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UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

SCHEDULE 14A  
(Rule 14a-101)

SCHEDULE 14A INFORMATION

Proxy Statement Pursuant to Section 14(a) of  
the Securities Exchange Act of 1934 (Amendment No.    )

Filed by the Registrant ☐

Filed by a Party other than the Registrant ☒

Check the appropriate box:

- ☐ Preliminary Consent Statement
- ☐ Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))
- ☐ Definitive Consent Statement
- ☐ Definitive Additional Materials
- ☒ Soliciting Material Under Rule 14a-12

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ENZO BIOCHEM, INC.

(Name of Registrant as Specified in Its Charter)

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(Name of Persons(s) Filing Proxy Statement, if Other Than the Registrant)

Payment of Filing Fee (Check the appropriate box):

- ☒ No fee required.
- ☐ Fee paid previously with preliminary materials.
- ☐ Fee computed on table in exhibit required by Item 25(b) per Exchange Act Rules 14a-6(i)(1) and 0-11.
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This Schedule 14A filing consists of the following communications relating to the proposed acquisition of Enzo Biochem, Inc. (the “Company” or “Enzo”) by Bethpage Parent, Inc., a Delaware corporation and affiliate of the Battery Ventures (“Parent”), pursuant to the terms of an Agreement and Plan of Merger, dated June 23, 2025, by and among the Company, Parent and Bethpage Merger Sub, Inc., a Delaware corporation and a wholly owned subsidiary of Parent. The communications below were first used or made available on June 24, 2025.

#### **Employee Town Hall Transcript**

*Kara Cannon, Chief Executive Officer of Enzo:*

Thank you for your time this morning. I wanted to personally let you know about an important development for Enzo. As you may recall, in April we announced the formation of a special committee of the Company’s Board of Directors to conduct a comprehensive review of value-maximizing alternatives. Following that review, Enzo has entered into an Agreement and Plan of Merger to be acquired by an affiliate of Battery Ventures, a global, technology-focused investment firm. Under the terms of the Merger Agreement, Battery will acquire Enzo for \$0.70 per share in cash, representing a total consideration of approximately \$37 million.

A press release announcing the transaction was issued earlier this morning. We have also filed a Form 8-K with the SEC with additional information about the terms of the transaction.

The transaction is subject to customary closing conditions, including shareholder approval, and we will be filing a proxy statement with the SEC which when final, will be mailed to all shareholders of Enzo.

Subject to satisfaction of all closing conditions, the transaction is expected to close in the third quarter of this calendar year.

We urge you to read the press release, Form 8-K and, when it becomes available, the proxy statement.

I am very excited about this next chapter for Enzo.

If you have questions, please do not hesitate to reach out to your manager, or to me.

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## Forward-Looking Statements

“Safe Harbor” Statement under the Private Securities Litigation Reform Act of 1995: This Proxy Statement (this “Disclosure”) pursuant to Section 14(a) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. All statements in this Disclosure that are not statements of historical fact are hereby identified as “forward-looking statements” for the purpose of the safe harbor provided by Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Exchange Act. Forward-looking statements include, without limitation, statements regarding the intent, belief or current expectations of the Company and its management, including, without limitation, those related to the Company’s future financial condition, results of operations and products in research and development, the Company’s strategic process, and the anticipated timing of the proposed merger under the Merger Agreement (the “Merger”), and the assumptions underlying or relating to any statement described above. Moreover, forward-looking statements necessarily involve assumptions on the part of the Company. These forward-looking statements generally are identified by the words “believe”, “expect”, “anticipate”, “estimate”, “project”, “intend”, “plan”, “should”, “may”, “will”, “would”, “will be”, “will continue” or similar expressions. Such forward-looking statements are not meant to predict or guarantee actual results, performance, events, or circumstances and may not be realized because they are based upon the Company’s current projections, plans, objectives, beliefs, expectations, estimates and assumptions and are subject to a number of risks and uncertainties and other influences, many of which the Company has no control over. Actual results and the timing of certain events and circumstances may differ materially from those described above as a result of these risks and uncertainties. Factors that may influence or contribute to the inaccuracy of forward-looking statements or cause actual results to differ materially from expected or desired results may include, without limitation, the Company’s and Parent’s ability to complete the Merger on the proposed terms or on the anticipated timeline, or at all, including risks and uncertainties related to securing the necessary approval of the Company’s shareholders, complying with the covenants contained in the Merger Agreement, and satisfaction of other closing conditions to consummate the Merger; the occurrence of any event, change or other circumstance that could give rise to the termination of the definitive transaction agreement relating to the Merger; risks related to diverting the attention of the Company’s management from ongoing business operations; significant transaction costs and/or unknown or inestimable liabilities; the risk of shareholder litigation in connection with the Merger, including resulting expense or delay; and other risks and uncertainties affecting the Company, including those described under the caption “Risk Factors” in the Company’s Annual Report on Form 10-K for the fiscal year ended July 31, 2024, and other public filings. Investors are cautioned that any such forward-looking statements are not guarantees of future performance and involve a number of risks and uncertainties that could materially affect actual results. The Company disclaims any obligations to update any forward-looking statement as a result of developments occurring after the date of this Disclosure.

## Participants in the Solicitation

Enzo and its directors and certain of their executive officers and employees may be considered participants in the solicitation of proxies from Enzo’s shareholders with respect to the proposed Merger under the rules of the SEC. Information about the directors and executive officers of Enzo is set forth in its Annual Report on Form 10-K for the year ended July 31, 2024, which was filed with the SEC on October 29, 2024, and in the Company’s proxy statement in connection with its 2024 Annual Meeting of Shareholders which was filed with the SEC on November 27, 2024, and in subsequent documents filed with the SEC. Additional information will be made available to you regarding the persons who may be deemed participants in the proxy solicitation and their direct and indirect interests (by security holdings or otherwise) in the Merger and related transactions in a proxy statement (the “Proxy Statement”), and other relevant materials, that will be filed with the SEC and disseminated to shareholders when they become available. Instructions on how to obtain free copies of this document and, when available, the Proxy Statement, are set forth below in the section headed “Additional Information and Where to Find It”.

This Disclosure relates to the proposed Merger involving the Company and may be deemed to be solicitation material in respect of the proposed Merger. In connection with the proposed Merger, Enzo will file the Proxy Statement. This Disclosure is not a substitute for the Proxy Statement or for any other document that Enzo may file with the SEC and or send to its shareholders in connection with the proposed Merger. BEFORE MAKING ANY VOTING DECISION, INVESTORS AND SHAREHOLDERS OF ENZO ARE URGED TO READ THE PROXY STATEMENT AND OTHER DOCUMENTS FILED WITH THE SEC CAREFULLY AND IN THEIR ENTIRETY WHEN THEY BECOME AVAILABLE BECAUSE THEY WILL CONTAIN IMPORTANT INFORMATION ABOUT ENZO, THE PROPOSED MERGER AND RELATED MATTERS.

**No Offer or Solicitation**

This Disclosure does not constitute an offer to sell or the solicitation of an offer to buy any securities nor a solicitation of any vote or approval with respect to the proposed transaction or otherwise. No solicitation shall be made except by means of a proxy statement in accordance with applicable law.

**Additional Information and Where to Find It**

Investors and shareholders will be able to obtain free copies of the Proxy Statement and other documents filed by Enzo with the SEC through the website maintained by the SEC at <http://www.sec.gov>. Copies of the documents filed by Enzo with the SEC will also be available free of charge on Enzo's website at [www.enzo.com](http://www.enzo.com).