaluria, gout, and cystinuria. This pipeline is fueled by the Synthetic Biotic platform, which applies precision genetic engineering to well-characterized probiotics based on the principles and techniques of synthetic biology, the application of programming and engineering to biological parts, systems, and organisms.

Our Drug Candidate Pipeline: Late-Stage Programs Focused on Rare Metabolic Diseases



We are focused on advancing our late-stage drug candidates for rare metabolic diseases, disorders that present a strong biological fit with Synthetic Biotics, and also provide synergies in clinical development, clinical trial execution and commercialization. Metabolic diseases result from alterations in how bodies break down or produce important metabolites or molecules needed for normal function. In patients with these diseases, the absence of certain enzymes causes metabolites to accumulate in the gut and systemically throughout the body. Our approach enables the design of GI-restricted, oral medicines designed to consume or modify disease-specific metabolites – an approach well suited for PKU and HCU, as well as other disorders in which the disease-specific metabolites transit through the GI tract, providing validated targets for these Synthetic Biotics.

In addition, patients with rare metabolic diseases due to inborn errors of metabolism are typically treated by the same relatively small and well-connected community of medical geneticist thought leaders and receive care

at the same metabolic clinics from a shared clinician network. The patient communities themselves are also often connected. These considerations present synergies for both clinical trial execution and management of multiple programs in different but related diseases, as well as for future product launches and commercialization.

PKU

Our pipeline is led by labafenogene marselecobac (SYNB1934), an orally administered, non-systemically absorbed, potential treatment for PKU, a rare metabolic disease caused by inherited mutations that impair the breakdown of phenylalanine (Phe), an amino acid found in all protein-containing foods. The goal of PKU management is to reduce plasma Phe below neurotoxic levels, reducing risk of neurocognitive complications. Current treatment options for PKU are limited due to safety and efficacy, leaving the majority of people living with PKU without medical management and with uncontrolled Phe. We designed labafenogene marselecobac (SYNB1934) to target and consume Phe in the GI tract by applying precision genetic engineering to a well-characterized probiotic, *E. coli* nissle, so that the Phe is metabolized into harmless byproducts within the GI tract. Results to date indicate the potential for labafenogene marselecobac (SYNB1934) to be the first and only orally administered, non-systemically absorbed medical treatment option for FDA available for patients to take alone, or as an adjunct to other medications for PKU. Following successful Phase 2 results, labafenogene marselecobac (SYNB1934) has advanced to Synpheny-3, a global, pivotal Phase 3 study. Labafenogene marselecobac (SYNB1934) has received Orphan Drug Designation, Fast Track designation, and Rare Pediatric Disease Designation (RPDD) from the FDA in addition to orphan designation from the European Medicines Agency (EMA).

Homocystinuria

HCU is a rare inherited metabolic disorder caused by a genetic defect that causes homocysteine and other toxic chemicals and their byproducts, including methionine, to build up in the blood and urine. Elevated homocysteine levels are associated with risk of life-threatening acute ischemic stroke as well as multisystem complications such as impairments of the eye (ectopia lentis and/or severe myopia), skeletal system, and neurocognitive impact (development delay and intellectual disability).

The first therapeutic intervention for HCU is typically to restrict methionine, a precursor to homocysteine, in the diet, with the goal of lowering plasma levels of total homocysteine (tHcy) to reduce risk of complications. SYNB1353, our drug candidate for HCU, was designed to leverage this pathway by consuming methionine in the GI tract as a means of reducing systemic levels of homocysteine. Like labafenogene marselecobac, SYNB1353 is an orally-administered, non-systemically absorbed investigational biotherapeutic based on genetic engineering of a probiotic to produce specific enzymes that metabolize methionine. In November 2022, we announced proof of mechanism was achieved based on the positive findings from a Phase 1 study in healthy volunteers using a dietary model of homocystinuria, which showed that SYNB1353 reduced plasma methionine by metabolizing methionine in the GI tract and preventing its absorption and systemic exposure. To date, the FDA has granted SYNB1353 Fast Track, Orphan Drug, and Rare Pediatric Disease designations as a potential treatment for HCU. Our next step for SYNB1353 is to advance to a Phase 2 study in patients with HCU.

Additional Clinical Pipeline & Preclinical Research Programs

In 2022, we achieved proof of concept for SYNB8802, in development for enteric hyperoxaluria, a well-recognized cause of recurrent kidney stones. During 2022, we also announced the naming of SYNB2081, a Synthetic Biotic designed to metabolize uric acid as a potential biotherapeutic for gout, which is currently in IND-enabling studies. We believe that both of these product candidates present compelling opportunities to help patients in significant need of new treatment options. We also believe that the programs would be best enabled in partnership with organizations with clinical and regulatory experience and expertise in relevant therapeutic areas, which would be complementary to our expertise on the Synthetic Biotic platform, and would benefit from the progress we continue to make in the rare metabolic space. We also have ongoing preclinical research activities to advance a Synthetic Biotic for cystinuria, a rare, genetic cause of recurrent kidney stones which is also caused by an underlying metabolic disorder.

In addition, we have continued our preclinical research collaboration with Roche, focused on inflammatory bowel disease (IBD), which began in June of 2021. Current approaches to treating IBD are focused on therapeutics that modulate the immune system and suppress inflammation, which is associated with systemic immunosuppression, and which includes greater susceptibility to infectious diseases and cancer. Because our approach is based on local delivery to the site of inflammation in the GI tract and not on systemic administration, we anticipate that our Synthetic Biotics may potentially offer an attractive safety profile in this therapeutic category, where safety is a particularly desirable attribute in a product profile compared to options available today.

Recent Developments

Nasdaq Deficiency Notification and Pending Reverse Stock Split

On May 25, 2023, we submitted to the Listing Qualifications Department of Nasdaq an application to transfer the listing of our common stock from The Nasdaq Global Market to The Nasdaq Capital Market. On June 6, 2023, we received a notice (the “Extension Notice”) from the Listing Qualifications Department informing us that Nasdaq granted us an additional 180 calendar days, or until December 4, 2023 to regain compliance with the minimum closing bid price requirement for continued listing on The Nasdaq Capital Market under Nasdaq Marketplace Rule 5550(a)(2). In connection with the Extension Notice, the listing of our common stock was transferred from the Nasdaq Global Market to the Nasdaq Capital Market, effective as of June 7, 2023. The Extension Notice has no other immediate effect on the listing of our common stock. If at any time before December 4, 2023, the closing bid price of our common stock is at least \$1.00 per share for a minimum of ten consecutive business days, Nasdaq will provide written confirmation that we have achieved compliance with Nasdaq Marketplace Rule 5550(a)(2). If compliance cannot be demonstrated to Nasdaq’s satisfaction by December 4, 2023, Nasdaq will provide written notification that our common stock will be delisted.

At our special meeting of stockholders to be held on September 21, 2023, we are asking stockholders to approve a proposed amendment to our Amended and Restated Certificate of Incorporation to effect a reverse stock split of our outstanding common stock at a ratio of not less than 1-for-5 and not greater than 1-for-15, subject to and as determined by our Board of Directors. The primary reason we are seeking stockholder approval of the reverse stock split is to attempt to increase the per share market price of our common stock to exceed the minimum closing bid price requirement for continued listing on the Nasdaq Capital Market. We believe that if the reverse stock split proposal is not approved by our stockholders, it is likely that our common stock will be delisted from the Nasdaq Capital Market.

Additional Information

For additional information related to our business and operations, please refer to the reports incorporated herein by reference, including our Annual Report on Form 10-K for the year ended December 31, 2022 (the “2022 Form 10-K”) as filed with the SEC on March 29, 2023, our Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2023, as filed with the SEC on May 11, 2023, and June 30, 2023, as filed with the SEC on August 10, 2023 (collectively, the “2023 Form 10-Qs”), and our Current Reports on Form 8-K as filed with the SEC, as described in the section entitled “*Incorporation of Documents by Reference*” beginning on page 31 of this prospectus.

Implications of Being a Smaller Reporting Company

We are a “smaller reporting company” as defined in Rule 12b-2 of the Exchange Act and have elected to take advantage of certain scaled disclosure available to smaller reporting companies.

Our 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, Mirna Therapeutics, Inc. (“Mirna”), completed its business combination with Synlogic, Inc. (“Private Synlogic”) pursuant to 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 (the “Merger Agreement”), pursuant to which Merger Sub merged with and into Private Synlogic, with Private Synlogic surviving as a wholly owned subsidiary of Mirna (the “Merger”). On August 25, 2017, in connection with, and prior to the completion of the Merger, Mirna effected a reverse stock split of its common stock (the “Reverse Stock Split”), and on August 28, 2017, immediately after completion of the Merger, Mirna changed its name to “Synlogic, Inc.” (NASDAQ: SYBX).

Our principal executive offices are located at 301 Binney St., Suite 402, Cambridge, MA 02142, and our phone number is (617) 401-9975. Our website address is www.synlogictx.com. The information contained on, or that can be accessed through, our website is not a part of this prospectus. We have included our website address in this prospectus solely as an inactive textual reference.

THE OFFERING

Common stock offered by us	shares (shares if the underwriter exercises its over-allotment option in full), assuming the sale of our shares of common stock at an assumed public offering price of \$ per share, which is the last reported sale price of our common stock on Nasdaq on , 2023.
Option to purchase additional securities	The underwriter has a 45-day option to purchase up to an additional shares of common stock from us at the public offering price, less underwriting discounts and commissions.
Common stock to be outstanding after this offering	shares (assuming the sale of \$ of our shares of common stock at an assumed public offering price of \$ per share, which is the last reported sale price of our common stock on Nasdaq on , 2023 and no exercise of the underwriter’s over-allotment option).
Use of Proceeds	We estimate the net proceeds to us from this offering, after deducting underwriting discounts and commissions and estimated offering expenses payable by us, will be approximately \$ million, assuming a combined public offering price of \$ per share, which is the last reported sale price of our common stock on Nasdaq on , 2023. The actual offering price for the offered securities will be as determined between us and the underwriter at the time of pricing, and may be at a discount to the current market price. We intend to use the net proceeds from this offering for (i) the continued clinical development of labafenogene marselecobac for PKU, (ii) preparation of our manufacturing for a potential BLA filing, (iii) to further advance clinical development of SYN1353 for HCU, and (iv) for general corporate purposes. See the section entitled “Use of Proceeds” beginning on page 12 of this prospectus.
Risk Factors	An investment in our securities involves a high degree of risk. See the section entitled “Risk Factors” beginning on page 7 of this prospectus and the similarly entitled sections in the documents incorporated by reference into this prospectus.
Nasdaq Capital Market symbol	“SYBX.”

