

PROSPECTUS SUPPLEMENT
(To Prospectus dated November 13, 2023)



This prospectus supplement no. 2 (this “*Second Supplement*”) amends and supplements the information in our sales agreement prospectus, dated November 13, 2023 (the “*Sales Agreement Prospectus*”), as previously amended and supplemented by the prospectus supplement dated March 16, 2026 (the “*First Supplement*”, and together with the Sales Agreement Prospectus, the “*Prospectus*”), contained in the shelf registration statement on Form S-3 (Registration No. 333-275256) of which the Prospectus is a part (the “*Registration Statement*”), relating to the offer and sale of shares of common stock, par value \$0.0001 per share (“*Common Stock*”), of Atara Biotherapeutics, Inc. (the “*Company*”) from time to time through TD Securities (USA) LLC (as successor to Cowen and Company, LLC (“*TD Cowen*” or the “*Sales Agent*”)) pursuant to the sales agreement, dated November 1, 2023 (the “*Sales Agreement*”), between the Company and TD Cowen. This Second Supplement should be read in conjunction with the Prospectus, and is qualified by reference thereto, except to the extent that the information herein amends or supersedes the information contained in the Prospectus. This Second Supplement is not complete without, and may only be delivered or utilized in connection with, the Prospectus and any future amendments or supplements thereto.

Subsequent to the filing of the First Supplement, on March 19, 2026, the staff of the Division of Corporation Finance of the Securities and Exchange Commission (the “*Staff*”) published Question 116.26 of the Securities Act Forms Corporation Finance Interpretations (the “*Staff Interpretation*”). The Staff Interpretation provides that, where (i) a company has entered into a sales agreement with a named selling agent for an at-the-market offering of an amount of securities that the company reasonably expected to offer and sell, (ii) the company had an effective Form S-3 registration statement, was eligible to offer and sell securities in reliance on General Instruction I.B.1 of Form S-3, and filed a prospectus supplement for the offering, and (iii) at the time of the company’s next Section 10(a)(3) update, the company does not meet the \$75 million public float requirement of General Instruction I.B.1 of Form S-3 but remains eligible to use Form S-3 in reliance on General Instruction I.B.6 of Form S-3, the Staff will not object if the company continues to offer and sell the full amount of securities covered by the prospectus supplement that was filed prior to the Section 10(a)(3) update, even if that amount would exceed the offering limits of General Instruction I.B.6 of Form S-3.

Consistent with the Staff Interpretation, the Company hereby supplements the Prospectus to reflect that it may offer and sell shares of Common Stock having an aggregate offering price equal to the full amount remaining available under the Sales Agreement and the Sales Agreement Prospectus. As of the date of this Second Supplement, the aggregate offering price of shares of Common Stock that remains available to be offered and sold under the Sales Agreement and the Prospectus, as supplemented by this Second Supplement, is \$79,269,007.

Our Common Stock is listed on the Nasdaq Global Market under the symbol “ATRA”.

Investing in our Common Stock involves risks. Before buying any shares, you should read the discussion of material risks of investing in our Common Stock in “Risk Factors” beginning on page SA-5 of the Sales Agreement Prospectus, and in the risks discussed under similar headings in the documents incorporated by reference in this Second Supplement and the Prospectus, as they may be amended, updated or modified periodically in our reports filed with the Securities and Exchange Commission.

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

TD Cowen

The date of this prospectus supplement is May 12, 2026.
