

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

SCHEDULE 14A

Proxy Statement Pursuant to Section 14(a) of the Securities Exchange Act of 1934

Filed by the Registrant
Filed by a Party other than the Registrant

Check the appropriate box:

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

Enzo Biochem, Inc.

(Name of Registrant as Specified in Its Charter)

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

Payment of Filing Fee (Check the appropriate box):

- No fee required
- Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.
- (1) Title of each class of securities to which transaction applies:

- (2) Aggregate number of securities to which transaction applies:

- (3) Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (set forth the amount on which the filing fee is calculated and state how it was determined):

- (4) Proposed maximum aggregate value of transaction:

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- Fee paid previously with preliminary materials.
- Check box if any part of the fee is offset as provided by Exchange Act Rule 0-11(a)(2) and identify the filing for which the offsetting fee was paid previously. Identify the previous filing by registration statement number, or the Form or Schedule and the date of its filing.
- (1) Amount previously paid:

- (2) Form, Schedule or Registration Statement No.:

- (3) Filing Party:

- (4) Date Filed:

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ENZO BIOCHEM, INC.
527 Madison Avenue
New York, New York 10022

NOTICE OF 2009 ANNUAL MEETING OF SHAREHOLDERS

To be held on January 29, 2010

To All Shareholders of Enzo Biochem, Inc.:

NOTICE IS HEREBY GIVEN that the 2009 Annual Meeting of Shareholders of Enzo Biochem, Inc., a New York corporation (the "Company"), will be held at The Yale Club, 50 Vanderbilt Avenue, New York, New York 10017, on January 29, 2010, at 9:00 a.m., local time (the "Annual Meeting"), for the following purposes:

1. to elect to the Company's Board of Directors (the "Board") as Class I Directors, each of Messrs. Irwin C. Gerson, Gregory M. Bortz and Dr. Stephen B. H. Kent, each to hold office for a term of three (3) years or until their respective successors have been duly elected and qualified;
2. to ratify the Company's appointment of Ernst & Young LLP, to serve as the Company's independent auditors for the Company's fiscal year ending July 31, 2010; and
3. to transact such other business as may properly come before the Annual Meeting or any adjournments or postponements thereof.

All shareholders are cordially invited to attend the Annual Meeting. Please note that you will be asked to present proof that you are a shareholder of the Company as well as valid picture identification, such as a driver's license or passport, in order to attend the Annual Meeting. The use of cameras, recording devices and other electronic devices will be prohibited at the Annual Meeting.

Whether or not you plan to attend the Annual Meeting, and regardless of the number of shares of common stock you own, you are requested to sign, date and return the enclosed proxy card promptly. A return envelope, which requires no postage if mailed in the United States, is enclosed for your convenience. Shareholders who sign, date and return proxy cards retain the right to revoke them by: (i) delivering written notice of such revocation to the Secretary of the Company not later than 5:00 p.m. (local time) on January 28, 2010; (ii) by submitting to the Secretary of the Company not later than 5:00 p.m. (local time) on January 28, 2010, a duly signed proxy card bearing a later date than your previously signed, returned and dated proxy card; or (iii) by attending the Annual Meeting and voting in person thereat. Attendance at the Annual Meeting will not, in and of itself, constitute revocation of a signed, completed and dated proxy card previously returned. All such later-dated proxy cards or written notices revoking a proxy card should be sent to Enzo Biochem, Inc., 527 Madison Avenue, New York, New York 10022, Attention: Elazar Rabbani, Secretary.

Please read carefully the enclosed Proxy Statement, which explains the proposals to be considered by you and acted upon at the Annual Meeting.

Your Board has fixed the close of business on December 29, 2009 as the record date for the determination of holders of record of the Company's common stock entitled to notice of, and to vote at, the Annual Meeting. A list of shareholders of the Company as of the record date will remain open for inspection during the Annual Meeting until the closing of the polls thereat.

If you have any questions about the procedures for admission to the Annual Meeting, please contact our proxy solicitors, The Altman Group, Inc., toll free at (866) 521-4425 or collect at (201) 860-7300 or via e-mail at ProxyInfo@altmangroup.com.

By Order of the Board of Directors,

/s/ Elazar Rabbani

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

December 23, 2009

ALL HOLDERS OF RECORD OF THE COMPANY'S COMMON STOCK (WHETHER THEY INTEND TO ATTEND THE ANNUAL MEETING OR NOT) ARE STRONGLY ENCOURAGED TO COMPLETE, SIGN, DATE AND RETURN PROMPTLY THE PROXY CARD ENCLOSED WITH THE ACCOMPANYING PROXY STATEMENT.

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**ENZO BIOCHEM, INC.
PROXY STATEMENT
2009 ANNUAL MEETING OF SHAREHOLDERS**

To be held on January 29, 2010

This Proxy Statement is being furnished to shareholders of record, as of December 29, 2009, of Enzo Biochem, Inc. (“Enzo” or the “Company”), in connection with the solicitation of proxies by the Board of Directors of the Company (the “Board”) for the 2009 Annual Meeting of Shareholders to be held at The Yale Club, 50 Vanderbilt Avenue, New York, New York 10017, on January 29, 2010, at 9:00 a.m., local time (the “Annual Meeting”), and at any adjournments or postponements of the Annual Meeting, for the purposes stated in the accompanying Notice of 2009 Annual Meeting of Shareholders.

The principal corporate office of the Company is located at 527 Madison Avenue, New York, New York 10022.

The approximate date of mailing to shareholders of the Notice of the 2009 Annual Meeting of Shareholders, this Proxy Statement, the enclosed proxy card and the Company’s 2009 Annual Report to Shareholders is December 23, 2009.

Householding of Annual Meeting Materials

Some brokers and other nominee record holders may be participating in the practice of “householding” this Proxy Statement and other proxy materials. This means that only one copy of this Proxy Statement and other proxy materials may have been sent to multiple shareholders in a shareholder’s household. The Company will promptly deliver additional copies of the Proxy Statement and other proxy materials to any shareholder who contacts the Company’s investor relations department at (212) 583-0100 or at the Company’s principal corporate office at 527 Madison Avenue, New York, New York 10022 requesting such additional copies. If a shareholder is receiving multiple copies of the Proxy Statement and other proxy materials at the shareholder’s household and would like to receive in the future only a single copy of the Proxy Statement and other proxy materials for a shareholder’s household, such shareholders should contact their broker, other nominee record holder, or the Company’s investor relations department to request the future mailing of only a single copy of the Company’s Proxy Statement and other proxy materials.