Outstanding Shares

Except as otherwise indicated herein, the number of shares of our common stock to be outstanding after this offering is based on 68,613,862 shares of common stock outstanding as of June 30, 2023 and excludes:

- 10,223,783 shares of common stock issuable upon exercise of outstanding options as of June 30, 2023, at a weighted average exercise price of \$2.64 per share, of which 4,230,915 shares were vested as of such date;
- 2,112,887 shares of common stock reserved for future issuance under the 2017 Stock Incentive Plan and the 2015 Equity Incentive Award Plan;

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- 1,832,565 shares of common stock reserved for future issuance under the 2015 Employee Stock Purchase Plan; and
- 2,548,117 shares of common stock issuable upon the exercise of pre-funded warrants held by Ginkgo Bioworks, Inc. (“Ginkgo”), exercisable at a price of \$9.00 per share, with \$8.99 of such exercise price previously paid.

Except as otherwise noted, all information in this prospectus assumes no exercise of the underwriter’s option to purchase additional shares.

RISK FACTORS

Investing in our securities involves risks. Before making an investment decision, you should carefully consider the risks and other information we include or incorporate by reference in this prospectus. In particular, you should consider the risk factors described under the heading “Risk Factors” in our most recent Quarterly Report on Form 10-Q, as may be revised or supplemented by our subsequent periodic and current reports, which are on file with the SEC and are incorporated herein by reference, and which may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future. In addition to those risk factors, there may be additional risks and uncertainties which are not currently known to us or that we currently deem immaterial. Our business, financial condition or results of operations could be materially adversely affected by any of these risks. The occurrence of any of these risks might cause you to lose all or part of your investment in the offered securities.

Risks Relating to this Offering and Ownership of Our Common Stock

Even if this offering is successful, we will require substantial additional capital to finance our operations, which may not be available to us on acceptable terms, or at all. As a result, we may be forced to delay, limit or terminate the development and commercialization of our product candidates, development of new product candidates or other operations.

As a clinical-stage biopharmaceutical company, our operations have consumed significant amounts of cash since our inception. We expect our research and development expenses to increase in connection with our ongoing activities, particularly as we continue to conduct clinical trials of and seek regulatory approvals for our product candidates.

Clinical development involves a lengthy and expensive process with uncertain outcomes and is subject to risks described under the heading “Risk Factors” in our most recent Quarterly Report on Form 10-Q, including that our preclinical studies or clinical trials may not be conducted as planned or completed on schedule and may not satisfy the requirements of the FDA, EMA, or other comparable foreign regulatory authorities. If we are required to conduct additional preclinical studies or clinical trials of our product candidates beyond those that we currently contemplate, if we are delayed or unable to successfully complete clinical trials of our product candidates or other testing, or if the results of these trials or tests are not positive or are only modestly positive or if there are safety concerns, we may require additional funding. We do not have any committed external source of funds. We expect to finance future cash needs through public or private equity or debt offerings or product collaborations. Additional capital may not be available in sufficient amounts or on reasonable terms, if at all. The current market environment for small biotechnology companies, like us, and broader macroeconomic factors, including recent and potential future disruptions in access to bank deposits or lending commitments due to bank failures, may preclude us from successfully raising additional capital.

If we do not raise additional capital, we may not be able to expand our operations or otherwise capitalize on our business opportunities, our business and financial condition will be negatively impacted and we may need to: significantly delay, scale back or discontinue research and discovery efforts and the development or commercialization of our product candidates or cease operations altogether; seek strategic alliances for research and development programs when we otherwise would not, or at an earlier stage than we would otherwise desire or on terms less favorable than might otherwise be available; or relinquish, or license on unfavorable terms, our rights to technologies or any other product candidates that we otherwise would seek to develop or commercialize ourselves.

Management will have broad discretion as to the use of the proceeds from this offering and we may not use the proceeds effectively.

Our management will have broad discretion with respect to the use of proceeds of this offering, including for any of the purposes described in the section entitled “Use of Proceeds” beginning on page 12 of this

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prospectus. You will be relying on the judgment of our management regarding the application of the proceeds of this offering. The results and effectiveness of the use of proceeds are uncertain, and we could spend the proceeds in ways that you do not agree with or that do not improve our results of operations or enhance the value of our common stock. Our failure to apply these funds effectively could harm our business, delay the development of our product candidates and cause the price of our common stock to decline.

You will experience immediate and substantial dilution as a result of this offering and may experience additional dilution in the future.

You will incur immediate and substantial dilution as a result of this offering. After giving effect to the sale by us of securities offered in this offering at an assumed public offering price of \$ per share of common stock, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us, investors in this offering can expect an immediate dilution of approximately \$ per share. See the section entitled “*Dilution*” beginning on page 16 of this prospectus for a more detailed discussion of the dilution you will incur if you purchase shares in this offering.

Future sales of substantial amounts of our common stock, or the possibility that such sales could occur, could adversely affect the market price of our common stock.

Future sales in the public market of shares of our common stock, including shares referred to in the foregoing risk factors or shares issued upon exercise of our outstanding stock options or warrants, or the perception by the market that these sales could occur, could lower the market price of our common stock or make it difficult for us to raise additional capital.

As of June 30, 2023, we had reserved for issuance 10,223,783 shares of our common stock issuable upon the exercise of outstanding stock options, of which 4,230,915 shares were vested as of such date, at a weighted-average exercise price of \$2.64 per share and 2,548,117 shares of common stock issuable upon the exercise of pre-funded warrants held by Ginkgo, exercisable at a price of \$9.00 per share, with \$8.99 of such exercise price previously paid. In the case of outstanding securities that have exercise or conversion prices that are below the market price of our common stock from time to time, our stockholders would experience dilution upon the exercise or conversion of these securities.

We may issue preferred stock in the future, and the terms of the preferred stock may reduce the value of our common stock.

We are authorized to issue up to five million shares of preferred stock in one or more series. Our board of directors may determine the terms of future preferred stock offerings without further action by our stockholders. If we issue shares of preferred stock, it could affect stockholder rights or reduce the market value of our outstanding common stock. In particular, specific rights granted to future holders of preferred stock may include voting rights, preferences as to dividends and liquidation, conversion and redemption rights, sinking fund provisions, and restrictions on our ability to merge with or sell our assets to a third party.

If our common stock becomes subject to the penny stock rules, it may be more difficult to sell our common stock.

The SEC has adopted rules that regulate broker-dealer practices in connection with transactions in penny stocks. Penny stocks are generally equity securities with a price of less than \$5.00 (other than securities registered on certain national securities exchanges or authorized for quotation on certain automated quotation systems, provided that current price and volume information with respect to transactions in such securities is provided by the exchange or system). The OTC Bulletin Board does not meet such requirements and if the price of our common stock is less than \$5.00 and our common stock is no longer listed on a national securities

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exchange such as Nasdaq, our stock may be deemed a penny stock. The penny stock rules require a broker-dealer, at least two business days prior to a transaction in a penny stock not otherwise exempt from those rules, to deliver to the customer a standardized risk disclosure document containing specified information and to obtain from the customer a signed and dated acknowledgment of receipt of that document. In addition, the penny stock rules require that prior to effecting any transaction in a penny stock not otherwise exempt from those rules, a broker-dealer must make a special written determination that the penny stock is a suitable investment for the purchaser and receive: (i) the purchaser's written acknowledgment of the receipt of a risk disclosure statement; (ii) a written agreement to transactions involving penny stocks; and (iii) a signed and dated copy of a written suitability statement. These disclosure requirements may have the effect of reducing the trading activity in the secondary market for our common stock, and therefore stockholders may have difficulty selling their shares.

We have never declared or paid cash dividends on our common stock and we do not anticipate paying cash dividends on our common stock in the foreseeable future.

Our business requires significant funding. We currently plan to invest all available funds and future earnings in the development and growth of our business and do not anticipate paying any cash dividends on our common stock in the foreseeable future and are prohibited by the terms of our outstanding indebtedness from paying dividends on any common stock, except with the prior consent of our lenders. As a result, capital appreciation, if any, of our common stock will be our stockholders' sole source of potential gain for the foreseeable future.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference into this prospectus include forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, as amended, that relate to future events or our future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to differ materially from any future results, levels of activity, performance or achievements expressed or implied by these forward-looking statements. Words such as, but not limited to, “anticipate,” “aim,” “believe,” “contemplate,” “continue,” “could,” “design,” “estimate,” “expect,” “intend,” “may,” “might,” “plan,” “predict,” “poise,” “project,” “potential,” “suggest,” “should,” “strategy,” “target,” “will,” “would,” and similar expressions or phrases, or the negative of those expressions or phrases, are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Although we believe that we have a reasonable basis for each forward-looking statement contained in this prospectus and incorporated by reference into this prospectus, we caution you that these statements are based on our projections of the future that are subject to known and unknown risks and uncertainties and other factors that may cause our actual results, level of activity, performance or achievements expressed or implied by these forward-looking statements, to differ. The section in this prospectus entitled “*Risk Factors*” and the sections in our periodic reports, including the 2022 Form 10-K entitled “Business,” and in the 2022 Form 10-K and the 2023 Form 10-Qs entitled “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” as well as other sections in this prospectus and the documents or reports incorporated by reference into this prospectus, discuss some of the factors that could contribute to these differences. These forward-looking statements include, among other things, statements about:

- the success of our research and development efforts;
- 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 success of our collaborations with third parties;
- the progress, timing and costs involved in developing manufacturing processes and in manufacturing products, as well as 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, if approved;
- the revenue generated by sales of our product candidates, if approved;
- the emergence of competing or complementary technological developments;
- 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;
- 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;
- the extent to which our business is adversely impacted by the effects of the coronavirus outbreak (“COVID-19”) or by other health epidemics or pandemics; and
- other risks and uncertainties, including those listed under “Risk Factors” on page 7 of this prospectus.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Forward-looking

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statements should be regarded solely as our current plans, estimates and beliefs. We have included important factors in the cautionary statements included in this document, particularly in the section entitled “*Risk Factors*” beginning on page 7 of this prospectus that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. Moreover, we operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. Given these risks and uncertainties, readers are cautioned not to place undue reliance on such forward-looking statements. All forward-looking statements are qualified in their entirety by this cautionary statement. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make. You should read this prospectus and the documents that we have filed as exhibits to this prospectus and incorporated by reference herein completely and with the understanding that our actual future results may be materially different from the plans, intentions and expectations disclosed in the forward-looking statements we make. The forward-looking statements contained in this prospectus are made as of the date of this prospectus and we do not assume any obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by applicable law.

