

PROSPECTUS SUPPLEMENT NO. 1
(To Prospectus Dated December 29, 2025)



APREA THERAPEUTICS, INC.

5,503,556 Shares of Common Stock

Unless otherwise stated, all references in this prospectus supplement to “we,” “us,” “our,” “Aprea,” the “Company” and similar designations refer to Aprea Therapeutics, Inc.

This prospectus supplement updates the prospectus dated December 29, 2025 (the “Prospectus”), relating to the resale, from time to time, by the selling stockholders identified in the Prospectus of up to (i) 26,459 shares of our common stock, par value \$0.001 per share (the “Common Stock”), initially issued in a private placement on December 8, 2025 (the “Private Placement”), (ii) 2,596,564 shares of Common Stock underlying pre-funded warrants issued in the Private Placement, (iii) 2,623,023 shares of Common Stock underlying common stock purchase warrants issued in the Private Placement, and (iv) 257,510 shares of Common Stock underlying common stock purchase warrants that were issued to Maxim Group LLC as compensation in connection with the Private Placement.

Investing in our securities involves significant risks. We strongly recommend that you read carefully the risks we describe in the Prospectus, as well as the risk factors that are incorporated by reference into the Prospectus from our filings made with the Securities and Exchange Commission. See “Risk Factors” on page 4 of the Prospectus.

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

The date of this prospectus supplement is May 15, 2026.

SELLING STOCKHOLDERS

The following information supplements and, where applicable, supersedes the information set forth under the caption “Selling Stockholders” in the Prospectus to reflect the assignment of Common Warrants to purchase up to 203,862 and 332,618 shares of Common Stock by each of BPY Limited and Nomis Bay Ltd., respectively, to Squadron Master Fund LP.

The number of shares of Common Stock beneficially owned prior to the offering for each selling stockholder includes (i) all shares of Common Stock held by such selling stockholder as of May 13, 2026 and (ii) all shares of Common Stock as to which such selling stockholder has the right to acquire within 60 days of such date. The percentages of shares owned before and after the offering are based on 12,382,776 shares of Common Stock outstanding as of May 13, 2026. Beneficial ownership is determined in accordance with the rules of the SEC and includes voting or investment power with respect to shares. Unless otherwise indicated below, to our knowledge, each selling stockholder named in the table has sole voting and investment power with respect to the shares of Common Stock beneficially owned, except to the extent authority is shared by spouses under applicable law. The inclusion of any shares in this table does not constitute an admission of beneficial ownership for any selling stockholder named below.

The table set forth under the caption “Selling Stockholders” in the Prospectus is supplemented as set forth below. This prospectus supplement does not update the table with respect to any selling stockholders not listed below, other than BPY Limited and Nomis Bay Ltd. which no longer own any shares of Common Stock or warrants to purchase shares of Common Stock:

Name of Selling Stockholder	Shares of Common Stock Beneficially Owned Prior to this Offering ⁽¹⁾		Maximum Number of Shares of Common Stock Being Offered ⁽²⁾	Shares of Common Stock to be Beneficially Owned After this Offering ⁽³⁾	
	Number	Percentage		Number	Percentage
Squadron Master Fund LP ⁽⁴⁾	1,374,335	9.99%	536,480	1,433,878	9.99%

- (1) Reflects shares of Common Stock issuable upon exercise of warrants up to the beneficial ownership blocker of 9.99%.
- (2) Reflects shares of Common Stock issuable upon exercise of Common Warrants issued in the Private Placement determined as if the outstanding warrants were exercised in full as of the trading day immediately preceding the date the registration statement was initially filed with the SEC, each as of the trading day immediately preceding the applicable date of determination and all subject to adjustment as provided in the registration right agreement, without regard to any limitations on the exercise of the warrants.
- (3) We do not know when or in what amounts a selling stockholder may offer shares for sale. The selling stockholders might not sell any or might sell all of the shares offered by the Prospectus. Because the selling stockholders may offer all or some of the shares pursuant to this offering, and because there are currently no agreements, arrangements or understandings with respect to the sale of any of the shares, we cannot estimate the number of shares that will be held by the selling stockholders after completion of the offering. However, for purposes of this table, the number of shares (i) includes shares of Common Stock issuable upon exercise of warrants up to the beneficial ownership blocker of 9.99% and (ii) assumes that, after completion of the offering, none of the shares covered by the Prospectus will be held by the selling stockholders.
- (4) Includes (i) Common Warrants to purchase up to 536,480 shares of Common Stock, which were assigned to Squadron Master Fund LP and are registered for resale pursuant to this offering (subject to a beneficial ownership blocker of 4.99%), (ii) pre-funded warrants to purchase up to 6,195,786 shares of Common Stock (subject to a beneficial ownership blocker of 9.99%), and (iii) common warrants to purchase up to 6,195,786 shares of Common Stock (subject to a beneficial ownership blocker of 9.99%). The address for Squadron Master Fund LP is 999 Oakmont Plaza Dr., Suite 600, Westmont, IL 60559.