IMPORTANT NOTICE REGARDING AVAILABILITY OF PROXY MATERIALS

This Proxy Statement, the form of proxy card, our 2009 Annual Report to Shareholders and our Annual Report on Form 10-K for our fiscal year ended July 31, 2009, as amended, are available to you on our website at www.enzo.com. Shareholders may also obtain a copy of these materials by writing to Enzo Biochem, Inc., 527 Madison Avenue, New York, New York 10022, Attention: Elazar Rabbani, Secretary. Upon payment of a reasonable fee, shareholders may also obtain a copy of the exhibits to our Annual Report on Form 10-K for our fiscal year ended July 31, 2009, as amended.

Who is Entitled to Vote at the Annual Meeting

Only shareholders of record of the Company's common stock, par value \$.01 per share (the "Common Stock"), as of the close of business on December 29, 2009 (the "Record Date") are entitled to notice of, and to vote at, the Annual Meeting. On the Record Date there were issued and outstanding 37,984,048 shares of Common Stock. Each outstanding share of Common Stock is entitled to one (1) vote upon all matters to be acted upon at the Annual Meeting.

How You May Vote

If you are a shareholder of record of Common Stock as of the Record Date, you may vote by completing, signing and returning the enclosed proxy card by mail. To vote by using the enclosed proxy card, mark your selections on the enclosed proxy card, date the proxy card and sign your name exactly as it appears on your proxy card, and return your proxy card by mail in the pre-addressed, postage-paid envelope enclosed with this Proxy Statement for such purpose. If you are a shareholder of record of Common Stock as of the Record Date, you may also vote in person by attending the Annual Meeting. Votes at the Annual Meeting will be taken by written ballot. At the commencement of the Annual Meeting, we will distribute a written ballot to any shareholder of record who attends the Annual Meeting and wishes to vote thereat in person.

If your shares are held in "street name," whether through a broker, bank or other nominee, only they can sign a proxy card with respect to your shares. You are therefore urged to contact the person responsible for your account and give them instructions for how to complete a proxy card representing your shares so that it can be timely returned on your behalf. You also should confirm in writing your instructions to the person responsible for your account and provide a copy of those instructions to our proxy solicitor, The Altman Group, Inc., so that they can attempt to ensure that your instructions are followed. If you wish instead to vote in person at the Annual Meeting, you must obtain a valid proxy from your broker, bank or other nominee.

If you are a shareholder of record of Common Stock as of the Record Date and plan to attend the Annual Meeting, please be sure to bring with you valid government-issued personal identification with a picture (such as a driver's license or passport) in order to gain admission to the meeting. If your shares are held in "street name" through a bank, broker or other nominee, you will have to bring evidence of your ownership of Common Stock as of the Record Date, in addition to valid government-issued personal identification, if you wish to attend the meeting. Examples of proof of Common Stock ownership include: a signed letter from your bank or broker stating that you owned your shares as of the Record Date; a brokerage account statement indicating that you owned your shares as of the Record Date; or a copy of the voting instruction card provided by your broker indicating that you owned your shares as of the Record Date. If you are a proxy holder for a shareholder of record of Common Stock as of the Record Date, then you must also bring the validly executed proxy naming you as the proxy holder, signed by the shareholder of record who owned such shares of Common Stock as of the Record Date.

If you have any questions about the procedures for admission to the Annual Meeting, please contact our proxy solicitors, The Altman Group, Inc., toll free at (866) 521-4425 or collect at (201) 860-7300 or via e-mail at ProxyInfo@altmangroup.com. Please see "Revocation of Proxies" below for a discussion of how to revoke your proxy.

Quorum; Vote Required

The holders of a majority of the outstanding shares of Common Stock as of the Record Date must be present in person or by proxy at the Annual Meeting to constitute a quorum for the transaction of business at the Annual Meeting.

The election of a nominee for Director (Proposal 1) requires a plurality of votes cast. This means that so long as a quorum is present, in person or represented by proxy, at the Annual Meeting for the transaction of business, any candidate receiving votes "for" his election, will be elected to serve as a Company Director. Shareholders may either vote "for" or "withhold" their vote for the Director nominees. A properly executed proxy card marked "withhold" and broker non-votes with respect to a Director nominee will not be voted with respect to the election of that Director, although it will be counted for purposes of determining whether there is a quorum for the transaction of business at the Annual Meeting. As a result, such votes will have no effect on the Director election since only votes "for" a nominee will be counted.

The ratification and approval of Proposal 2 will require the affirmative vote of a majority of the votes cast by holders of shares of Common Stock present, in person or represented by proxy, at the Annual Meeting and entitled to vote on such proposal. Shareholders may either vote "for," "against" or "abstain" with respect to the ratification and approval of Proposal 2. Abstentions and broker non-votes will not be counted as votes cast on this matter and will have no effect on the outcome of the vote with respect to Proposal 2, although they will be counted for purposes of determining whether there is a quorum for the transaction of business at the Annual Meeting.

If you hold your shares (i.e., they are registered) through a bank, broker or other nominee in “street name” but you do not provide the firm that holds your shares with your specific voting instructions, it will only be allowed to vote your shares on your behalf in its discretion on “routine” matters, but it cannot vote your shares in its discretion on your behalf on any “non-routine” matters. **Please note that this year the applicable rules of The New York Stock Exchange, Inc. (the “NYSE”) that prescribe how brokers may vote your shares have recently changed.** Under the applicable new rules of the NYSE, at the Annual Meeting, Proposal 1 relating to the election of your Board’s nominees for Directors is considered a “non-routine” matter and Proposal 2 relating to the appointment of the Company’s independent auditors for our fiscal year ending July 31, 2010 is considered a “routine” matter. Therefore, you must give specific instructions to your broker for your shares to be voted on the election of Directors at the Annual Meeting.

