

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

**FORM S-8
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

ENZO BIOCHEM, INC.

(Exact name of Registrant as specified in its charter)

New York

*(State or Other Jurisdiction
of Incorporation or Organization)*

**527 Madison Avenue
New York, NY**

(Address of Principal Executive Offices)

13-2866202

*(I.R.S. Employer
Identification Number)*

10022

(Zip Code)

ENZO BIOCHEM, INC. AMENDED AND RESTATED 2011 INCENTIVE PLAN

(as amended and restated effective as of October 7, 2020)

(Full Title of the Plan)

**Barry W. Weiner
President and Treasurer
Enzo Biochem, Inc.
527 Madison Avenue
New York, NY 10022**

(Name and address of agent for service)

(212) 583-0100

(Telephone number, including area code, of agent for service)

Copy to:

**Robert H. Cohen, Esq.
Ze'-ev D. Eiger, Esq.
McDermott Will & Emery LLP
340 Madison Avenue
New York, NY 10173
(212) 547-5400**

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Exchange Act.

CALCULATION OF REGISTRATION FEE

Title of securities to be registered	Amount to be registered(1)(2)	Proposed maximum offering price per share(3)	Proposed maximum aggregate offering price(3)	Amount of registration fee
Common Stock, par value \$0.01 per share	4,000,000	\$ 2.94	\$ 11,760,000	\$ 1,283.02

(1) Pursuant to Rule 416(a) of the Securities Act of 1933, as amended (the "Securities Act"), this Registration Statement also registers any additional shares of common stock, par value \$0.01 per share ("Common Stock"), of Enzo Biochem, Inc. (the "Company"), as may become available or issuable under the Enzo Biochem, Inc. Amended and Restated 2011 Incentive Plan, as amended and restated effective as of October 7, 2020 (the "Plan"), to prevent dilution resulting from stock splits, stock dividends, or similar transactions.

(2) Pursuant to Rule 416(c) under the Securities Act, this Registration Statement also covers an indeterminate amount of interests to be offered or sold pursuant to the Plan.

(3) Estimated solely for the purpose of determining the amount of the registration fee pursuant to Rule 457(c) and Rule 457(h) under the Securities Act, based on the average of the high and low prices per share of Common Stock as reported on the New York Stock Exchange on January 14, 2021.

Explanatory Note

This Registration Statement is being filed solely to register an additional 4,000,000 shares of common stock, par value \$0.01 per share (the "Common Stock"), of Enzo Biochem, Inc. (the "Company") reserved for issuance under the Company's Amended and Restated 2011 Incentive Plan, as amended and restated effective as of October 7, 2020 (the "Plan"). The Plan was approved by the Company's shareholders at the 2020 annual meeting of shareholders of the Company held on January 4, 2021. The securities subject to this Registration Statement are of the same class for which the Company previously filed with the Securities and Exchange Commission (the "Commission") a Registration Statement on Form S-8 under the Securities Act of 1933, as amended (the "Securities Act"). The Company initially registered 3,000,000 shares of Common Stock issuable under the Plan pursuant to a Registration Statement on Form S-8 (File No. 333-172127) filed with Commission on February 9, 2011 and an additional 2,000,000 shares of Common Stock issuable under the Plan pursuant to a Registration Statement on Form S-8 (File No. 333-226799) filed on August 13, 2018 (the "Prior Registration Statements"). Accordingly, the contents of the Prior Registration Statements are hereby incorporated by reference in this Registration Statement pursuant to General Instruction E of Form S-8.

PART II
INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

ITEM 3. INCORPORATION OF DOCUMENTS BY REFERENCE.

The following documents filed with the Commission are hereby incorporated by reference into this Registration Statement:

- (a) the Company's Annual Report on [Form 10-K](#) for the year ended July 31, 2020, filed with the Commission on October 19, 2020;
- (b) the Company's Quarterly Report on [Form 10-Q](#) for the quarter ended October 31, 2020, filed with the Commission on December 11, 2020;
- (c) the Company's Current Reports on Form 8-K filed with the Commission on [November 16, 2020](#), [November 23, 2020](#), [November 25, 2020](#), [December 14, 2020](#), [December 17, 2020](#), [January 6, 2021](#) and [January 8, 2021](#); and
- (d) the description of the Common Stock set forth in the Company's Registration Statement on [Form 8-A](#), filed with the Commission on December 8, 1999.

All documents filed by the Company pursuant to Section 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, subsequent to the date hereof and prior to the filing of a post-effective amendment which indicates that all securities offered have been sold or which deregisters all securities then remaining unsold shall be deemed to be incorporated by reference herein and to be a part hereof from the date of filing of such documents.

Notwithstanding the foregoing, unless specifically stated to the contrary, none of the information disclosed by the Company under Items 2.02 or 7.01 of any Current Report on Form 8-K that the Company may from time to time furnish to the Commission will be incorporated by reference into, or otherwise included in, this Registration Statement. Any statement contained herein or in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this Registration Statement to the extent that a statement contained herein or in any subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

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SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Company certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of New York, State of New York, on January 15, 2021.

ENZO BIOCHEM, INC.

By: /s/ Elazar Rabbani, Ph.D.
Elazar Rabbani, Ph.D.
Chairman of the Board, Chief Executive Officer and Director

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENT, that each person whose signature appears below constitutes and appoints Elazar Rabbani, Ph.D. and David Bench, and each or either of them, his or her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments, including post-effective amendments, to this Registration Statement, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his or her substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed below by the following persons in the capacities and on the dates indicated.