USE OF PROCEEDS

We estimate that the net proceeds from our issuance and sale of our common stock in this offering will be approximately \$ million, or approximately \$ million if the underwriter exercises its option to purchase additional shares of common stock in full, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us and assuming a public offering price of \$ per share, which is the last reported sale price of our common stock on Nasdaq on , 2023.

As of June 30, 2023, we had cash and cash equivalents of approximately \$46.3 million. We intend to use the net proceeds from this offering for (i) the continued clinical development of labafenogene marselecobac (SYNB1934) for PKU, including the ongoing Phase 3 study (ii) to prepare our manufacturing for a potential BLA filing should the Phase 3 study be successful, (iii) to further advance clinical development of SYNB1353 our clinical candidate for HCU, and (iv) for general corporate purposes.

This expected use of net proceeds from this offering and our existing cash and cash equivalents represents our intentions based upon our current plans and business conditions, which could change in the future as our plans and business conditions evolve. The amounts and timing of our actual expenditures may vary significantly depending on numerous factors, including the progress of our development, the status of and results from clinical trials, as well as any collaborations that we may enter with third parties for any product candidates we may seek to develop, and any unforeseen cash needs. As a result, our management will retain broad discretion over the allocation of the net proceeds from this offering. We have no current agreements, commitments or understandings for any material acquisitions or licenses of any products, businesses or technologies.

We anticipate existing cash and cash equivalents and the net proceeds from this offering will be sufficient to fund our planned operations through . We plan to raise additional capital in the future to fund the completion of the clinical development of our current product candidates and our ongoing working capital requirements.

As of the date of this prospectus, we cannot predict with certainty all the uses for the net proceeds to be received upon the completion of this offering or the amounts we will spend on the uses set forth above. Pending our use of the net proceeds from this offering, we intend to invest a portion of the net proceeds in a variety of capital preservation investments, including short-term, interest-bearing instruments and U.S. government securities.

DIVIDEND INFORMATION

We have never declared or paid any cash dividends on our common stock and do not anticipate declaring or paying any cash dividends on our common stock in the foreseeable future. We expect to retain all available funds and any future earnings to support operations and fund the development and growth of our business. Our board of directors has the right to authorize the issuance of preferred stock in the future, without further stockholder approval, the holders of which may have preferences over the holders of our common stock as to payment of dividends.

CAPITALIZATION

The following table sets forth our cash and cash equivalents and capitalization as of June 30, 2023:

- on an actual basis as of June 30, 2023; and
- on an as adjusted basis to give further effect to the issuance and sale of shares of our common stock in this offering at an assumed public offering price of \$ _____ per share, which is the last reported sale price for our common stock on Nasdaq on _____, 2023, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us.

Our capitalization following the closing of this offering will be adjusted based on the actual public offering price and other terms of this offering determined at pricing. You should read this table together with our consolidated financial statements and the related notes and the sections entitled “*Management’s Discussion and Analysis of Financial Condition and Results of Operations*” in the 2022 Form 10-K and the 2023 Form 10-Qs, which are incorporated by reference herein.

	Actual (in thousands)	As Adjusted (in thousands) ⁽¹⁾
Cash and cash equivalents	\$ 46,261	\$ _____
Stockholders’ equity:		
Common stock, \$0.001 par value per share:	73	
250,000,000 shares authorized and outstanding as of June 30, 2023; 72,810,751 shares issued and 68,613,862 shares outstanding as of June 30, 2023; shares issued and outstanding as adjusted		
Additional paid-in capital	444,906	
Accumulated deficit	(387,689)	
Total stockholders’ equity	54,774	
Total capitalization	\$ 79,284	\$ _____

- (1) Each \$0.10 increase (decrease) in the assumed public offering price per share would increase (decrease) the amount of cash and cash equivalents, working capital, total assets, and total stockholders’ equity by approximately \$ _____ million, assuming the number of securities offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting underwriting discounts and commissions and estimated offering expenses payable by us. We may also increase or decrease the number of securities to be issued in this offering. Each increase (decrease) of 1.0 million shares offered by us would increase (decrease) the as adjusted amount of cash and cash equivalents, working capital, total assets and total stockholders’ equity by approximately \$ _____ million, assuming the assumed public offering price remains the same and after deducting underwriting discounts and commissions and estimated offering expenses payable by us. The as adjusted information discussed above is illustrative only and will be adjusted based on the actual public offering price and other terms of this offering determined between us and the underwriter at pricing.

Except as otherwise indicated herein, the number of shares of our common stock to be outstanding after this offering is based on 68,613,862 shares of common stock outstanding as of June 30, 2023 and excludes:

- 10,223,783 shares of common stock issuable upon exercise of outstanding options as of June 30, 2023, at a weighted average exercise price of \$2.64 per share, of which 4,230,915 shares were vested as of such date;
- 2,112,887 shares of common stock reserved for future issuance under the 2017 Stock Incentive Plan and the 2015 Equity Incentive Award Plan;

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- 1,832,565 shares of common stock reserved for future issuance under the 2015 Employee Stock Purchase Plan; and
- 2,548,117 shares of common stock issuable upon the exercise of pre-funded warrants held by Ginkgo, exercisable at a price of \$9.00 per share, with \$8.99 of such exercise price previously paid.

DILUTION

If you invest in our common stock in this offering, your ownership interest will be diluted immediately to the extent of the difference between the public offering price per share of our common stock and the as adjusted net tangible book value per share of our common stock after this offering.

Our historical net tangible book deficit as of June 30, 2023 was \$387.7 million, or \$5.65 per share of our common stock. Historical net tangible book deficit per share represents the amount of our total tangible assets less total liabilities, divided by the number of shares of our common stock outstanding as of June 30, 2023.

After giving effect to the issuance and sale of _____ shares of our common stock in this offering at an assumed public offering price of \$ _____ per share, which is the last reported sale price of our common stock on Nasdaq on _____, 2023, and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, our as adjusted net tangible book value as of June 30, 2023 would have been \$ _____ million, or \$ _____ per share. This represents an immediate increase in net tangible book value per share of \$ _____ to existing stockholders and immediate dilution of \$ _____ per share to new investors purchasing common stock in this offering. Dilution per share to new investors is determined by subtracting as adjusted net tangible book value per share after this offering from the public offering price per share paid by new investors. The following table illustrates this dilution on a per share basis:

Assumed public offering price per share	\$ _____
Historical net tangible book deficit per share	\$5.65
Increase in net tangible book value per share attributable to new investors	_____
As adjusted net tangible book value per share after this offering	\$ _____
Dilution per share to new investors	\$ _____

Each \$0.10 increase (decrease) in the assumed public offering price of \$ _____ per share, which is the last reported sale price of our common stock on Nasdaq on _____, 2023, would increase (decrease) our as adjusted net tangible book value per share after this offering by approximately \$ _____ and the dilution per share to new investors purchasing shares in this offering by \$ _____ assuming the number of securities offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting underwriting discounts and commissions and estimated offering expenses payable by us. We may also increase or decrease the number of securities to be issued in this offering. Each increase (decrease) of 1.0 million shares offered by us would increase (decrease) our as adjusted net tangible book value per share and the dilution per share to new investors purchasing securities in this offering by \$ _____ and \$ _____, respectively assuming that the assumed public offering price remains the same and after deducting underwriting discounts and commissions and estimated offering expenses payable by us. The information discussed above is illustrative only and will be adjusted based on the actual public offering price and other terms of this offering as determined between us and the underwriter at pricing.

If the underwriter exercises its option to purchase additional shares in full, the as adjusted net tangible book value per share after giving effect to this offering would be \$ _____ per share, which amount represents an immediate increase in the net tangible book value per share of \$ _____ to existing stockholders and immediate dilution of \$ _____ per share to new investors purchasing common stock in this offering.

Except as otherwise indicated herein, the number of shares of our common stock to be outstanding after this offering is based on 68,613,862 shares of common stock outstanding as of June 30, 2023 and excludes:

- 10,223,783 shares of common stock issuable upon exercise of outstanding options as of June 30, 2023, at a weighted average exercise price of \$2.64 per share, of which 4,230,915 shares were vested as of such date;

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- 2,112,887 shares of common stock reserved for future issuance under the 2017 Stock Incentive Plan and the 2015 Equity Incentive Award Plan;
- 1,832,565 shares of common stock reserved for future issuance under the 2015 Employee Stock Purchase Plan; and
- 2,548,117 shares of common stock issuable upon the exercise of pre-funded warrants held by Ginkgo, exercisable at a price of \$9.00 per share, with \$8.99 of such exercise price previously paid.

DESCRIPTION OF CAPITAL STOCK

The following description of our capital stock summarizes the material terms and provisions of our common stock and our preferred stock. For the complete terms of our common stock, please refer to our amended and restated certificate of incorporation and our amended and restated bylaws, each as amended to date, that are incorporated by reference into the registration statement of which this prospectus is a part or may be incorporated by reference into this prospectus. The terms of these securities may also be affected by the Delaware General Corporation Law, or the DGCL. The summary below is qualified in its entirety by reference to our amended and restated certificate of incorporation and amended and restated bylaws, each as in effect at the time of any offering of securities under this prospectus.