If you do not give specific instructions to your broker how to vote your shares on your behalf with respect to the election of the Board’s nominees for Directors at the Annual Meeting prior to the 10th day prior to the Annual Meeting, your broker will have no discretionary authority to vote your shares on the election of Directors at the Annual Meeting. Such “uninstructed” shares are commonly referred to as “broker non-votes” and, although such shares will be counted towards the determination of whether a quorum is present, in person or represented by proxy, at the Annual Meeting, with respect to Proposal 1, such uninstructed shares (or broker non-votes) will have the effect of a “withhold” vote for all three Board nominees for election as Directors. With respect to Proposal 2, your broker will have discretionary authority to vote your uninstructed shares “for”, or “against”, or to “abstain” from voting, on the ratification of the appointment of the Company’s independent auditors.

Proxy ballots will be received, tabulated and certified at the Annual Meeting by the inspector of election appointed by the Board. The inspector will also determine whether a quorum is present at the Annual Meeting.

Revocation of Proxies

If you are a shareholder of record on the Record Date and have signed, dated and returned a proxy card, you may revoke such proxy card in your discretion by:

- delivering written notice of such revocation to the Secretary of the Company, which notice must be received no later than 5:00 p.m. (local time) on January 28, 2010;
- by attending the Annual Meeting and voting, in person thereat, the shares represented by your proxy card (but your attendance at the Annual Meeting will not, in and of itself, constitute revocation of your previously signed, dated and returned proxy card); or
- by submitting to the Secretary of the Company so that it is received not later than 5:00 p.m. (local time) on January 28, 2010, a duly signed, dated and completed proxy card bearing a later date than the proxy card you previously submitted.

All such later-dated proxy cards or written notices of revocation of a proxy card should be sent to Enzo Biochem, Inc., 527 Madison Avenue, New York, New York 10022, Attention: Elazar Rabbani, Secretary. If you hold shares in street name, you must contact the firm that holds your shares to change or revoke any prior voting instructions.

Voting

The persons named as proxies in the enclosed proxy card will vote the shares for which such persons were thereby appointed in accordance with the voting indications marked thereon by the shareholders who signed, dated and returned such card. If, however, such proxy card is signed, dated and returned to the Company but no voting indications are marked thereon, all shares represented by such proxy card will be voted by the proxies named therein **“FOR” the election of each of the Board’s three Class I Director nominees (Proposal 1) and “FOR” the ratification of the Company’s appointment of Ernst & Young LLP to serve as the Company’s independent auditors for its fiscal year ending July 31, 2010 (Proposal 2)**, and will be voted on any other matters as may come before the Annual Meeting in the best judgment and discretion of the persons named as proxies.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

Set forth below is information concerning stock ownership of all persons known by the Company to own beneficially 5% or more of the shares of Common Stock of the Company, the executive officers named in the "Summary Compensation Table" as "Named Executive Officers," all current Directors and Director nominees, and all current Directors and executive officers of the Company as a group, based upon the number of outstanding shares of Common Stock as of the close of business on December 29, 2009, the Record Date.

The percentages in the "Percent of Class" column are calculated in accordance with the rules of the SEC, under which a person may be deemed to be the beneficial owner of shares if that person has or shares the power to vote or dispose of those shares or has the right to acquire beneficial ownership of those shares within 60 days (for example, through the exercise of an option or warrant). Accordingly, the shares shown in the table as beneficially owned by certain individuals may include shares owned by certain members of their respective families. Because of these rules, more than one person may be deemed to be the beneficial owner of the same shares. The inclusion of the shares shown in the table is not necessarily an admission of beneficial ownership of those shares by the person indicated. Except as otherwise indicated, each of the persons named has sole voting and investment power with respect to the shares shown.

Name and Address of Beneficial Owner	Amount and Nature of Beneficial Ownership (1)		Percent of Class (2)
Elazar Rabbani, Ph.D.	2,109,143	(3)	5.5%
Barry W. Weiner	1,316,167	(4)	3.4%
Shahram K. Rabbani	1,458,222	(5)	3.8%
Carl W. Balezentis, Ph.D.	14,588	(6)	*
Dr. Kevin Krenitsky	6,600		*
Andrew R. Crescenzo, CPA	16,110	(7)	*
Irwin C. Gerson	93,344	(8)	*
Melvin F. Lazar, CPA	112,047	(9)	*
Stephen B.H. Kent, Ph.D.	30,154	(10)	*
Bernard L. Kasten, M.D.	26,654	(11)	*
Gregory M. Bortz	0		*
Clearbridge Advisors, LLC and Smith Barney Fund Management LLC	4,516,010	(12)	11.89%
J. Morton Davis	2,942,240	(13)	7.75%
Barclays Global Investors, NA., Barclays Global Fund Advisors and Barclays Global Investors, Ltd.	2,264,029	(14)	5.96%
All Directors and executive officers as a group (13 persons) (15)	5,498,317	(16)	14.14%

* Represents beneficial ownership of less than 1%.

- (1) Except as otherwise noted, all shares of Common Stock are beneficially owned and the sole investment and voting power is held by the persons named, and such persons' address is c/o Enzo Biochem, Inc., 527 Madison Avenue, New York, New York 10022.
- (2) Based upon 37,984,048 shares of Common Stock of the Company outstanding as of the close of business on December 29, 2009. Common Stock not outstanding but deemed beneficially owned by virtue of the right of an individual to acquire shares within 60 days from the date is treated as outstanding only when determining the amount and percentage of Common Stock owned by such individual.

