

PROSPECTUS SUPPLEMENT

(To Prospectus dated August 30, 2021 and Prospectus Supplement dated May 24, 2023)



ELOXX PHARMACEUTICALS, INC.

Up to \$4,200,000 of Common Stock

This Prospectus Supplement supplements the prospectus and the prospectus supplement, dated August 30, 2021 and May 24, 2023, respectively (together, the “ATM Prospectus”), relating to the offer and sale of shares of our common stock having an aggregate offering price of up to \$6,500,000 pursuant to the terms of the Sales Agreement, dated May 24, 2023 (the “Agreement”), with Oppenheimer & Co. Inc. (“Oppenheimer”). Through the date hereof, we have sold an aggregate of \$3,444,714 of shares of our common stock through Oppenheimer under the Agreement. This Prospectus 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 Prospectus 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.

On March 31, 2023, the date we filed our Annual Report on Form 10-K for the fiscal year ended December 31, 2022, we were subject to the offering limits in General Instruction I.B.6 of Form S-3. As of the date of this Prospectus Supplement, the aggregate market value of our common stock held by non-affiliates pursuant to General Instruction I.B.6 of Form S-3 is \$22,995,362, which was calculated based on 2,375,554 shares of our outstanding common stock held by non-affiliates and a price of \$9.68 per share, the closing price of our common stock on July 12, 2023, which is the highest closing sale price of our common stock on the Nasdaq Capital Market within the prior 60 days. As of the date of this Prospectus Supplement, we have sold an aggregate of \$3,444,714 of shares pursuant to General Instruction I.B.6 of Form S-3 during the 12 calendar months prior to, and including, the date of this Prospectus Supplement. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell securities in public primary offerings on Form S-3 with a value exceeding one-third of our public float (as defined by General Instruction I.B.6) in any 12 calendar month period so long as our public float remains below \$75.0 million.

We are filing this Prospectus Supplement to amend the ATM Prospectus Supplement to increase the maximum amount of shares that we are eligible to sell pursuant to the Agreement under General Instruction I.B.6. As a result of these limitations, we may currently only offer and sell shares of our common stock having an aggregate offering price of up to \$4,220,406 pursuant to the Agreement. Pursuant to this Prospectus Supplement, we are registering the offer and sale of up to \$4,200,000, of shares of our common stock. However, in the event that our public float increases or decreases, we may sell securities in public primary offerings on Form S-3 with a value up to one-third of our public float, in each case calculated pursuant to General Instruction I.B.6 and subject to the terms of the Agreement. In the event that our public float increases above \$75.0 million, we will no longer be subject to the limits in General Instruction I.B.6 of Form S-3.

Our common stock trades on the Nasdaq Capital Market under the symbol “ELOX.” On August 10, 2023, the last reported sale price of our common stock on the Nasdaq Capital Market was \$5.47 per share.

INVESTING IN OUR SECURITIES INVOLVES RISKS. SEE THE “RISK FACTORS” ON PAGE S-8 OF THE ATM PROSPECTUS AND IN THE DOCUMENTS INCORPORATED BY REFERENCE IN THE REGISTRATION STATEMENT CONCERNING FACTORS YOU SHOULD CONSIDER BEFORE INVESTING IN OUR COMMON STOCK.

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 accompanying prospectus. Any representation to the contrary is a criminal offense.

Oppenheimer & Co.

The date of this prospectus supplement is August 11, 2023.
