

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

FORM 10-K/A

(Amendment No. 2)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE  
SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended **July 31, 2009**

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE  
SECURITIES EXCHANGE ACT OF 1934

For the transition period from \_\_\_\_\_ to \_\_\_\_\_

Commission file number: **001-09974**

**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, New York**

(Address of principal executive offices)

**13-2866202**

(I.R.S. Employer  
Identification No.)

**10022**

(Zip Code)

Registrant's telephone number, including area code: **(212) 583-0100**

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Name of each exchange on which registered
Common Stock, \$0.01 par value per share	The New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes

No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act.

Yes

No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes

No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).

Yes

No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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

Large accelerated filer

Accelerated filer

Non-accelerated filer  (Do not check if a smaller reporting company)

Smaller reporting company

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes

No

The aggregate market value of the registrant's voting stock held by non-affiliates was approximately \$166,537,000 as of January 31, 2009.

The number of shares of the registrant's common stock, par value \$.01, outstanding as of December 1, 2009 was approximately 37,858,000.

## EXPLANATORY NOTE

Enzo Biochem, Inc. (the "Company") is filing this Amendment No. 2 to its Annual Report on Form 10-K for the fiscal year ended July 31, 2009, filed with the Securities and Exchange Commission on October 14, 2009, as amended by Amendment No. 1, filed with the Securities and Exchange Commission on November 25, 2009, solely for the purpose of making certain technical reference corrections in the exhibit index. In connection with the filing of this Amendment, and as required by Rule 12b-15 of the Securities Exchange Act of 1934 (the "Exchange Act"), the Company is also filing new certifications of its principal executive officer and principal financial officer pursuant to Rule 13a-14(a)/15d-14(a) of the Exchange Act.

Unless otherwise stated, this Amendment No. 2 does not reflect events occurring after the filing of the original Form 10-K or modify or update in any way disclosures contained in the original Form 10-K.

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**Item 15. Exhibits and Financial Statements Schedules**

a) Documents filed as part of the report

**(3) Exhibits.**

Exhibit No.	Description
3(a)	Certificate of Incorporation, as amended March 17, 1980. (1)
3(b)	June 16, 1981 Certificate of Amendment of the Certificate of Incorporation. (2)
3(c)	Certificate of Amendment to the Certificate of Incorporation. (3)
3(d)	Amended and restated Bylaws. (4)
10 (c)	Employment Agreements with Elazar Rabbani. (5)
10(d)	Employment Agreement with Shahram Rabbani. (5)
10(e)	Employment Agreement with Barry Weiner. (5)
10(f)	1994 Stock Option Plan. (6)
10(g)	1999 Stock Option Plan. (7)
10 (h)	Amendment to Elazar Rabbani's employment agreement. (8)
10 (i)	Amendment to Shahram Rabbani's employment agreement. (8)
10 (j)	Amendment to Barry Weiner's employment agreement. (8)
10 (k)	2005 Equity Compensation Incentive Plan. (9)
10 (l)	Amended and Restated Lease Agreement with Pari Management. (10)
10 (m)	Settlement and Release Agreement between the Company and Sigma Aldrich. (11)
10 (n)	Stock Purchase Agreement by and among Enzo Life Sciences, Inc., Axxora Life Sciences Inc., and the stock holders, option holders and warrant holders listed on Schedule I thereto. (12)
10 (o)	Stock Asset Purchase Agreement By and Among Buyer Parties and Seller Parties. (13)
10 (p)	Asset Purchase Agreement By and Among Enzo Life Sciences, Inc., Enzo Life Sciences Acquisition, Inc., Assay Designs, Inc., Ampersand 2001 Limited Partnership and Ampersand 2001 Companion Fund Limited Partnership. (14)
14 (a)	Code of Ethics. (15)
21	Subsidiaries of the registrant:  Enzo Clinical Labs, Inc., a New York corporation Enzo Life Sciences, Inc., a New York corporation Enzo Therapeutics, Inc., a New York corporation Enzo Realty, LLC, a New York corporation

- 23 Consent of Independent Registered Public Accounting Firm. (16)
- 31 (a) Certification of CEO Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. (16)
- 31 (b) Certification of CFO Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. (16)
- 31 (c) Certification of CEO Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. (17)
- 31 (d) Certification of CFO Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. (17)
- 31(e) Certification of CEO Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 filed herewith.
- 31(f) Certification of CFO Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 filed herewith.
- 32 (a) Certification of CEO Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. (16)
- 32 (b) Certification of CFO Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. (16)