- (3) Includes (i) 325,842 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof, (ii) 3,469 shares of Common Stock held in the name of Dr. Rabbani as custodian for certain of his children, (iii) 2,168 shares of Common Stock held in the name of Dr. Rabbani's wife as custodian for certain of their children, and (iv) an aggregate of 5,100 shares of Common Stock held in the name of Dr. Rabbani's children. Includes 8,031 shares of Common Stock held in the Company's 401(k) plan.
- (4) Includes (i) 325,842 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof, and (ii) 3,642 shares of Common Stock that Mr. Weiner holds as custodian for certain of his children. Includes 8,038 shares of Common Stock held in the Company's 401(k) plan.
- (5) Includes (i) 1,354 shares of Common Stock held in the name of Mr. Rabbani's son, and (ii) 1,671 shares of Common Stock that Mr. Rabbani holds as custodian for certain of his nephews. Includes 7,995 shares of Common Stock held in an Individual Retirement Account.
- (6) Includes (i) 3,085 shares of Common Stock held in the Company's 401(k) plan and (ii) 3,333 shares of restricted Common Stock vesting 60 days from the date hereof.
- (7) Includes (i) 3,110 shares of Common Stock held in the Company's 401(k) plan and (ii) 3,000 shares of restricted Common Stock vesting 60 days from the date hereof.
- (8) Includes (i) 54,690 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof and (ii) 20,490 shares of restricted Common Stock vesting 60 days from the date hereof.
- (9) Includes (i) 28,644 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof, (ii) 26,249 shares of Common Stock owned by Mr. Lazar's wife, (iii) 20,490 shares of restricted Common Stock vesting 60 days from the date hereof and (iv) 10,500 shares in an Individual Retirement Account.
- (10) Includes 20,490 shares of restricted Common Stock vesting 60 days from the date hereof.
- (11) Includes 20,490 shares of restricted Common Stock vesting 60 days from the date hereof.
- (12) The address of each entity in the group is 620 8th Ave, New York, New York 10022. This information is based solely on a Schedule 13G filed on February 19, 2009.
- (13) Mr. Davis' address is D.H. Blair Investment Banking Corp., 44 Wall Street, New York, New York 10005. Includes (i) 33,425 shares owned directly by Mr. Davis, (ii) 1,024,345 shares owned directly by Blair Investment, (iii) 691,396 shares owned by Engex, Inc., (iv) 12,733 shares owned by an investment advisor whose principal is Mr. Davis and (v) 1,180,341 shares owned by Rosalind Davidowitz, Mr. Davis' wife. This information is based solely on a Schedule 13G filed on February 10, 2009.
- (14) The address of Barclays Global Investors, NA. and Barclays Global Fund Advisors is 400 Howard Street, San Francisco, California 94105; the address of Barclays Global Investors, Ltd is Murray House, 1 Royal Mint Court, London EC3N 4HH. This information is based solely on a Schedule 13G filed on February 5, 2009.
- (15) The total number of Directors and executive officers includes three (3) executive officers or key employees who were not named in the table under the caption "Security Ownership of Certain Beneficial Owners and Management."
- (16) Includes 822,422 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof and 91,293 shares of vesting of restricted stock and non-voting restricted stock units within 60 days from the date hereof.

**PROPOSAL 1
ELECTION OF DIRECTORS**

The Company has three (3) classes of Directors, each of which serves for a term of three (3) years. At the Annual Meeting, the Company's Class I Directors will be elected to hold office for a term of three (3) years or until their respective successors are elected and qualified. Unless otherwise instructed, the shares represented by validly submitted proxies will be voted for the election of each of the below-listed nominees to serve as Class I Directors. Management has no reason to believe that the below-listed nominees will not be candidates or will be unable to serve as Directors. However, in the event that any of the below-listed nominees should become unable or unwilling to serve as Director, the form of proxy will be voted for the election of such alternate person as shall be designated by the Class II and Class III Directors.

The total cumulative length of time that any Outside Director (a member of the Board who is not an officer or employee of the Company) may serve on the Board is limited to a maximum of three (3) three-year terms, whether consecutively or in total, plus any portion of an earlier three-year term that such Outside Director may have been appointed to serve.

**CLASS I DIRECTOR NOMINEES TO SERVE UNTIL
THE 2013 ANNUAL MEETING, IF ELECTED:**

Class I: Term to Expire In 2013

Name	Age	Year First Became a Director
Gregory M. Bortz	40	n/a
Irwin C. Gerson	79	2001
Stephen B. H. Kent, Ph.D.	64	2007

GREGORY M. BORTZ is the founder and managing partner of Creo Capital Partners, LLC, a private equity firm that provides capital to middle-market companies, since February 2005. Creo holds investments in companies certain of which Mr. Bortz serves as a Board member. From October 2000 to February 2005, Mr. Bortz was Senior Vice President, Investment Banking Division of the international investment bank Lehman Brothers, Inc. Prior to such position he was a Vice President of Investment Banking at Credit Suisse First Boston, a leading international investment bank, from January 1998 to October 2000. Mr. Bortz held the position of Manager at the accounting firm of Ernst and Young (1994-1997) and Senior at the public accounting firm of Arthur Anderson (1993-1994), both in their respective audit groups. Mr. Bortz is a chartered accountant in the United Kingdom and South Africa and graduated from the University of Cape Town with a Bachelors of Business Science and Graduate Diploma in Accounting and Finance.

IRWIN C. GERSON has been a Director of the Company since May 2001 and is Chairman of the Compensation Committee and also serves on the Audit and the Nominating/Governance Committees. From 1995 until December 1998, Mr. Gerson served as Chairman of Lowe McAdams Healthcare and prior thereto had been, since 1986, Chairman and Chief Executive Officer of William Douglas McAdams, Inc., one of the largest advertising agencies in the U.S. specializing in pharmaceutical marketing and communications to healthcare professionals. In February 2000, he was inducted into the Medical Advertising Hall of Fame. He was a Director of Andrx Corporation, a NASDAQ listed company which specializes in proprietary drug delivery technologies until November 2006. From 1990-1999, he was Chairman of the Council of Overseers of the Arnold and Marie Schwartz College of Pharmacy and has served as a trustee of The Albany College of Pharmacy and Long Island University. He was elected President of the Advisory Board of the Florida Atlantic University Lifelong Learning Society in October 2006. Mr. Gerson has a Bachelor of Science in Pharmacy from Fordham University and an MBA from the New York University Graduate School of Business Administration.

