

As filed with the Securities and Exchange Commission on March 17, 2026

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

**AMENDMENT NO. 1 TO
FORM S-3
REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933**

APREA THERAPEUTICS, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or jurisdiction
of incorporation or organization)

84-2246769
(I.R.S. Employer
Identification No.)

**3805 Old Easton Road
Doylestown, PA 18902
(215) 948-4119**

(Address, Including Zip Code, and Telephone Number, Including Area Code, of Registrant's Principal Executive Offices)

**Oren Gilad, Ph.D.
President and Chief Executive Officer
Aprea Therapeutics, Inc.
3805 Old Easton Road
Doylestown, PA 18902
(215) 948-4119**

(Name, Address, Including Zip Code, and Telephone Number, Including Area Code, of Agent for Service)

Copies to:

**Fahd M.T. Riaz, Esq.
Patrick O'Malley, Esq.
DLA Piper LLP (US)
1650 Market Street, Suite 5000
Philadelphia, PA 19103-7300
(212) 839-5599**

**Approximate date of commencement of proposed sale to the public:
From time to time after this registration statement becomes effective.**

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

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

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

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

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

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

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

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 Securities Act.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance

with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

Explanatory Note

This Pre-Effective Amendment No. 1 to the Registration Statement on Form S-3 (File No. 333-293609) (the "Registration Statement") of Aprea Therapeutics, Inc. (the "Company") is being filed solely to file an updated consent of EisnerAmper (Exhibit 23.2) to the Registration Statement. This Amendment No. 1 does not modify any provision of the Prospectus that forms a part of the Registration Statement and accordingly such Prospectus has not been included herein.

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 16. Exhibits

| Exhibit No. | Description |
|-------------------------------|---|
| <u>3.1*</u> | <u>Amended and Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Report on Form 8-K filed on October 7, 2019).</u> |
| <u>3.2*</u> | <u>Certificate of Amendment to Amended and Restated Certificate of Incorporation of Aprea Therapeutics, Inc. (incorporated by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on February 13, 2023).</u> |
| <u>3.3*</u> | <u>Certificate of Designation of Series A Non-Voting Series A Convertible Preferred Stock (incorporated by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on May 17, 2022).</u> |
| <u>3.4*</u> | <u>Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.1 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, filed on November 6, 2020).</u> |
| <u>4.1*</u> | <u>Form of Pre-Funded Warrant (incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K filed on January 29, 2026).</u> |
| <u>4.2*</u> | <u>Form of Common Warrant (incorporated by reference to Exhibit 4.2 to the Current Report on Form 8-K filed on January 29, 2026).</u> |
| <u>5.1**</u> | <u>Opinion of DLA Piper LLP (US).</u> |
| <u>10.1*+</u> | <u>Form of Securities Purchase Agreement, dated as of January 28, 2026, by and between Aprea Therapeutics, Inc. and the purchasers named therein (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on January 29, 2026).</u> |
| <u>10.2*</u> | <u>Form of Registration Rights Agreement, dated as of January 28, 2026, by and between Aprea Therapeutics, Inc. and the purchasers (incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K filed on January 29, 2026).</u> |
| <u>23.1**</u> | <u>Consent of DLA Piper LLP (US) (included in Exhibit 5.1).</u> |
| <u>23.2</u> | <u>Consent of EisnerAmper LLP.</u> |
| <u>24.1**</u> | <u>Power of Attorney (located on the signature page of the Registration Statement on Form S-3, filed on February 20, 2026).</u> |
| <u>107**</u> | <u>Filing fee table.</u> |

*Previously filed.

**Previously filed as an exhibit to the Company's Registration Statement on Form S-3, filed on February 20, 2026.

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Schedules and exhibits have been omitted from this exhibit pursuant to Item 601(a)(5) of Regulation S-K. The registrant hereby undertakes to furnish copies of any of the omitted schedules and exhibits upon request by the U.S. Securities and Exchange Commission.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized in the City of Doylestown, Commonwealth of Pennsylvania, on March 17, 2026.

APREA THERAPEUTICS, INC.

By: /s/ Oren Gilad

Oren Gilad, Ph.D.
President, Chief Executive Officer and Director
(Principal Executive Officer)

/s/ John P. Hamill

John P. Hamill
Senior Vice President and Chief Financial Officer (Principal Financial
Officer and Principal Accounting Officer)

POWER OF ATTORNEY

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement has been signed by the following persons in the capacities indicated on the date indicated:

| Signature | Title | Date |
|--|---|----------------|
| /s/ Oren Gilad Oren Gilad, Ph.D. | President, Chief Executive Officer and Director (Principal Executive Officer) | March 17, 2026 |
| /s/ John P. Hamill John P. Hamill | Senior Vice President and Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer) | March 17, 2026 |
| /s/ * Marc Duey | Director | March 17, 2026 |
| /s/ * Michael Grissinger | Director | March 17, 2026 |
| /s/ * John B. Henneman III | Director | March 17, 2026 |
| /s/ * Rifat Pamukcu, M.D. | Director | March 17, 2026 |
| /s/ * Richard Peters, M.D., Ph.D. | Director | March 17, 2026 |
| /s/ * Gabriel Gruia, M.D. | Director | March 17, 2026 |
| /s/ * Bernd R. Seizinger, M.D., Ph.D. | Director | March 17, 2026 |
| /s/ * Jean-Pierre Bizzari, M.D. | Director | March 17, 2026 |

*By: /s/ Oren Gilad

Oren Gilad, Ph.D.
Attorney-in-fact

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in this Amendment No. 1 to the Registration Statement of Aprea Therapeutics, Inc. on Form S-3 (No. 333-293609) to be filed on or about March 17, 2026 of our report dated March 16, 2026, on our audits of the financial statements as of December 31, 2025 and 2024 and for each of the years then ended, which report was included in the Annual Report on Form 10-K filed March 16, 2026. Our report includes an explanatory paragraph about the existence of substantial doubt concerning the Company's ability to continue as a going concern.

/s/ EisnerAmper LLP

EISNERAMPER LLP
Philadelphia, Pennsylvania
March 16, 2026