Date: January 15, 2021

By: /s/ Elazar Rabbani, Ph.D.

Elazar Rabbani, Ph.D.
Chairman of the Board, Chief Executive Officer and Director
(Principal Executive Officer)

Date: January 15, 2021

By: /s/ David Bench
David Bench
Chief Financial Officer
(Principal Financial Officer and Principal Accounting Officer)

Date: January 15, 2021

By: /s/ Barry W. Weiner
Barry W. Weiner
President and Treasurer

By: _____
Rebecca J. Fischer
Director

Date: January 15, 2021

By: /s/ Dov Perlysky
Dov Perlysky
Director

Date: January 15, 2021

By: /s/ Mary Tagliaferri
Mary Tagliaferri
Director

By: _____
Ian B. Walters
Director

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EXHIBIT INDEX

<u>No.</u>	<u>Description</u>
4.1	Certificate of Incorporation.(1)
4.2	Certificate of Amendment of the Certificate of Incorporation. Filed March 17, 1980.(1)
4.3	Certificate of Amendment of the Certificate of Incorporation. Filed June 16, 1981.(1)
4.4	Certificate of Amendment to the Certificate of Incorporation. Filed July 22, 1988.(1)
4.5	Amended and Restated By-Laws.(2)
4.6	Amended and Restated By-Laws.(3)
4.7	Amendment No. 1 to Amended and Restated By-Laws.(4)
4.8	Form of Common Stock Certificate.(1)
5.1	Legal Opinion of McDermott Will & Emery LLP.
23.1	Consent of EisnerAmper LLP.
23.2	Consent of McDermott Will & Emery LLP (included in exhibit 5.1).
24.1	Powers of Attorney of the directors and certain officers of the Company (included on the signature page to the Registration Statement).
99.1	Enzo Biochem, Inc. Amended and Restated 2011 Incentive Plan, as amended and restated effective as of October 7, 2020.(5)

- (1) Incorporated by reference from the Company's Registration Statement on Form S-8 (Registration No. 333-123712) filed with the Commission on March 31, 2005.
(2) Incorporated by reference from the Company's Current Report on Form 8-K filed with the Commission on January 22, 2013.
(3) Incorporated by reference from the Company's Current Report on Form 8-K filed with the Commission on December 3, 2018.
(4) Incorporated by reference from the Company's Current Report on Form 8-K filed with the Commission on March 2, 2020.
(5) Incorporated by reference from the Company's Annual Report on Form 10-K for the fiscal year ended July 31, 2020 filed with the Commission on October 19, 2020.

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January 15, 2021

Enzo Biochem, Inc.
527 Madison Avenue
New York, New York 10022

Re: Enzo Biochem, Inc. Registration Statement on Form S-8

Dear Ladies and Gentlemen:

We are rendering this opinion in connection with the Registration Statement on Form S-8 (the "Registration Statement") to be filed with the Securities and Exchange Commission under the Securities Act of 1933, as amended, with respect to the registration of 4,000,000 additional shares (the "Shares") of common stock, par value \$0.01 per share, of Enzo Biochem, Inc., a New York corporation (the "Company"), pursuant to the Enzo Biochem, Inc. Amended and Restated 2011 Incentive Plan, as amended and restated effective as of October 7, 2020 (the "Plan").

We have examined: (i) the Registration Statement; (ii) the Company's Certificate of Incorporation, as amended to date; (iii) the Company's Amended and Restated By-Laws, as amended to date; (iv) the Plan; and (v) the corporate proceedings relating to the registration of the Shares pursuant to the Plan.

In addition to the examination outlined above, we have conferred with various officers of the Company and have ascertained or verified, to our satisfaction, such additional facts as we deemed necessary or appropriate for the purposes of this opinion. In our examination, we have assumed the authenticity of all documents submitted to us as originals, the conformity to the original documents of all documents submitted to us as copies, the genuineness of all signatures on documents reviewed by us and the legal capacity of natural persons.

Based on the foregoing, we are of the opinion that the Shares that constitute original issuance shares will be validly issued, fully paid and nonassessable by the Company when the issuance of such Shares has been duly and validly approved by the board of directors of the Company and such Shares have been delivered in accordance with the Plan.

We do not express any opinion herein concerning any law other than the New York Business Corporation Law.

We consent to the filing of this opinion as an exhibit to the Registration Statement and we consent to the use of our name wherever it appears in the Registration Statement. In giving this consent, we do not hereby admit that we come within the category of persons whose consent is required under Section 7 of the Securities Act of 1933, as amended, or the rules and regulations of the Securities and Exchange Commission thereunder.

Sincerely,

/s/ McDermott Will & Emery LLP

**McDermott
Will & Emery**

340 Madison Avenue New York NY 10173-1922 Tel +1 212 547 5400 Fax +1 212 547 5444
US practice conducted through McDermott Will & Emery LLP.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in this Registration Statement of Enzo Biochem, Inc. on Form S-8 to be filed on or about January 15, 2021 of our report dated October 19, 2020, on our audits of the consolidated financial statements and financial statement schedules as of July 31, 2020 and 2019 and for each of the years in the three-year period ended July 31, 2020, which report was included in the Annual Report on Form 10-K filed October 19, 2020.

/s/ EisnerAmper LLP

EISNERAMPER LLP
New York, New York
January 15, 2021