STEPHEN B. H. KENT, Ph.D. has been a Director of the Company since January 2007 and Lead Independent Director since January 2008 and serves on the Nominating/Governance Committee. Dr. Kent is or has been a Professor of Biochemistry & Molecular Biology (2001-present), Professor of Chemistry (2002-present), and Director of the Institute for Biophysical Dynamics (2003-2009) at the University of Chicago. Dr. Kent was the business founder and served as a Director of CIPHERGEN Biosystems, a biotechnology tools company (1994-1997) and Gryphon Sciences, a biotechnology company (1994-2002). At Gryphon Sciences, Kent served as President (1997-2000), CEO (1999-2000), and Chief Scientist (1997-2001). Dr. Kent has served on the Scientific Advisory Board at pharmaceutical company Amylin Pharmaceuticals from 2005-present, the Board of the Center for Functional Genomics, Victoria University, New Zealand from 2004-present, the Scientific Advisory Board, Institute for Molecular Bioscience, The University of Queensland, Australia, from 2001-present, and the Scientific Advisory Board, New York Blood Center & Kimball Research Institute from 1991-1997. Dr. Kent received Bachelor of Science and Master of Science degrees in his native New Zealand, and his Ph.D. from the University of California, Berkeley.

THE BOARD OF DIRECTORS OF THE COMPANY RECOMMENDS A VOTE "FOR" PROPOSAL 1 RELATING TO THE ELECTION OF EACH OF THE ABOVE-NAMED CLASS I DIRECTOR NOMINEES. PROXIES SOLICITED BY THE BOARD OF DIRECTORS WILL BE SO VOTED UNLESS SHAREHOLDERS SPECIFY IN THEIR PROXIES A CONTRARY CHOICE.

DIRECTORS WHO ARE CONTINUING IN OFFICE:**Class II: Term to Expire In 2011**

<u>Name</u>	<u>Age</u>	<u>Year First Became a Director</u>
Barry W. Weiner	59	1977
Melvin F. Lazar, CPA	70	2002
Bernard L. Kasten, M.D.	63	2008

Class III: Term to Expire In 2012

<u>Name</u>	<u>Age</u>	<u>Year First Became a Director</u>
Elazar Rabbani, Ph.D.	66	1976

DIRECTORS, EXECUTIVE OFFICERS AND KEY EMPLOYEES

The current Directors, executive officers and key employees of the Company and its subsidiaries are identified in the table below.

<u>Name</u>	<u>Age</u>	<u>Year Became a Director or Executive Officer</u>	<u>Position</u>
Elazar Rabbani, Ph.D.	66	1976	Chairman of the Board, Chief Executive Officer and Secretary (1)
Barry W. Weiner	59	1977	President, Chief Financial Officer, Principal Accounting Officer, Treasurer and Director (1)
Shahram K. Rabbani	57	1976(2)	Director (1)
Carl W. Balezentis, Ph.D.	52	2006	President, Enzo Life Sciences, Inc.
Christine Fischette, Ph.D.	58	2008	President, Enzo Therapeutics, Inc.
Kevin Krenitsky, M.D.	43	2009	President, Labs, Inc.
Andrew R. Crescenzo, CPA	53	2006	Senior Vice President of Finance
Herbert B. Bass	61	1989	Vice President of Finance
David C. Goldberg	52	1995	Vice President, Corporate Development
Andrew P. Whiteley	51	2008	Vice President, Business Development and Chief Operating Officer, Enzo Life Sciences, Inc.
Paul O'Brien	47	2009	Vice President, Global Human Resources
Irwin C. Gerson	79	2001	Director
Bernard L. Kasten, M.D.	63	2008	Director
Stephen B. H. Kent, Ph.D.	64	2007	Director
Melvin F. Lazar, CPA	70	2002	Director

(1) Effective November 25, 2009, the Board removed Shahram K. Rabbani as Secretary and Treasurer of the Company and appointed Dr. Elazar Rabbani as Secretary and Barry W. Weiner as Treasurer.

(2) Director term expires January 29, 2010. Mr. Rabbani was also terminated as the President of Enzo Clinical Labs, Inc., a subsidiary of the Company, effective March 9, 2009.

Biographical Information Regarding Directors, Executive Officers and Key Employees

ELAZAR RABBANI, Ph.D. is Enzo Biochem's founder and has served as the Company's Chairman of the Board and Chief Executive Officer since its inception in 1976 and Secretary since November 25, 2009. Dr. Rabbani has authored numerous scientific publications in the field of molecular biology, in particular, nucleic acid labeling and detection. He is also the lead inventor of many of the Company's pioneering patents covering a wide range of technologies and products. Dr. Rabbani received his Bachelor of Arts degree from New York University in Chemistry and his Ph.D. in Biochemistry from Columbia University. He is a member of the American Society for Microbiology.

BARRY W. WEINER President, Chief Financial Officer, Treasurer and Director, is a founder of Enzo Biochem, Inc. He has served as the Company's President since 1996 and Treasurer since November 25, 2009, and previously held the position of Executive Vice President. Before his employment with Enzo, he worked in several managerial and marketing positions at the Colgate Palmolive Company, a consumer products company. Mr. Weiner is a Director of the New York Biotechnology Association. He received his Bachelor of Arts degree in Economics from New York University and a MBA in Finance from Boston University.

SHAHRAM K. RABBANI Director, is a founder and has been with the Company since its inception. Mr. Rabbani served as the Secretary and Treasurer of the Company until November 25, 2009, and as President of Enzo Clinical Labs, Inc. ("Enzo Labs") until March 9, 2009. He received a Bachelor of Arts Degree in Chemistry from Adelphi University.

CARL W. BALEZENTIS, Ph.D. President, Enzo Life Sciences, Inc., has held this position since June 2006. Before his employment with Enzo, he was CEO of Lark Technologies, Inc., a contract research organization providing molecular biology services, from 2000 to 2004, prior to its acquisition by Genaissance Pharmaceuticals, Inc., a biotechnology company. Subsequent to the acquisition Dr. Balezentis held the positions of President of Lark Technologies, Inc., and Senior Vice President of Genaissance. From 1998 to 2000 he held numerous executive positions in the life sciences industry at Sigma-Aldrich (a manufacturer of research chemicals), Perceptive Scientific Instruments, Inc. (a manufacturer of medical imaging equipment), Applied Biosystems, Inc. (a life sciences research tools producer now known as Applera) and Promega Corporation (a life science supply company). Dr. Balezentis holds a Ph.D. in Genetics from the University of Arizona and completed a Post Doctoral Fellowship at M.D. Anderson Cancer Center in Houston, TX.

