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

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**POST-EFFECTIVE AMENDMENT NO. 1 TO  
FORM S-8  
REGISTRATION STATEMENT NO. 333-278164  
UNDER  
THE SECURITIES ACT OF 1933**

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**Lyra Therapeutics, Inc.**  
(Exact name of registrant as specified in its charter)

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

**81-1700838**  
(I.R.S. Employer  
Identification No.)

**480 Arsenal Way  
Watertown, Massachusetts 02472**  
(Address of principal executive offices) (Zip code)

**Lyra Therapeutics, Inc. 2020 Incentive Award Plan  
Lyra Therapeutics, Inc. 2022 Employee Inducement Award Plan**  
(Full title of the plans)

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**Maria Palasis, Ph.D.**  
**480 Arsenal Way  
Watertown, Massachusetts 02472**  
(Name and address of agent for service)

**(617) 393-4600**  
(Telephone number, including area code, of agent for service)

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*Copy to:*

**Peter N. Handrinos, Esq.  
Wesley C. Holmes, Esq.  
Latham & Watkins LLP  
200 Clarendon Street, 27th Floor  
Boston, MA 02116  
(617) 948-6000**

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

Large accelerated filer   
Non-accelerated filer

Accelerated filer   
Smaller reporting company   
Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

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**EXPLANATORY NOTE  
DEREGISTRATION OF SECURITIES**

This Post-Effective Amendment relates to the Registration Statement on Form S-8 (File No. 333-278164) (as amended, the “Registration Statement”), filed by Lyra Therapeutics, Inc., a Delaware corporation (the “Registrant”), with the Securities and Exchange Commission (the “SEC”) on March 22, 2024, registering a total of 350,000 shares of the Registrant’s common stock, par value \$0.001 per share (the “Common Stock”), under the 2022 Employment Inducement Award Plan and 2,288,582 shares of Common Stock under the Registrant’s 2020 Incentive Award Plan. This Post-Effective Amendment is being filed to deregister any and all shares of Common Stock, registered but unsold or otherwise unissued under the Registration Statement as of the date hereof.

On February 2, 2026, the Registrant received a letter (the “Staff Determination Letter”) from the Listing Qualifications Department of The Nasdaq Stock Market LLC (“Nasdaq”) notifying the Registrant that Nasdaq had determined to delist the Registrant’s common stock from The Nasdaq Stock Market. In the Staff Determination Letter, Nasdaq stated that, pursuant to Listing Rule 5101, it believes the Registrant is a “public shell” and that the continued listing of its securities is no longer warranted. Trading of the Registrant’s common stock was suspended at the open of trading on March 17, 2026.

As a result of the foregoing, and Nasdaq’s determination that the Registrant’s Common Stock is no longer suitable for listing pursuant to certain Nasdaq rules, Nasdaq plans to file a Form 25 with the SEC to remove the Registrant’s common stock from listing and registration on the Nasdaq. The Registrant has terminated any and all offerings of its securities pursuant to the Registration Statement. Accordingly, the Registrant hereby terminates the effectiveness of the Registration Statement and, in accordance with an undertaking made by the Registrant in Part II of the Registration Statement to remove from registration, by means of post-effective amendment, any securities that had been registered for issuance but remain unsold at the termination of the offering, removes from registration any and all securities of the Registrant registered but unsold under the Registration Statement as of the date hereof.

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## SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement on Form S-8 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Watertown, Commonwealth of Massachusetts, on this 25 day of March, 2026.

### **Lyra Therapeutics, Inc.**

By: /s/ Jason Cavalier  
Name: Jason Cavalier  
Title: Authorized Signatory

No other person is required to sign this Post-Effective Amendment in reliance upon Rule 478 under the Securities Act of 1933, as amended.