General

Our amended and restated certificate of incorporation authorizes us to issue up to 250,000,000 shares of common stock, \$0.001 par value per share and 5,000,000 shares of preferred stock, \$0.001 par value per share.

Common Stock

Holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders and do not have cumulative voting rights. An election of directors by our stockholders shall be determined by a plurality of the votes cast by the stockholders entitled to vote on the election. Holders of common stock are entitled to receive proportionately any dividends as may be declared by our board of directors, subject to any preferential dividend rights of any series of preferred stock that we may designate and issue in the future. All shares of common stock outstanding as of the date of this prospectus and, upon issuance and sale, all shares of common stock that we may offer pursuant to this prospectus, will be fully paid and nonassessable.

In the event of our liquidation or dissolution, the holders of common stock are entitled to receive proportionately our net assets available for distribution to stockholders after the payment of all debts and other liabilities and subject to the prior rights of any outstanding preferred stock. Holders of common stock have no preemptive, subscription, redemption or conversion rights. There are no redemption or sinking fund provisions applicable to the common stock. Our outstanding shares of common stock are validly issued, fully paid and nonassessable. The rights, preferences and privileges of holders of common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC.

Our common stock is listed for quotation on The Nasdaq Capital Market under the symbol "SYBX."

Preferred Stock

The following description of our preferred stock and the description of the terms of any particular series of preferred stock that we choose to issue hereunder are not complete. These descriptions are qualified in their entirety by reference to our amended and restated certificate of incorporation and the certificate of designation relating to any series of preferred stock issued by us. The rights, preferences, privileges and restrictions of the preferred stock of each series will be fixed by the certificate of designation relating to that series.

We currently have no shares of preferred stock outstanding. Our board of directors is authorized, without action by the stockholders, to designate and issue up to an aggregate of 5,000,000 shares of preferred stock in one or more series. Any or all of these rights may be greater than the rights of our common stock.

Our board of directors, without stockholder approval, can issue preferred stock with voting, conversion or other rights that could negatively affect the voting power and other rights of the holders of our common stock.

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Preferred stock could thus be issued quickly with terms calculated to delay or prevent a change in control of Synlogic or make it more difficult to remove our management. Additionally, the issuance of preferred stock may have the effect of decreasing the market price of our common stock.

Our board of directors may specify the following characteristics of any preferred stock:

- the maximum number of shares;
- the designation of the shares;
- the annual dividend rate, if any, whether the dividend rate is fixed or variable, the date or dates on which dividends will accrue, the dividend payment dates, and whether dividends will be cumulative;
- the price and the terms and conditions for redemption, if any, including redemption at the option of Synlogic or at the option of the holders, including the time period for redemption, and any accumulated dividends or premiums;
- the liquidation preference, if any, and any accumulated dividends upon the liquidation, dissolution or winding up of Synlogic's affairs;
- any sinking fund or similar provision, and, if so, the terms and provisions relating to the purpose and operation of the fund;
- the terms and conditions, if any, for conversion or exchange of shares of any other class or classes of Synlogic's capital stock or any series of any other class or classes, or of any other series of the same class, or any other securities or assets, including the price or the rate of conversion or exchange and the method, if any, of adjustment;
- the voting rights;
- any or all other preferences and relative, participating, optional or other special rights, privileges or qualifications, limitations or restrictions; and
- any preferred stock issued will be fully paid and nonassessable upon issuance.

Warrants

Our outstanding warrants contain customary net exercise provisions and contain provisions for the adjustment of the exercise price and the number of shares issuable upon the exercise of the warrant in the event of certain stock dividends, stock splits, recapitalizations, reclassifications, consolidations and other fundamental transactions.

Certain Provisions of Delaware Law and of the Company's Certificate of Incorporation and Bylaws

Delaware Law

We are subject to Section 203 of the Delaware General Corporation Law. Subject to certain exceptions, Section 203 prevents a publicly held Delaware corporation from engaging in a "business combination" with any "interested stockholder" for three years following the date that the person became an interested stockholder, unless the interested stockholder attained such status with the approval of our board of directors or unless the business combination is approved in a prescribed manner. A "business combination" includes, among other things, a merger or consolidation involving us and the "interested stockholder" and the sale of more than 10% of our assets. In general, an "interested stockholder" is any entity or person beneficially owning 15% or more of our outstanding voting stock and any entity or person affiliated with or controlling or controlled by such entity or person.

Charter Documents

Our restated certificate of incorporation and amended and restated bylaws divide our board of directors into three classes with staggered three year terms. The provision for a classified board could prevent a party who acquires control of a majority of our outstanding voting stock from obtaining control of our board of directors until the second annual stockholders meeting following the date the acquirer obtains the controlling stock interest. Our classified board provision could discourage a potential acquirer from making a tender offer or otherwise attempting to obtain control of Synlogic and could increase the likelihood that incumbent directors will retain their positions. Our amended and restated certificate of incorporation provides that, subject to the special rights of holders of one or more series of preferred stock, directors may be removed at any time, but only for cause by the affirmative vote of the holders of at least 66 and 2/3% of the voting power of all our outstanding voting stock.

Our restated certificate of incorporation provides that certain amendments of our certificate of incorporation and amendments by our stockholders of our amended and restated bylaws require the approval of at least 66 and 2/3% of the voting power of all outstanding stock. These provisions could discourage a potential acquirer from making a tender offer or otherwise attempting to obtain control of us and could delay changes in management.

Our restated bylaws establish an advance notice procedure for stockholder proposals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to our board of directors. At an annual meeting, stockholders may only consider proposals or nominations specified in the notice of meeting or brought before the meeting by or at the direction of our board of directors. Stockholders may also consider a proposal or nomination by a person who was a stockholder at the time of giving notice and at the time of the meeting, who is entitled to vote at the meeting and who has complied with the notice requirements of our amended and restated bylaws in all respects provided that such proposal is properly made in accordance with Rule 14a-8 under the Exchange Act. The amended and restated bylaws do not give our board of directors the power to approve or disapprove stockholder nominations of candidates or proposals regarding other business to be conducted at a special or annual meeting of the stockholders. However, our amended and restated bylaws may have the effect of precluding the conduct of business at a meeting if the proper procedures are not followed. These provisions may also discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the potential acquirer's own slate of directors or otherwise attempting to obtain control of us.

Our amended and restated bylaws provide that a special meeting of our stockholders may be called at any time by our board of directors. Because our stockholders do not have the right to call a special meeting, our stockholders cannot force stockholder consideration of a proposal over the opposition of our board of directors by calling a special meeting of stockholders prior to such time as a majority of our board of directors believed the matter should be considered and such stockholder would only be able to force consideration of such proposal at the next annual meeting, provided that the requestor met the notice requirements. The restriction on the ability of our stockholders to call a special meeting means that a proposal to replace one or more directors on our board of directors also could be delayed until the next annual meeting.

Our amended and restated bylaws do not allow stockholders to act by written consent without a meeting. Without the availability of stockholder action by written consent, a holder controlling a majority of our capital stock would not be able to amend our amended and restated bylaws or remove directors without holding a stockholders' meeting.

Limitation of Liability and Indemnification

Our restated certificate of incorporation contains provisions that limit the liability of our directors and officers for monetary damages to the fullest extent permitted by Delaware law. Consequently, our directors and executive officers will not be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duties as directors or officers, except for liability for (1) any breach of the director's or officer's duty of loyalty to us or our stockholders, (2) any act or omission not in good faith or which involves intentional misconduct or a knowing violation of law, (3) with respect to our directors, unlawful payments of dividends or

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unlawful stock repurchases or redemptions as provided in Section 174 of the DGCL, or (4) any transaction from which the director or officer derived an improper personal benefit.

Our restated certificate of incorporation and amended and restated bylaws provide that we are required to indemnify our directors and officers, in each case to the fullest extent permitted by Delaware law. The amended and restated bylaws also provide that we are obligated to advance expenses incurred by a director or officer in advance of the final disposition of any action or proceeding, and permit us to secure insurance on behalf of any officer, director, employee or other agent for any liability arising out of his or her actions in that capacity regardless of whether we would otherwise be permitted to indemnify him or her under Delaware law.

We have entered and expect to continue to enter into agreements to indemnify our directors, executive officers and other employees as determined by our board of directors. With specified exceptions, these agreements provide for indemnification for related expenses including, among other things, attorneys' fees, judgments, fines and settlement amounts incurred by any of these individuals in any action or proceeding brought against them by reason of the fact that they are or were our agents. We believe that these provisions in our restated certificate of incorporation and amended and restated bylaws and indemnification agreements are necessary to attract and retain qualified directors and officers. We also maintain directors' and officers' liability insurance. This description of the limitation of liability and indemnification provisions of our restated certificate of incorporation, amended and restated bylaws and indemnification agreements is qualified in its entirety by reference to these documents.

DESCRIPTION OF SECURITIES WE ARE OFFERING

We are offering _____ shares of our common stock. The material terms and provisions of our common stock and each other class of our securities that qualifies or limits our common stock are described in the section entitled "*Description of Capital Stock*" beginning on page 18 of this prospectus.

MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES TO HOLDERS OF COMMON STOCK

The following is a summary of the material U.S. federal income tax consequences of the acquisition, ownership and disposition of our common stock, but does not purport to be a complete analysis of all the potential tax considerations relating thereto. This summary is based upon the provisions of the Internal Revenue Code of 1986, as amended, or the Code, Treasury Regulations promulgated thereunder, administrative rulings and judicial decisions, all as of the date hereof. These authorities may be changed or subject to differing interpretations, possibly with retroactive effect, so as to result in U.S. federal income tax consequences different from those set forth below. We have not sought and will not seek any ruling from the Internal Revenue Service, or the IRS, with respect to the statements made and the conclusions reached in the following summary, and there can be no assurance that the IRS or a court will agree with such statements and conclusions.