CHRISTINE T. FISCHETTE, Ph.D. President, Enzo Therapeutics, Inc. has held this position since January 2008. Before her employment with Enzo, from 1999-2007, she was Executive Director and Head of Negotiation, Global Business Development and Licensing for various therapeutic Business Franchise Boards at the pharmaceutical company Novartis Pharmaceuticals, a division of Novartis Ag. From 1987-1999, Dr. Fischette held various positions at the pharmaceutical company Pfizer Pharmaceuticals, NY and directed preclinical/clinical development, medical marketing, and was head of Pfizer's US commercial arm for diabetes before joining business development and licensing from 1987-1999. Prior to her work experience at Pfizer, she conducted research as Senior Scientist at Hoffmann-La Roche, Inc. and as a PostDoctoral Fellow at Rockefeller University. Dr. Fischette holds a Ph.D. in Physiology from the University of Medicine & Dentistry of New Jersey and a B.A. in Biology Education from Rutgers University.

KEVIN KRENITSKY, M.D. was appointed President of Enzo Labs in March 2009. Before his employment at Enzo he was the CEO of Bio Serve Biotechnologies, a global biotechnology company specializing in processing genetic diagnostic tests from 2007 to February 2009. From 2006 to 2007, he was the Interim CEO of Parkway Clinical Laboratories, a clinical diagnostic lab providing comprehensive routine and esoteric testing. Prior to his employment at Parkway Clinical, from 1999 to 2006, he served as Senior Vice President and Division Head at manufacturer SeraCare Life Sciences' Genomics Collaborative Division (GCI) where he managed all worldwide pharmaceutical R&D collaborations. Before GCI was acquired by Seracare Life Sciences, he held the position of Medical Director. Dr. Krenitsky received his M.D. from Jefferson Medical College.

ANDREW R. CRESCENZO, CPA Senior Vice President of Finance for the Company has held this position since May 2006. Before joining the Company, Mr. Crescenzo was an Executive Director from 2002 to 2006 and a Senior Manager from 1997 to 2002 at the accounting firm Grant Thornton LLP. From 1993 to 1997 he served as Vice President and Chief Financial Officer of J. D'Addario & Co, Inc, a leading manufacturer and distributor of equipment for the musical industry, and held several positions at the accounting firm Ernst and Young LLP from 1984 to 1993, the latest of which was Senior Manager. Mr. Crescenzo is a Certified Public Accountant and received his Bachelors of Business Administration from Adelphi University.

HERBERT B. BASS Vice President of Finance for the Company and has held this position since May 1989. Prior to 1989 Mr. Bass served as the Corporate Controller of the Company. Mr. Bass has been with the Company since 1986. From 1977 to 1986, Mr. Bass held various positions at Danziger and Friedman, Certified Public Accountants, the latest of which was audit manager. Mr. Bass received a Bachelor of Business Administration degree in Accounting from Bernard M. Baruch College.

DAVID C. GOLDBERG Vice President of Corporate Development for Enzo Biochem, Inc. has been employed with the Company since 1985. He has held several managerial and executive positions within Enzo Biochem. Mr. Goldberg also held management and marketing positions with pharmaceutical research company DuPont-NEN and chemical supplier Gallard Schlesinger

Industries before joining the Company. He received a Master of Science degree in Microbiology from Rutgers University and a Master of Business Administration in Finance from New York University.

ANDREW P. WHITELEY Chief Operating Officer, Enzo Life Sciences and Vice President of Business Development, Enzo Biochem since May 2008. Before his employment at Enzo, Mr. Whiteley previously held the position of CEO at Vitra Biosciences (2003 to 2005) and CEO of InforMax, a bioinformatics company, from 2002 to 2003 which was acquired by Invitrogen. Prior to that Mr. Whiteley held various positions at Amersham Pharmacia Biotech, a leading biotechniques company (now part of GE Healthcare), including, VP Bioinformatics and VP Sequencing Business. Mr. Whiteley graduated from Nottingham University, England with a joint honors degree in Biochemistry and Chemistry.

PAUL C. O'BRIEN Vice President of Global Human Resources for the Company has held this position since November 2009. Before joining the Company, Mr. O'Brien was Vice President of Global Human Resources at Black & Decker, the multinational manufacturer, for their Fastening and Assembly Systems Group from 2005 to 2009. From 2003 to 2004 Mr. O'Brien was Director of Global Human Resources for Stryker Spine, a manufacturer of spine related products, and from 1991 to 2002 Mr. O'Brien held various roles in Human Resources with Tyco Healthcare (a leading manufacturer, distributor and servicer of medical devices), the latest of which was Senior Director, Divisional Human Resources. Mr. O'Brien received a Bachelor of Arts degree in General Studies from Providence College.

IRWIN C. GERSON has been a Director of the Company since May 2001 and is Chairman of the Compensation Committee and also serves on the Audit and the Nominating/Governance Committees. From 1995 until December 1998, Mr. Gerson served as Chairman of the healthcare communications firm Lowe McAdams Healthcare and prior thereto had been, since 1986, Chairman and Chief Executive Officer of William Douglas McAdams, Inc., one of the largest advertising agencies in the U.S. specializing in pharmaceutical marketing and communications to healthcare professionals. In February 2000, he was inducted into the Medical Advertising Hall of Fame. He was a Director of Andrx Corporation, a NASDAQ listed company which specializes in proprietary drug delivery technologies until November 2006. From 1990-1999, he was Chairman of the Council of Overseers of the Arnold and Marie Schwartz College of Pharmacy and has served as a trustee of The Albany College of Pharmacy and Long Island University. He was elected President of the Advisory Board of Florida Atlantic University Lifelong Learning Society in October 2006. Mr. Gerson has a Bachelor of Science in Pharmacy from Fordham University and an MBA from the New York University Graduate School of Business Administration. Mr. Gerson is a nominee for re-election at the 2009 Annual Meeting.