**Notes to exhibits**

- (1) These exhibits were filed as exhibits to the Company's Registration Statement on Form S-18 (File No. 2-67359) and are incorporated herein by reference.
- (2) This exhibit was filed as an exhibit to the Company's Form 10-K for the year ended July 31, 1981 and is incorporated herein by reference.
- (3) This exhibit was filed with the Company's Annual Report on Form 10-K for the year ended July 31, 1989 and is incorporated herein by reference.
- (4) This exhibit was filed with Amendment No. 1 to the Company's Current Report on Form 8-K on January 30, 2008 and is incorporated herein by reference.
- (5) This exhibit was filed with the Company's Annual Report on Form 10-K for the year ended July 31, 1994 and is incorporated herein by reference.
- (6) This exhibit was filed with the Company's Annual Report on Form 10-K for the year ended July 31, 1995 and is incorporated herein by reference.
- (7) This exhibit was filed with the Company's Registration Statement on Form S-8 (333-87153) and is incorporated herein by reference.
- (8) This exhibit was filed with the Company's Annual Report on Form 10-K for the year ended July 31, 2000 and is incorporated herein by reference.
- (9) This exhibit was included in the Company's Proxy Statement on Schedule 14A filed on January 19, 2005 and is incorporated herein by reference.
- (10) This exhibit was filed with the Company's Annual Report on Form 10-K for the year ended July 31, 2005 and is incorporated herein by reference.
- (11) This exhibit was filed with the Company's Current Report on Form 8-K on September 21, 2006 and is incorporated herein by reference.
- (12) This exhibit was filed with the Company's Current Report on Form 8-K on May 30, 2007 and is incorporated herein by reference.
- (13) This exhibit was filed with the Company's Current Report on Form 8-K on May 9, 2008 and is incorporated herein by reference.
- (14) This exhibit was filed with the Company's Current Report on Form 8-K on March 13, 2009 and is incorporated herein by reference.
- (15) This exhibit was filed with the Company's Annual Report on Form 10-K for the year ended July 31, 2003 and is incorporated herein by reference.
- (16) This exhibit was filed with the Company's Annual Report on Form 10-K for the year ended July 31, 2009 and is incorporated herein by reference.
- (17) This exhibit was filed with Amendment No. 1 to the Company's Annual Report on Form 10-K/A for the year ended July 31, 2009 and is incorporated herein by reference.

**SIGNATURES**

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this amendment to the Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized on the 11<sup>th</sup> day of December, 2009.

ENZO BIOCHEM, INC.

By:           /s/ Elazar Rabbani

Name: Elazar Rabbani Ph.D.  
Title: Chairman of the Board of Directors,  
Secretary and Chief Executive Officer

**CERTIFICATIONS**

I, Elazar Rabbani, Ph.D., certify that:

1. I have reviewed this Amendment No. 2 to the Annual Report on Form 10-K of Enzo Biochem, Inc.
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report.
3. *[Intentionally omitted]\**
4. *[Intentionally omitted]\**
5. *[Intentionally omitted]\**

Date: December 11, 2009

By: /s/ Elazar Rabbani

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Elazar Rabbani, Ph.D.  
Chairman of the Board of  
Directors, Secretary and Chief  
Executive Officer

\*Paragraphs 3 through 5 are included in Exhibit 31(a) to the Annual Report on Form 10-K for the fiscal year ended July 31, 2009. Please see Note 16 to the exhibits.

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## CERTIFICATIONS

I, Barry W. Weiner, certify that:

1. I have reviewed this Amendment No. 2 to the Annual Report on Form 10-K of Enzo Biochem, Inc.
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report.
3. *[Intentionally omitted]*\*
4. *[Intentionally omitted]*\*
5. *[Intentionally omitted]*\*

Date: December 11, 2009

By: /s/ Barry W. Weiner

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Barry W. Weiner  
President, Chief Financial  
Officer, Principal  
Accounting Officer,  
Treasurer and Director

\*Paragraphs 3 through 5 are included in Exhibit 31(b) to the Annual Report on Form 10-K for the fiscal year ended July 31, 2009. Please see Note 16 to the exhibits.

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