This summary also does not address the tax considerations arising under the laws of any U.S. state or local or any non-U.S. jurisdiction, estate or gift tax, the 3.8% Medicare tax on net investment income or any alternative minimum tax consequences. In addition, this discussion does not address tax considerations applicable to a holder's particular circumstances or to a holder that may be subject to special tax rules, including, without limitation:

- banks, insurance companies or other financial institutions;
- tax-exempt or government organizations;
- brokers or dealers in securities or currencies;
- traders in securities that elect to use a mark-to-market method of accounting for their securities holdings;
- persons that own, or are deemed to own, more than five percent of our capital stock;
- certain U.S. expatriates, citizens or former long-term residents of the United States;
- persons who hold our common stock and pre-funded warrants or common warrants as a position in a hedging transaction, "straddle," "conversion transaction," synthetic security, other integrated investment, or other risk reduction transaction;
- persons who do not hold our common stock and pre-funded warrants or common warrants as a capital asset within the meaning of Section 1221 of the Code (generally, for investment purposes);
- persons deemed to sell our common stock and pre-funded warrants or common warrants under the constructive sale provisions of the Code;
- pension plans;
- partnerships, or other entities or arrangements treated as partnerships for U.S. federal income tax purposes, or investors in any such entities;
- persons for whom our stock constitutes "qualified small business stock" within the meaning of Section 1202 of the Code;
- integral parts or controlled entities of foreign sovereigns;
- controlled foreign corporations;
- passive foreign investment companies and corporations that accumulate earnings to avoid U.S. federal income tax; or
- persons that acquire our common stock or pre-funded warrants or common warrants as compensation for services.

In addition, if a partnership, including any entity or arrangement classified as a partnership for U.S. federal income tax purposes, holds our common stock or pre-funded warrants or common warrants, the tax treatment of a

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partner generally will depend on the status of the partner, the activities of the partnership, and certain determinations made at the partner level. Accordingly, partnerships that hold our common stock or pre-funded warrants or common warrants, and partners in such partnerships, should consult their tax advisors regarding the U.S. federal income tax consequences to them of the purchase, ownership, and disposition of our common stock or pre-funded warrants or common warrants.

You are urged to consult your tax advisor with respect to the application of the U.S. federal income tax laws to your particular situation, as well as any tax consequences of the purchase, ownership and disposition of our common stock or pre-funded warrants or common warrants arising under the U.S. federal estate or gift tax rules or under the laws of any U.S. state or local or any non-U.S. or other taxing jurisdiction or under any applicable tax treaty.

Definition of a U.S. Holder

For purposes of this summary, a “U.S. Holder” is any beneficial owner of our common stock or pre-funded warrants or common warrants that is a “U.S. person,” and is not a partnership, or an entity treated as a partnership or disregarded from its owner, each for U.S. federal income tax purposes. A U.S. person is any person that, for U.S. federal income tax purposes, is or is treated as any of the following:

- an individual who is a citizen or resident of the United States;
- a corporation created or organized under the laws of the United States, any state thereof, or the District of Columbia;
- an estate, the income of which is subject to U.S. federal income tax regardless of its source; or
- a trust that (1) is subject to the primary supervision of a U.S. court and the control of one or more U.S. persons (within the meaning of Section 7701(a)(30) of the Code), or (2) has a valid election in effect to be treated as a U.S. person for U.S. federal income tax purposes.

For purposes of this summary, a “Non-U.S. Holder” is any beneficial owner of our common stock or pre-funded warrants or common warrants that is not a U.S. Holder or a partnership, or other entity treated as a partnership or disregarded from its owner, each for U.S. federal income tax purposes.

Tax Consequences to U.S. Holders

Distributions on Common Stock

As discussed above under “*Dividend Information – Dividend Policy*,” we do not currently expect to make distributions on our common stock. In the event that we do make distributions of cash or other property, distributions paid on common stock, other than certain pro rata distributions of common stock, will be treated as a dividend to the extent paid out of our current or accumulated earnings and profits and will be includible in income by the U.S. Holder and taxable as ordinary income when received. If a distribution exceeds our current and accumulated earnings and profits, the excess will be first treated as a tax-free return of the U.S. Holder’s investment, up to the U.S. Holder’s tax basis in the common stock. Any remaining excess will be treated as a capital gain. Subject to applicable limitations, dividends paid to certain non-corporate U.S. Holders may be eligible for taxation as “qualified dividend income” and therefore may be taxable at rates applicable to long-term capital gains. U.S. Holders should consult their tax advisers regarding the availability of the reduced tax rate on dividends in their particular circumstances. Dividends received by a corporate U.S. Holder will be eligible for the dividends-received deduction if the U.S. Holder meets certain holding period and other applicable requirements.

Sale or Other Disposition of Common Stock

For U.S. federal income tax purposes, gain or loss realized on the sale or other disposition of common stock will be capital gain or loss, and will be long-term capital gain or loss if the U.S. Holder held the common stock

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for more than one year. The amount of the gain or loss will equal the difference between the U.S. Holder's tax basis in the common stock disposed of and the amount realized on the disposition. Long-term capital gains recognized by non-corporate U.S. Holders will be subject to reduced tax rates. The deductibility of capital losses is subject to limitations.

Tax Consequences to Non-U.S. Holders

Distributions

As discussed in the section entitled "*Dividend Information—Dividend Policy*," we do not anticipate paying any dividends on our common stock in the foreseeable future. If we make distributions on our common stock, those payments will constitute dividends for U.S. federal income tax purposes to the extent we have current or accumulated earnings and profits, as determined under U.S. federal income tax principles. To the extent those distributions exceed both our current and our accumulated earnings and profits, they will constitute a return of capital and will first reduce a Non-U.S. Holder's basis in our common stock, but not below zero. Any excess will be treated as capital gain and will be treated as described below under the "*Gain on Sale or Other Disposition of Common Stock*" section. Any such distributions would be subject to the discussions below regarding back-up withholding and Foreign Account Tax Compliance Act, or FATCA.

Subject to the discussion below on effectively connected income, any dividend paid to a Non-U.S. Holder generally will be subject to U.S. withholding tax either at a rate of 30% of the gross amount of the dividend or such lower rate as may be specified by an applicable income tax treaty. To receive a reduced treaty rate, a Non-U.S. Holder must provide us or our agent with an IRS Form W-8BEN, IRS Form W-8 BEN-E or another appropriate version of IRS Form W-8 (or a successor form), which must be updated periodically, and which, in each case, must certify qualification for the reduced rate. Non-U.S. Holders should consult their tax advisors regarding their entitlement to benefits under any applicable income tax treaty.

Dividends paid to a Non-U.S. Holder that are effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States and that are not eligible for relief from U.S. (net basis) income tax under an applicable income tax treaty, generally are exempt from the (gross basis) withholding tax described above. To obtain this exemption from withholding tax, the Non-U.S. Holder must provide the applicable withholding agent with an IRS Form W-8ECI or successor form or other applicable IRS Form W-8 certifying that the dividends are effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States. Such effectively connected dividends, if not eligible for relief under a tax treaty, would not be subject to a withholding tax, but would be taxed at the same graduated rates applicable to U.S. persons, net of certain deductions and credits and if, in addition, the Non-U.S. Holder is a corporation, may also be subject to a branch profits tax at a rate of 30% (or such lower rate as may be specified by an applicable income tax treaty).

If you are eligible for a reduced rate of withholding tax pursuant to a tax treaty, you may be able to obtain a refund of any excess amounts withheld if you timely file an appropriate claim for refund with the IRS.

Gain on Sale or Other Disposition of Common Stock

Subject to the discussion below regarding backup withholding and FATCA, a Non-U.S. Holder generally will not be required to pay U.S. federal income tax on any gain realized upon the sale or other disposition of our common stock unless:

- the gain is effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States and not eligible for relief under an applicable income tax treaty, in which case the Non-U.S. Holder will be required to pay tax on the net gain derived from the sale under regular graduated U.S. federal income tax rates, and for a Non-U.S. Holder that is a corporation, such Non-U.S. Holder may be subject to the branch profits tax at a 30% rate (or such lower rate as may be specified by an applicable income tax treaty) on such effectively connected gain, as adjusted for certain items;

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- the Non-U.S. Holder is an individual who is present in the United States for a period or periods aggregating 183 days or more during the calendar year in which the sale or disposition occurs and certain other conditions are met, in which case the Non-U.S. Holder will be required to pay a flat 30% tax on the gain derived from the sale, which tax may be offset by U.S. source capital losses (even though the Non-U.S. Holder is not considered a resident of the United States) (subject to applicable income tax or other treaties); or
- we are a “U.S. real property holding corporation” for U.S. federal income tax purposes, or a USRPHC, at any time within the shorter of the five-year period preceding the disposition or the Non-U.S. Holder’s holding period for our common stock. We believe we are not currently and do not anticipate becoming a USRPHC. However, because the determination of whether we are a USRPHC depends on the fair market value of our United States real property interests relative to the fair market value of our other business assets, there can be no assurance that we will not become a USRPHC in the future. Even if we become a USRPHC, however, gain arising from the sale or other taxable disposition by a Non-U.S. Holder of our common stock will not be subject to United States federal income tax if (a) shares of our common stock are “regularly traded,” as defined by applicable Treasury Regulations, on an established securities market, such as Nasdaq, and (b) the Non-U.S. Holder owns or owned, actually and constructively, 5% or less of the shares of our common stock throughout the five-year period ending on the date of the sale or exchange. If the foregoing exception does not apply, such Non-U.S. Holder’s proceeds received on the disposition of shares will generally be subject to withholding at a rate of 15% and such Non-U.S. Holder will generally be taxed on any gain in the same manner as gain that is effectively connected with the conduct of a U.S. trade or business, except that the branch profits tax generally will not apply.

Information Reporting and Backup Withholding

Information returns may be filed with the IRS in connection with distributions on common stock, and the proceeds of a sale or other disposition of common stock. A non-exempt U.S. Holder may be subject to U.S. backup withholding on these payments if it fails to provide its taxpayer identification number to the withholding agent and comply with certification procedures or otherwise establish an exemption from backup withholding.

