

PROSPECTUS SUPPLEMENT
(To Prospectus Supplement dated April 28, 2025; and
To Prospectus and Prospectus Supplement dated September 12, 2024)



Relmada Therapeutics, Inc.

Up to \$100,000,000
Common Stock

This prospectus supplement (this “Supplement”) amends and supplements certain information in our prospectus dated September 12, 2024 (the “Base Prospectus”), as supplemented by our prospectus supplement dated September 12, 2024 (the “Prospectus Supplement”), and as amended by the prospectus supplement dated April 28, 2025 (the “Sticker Supplement” and together with the Base Prospectus and the Prospectus Supplement, the “ATM Prospectus”), as filed with the Securities and Exchange Commission as part of our registration statement on Form S-3 (333-281877). The ATM Prospectus was filed in relation to the offer and sale of shares of our common stock, par value \$0.001 per share, from time to time pursuant to the terms of the Open Market Sale AgreementSM, dated April 7, 2022 (the “Sale Agreement”), with Jefferies LLC as sales agent. This Supplement should be read in conjunction with the ATM Prospectus, and is qualified by reference thereto, except to the extent that the information herein amends or supersedes the information contained in the ATM Prospectus. This Supplement is not complete without, and may only be delivered or utilized in connection with, the ATM Prospectus, and any future amendments or supplements thereto.

Since our entry into the Sale Agreement, we have not offered or sold any shares of our common stock under the ATM Prospectus.

Our common stock is listed on The Nasdaq Global Select Market under the symbol “RLMD.” On January 29, 2026, the last reported sale price of our common stock on Nasdaq was \$3.91 per share.

We are filing this Supplement to amend the ATM Prospectus to increase the aggregate amount we intend to sell pursuant to the Sales Agreement. Pursuant to this Supplement, we are offering up to \$100,000,000 of our common stock for sale under the Sales Agreement from and after the date hereof. This Supplement amends and/or supplements only those sections of the ATM Prospectus as set forth in this Supplement; all other sections of the ATM Prospectus remain as is.

We are no longer subject to General Instruction I.B.6. of Form S-3 as the aggregate market value of our common stock held by non-affiliates equaled or exceeded \$75.0 million as of January 28, 2026. If we become subject to the offering limitations contained in General Instruction I.B.6 of Form S-3 in the future, we will file another prospectus supplement.

Investing in our securities involves a high degree of risk. See “Risk Factors” beginning on page S-3 of the Prospectus Supplement, Page 2 of the Base Prospectus, and the risks discussed under similar headings in documents incorporated by reference into the ATM 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 Supplement or the ATM Prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

Jefferies

The date of this prospectus supplement is January 30, 2026.