BERNARD L. KASTEN, M.D. Dr. Kasten has been a Director of the Company since January 2008 and serves on the Audit, Nominating and the Compensation Committees. He served as Director of biotechnology company Cleveland Biolabs, Inc. (CBLI: NASDAQ) and has been serving as Chairman of the Board since August 2006. From 1995 to 2004, Dr. Kasten served at Quest Diagnostics Incorporated, a national provider of diagnostic testing, information and services, where he was Chief Laboratory Officer and most recently Vice President of Medical Affairs of its MedPlus Inc. subsidiary, which is a healthcare information technology company. Dr. Kasten served as a Director of the drug development company SIGA Technologies from May 2003 to December 2006, and as SIGA's Chief Executive Officer from July 2004 through April 2006. Dr. Kasten currently serves as a Director of GeneLink Inc. (GNLK.OTCBB) and SeraCare Life Sciences Inc. (SCRS-Pink Sheets). Dr. Kasten is also a Director of several privately held companies. Dr. Kasten is a graduate of the Ohio State University College of Medicine. His residency was served at the University of Miami, Florida and he was awarded fellowships at the National Institutes of Health Clinical Center and NCI, Bethesda, Maryland. He is a diplomat of the Board of Pathology with certification in anatomic and clinical pathology with sub-specialty certification in Medical Microbiology.

STEPHEN B. H. KENT, Ph.D. has been a Director of the Company since January 2007 and Lead Independent Director since January 2008 and serves on the Nominating/Governance Committee. Dr. Kent is or has been a Professor of Biochemistry & Molecular Biology (2001-present), Professor of Chemistry (2002-present), and Director of the Institute for Biophysical Dynamics (2003-2009) at the University of Chicago. Dr. Kent was the business founder and served as a Director of CIPHERGEN Biosystems, a biotechnology tools company (1994-1997) and Gryphon Sciences, a biotechnology company (1994-2002). At Gryphon Sciences, Kent served as President (1997-2000), CEO (1999-2000), and Chief Scientist (1997-2001). Dr. Kent has served on the Scientific Advisory Board at pharmaceutical company Amylin Pharmaceuticals from 2005-present, the Board of the Center for Functional Genomics, Victoria University, New Zealand from 2004-present, the Scientific Advisory Board, Institute for Molecular Bioscience, The University of Queensland, Australia, from 2001-present, and the Scientific Advisory Board, New York Blood Center & Kimball Research Institute from 1991-1997. Dr. Kent received Bachelor of Science and Master of Science degrees in his native New Zealand, and his Ph.D. from the University of California, Berkeley. Dr. Kent is a nominee for re-election at the 2009 Annual Meeting.

MELVIN F. LAZAR, CPA has been a Director of the Company since August 2002, the Lead Independent Director from October 2005 to January 2008, and is Chairman of the Audit Committee. Mr. Lazar was a founding partner of the public accounting firm of Lazar, Levine & Felix LLP from 1969 until October 2002. Mr. Lazar is a board member and chairman of the audit committee of Arbor Realty Trust, Inc. (ABR: NYSE). Arbor is a real estate investment trust (REIT) formed to invest in real estate related bridge and mezzanine loans, preferred equity investments and other real estate related assets. Mr. Lazar holds a Bachelor of Business Administration degree from The City College of New York (Baruch College).

Family Relationships

Dr. Elazar Rabbani and Shahram K. Rabbani are brothers and Barry W. Weiner is their brother-in-law.

Director Independence

Messrs. Irwin C. Gerson and Melvin F. Lazar and Drs. Bernard L. Kasten and Stephen Kent qualify as “independent Directors” under the criteria established by the NYSE. Mr. Bortz, if elected, would also qualify as an “independent Director” under the criteria established by the NYSE.

Certain Legal Proceedings

In connection with the termination of his employment as President of Enzo Labs, Shahram K. Rabbani, the former Secretary and Treasurer of the Company and current member of the Board, submitted on April 30, 2009 a demand for arbitration and related statement of claim to the American Arbitration Association. The statement of claim names the Company, Dr. Elazar Rabbani, the Chairman of the Board, Chief Executive Officer and Secretary of the Company, and Barry W. Weiner, the President, Chief Financial Officer, Principal Accounting Officer, Treasurer and a member of the Board, as respondents and alleges, among other things, claims relating to the termination of Mr. Rabbani’s employment as President of Enzo Labs. The statement of claim purports to allege claims for breach of contract against the Company, unlawful retaliation under the Sarbanes-Oxley whistleblower statute (the “Claims”) against the Company, Dr. Rabbani and Mr. Weiner, and tortious interference with contract against Dr. Rabbani and Mr. Weiner. Mr. Rabbani seeks damages of no less than \$10 million including attorneys’ fees, costs, and punitive damages. The Company believes the Claims are without merit and intends to defend vigorously against them.

Subsequent to April 30, 2009, the Company conducted a review, as directed by a special committee of the Board, relating to the aforementioned Claims pertaining to Enzo Labs. The review concluded that the purported Claims were unsubstantiated.

On September 18, 2009, Mr. Rabbani amended his statement of claim to add a claim for defamation against the Company and a claim against the Company, Dr. Rabbani and Mr. Weiner seeking a declaratory judgment. The Company also believes these additional claims are without merit and intends to defend vigorously against them.

Documentary discovery has commenced, and an arbitration hearing has been scheduled for March 2, 2010. Mr. Rabbani also filed a complaint for unlawful retaliation under the Sarbanes-Oxley Act’s whistleblower statute with the Department of Labor against the Company, Dr. Rabbani and Mr. Weiner arising out of the same facts and occurrences. The Company believes the Claims are without merit and intends to defend vigorously against them.

C CORPORATE GOVERNANCE

Our Board and management are committed to responsible corporate governance to ensure that the Company is managed for the long-term benefit of its shareholders. To that end, during the past year, as in prior years, the Board and management have periodically reviewed and updated, as appropriate, the Company's corporate governance policies and practices. During the past year, the Board has also continued to evaluate and, when appropriate, update the Company's corporate governance policies and practices in accordance with the requirements of the Sarbanes-Oxley Act of 2002 and the rules and listing standards issued by the Securities and Exchange Commission and the NYSE.