A Non-U.S. Holder may be subject to U.S. information reporting and backup withholding on these payments unless the Non-U.S. Holder complies with certification procedures to establish that it is not a U.S. person (within the meaning of the Code). The certification requirements generally will be satisfied if the Non-U.S. Holder provides the applicable withholding agent with a statement on the applicable IRS Form W-8BEN or IRS Form W-8BEN-E (or suitable substitute or successor form), together with all appropriate attachments, signed under penalties of perjury, stating, among other things, that such Non-U.S. Holder is not a U.S. Person. Applicable Treasury Regulations provide alternative methods for satisfying this requirement. In addition, the amount of distributions on common stock or constructive dividends on common stock paid to a Non-U.S. Holder, and the amount of any U.S. federal tax withheld therefrom, must be reported annually to the IRS and the holder. This information may be made available by the IRS under the provisions of an applicable tax treaty or agreement to the tax authorities of the country in which the Non-U.S. Holder resides.

Payment of the proceeds of the sale or other disposition of common stock to or through a non-U.S. office of a U.S. broker or of a non-U.S. broker with certain specified U.S. connections generally will be subject to information reporting requirements, but not backup withholding, unless the Non-U.S. Holder certifies under penalties of perjury that it is not a U.S. person or an exemption otherwise applies. Payments of the proceeds of a sale or other disposition of common stock to or through a U.S. office of a broker generally will be subject to information reporting and backup withholding, unless the Non-U.S. Holder certifies under penalties of perjury that it is not a U.S. person or otherwise establishes an exemption.

Backup withholding is not an additional tax. The amount of any backup withholding from a payment generally will be allowed as a credit against the holder’s U.S. federal income tax liability and may entitle the holder to a refund, provided that the required information is timely furnished to the IRS.

Foreign Account Tax Compliance Act

FATCA imposes withholding tax on certain types of payments made to foreign financial institutions and certain other non-U.S. entities. The legislation imposes a 30% withholding tax on dividends on, or, subject to the discussion of certain proposed Treasury Regulations below, gross proceeds from the sale or other disposition of, our common stock paid to a “foreign financial institution” or to certain “non-financial foreign entities” (each as defined in the Code), unless (i) the foreign financial institution undertakes certain diligence and reporting obligations, (ii) the non-financial foreign entity either certifies it does not have any “substantial United States owners” (as defined in the Code) or furnishes identifying information regarding each substantial United States owner, or (iii) the foreign financial institution or non-financial foreign entity otherwise qualifies for an exemption from these rules. If the payee is a foreign financial institution and is subject to the diligence and reporting requirements in (i) above, it must enter into an agreement with the U.S. Treasury requiring, among other things, that it undertake to identify accounts held by “specified United States persons” or “United States-owned foreign entities” (each as defined in the Code), annually report certain information about such accounts, and withhold 30% on payments to account holders whose actions prevent it from complying with these reporting and other requirements. If the country in which a payee is resident has entered into an “intergovernmental agreement” with the United States regarding FATCA, that agreement may permit the payee to report to that country rather than to the U.S. Department of the Treasury. The U.S. Treasury recently released proposed Treasury Regulations which, if finalized in their present form, would eliminate the federal withholding tax of 30% applicable to the gross proceeds of a sale or other disposition of our common stock. In its preamble to such proposed Treasury Regulations, the U.S. Treasury stated that taxpayers may generally rely on the proposed regulations until final regulations are issued. Prospective investors should consult their own tax advisors regarding the possible impact of these rules on their investment in our common stock, and the possible impact of these rules on the entities through which they hold our common stock, including, without limitation, the process and deadlines for meeting the applicable requirements to prevent the imposition of this 30% withholding tax under FATCA.

The preceding discussion of U.S. federal tax considerations is for general information only. It is not tax advice. Each prospective investor should consult its tax advisor regarding the particular U.S. federal, state and local and non-U.S. tax consequences of purchasing, holding and disposing of our common stock, including the consequences of any proposed change in applicable laws.

UNDERWRITING

We entered into an underwriting agreement with Chardan Capital Markets, LLC (“Chardan” or the “underwriter”) relating to this offering. Subject to the terms and conditions of the underwriting agreement, we have agreed to sell to Chardan and Chardan has agreed to purchase, _____ shares of common stock.

Chardan has agreed to purchase all of the shares of common stock offered by us, other than those covered by the underwriter’s option to purchase additional shares of common stock from us as described below, if any are purchased. The obligations the underwriter may be terminated upon the occurrence of certain events specified in the underwriting agreement. Furthermore, pursuant to the underwriting agreement, the obligations of the underwriter are subject to customary conditions, representations and warranties contained in the underwriting agreement, such as receipt by the underwriter of officers’ certificates and legal opinions.

The underwriter has advised us that it proposes initially to offer the shares of common stock to the public at the public offering price set forth on the cover page of this prospectus and to dealers at a price less a concession not in excess of \$ _____ per share, based on the public offering price per share. After the shares of common stock are released for sale to the public, the underwriter may change the offering price, the concession, and other selling terms at various times.

We have agreed to indemnify the underwriter against certain liabilities, including liabilities under the Securities Act and to contribute to payments the underwriter may be required to make in respect thereof.

The underwriter is offering the shares of common stock in this offering subject to prior sale, when, as and if issued to and accepted by them subject to approval of legal matters by their counsel and other conditions specified in the underwriting agreement. The underwriter reserves the right to withdraw, cancel or modify orders to the public, and to reject orders in whole or in part.

Over-Allotment Option

We have granted the underwriter an option, exercisable one or more times, in whole or in part, not later than 45 days from the date of this prospectus, to purchase from us up to an additional _____ shares of common stock from us based on the sale of our common stock at an assumed public offering price of \$ _____ per share of common stock, which is the last reported sale price of our common stock on the Nasdaq Capital Market on _____, at the public offering price per share, less the underwriting discounts and commissions solely to cover over-allotments, if any.

Discounts, Commissions and Reimbursement

The following table provides information regarding the amount of the discounts and commissions to be paid to the underwriter by us. Such amounts are shown assuming both no exercise and full exercise of the underwriter’s option to purchase additional shares of common stock.

	<u>Per Share</u>	<u>Total Without Exercise of Option</u>	<u>Total With Full Exercise of Option</u>
Public offering price	\$ _____	\$ _____	\$ _____
Underwriting discounts and commissions ⁽¹⁾	\$ _____	\$ _____	\$ _____
Proceeds to us, before expenses	\$ _____	\$ _____	\$ _____

(1) We have agreed to pay the underwriter a commission of 6% of the gross proceeds of this offering.

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We estimate that our total expenses of the offering, excluding the estimated underwriting discounts and commissions, will be approximately \$ _____, which includes the fees and expenses for which we have agreed to reimburse the underwriters, provided that any such fees and expenses will not exceed an aggregate of \$150,000.

Lock-Up Agreements

We, our officers and directors have agreed to a 90-day “lock-up” with respect to shares of our common stock and other of our securities that they beneficially own, including securities that are convertible into shares of common stock and securities that are exchangeable or exercisable for shares of common stock. This means that, subject to certain exceptions, for a period of 90 days following the date of this prospectus, we and such persons may not offer, sell, pledge or otherwise dispose of these securities without the prior written consent of Chardan.

Tail Period

In the event that this offering is not consummated as contemplated herein, the underwriter will be entitled to receive a cash fee equal to six percent (6.0%) of the gross proceeds received by us from any financing or capital raising transaction to the extent that such proceeds are provided to us by any investor directly introduced by the underwriter to us during the period beginning on June 9, 2023 and ending on the termination of the engagement (the “Engagement Period”) and that any such transaction is consummated at any time during the Engagement Period or within the 12-month period following the Engagement Period.

Electronic Offer, Sale, and Distribution of Securities

A prospectus in electronic format may be made available on the websites maintained by the underwriter. The prospectus in electronic format will be identical to the paper version of such prospectus. The underwriter may agree to allocate a number of shares to underwriter and selling group members for sale to their online brokerage account holders. Internet distributions will be allocated by the underwriter and selling group members that will make internet distributions on the same basis as other allocations. Other than the prospectus in electronic format, the information on these websites is not part of, nor incorporated by reference into, this prospectus or the registration statement of which this prospectus forms a part, has not been approved or endorsed by us, and should not be relied upon by investors.

Listing

We have applied to list the shares of common stock offered on the Nasdaq Capital Market under the symbol “SYBX”.

Stabilization

In connection with this offering, the underwriter may engage in stabilizing transactions, over-allotment transactions, syndicate-covering transactions, penalty bids, and purchases to cover positions created by short sales.

- Stabilizing transactions permit bids to purchase securities so long as the stabilizing bids do not exceed a specified maximum and are engaged in for the purpose of preventing or retarding a decline in the market price of the securities while the offering is in progress.
- Over-allotment transactions involve sales by the underwriter of securities in excess of the number of securities the underwriter is obligated to purchase. This creates a syndicate short position which may be either a covered short position or a naked short position. In a covered short position, the number of securities over-allotted by the underwriter is not greater than the number of securities that they may purchase in the over-allotment option. In a naked short position, the number of securities involved is greater than the number of securities in the over-allotment option. The underwriter may close out any short position by exercising their over-allotment option and/or purchasing securities in the open market.

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- Syndicate covering transactions involve purchases of securities in the open market after the distribution has been completed in order to cover syndicate short positions. In determining the source of securities to close out the short position, the underwriter will consider, among other things, the price of securities available for purchase in the open market as compared with the price at which they may purchase securities through exercise of the over-allotment option. If the underwriter sells more securities than could be covered by exercise of the over-allotment option and, therefore, have a naked short position, the position can be closed out only by buying securities in the open market. A naked short position is more likely to be created if the underwriter is concerned that after pricing there could be downward pressure on the price of the securities in the open market that could adversely affect investors who purchase in the offering.
- Penalty bids permit the underwriter to reclaim a selling concession from a syndicate member when the securities originally sold by that syndicate member are purchased in stabilizing or syndicate covering transactions to cover syndicate short positions.

