Issuer Free Writing Prospectus
Filed Pursuant to Rule 433
Dated October 27, 2026
Relating to the Preliminary Prospectus Supplements dated October 27, 2026
(To Prospectus Dated March 10, 2026)
Registration Statement No. 333-294170

Rapport Announces Proposed Public Offerings of Common Stock and Convertible Notes as well as Concurrent Private Placement

BOSTON and SAN DIEGO, October 27, 2026 — Rapport Therapeutics, Inc. (Nasdaq: RAPP) ("Rapport" or the "Company"), a clinical-stage biotechnology company dedicated to the discovery and development of small molecule precision medicines for patients with neurological or psychiatric disorders, today announced that it has commenced separate underwritten public offerings of $200.0 million of shares of its common stock (the "common stock offering") and $150.0 million aggregate principal amount of convertible senior notes due 2032 (the "notes offering" and together with the common stock offering, the "underwritten offerings"). In addition, Rapport intends to grant the underwriters in the common stock offering a 30-day option to purchase up to an additional $30.0 million of shares of its common stock under the same terms and conditions and intends to grant the underwriters a 30-day option to purchase up to an additional $22.5 million aggregate principal amount of notes solely to cover over-allotments, if any. Concurrently with the underwritten offerings, Rapport intends to enter into a share purchase agreement with a certain investor named therein (the "Investor"), in a separately negotiated transaction (the "concurrent private placement" and together with the underwritten offerings, the "offerings") pursuant to which Rapport intends to offer and sell, and the Investor intends to purchase shares of Rapport's common stock at the price per share of common stock in the common stock offering. The sale of shares to the Investor in the proposed concurrent private placement will not be registered as part of the common stock offering. The proposed offerings are subject to market and other conditions, and there can be no assurance as to whether or when the offerings may be completed, or as to the actual size or terms of the offerings.

All of the shares and notes to be sold in the offerings are being sold by Rapport. The consummation of the proposed common stock offering will not be contingent on the consummation of the proposed notes offering or the proposed concurrent private placement, and the consummation of the proposed notes offering will not be contingent on the consummation of the proposed common stock offering or the proposed concurrent private placement. However, the consummation of the proposed concurrent private placement is contingent upon the consummation of the proposed common stock offering.

Morgan Stanley, Leerink Partners and Evercore ISI are acting as joint book-running managers for the proposed underwritten offerings and as placement agents for the concurrent private placement. BTIG and Citizens Capital Markets are acting as joint book-running managers in the proposed common stock offering.

Rapport currently intends to use the net proceeds from the common stock offering, and, if it is consummated, the concurrent private placement, and if it is consummated, the concurrent convertible notes offering, to fund its ongoing and planned clinical trials advancing RAP-219, for other research and development, and for working capital and general corporate purposes. Rapport also may use a portion of the remaining net proceeds to in-license, acquire or invest in complementary businesses, technologies, products or assets. However, Rapport currently has no agreements or commitments to complete any such transaction.

The notes will be general unsecured obligations of Rapport, will accrue interest payable semi-annually in arrears and will mature on December 1, 2032, unless earlier converted, redeemed or repurchased.

Noteholders will have the right to convert their notes in certain circumstances and during specified periods. Upon conversion, Rapport will pay or deliver, as the case may be, cash, shares of its common stock or a combination of cash and shares of its common stock, at Rapport's election.

Rapport may redeem for cash all or any portion of the notes (subject to certain limitations), at Rapport's option, on a redemption date on or after December 6, 2030, if the last reported sale price per share of Rapport's common stock has been at least 130% of the conversion price then in effect for a specified period of time. The redemption price will be 100% of the principal amount of the notes to be redeemed, plus accrued and unpaid interest to, but excluding, the relevant redemption date.

If Rapport undergoes certain corporate events that constitute a "fundamental change," then, subject to certain conditions and limited exceptions, noteholders may require Rapport to repurchase for cash all or any portion of their notes at a repurchase price equal to 100% of the principal amount of the notes to be repurchased, plus accrued and unpaid interest to, but excluding, the fundamental change repurchase date.

The interest rate, initial conversion rate and other terms of the notes will be determined at the pricing of the notes offering.

