

PROSPECTUS SUPPLEMENT
(To the Prospectus dated August 30, 2018)

\$17,305,300

Synlogic, Inc.

Common Stock

This prospectus supplement amends and supplements the information in our prospectus dated August 30, 2018 (File No. 333-226730). This prospectus supplement should be read in conjunction with the prospectus and is qualified in its entirety by reference thereto, except to the extent that the information herein amends or supersedes the information contained in the prospectus. This prospectus supplement is not complete without, and may only be delivered or utilized in connection with, the prospectus and any future amendments or supplements thereto.

We filed the prospectus to register the offer and sale of shares of our common stock from time to time pursuant to the terms of an at-the-market equity offering sales agreement dated October 13, 2017 that we entered into with Cowen and Company, LLC, or Cowen, as our sales agent thereunder. As of the date of this prospectus supplement, we have not sold any shares of our common stock through Cowen under the at-the-market equity offering sales agreement. Without giving effect to any offering limit imposed by General Instruction I.B.6 of Form S-3, we may offer and sell shares of our common stock having an aggregate offering price of up to \$50,000,000 from time to time through Cowen acting as our sales agent in accordance with the terms of the at-the-market equity offering sales agreement.

On March 12, 2020, the date on which we filed our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, the prospectus became subject to the offering limits set forth in General Instruction I.B.6 of Form S-3. As of March 5, 2020, the aggregate market value of our outstanding common stock held by non-affiliates, or public float, was approximately \$51,915,901, based on 16,325,755 shares of our outstanding common stock that were held by non-affiliates on such date and a price of \$3.18 per share, which was the price at which our common stock was last sold on The Nasdaq Capital Market on January 21, 2020 (a date within 60 days of the date hereof), calculated in accordance with General Instruction I.B.6 of Form S-3. We have not offered any securities pursuant to General Instruction I.B.6 of Form S-3 in the 12 calendar months preceding the date of this prospectus supplement.

We are filing this prospectus supplement to amend and supplement the information in our prospectus and original prospectus supplement based on the amount of securities that we are eligible to sell under General Instruction I.B.6 of Form S-3. After giving effect to the \$17,305,300 offering limit imposed by General Instruction I.B.6 of Form S-3, we may offer and sell additional shares of our common stock having an aggregate offering price of up to \$17,305,300 from time to time through Cowen acting as our sales agent in accordance with the terms of the at-the-market equity offering sales agreement.

Our common stock is listed on The Nasdaq Capital Market under the symbol "SYBX." On March 17, 2020, the last reported sale price of our common stock on The Nasdaq Capital Market was \$2.62 per share.

Investing in our securities involves risks. You should read this prospectus supplement and the documents we incorporate herein by reference carefully before you make your investment decision. See "Risk Factors" set forth in the documents we file with the Securities and Exchange Commission that are incorporated by reference herein for more information.

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

Cowen

Prospectus Supplement dated March 18, 2020.