These stabilizing transactions, over-allotment transactions, syndicate covering transactions, and penalty bids may have the effect of raising or maintaining the market price of our securities or preventing or retarding a decline in the market price of our securities. As a result, the price of our securities in the open market may be higher than it would otherwise be in the absence of these transactions. Neither we nor the underwriter make any representation or prediction as to the effect that the transactions described above may have on the price of our securities. These transactions may be affected on the Nasdaq Stock Market, in the over-the-counter market or otherwise and, if commenced, may be discontinued at any time.

Passive Market Making

In connection with this offering, the underwriters and selling group members may engage in passive market making transactions in our securities on the Nasdaq Stock Market in accordance with Rule 103 of Regulation M under the Exchange Act, during a period before the commencement of offers or sales of the shares and extending through the completion of the distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. However, if all independent bids are lowered below the passive market maker's bid, then that bid must then be lowered when specified purchase limits are exceeded.

Certain Relationships

The underwriter and its affiliates have provided, or may in the future, from time to time, engage in transactions with and perform services for us in the ordinary course of their business for which they may receive customary fees and reimbursement of expenses. In the ordinary course of their various business activities, the underwriter and its affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments of our Company. The underwriter and its affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

LEGAL MATTERS

The validity of the securities offered hereby is being passed upon for us by Mintz, Levin, Cohn, Ferris, Glovsky & Popeo, P.C., New York, New York. Lowenstein Sandler LLP is acting as counsel for the underwriter in connection with this offering.

EXPERTS

The consolidated financial statements of Synlogic, Inc. as of December 31, 2022 and 2021, and for the years then ended, have been incorporated by reference herein and in the registration statement 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 MORE INFORMATION

We are a reporting company and file annual, quarterly and current reports, proxy statements and other information with the SEC. We have filed with the SEC a registration statement on Form S-1 under the Securities Act with respect to the offer and sale of our securities under this prospectus. This prospectus does not contain all of the information set forth in the registration statement and the exhibits to the registration statement. For further information with respect to us and the securities offered under this prospectus, we refer you to the registration statement and the exhibits filed as a part of the registration statement. The SEC also maintains an Internet site that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC, including Synlogic, Inc. The SEC's Internet site can be found at www.sec.gov. We maintain a website at www.synlogictx.com. Information found on, or accessible through, our website is not a part of, and is not incorporated into, this prospectus, and you should not consider it part of this prospectus.

INCORPORATION OF DOCUMENTS BY REFERENCE

The SEC allows us to incorporate by reference the information we file with it, which means that we can disclose important information to you by referring you to another document that we have filed separately with the SEC. You should read the information incorporated by reference because it is an important part of this prospectus. 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 into this prospectus and the registration statement of which this prospectus is a part the information or documents listed below that we have filed with the SEC (Commission File No. 001-37566):

- Annual Report on Form [10-K](#) for the fiscal year ended December 31, 2022 as filed with the SEC on March 29, 2023;
- [Definitive Proxy Statement](#) on Schedule 14A, filed with the SEC on May 1, 2023 to the extent incorporated by reference into our Annual Report on Form 10-K for the year ended December 31, 2022 (other than the portions thereof that are furnished and not filed);
- Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2023, as filed with the SEC on [May 11, 2023](#), and June 30, 2023, as filed with the SEC on [August 10, 2023](#);
- Current Reports on Form 8-K (other than the portions thereof that are furnished and not filed) as filed with the SEC on [January 19, 2023](#), [June 5, 2023](#), [June 15, 2023](#) and [August 16, 2023](#);
- the description of our common stock contained in [Exhibit 4.3](#) to our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, including any amendments or reports filed for purpose of updating such description; and

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- all reports and other documents subsequently filed by us pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act after the date of this prospectus and prior to the termination or completion of the offering of securities under this prospectus shall be deemed to be incorporated by reference in this prospectus and to be a part hereof from the date of filing such reports and other documents.

We also incorporate by reference any future filings (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary) made with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, including those made 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, until we file a post-effective amendment that indicates the termination of the offering of the common stock made by this prospectus and will become a part of this prospectus from the date that such documents are filed with the SEC. Information in such future filings updates and supplements the information provided in this prospectus. Any statements in any such future filings will automatically be deemed to modify and supersede any information in any document we previously filed with the SEC that is incorporated or deemed to be incorporated herein by reference to the extent that statements in the later filed document modify or replace such earlier statements.

We will furnish without charge to each person, including any beneficial owner, to whom a prospectus is delivered, upon written or oral request, a copy of any or all of the documents incorporated by reference into this prospectus but not delivered with the prospectus, including exhibits that are specifically incorporated by reference into such documents. You should direct any requests for documents to Synlogic, Inc., 301 Binney St., Suite 402, Cambridge, MA 02142. Our phone number is (617) 401-9975.

You should rely only on information contained in, or incorporated by reference into, this prospectus and any prospectus supplement. We have not authorized anyone to provide you with information different from that contained in this prospectus or incorporated by reference into this prospectus. We are not making offers to sell the securities in any jurisdiction in which such an offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make such offer or solicitation.

SYNLOGIC, INC.

Shares of Common Stock

PROSPECTUS

Book-Running Manager

Chardan

, 2023

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 13. Other Expenses of Issuance and Distribution.

The following table sets forth the expenses to be incurred in connection with the offering described in this Registration Statement, other than underwriting discounts and commissions, all which will be paid by the Registrant. All amounts are estimates except the Securities and Exchange Commission, or SEC, registration fee and the Financial Industry Regulatory Authority, Inc., filing fee.

	Amount
Securities and Exchange Commission registration fee	\$ 1,901
Financial Industry Regulatory Authority, Inc. filing fee	3,088
Accountant's fees and expenses	35,000
Legal fees and expenses	100,000
Transfer agent's fees and expenses	5,000
Printing and engraving expenses	15,000
Miscellaneous	5,011
Total expenses	<u>\$ 165,000</u>

As permitted by Section 102 of the Delaware General Corporation Law, we have adopted provisions in our amended and restated certificate of incorporation and amended and restated bylaws, each as amended, which limit or eliminate the personal liability of our directors for a breach of their fiduciary duty of care as a director. The duty of care generally requires that, when acting on behalf of the corporation, directors exercise an informed business judgment based on all material information reasonably available to them. Consequently, a director will not be personally liable to us or our stockholders for monetary damages for breach of fiduciary duty as a director, except for liability for:

Item 14. Indemnification of Directors and Officers.

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 and officers of a corporation to the corporation or its stockholders for monetary damages for a breach of fiduciary duty as a director or officer, except where the director or officer breached his or her 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

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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.

(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

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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.

(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 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. These agreements require us to indemnify these individuals to the fullest extent permitted

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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 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 15. Recent Sales of Unregistered Securities.

Employees surrendered 18,187 shares to us, at purchase prices ranging from \$3.50 to \$4.12, during the nine months ended September 30, 2021, for the payment of the minimum tax liability withholding obligations upon the vesting of shares of restricted stock. We do not consider this a share buyback program.

Item 16. Exhibits and Financial Statement Schedules.

<u>Exhibit Number</u>	<u>Exhibit Description</u>	<u>Filed Herewith</u>	<u>Incorporated by Reference herein from Form or Schedule</u>	<u>Filing Date</u>	<u>SEC File/Reg. Number</u>
1.1*	Underwriting Agreement, dated , 2023, by and between the Registrant and Chardan Capital Markets LLC				
2.1^	Agreement and Plan of Merger and Reorganization, dated as of May 15, 2017, by and among Mirna Therapeutics, Inc., Meerkat Merger Sub, Inc. and Synlogic, Inc.		8-K (Exhibit 2.1)	05/16/2017	001-37566
3.1	Amended and Restated Certificate of Incorporation		8-K (Exhibit 3.1)	10/6/2015	001-37566
3.2	Certificate of Amendment (Reverse Stock Split) to the Amended and Restated Certificate of Incorporation, dated August 25, 2017		8-K (Exhibit 3.1)	08/28/2017	001-37566
3.3	Certificate of Amendment (Name Change) to the Amended and Restated Certificate of Incorporation		8-K (Exhibit 3.2)	08/28/2017	001-37566

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3.4	Certificate of Amendment to Amended and Restated Certificate of Incorporation of Synlogic, Inc., dated June 15, 2023	8-K (Exhibit 3.1)	06/15/2023	001-37566
3.5	Amended and Restated Bylaws	8-K (Exhibit 3.2)	10/6/2015	001-37566
4.1	Form of Common Stock Certificate	S-1/A (Exhibit 4.2)	09/18/2015	333-206544
4.2	Pre-Funded Warrant	8-K (Exhibit 4.1)	06/12/2019	001-37566
4.3	Description of Securities	10-K (Exhibit 4.3)	03/12/2020	001-37566
5.1*	Opinion of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.			
10.1#	2015 Equity Incentive Award Plan	10-K (Exhibit 10.1)	03/20/2018	001-37566
10.2#	Form of Stock Option Grant Notice and Stock Option Agreement under the 2015 Equity Incentive Award Plan.	S-1/A (Exhibit 10.9(B))	09/11/2015	333-206544
10.3#	Form of Restricted Stock Award Agreement and Restricted Stock Unit Award Grant Notice under the 2015 Equity Incentive Award Plan.	S-1/A (Exhibit 10.9(C))	09/11/2015	333-206544
10.4#	2017 Stock Incentive Plan	10-K (Exhibit 10.4)	03/20/2018	001-37566
10.5#	Form of Stock Option Grant Notice and Stock Option Agreement under 2017 Stock Incentive Plan.	10-Q (Exhibit 10.17)	11/13/2017	001-37566
10.6#	Non-Employee Director Compensation Program.	8-K (Exhibit 10.1)	01/31/2020	001-37566
10.7#	Form of Indemnification Agreement between the Company and each of its directors and officers	S-1/A (Exhibit 10.13)	09/11/2015	333-206544
10.8#	Offer Letter by and between Synlogic and Aoife M. Brennan, MB, BCh, BAO, MMSc, dated as of June 22, 2016	8-K (Exhibit 10.6)	08/28/2017	001-37566
10.9#	First Amendment to Offer Letter by and between Synlogic and Aoife M. Brennan, MB, BCh, BAO, MMSc, dated as of November 7, 2016	8-K (Exhibit 10.7)	08/28/2017	001-37566

