



**Enzo Biochem, Inc.**  
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November 12, 2010

**BY EDGAR TRANSMISSION**

Securities and Exchange Commission  
Office of Mergers & Acquisitions  
100 F Street, NE  
Washington, D.C. 20549  
Attention: Evan S. Jacobson

Re: Enzo Biochem, Inc.  
Revised Preliminary Proxy Materials  
on Schedule 14A (File No. 001-09974)

Ladies and Gentlemen:

Enzo Biochem, Inc., a New York corporation (the "Registrant"), hereby transmits herewith for filing with the Securities and Exchange Commission (the "Commission"), pursuant to Rule 101(a)(iii) of Regulation S-T under the Commission's Electronic Data Gathering and Retrieval System and Section 14 of, and Rule 14a-6(a) of Regulation 14A under, the Securities Exchange Act of 1934, as amended (the "Exchange Act"), the following revised preliminary proxy materials ("Amendment No. 1"):

(i) The Registrant's Notice of Annual Meeting in connection with the Registrant's 2010 Annual Meeting of Shareholders to be held on January 14, 2011 (the "Annual Meeting");

(ii) The proxy statement and appendices thereto, constituting a proxy statement of the board of directors of the Registrant (the "Board") for use in soliciting proxies with respect to approval by the Registrant's shareholders of the matters to be considered and voted on at the Annual Meeting; and

(iii) A form of proxy to be furnished to the holders of record of the Registrant's common stock in connection with the Annual Meeting (collectively, the "Preliminary Proxy Materials").

Amendment No. 1 responds to the comments received from the Commission's staff (the "staff") by letter dated November 10, 2010 (the "Comment Letter"), with respect to the Preliminary Proxy Materials filed with the Commission on November 5, 2010. For the staff's convenience, the staff's comments have been restated below in bold type (the numbers thereof corresponding to the numbers of the staff's comments contained in the Comment Letter) and the responses to each comment appear immediately below such comment.

Pursuant to Rule 14a-6(e)(l) under the Exchange Act, the revised Preliminary Proxy Materials contained in Amendment No. 1 have been clearly marked "Preliminary Copy—Subject to Completion". Pursuant to Rule 14a-6(d) under the Exchange Act, definitive copies of the

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revised Preliminary Proxy Materials filed herewith are intended to be released to the Registrant's shareholders on or about November 26, 2010.

As disclosed in the Preliminary Proxy Materials, the Registrant has established the close of business on November 19, 2010 as the record date for determining holders of record of the Registrant's common stock entitled to notice of, and to vote at, the Annual Meeting, in accordance with applicable New York law, the Registrant's amended and restated bylaws as currently in effect (the "Bylaws") and the rules and regulations of the New York Stock Exchange.

**Proposal 1: Election of Directors, page 7**

- 1. We note the participants reserve the right to vote for unidentified substitute nominees. Please advise us, with a view toward revised disclosure, whether the participants are required to identify or nominate such substitute nominees in order to comply with any applicable company advance notice bylaw. In addition, please confirm for us that if the participants lawfully identify or nominate substitute nominees before the meeting, the participants will file an amended proxy statement that: (i) identifies the substitute nominees, (ii) discloses whether such nominees have consented to being named in the revised proxy statement and to serve if elected, and (iii) includes the disclosure required by Items 5(b) and 7 of Schedule 14A with respect to such nominees.**

The participants are not required to identify or nominate such substitute nominees in order to comply with the applicable advance notice provisions of the Bylaws. However, in the event that any of the named Board nominees for Class II Director should become unable or unwilling to serve as a Class II Director, and if the participants lawfully identify or nominate one or more substitute nominees before the Annual Meeting, the participants will file an amended proxy statement that: (i) identifies the substitute nominees, (ii) discloses whether such nominees have consented to being named in the revised proxy statement and to serve if elected, and (iii) includes the disclosure required by Items 5(b) and 7 of Schedule 14A with respect to such nominees.

In that regard, the Registrant has included the following new disclosure at the end of the first paragraph on page 7 of Amendment No. 1:

"If any alternate persons are designated by the Class I and Class III Directors currently on the Board to serve as Class II Director-nominees, the Company will publicly notify shareholders by press release and will promptly distribute to shareholders revised proxy materials (including a revised WHITE proxy card) that (i) identify each such substitute nominee, (ii) disclose whether such substitute nominee has consented to being named in the revised proxy statement and to serve if elected, and (iii) include certain other disclosure required by applicable federal proxy rules and regulations with respect to each such substitute nominee."

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2. **Please confirm your understanding that all written soliciting materials, including any scripts to be used in soliciting proxies must be filed under the cover of Schedule 14A on the date of first use. See Exchange Act Rules 14a-6(b) and (c).**

The Registrant hereby confirms its understanding that all written soliciting materials, including any scripts to be used in soliciting proxies must be filed under the cover of Schedule 14A on the date of first use.

Appendix A

3. **Please revise the references in this appendix to persons who “may be deemed” participants to state definitively that the persons identified in this section “are” participants. See Instruction 3 to Item 4 of Schedule 14A.**

The Registrant has revised Appendix A in accordance with the Staff’s comment.

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The Registrant has also made certain edits to the section entitled “COMPENSATION OF EXECUTIVE OFFICERS—Compensation Discussion and Analysis—Objectives and Philosophy of Our Executive Compensation Program” beginning on page 17 of Amendment No. 1, including inserting the following disclosure at the end of such section on page 18 of Amendment No. 1 (just prior to the subsection titled “Components of our Executive Compensation Program”):

“For 2010, executive pay was significantly below the median of its peer group. Also, equity grants, which are all time-vested restricted shares, represent a small percentage of pay. For the past three years, the award value of equity for the CEO was just 15% of total pay. The other executive officers had grant levels ranging from 9% to 16% of total pay. As a result, our burn rate and shareholder dilution is among the lowest in the industry.

Although salaries paid in 2010 were slightly higher than 2009 due to the timing of an increase in early 2009, salary levels were flat in 2010.

Executive bonuses are discretionary but they will be primarily non-discretionary and performance-based in 2011 and beyond, using financial-based goals going forward. The Named Executive Officers and other key executives and managers will participate in the new “pay for performance” plan approved by the Board for 2011.

We continue to grant primarily time-vested restricted shares to limit dilution. For now there are no plans to grant performance shares, but grant levels will remain relatively low to limit shareholder dilution.”

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The Registrant hereby acknowledges that:

- the Registrant is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the Registrant may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Should any member of the staff have any questions or comments concerning this filing or the enclosed materials transmitted herewith, or desire any further information or clarification in respect of Amendment No. 1, please do not hesitate to contact the undersigned at (212) 583-0100, or our counsel, Robert H. Cohen of Greenberg Traurig, LLP, at (212) 801-6907.

Sincerely,

/s/ Barry W. Weiner  
Barry W. Weiner  
President and Chief Operating Officer

cc: Elazar Rabbani  
Robert H. Cohen, Esq.

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