The securities in the proposed underwritten offerings are being offered by Rapport pursuant to an automatically effective shelf registration statement that was filed with the U.S. Securities and Exchange Commission (the "SEC") on March 10, 2026 (File No. 333-294170). Preliminary prospectus supplements and accompanying prospectuses relating to and describing the terms of the proposed underwritten offerings will be filed with the SEC and may be obtained, when available, from: Morgan Stanley & Co. LLC, Attention: Prospectus Department, 180 Varick Street, 2nd Floor, New York, NY 10014, or by email at prospectus@morganstanley.com; Leerink Partners LLC, Attention: Syndicate Department, 53 State Street, 40th Floor, Boston, MA 02109, by telephone at (800) 808-7525, ext. 6105, or by email at syndicate@leerink.com; Evercore Group L.L.C., Attention: Equity Capital Markets, 55 East 52nd Street, 35th Floor, New York, NY 10055, by telephone at (888) 474-0200, or by email at ecm.prospectus@evercore.com; or by accessing the SEC's website at www.sec.gov.

The offer and sale of the shares in the proposed concurrent private placement has been made in a transaction not involving a public offering, and such shares have not been registered under the Securities Act of 1933, as amended (the "Securities Act"), or applicable state securities laws, and are being offered and sold in reliance on Section 4(a)(2) of the Securities Act. The shares in the concurrent private placement may not be reoffered or resold in the United States except pursuant to an effective registration statement or an applicable exemption from the registration requirements of the Securities Act and other applicable securities laws. Rapport has agreed to file a registration statement with the SEC registering the resale of the shares to be sold in the proposed concurrent private placement.

This press release shall not constitute an offer to sell or the solicitation of an offer to buy the shares to be sold in the concurrent private placement, nor shall there be any sale of such shares in any state or jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such state or jurisdiction.

About Rapport Therapeutics

Rapport Therapeutics is a clinical-stage biotechnology company dedicated to discovering and developing small molecule precision medicines for patients with neurological and psychiatric disorders. The Company's founders made pioneering discoveries related to the function of receptor associated proteins ("RAPs") in the brain, which form the basis of Rapport's RAP technology platform. The platform enables a differentiated approach to generate precision small molecule product candidates with the potential to overcome many limitations of conventional neurology drug discovery. Rapport's precision

neuroscience pipeline includes the Company's lead investigational drug, RAP-219, which is designed to achieve neuroanatomical specificity through selective targeting of a RAP expressed only in discrete regions of the brain. The pipeline is anchored by the Company's epilepsy portfolio, including FOS and primary generalized tonic-clonic seizures, as well as bipolar mania. The Company is also advancing additional discovery and preclinical programs leveraging its platform, including in chronic pain and migraine and in hearing and vestibular disorders.

Forward-Looking Statements

This press release contains "forward-looking statements" within the meaning of Section 27A of the Securities Act and Section 21E of the Securities Exchange Act of 1934, each as amended. The words "anticipate," "believe," "continue," "could," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "project," "should," "target," "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These forward-looking statements include, but are not limited to, express or implied statements regarding uncertainties related to market conditions; the anticipated terms of the common stock and notes being offered in the offerings; the grant to the underwriters of an option to purchase additional shares in the common stock offering; the grant to the underwriters of an option to purchase additional notes in the notes offering; the timing, size and expected use of proceeds of the offerings; and Rapport's ability to complete the offerings.

Forward looking statements are based on management's current expectations and are subject to risks and uncertainties that could negatively affect Rapport's business, operating results, financial condition and stock value. Factors that could cause actual results to differ materially from those currently anticipated include the risks described in "Risk Factors" in the Company's Annual Report on Form 10-K and subsequent quarterly reports on Form 10-Q filed with the SEC and any subsequent filings with the SEC, including those contained or incorporated by reference in each preliminary prospectus supplement and accompanying prospectus related to each proposed underwritten offering to be filed with the SEC. Any forward-looking statements represent Rapport's views only as of today and should not be relied upon as representing its views as of any subsequent date. Rapport expressly disclaims any obligation or undertaking to release publicly any updates or revisions to any forward-looking statements contained herein to reflect any change in its expectations or any changes in events, conditions or circumstances on which any such statement is based, except as required by law, and claims the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

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