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10.10#	<u>Second Amendment to Offer Letter by and between Synlogic and Aoife M. Brennan, MB, BCh, BAO, MMSc, dated as of May 8, 2017</u>	8-K (Exhibit 10.8)	08/28/2017	001-37566
10.11#	<u>Third Amendment to Offer Letter dated as of June 5, 2018, between Synlogic, Inc. and Aoife Brennan, MB, BCh, BAO, MMSc</u>	10-Q (Exhibit 10.1)	08/9/2018	001-37566
10.12#	<u>Amended and Restated Letter Agreement by and between Synlogic, Inc. and Aoife M. Brennan, MB, BCh, BAO, MMSc, dated as of October 1, 2018</u>	10-Q (Exhibit 10.1)	11/13/2018	001-37566
10.13	<u>Employment Agreement dated as of January 24, 2022, by and between Synlogic and Michael Jensen</u>	8-K (Exhibit 10.1)	03/03/2022	001-37566
10.14.1	<u>Employment Letter Agreement dated November 28, 2018, by and between Synlogic and Antoine Awad</u>	10-K (Exhibit 10.14.1)	03/25/2021	001-37566
10.14.2	<u>Promotion Letter, dated July 21, 2020, for Antoine Awad</u>	10-K (Exhibit 10.14.2)	03/25/2021	001-37566
10.15†^	<u>Agreement and Plan of Merger by and among AbbVie S.à.r.l., Suffolk Merger Sub, Inc., Synlogic IBDCo, Inc., Synlogic, LLC, Synlogic, Inc. and the founders named therein, dated as of July 16, 2015; as amended by a First Amendment to Agreement and Plan of Merger, dated as of December 14, 2015</u>	8-K (Exhibit 10.12)	08/28/2017	001-37566
10.16†^	<u>Second Amendment to Agreement and Plan of Merger by and among AbbVie S.à.r.l., Synlogic IBDCo, Inc. and Synlogic Operating Company, Inc., dated as of September 27, 2018</u>	10-Q (Exhibit 10.2)	11/13/2018	001-37566
10.17†^	<u>Third Amendment to Agreement and Plan of Merger and First Amendment to License Agreement by and among AbbVie S.à.r.l., Synlogic IBDCo, Inc. and Synlogic Operating Company, Inc., dated as of December 18, 2018</u>	10-K (Exhibit 10.25)	03/12/2019	001-37566
10.18†	<u>License Agreement by and between Synlogic, Inc. and Synlogic IBDCo, Inc., dated as of July 16, 2015</u>	8-K (Exhibit 10.13)	08/28/2017	001-37566
10.19	<u>Sales Agreement, dated as of July 23, 2021 by and between the registrant and Jefferies LLC</u>	10-Q (Exhibit 1.1)	11/10/2021	001-37566
10.20	<u>Form of Subscription Agreement, dated as of April 6, 2018, by and among Synlogic, Inc. and certain investors.</u>	8-K (Exhibit 10.1)	04/6/2018	001-37566
10.21†	<u>Master Contract Services Agreement, dated as of September 8, 2018, between Synlogic, Inc. and Azzur Group (d/b/a Azzur of New England LLC).</u>	10-K (Exhibit 10.29)	03/12/2019	001-37566

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10.22†	Statement of Work dated September 10, 2018 pursuant to Master Contract Services Agreement between Synlogic, Inc. and Azzur Group (d/b/a Azzur of New England LLC).	10-K (Exhibit 10.30)	03/12/2019	001-37566
10.23†	Statement of Work dated December 7, 2018 pursuant to Master Contract Services Agreement between Synlogic, Inc. and Azzur Group (d/b/a Azzur of New England LLC).	10-K (Exhibit 10.31)	03/12/2019	001-37566
10.24	Subscription Agreement dated June 11, 2019 by and between the Company and Ginkgo Bioworks, Inc.	8-K (Exhibit 10.1)	06/12/2019	001-37566
10.25†	Foundry Terms of Service Agreement dated June 11, 2019 by and between Synlogic Operating Company Inc. and Ginkgo Bioworks, Inc.	10-Q (Exhibit 10.2)	08/08/2019	001-37566
10.26	Consulting Agreement effective as of October 13, 2019 by and between the Company and Danforth Advisors, LLC, as amended	8-K (Exhibit 10.1)	10/24/2019	001-37566
10.27	Synlogic, Inc. 2015 Employee Stock Purchase Plan, as amended	8-K (Exhibit 10.1)	12/20/2019	001-37566
10.28†	License and Services Agreement and Statement of Work, dated April 28, 2021, by and between Synlogic Operating Company, Inc. and Azzur Cleanrooms-On-Demand – Boston, LLC.	10-Q (Exhibit 10.1)	08/12/2021	001-37566
10.29†	Pilot Collaboration and Option Agreement, dated June 16, 2021, among Synlogic Operating Company, Inc. and Hoffman-La Roche Inc.	10-Q (Exhibit 10.2)	08/12/2021	001-37566
10.30	Statement of Work dated January 21, 2022 pursuant to Master Contract Services Agreement between Synlogic, Inc. and Azzur Group (d/b/a Azzur of New England LLC), SOW P-10558-01	10-K (Exhibit 10.30)	03/17/2022	001-37566
10.31	Statement of Work dated January 21, 2022 pursuant to Master Contract Services Agreement between Synlogic, Inc. and Azzur Group (d/b/a Azzur of New England LLC), SOW P-10558-2	10-K (Exhibit 10.31)	03/17/2022	001-37566
10.32	Statement of Work dated November 22, 2022 pursuant to Master Contract Services Agreement between Synlogic, Inc. and Azzur Group (d/b/a Azzur of New England LLC), SOW P-10558-01 Extension A	10-K (Exhibit 10.32)	03/29/2023	001-37566
21.1	Subsidiaries of the registrant	10-K (Exhibit 21.1)	03/29/2023	001-37566

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23.1	Consent of Independent Registered Public Accounting Firm	X
23.2*	Consent of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. (included in Exhibit 5.1 hereto)	
24.1	Power of Attorney (included in the signature page hereto)	X
107	Filing Fee Table	X

[^] The schedules and exhibits to this exhibit have been omitted pursuant to Item 601(b)(2) of Regulation S-K. A copy of any omitted schedule and/or exhibit will be furnished to the SEC upon request.

[#] Management contract or compensatory plans or arrangements.

[†] Portions of this exhibit (indicated by asterisks) have been omitted in accordance with the rules of the Securities and Exchange Commission.

* To be filed by amendment.

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 Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement;

provided, however, that paragraphs (a)(1)(i), (ii), and (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 Securities Exchange Act of 1934 (15 U.S.C. 78m or 78o(d)) that are incorporated by reference in the registration statement.

(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;

(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 of the registrant under the Securities Act to any purchaser in the initial distribution of the securities:

The undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the

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purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

- (i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;
- (ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;
- (iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

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 Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) 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.

- (iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

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 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 such 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 Act and will be governed by the final adjudication of such issue.

The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of these securities at that time shall be deemed to be the initial *bona fide* offering.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant 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 September 8, 2023.

SYNLOGIC, INC.

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement on Form S-1 has been signed by the following persons in the capacities and on the dates indicated.

By: /s/ Aoife Brennan MB, BCh, BAO, MMSc

Name: Aoife Brennan MB, BCh, BAO, MMSc

Title: *President and Chief Executive Officer*

Name	Title	Date
<u>/s/ Aoife Brennan MB, BCh, BAO, MMSc</u> Aoife Brennan MB, BCh, BAO, MMSc	President, Chief Executive Officer and Director <i>(Principal Executive Officer)</i>	September 8, 2023
<u>/s/ Michael Jensen</u> Michael Jensen	Chief Financial Officer <i>(Principal Financial Officer and Principal Accounting Officer)</i>	September 8, 2023
<u>/s/ Peter Barrett</u> Peter Barrett	Chairman of the Board	September 8, 2023
<u>/s/ Michael Burgess</u> Michael Burgess	Director	September 8, 2023
<u>/s/ Michael Heffernan</u> Michael Heffernan	Director	September 8, 2023
<u>/s/ Patricia Hurter</u> Patricia Hurter	Director	September 8, 2023
<u>/s/ Lisa Kelly-Croswell</u> Lisa Kelly-Croswell	Director	September 8, 2023
<u>/s/ Nick Leschly</u> Nick Leschly	Director	September 8, 2023
<u>/s/ Edward Mathers</u> Edward Mathers	Director	September 8, 2023
<u>/s/ Richard P. Shea</u> Richard P. Shea	Director	September 8, 2023

Consent of Independent Registered Public Accounting Firm

We consent to the use of our report dated March 29, 2023, with respect to the consolidated financial statements of Synlogic, Inc., incorporated herein by reference and to the reference to our firm under the heading “Experts” in the prospectus.

/s/ KPMG LLP

Boston, Massachusetts
September 8, 2023

Calculation of Filing Fee Tables

Form S-1
(Form Type)

Synlogic, Inc.
(Exact Name of Registrant as Specified in its Charter)

Table 1: Newly Registered Securities

Security Type	Security Class Title	Fee Calculation Rule	Amount Registered	Proposed Maximum Offering Price Per Unit	Maximum Aggregate Offering Price(1)(2)	Fee Rate	Amount of Registration Fee
Equity	Common Stock, par value \$0.001 per share	Rule 457(o)	—	—	\$17,250,000	\$110.20 per \$1,000,000	\$1,900.95
Total Offering Amounts					\$17,250,000		\$1,900.95
Total Fee Offsets							—
Net Fee Due							\$1,900.95

- (1) Includes the aggregate offering price of additional shares that the underwriter has the option to purchase to cover over-allotments, if any.
- (2) Estimated solely for the purpose of computing the amount of the registration fee pursuant to Rule 457(o) under the Securities Act of 1933, as amended.