Corporate Governance Policies and Practices

The Company has a variety of policies and practices to foster and maintain responsible corporate governance, including the following:

Corporate Governance Guidelines – The Board adopted Corporate Governance Guidelines, which culminate in one document many of the corporate governance practices and procedures that had evolved over the years. These guidelines address the duties of the Board, Director qualifications and selection process, Board operations, Board committee matters and continuing education. The guidelines also provide for annual self-evaluations by the Board and its committees. The Board reviews these guidelines on an annual basis. The guidelines are available on the Company's website at www.enzo.com, and in print to any interested party that requests them.

Corporate Code of Ethics – The Company has a Code of Ethics that applies to all of the Company's employees, officers and members of the Board. The Code of Ethics is available on the Company's website at www.enzo.com, and in print to any interested party that requests it.

Board Committee Charters – Each of the Company's Audit, Compensation and Nominating/Governance Committees has a written charter adopted by the Company's Board that establishes practices and procedures for such committee in accordance with applicable corporate governance rules and regulations. The charters are available on the Company's website at www.enzo.com, and in print to any interested party that requests them.

Lead Independent Director Charter – The duties of the Lead Independent Director, as set forth in the Lead Independent Director Charter, among other things, are to develop the agendas for and serve as chairman of the executive sessions of the independent Directors of the Company; serve as principal liaison between the independent Directors of the Company and the Chairman of the Board and between the independent Directors and senior management; provide the Chairman of the Board with input as to the preparation of the agendas for Board meetings; advise the Chairman of the Board as to the quality, quantity and timeliness of the information submitted by the Company's management that is necessary or appropriate for the independent Directors to effectively and responsibly perform their duties; ensure that independent Directors have adequate opportunities to meet and discuss issues in executive sessions without management present; if the Chairman of the Board is unable to attend a Board meeting, act as chairman of such Board meeting; and perform such other duties as the Board shall from time to time delegate.

Dr. Stephen Kent has served as Lead Independent Director since January 24, 2008.

The Lead Independent Director Charter is available on the Company's website at www.enzo.com, and in print to any interested party that requests it.

Director Independence

Requirements – The Board believes that a substantial majority of its members should be independent, non-employee Directors. The Board adopted the following "Director Independence Standards," which are consistent with criteria established by the NYSE, to assist the Board in making these independence determinations:

No Director can qualify as independent if he or she has a material relationship with the Company outside of his or her service as a Director of the Company. A Director is not independent if, within the preceding three years:

- The Director was an employee of the Company.
- An immediate family member of the Director was an executive officer of the Company.
- A Director was affiliated with or employed by a present or former internal or external auditor of the Company.
- An immediate family member of a Director was affiliated with or employed in a professional capacity by a present or former internal or external auditor of the Company.

- A Director, or an immediate family member of the Director, received more than \$100,000 per year in direct compensation from the Company, other than Director and committee fees and pension or other forms of deferred compensation for prior services (provided such compensation is not contingent in any way on continued service).
- The Director, or an immediate family member of the Director, was employed as an executive officer of another company where any of the Company's executives served on that company's compensation committee of the board of Directors.
- The Director was an executive officer or employee, or an immediate family member of the Director was an executive officer, of another company that made payments to, or received payments from, the Company for property or services in an amount which, in any single fiscal year, exceeded the greater of \$1 million or two percent (2%) of such other company's consolidated gross revenues.
- The Director, or an immediate family member of the Director, was an executive officer of another company that was indebted to the company, or to which the Company was indebted, where the total amount of either company's indebtedness to the other was five percent (5%) or more of the total consolidated assets of the company he or she served as an executive officer.
- The Director, or an immediate family member of the Director, was an officer, Director or trustee of a charitable organization where the Company's annual discretionary charitable contributions to the charitable organization exceeded the greater of \$1 million or five percent (5%) of that organization's consolidated gross revenues.

The Board has reviewed all material transactions and relationships between each Director, or any member of his or her immediate family, and the Company, its senior management and its independent auditors. Based on this review and in accordance with its independence standards outlined above, the Board has affirmatively determined that all of the non-employee Directors are independent.

Board Nomination Policies and Procedure

Nomination Procedure – The Nominating/Governance Committee is responsible for identifying, evaluating and recommending candidates for election to the Board, with due consideration for recommendations made by other Board members, the CEO, shareholders, and other sources. In addition to the above criteria, the Nominating/Governance Committee also considers the appropriate balance of experience, skills, and characteristics desirable among the members of the Board. The independent members of the Board review the Nominating/Governance Committee candidates and nominate candidates for election by the Company shareholders.

Directors must also possess the highest personal and professional ethics, integrity and values and be committed to representing the long-term interests of all shareholders. Board members are expected to diligently prepare for, attend and participate in all Board and applicable Committee meetings. Each Board member is expected to ensure that other existing and future commitments do not materially interfere with the member's service as a Director.

The Nominating/Governance Committee also reviews whether a potential candidate will meet the Company's independence standards and any other Director or committee membership requirements imposed by law, regulation or stock exchange rules.

Director candidates recommended to the Committee are subject to full Board approval and subsequent election by the shareholders. The Board is also responsible for electing Directors to fill vacancies on the Board that occur due to retirement, resignation, expansion of the Board or other reasons between the Shareholders' annual meetings. The Nominating/Governance Committee may retain a recruitment firm, from time to time, to assist in identifying and evaluating Director candidates. When a firm is used, the Committee provides specified criteria for Director candidates, tailored to the needs of the Board at that time, and pays the firm a fee for these services. Suggestions for Director candidates are also received from Board members and management and may be solicited from professional associations as well.

Board Committees

All members of each of the Company's three standing committees – the Audit, Compensation, and Nominating/Governance – are required to be independent in accordance with NYSE criteria. See below for a description of the responsibilities of the Board's standing committees.

Executive Sessions of Non-Management Directors

The Board and the Audit, Compensation and Nominating/Governance Committees periodically hold meetings of only the independent Directors or Committee members without management present.

Board Access to Independent Advisors

The Board as a whole, and each of the Board committees separately, has authority to retain and terminate such independent consultants, counselors or advisors to the Board as each shall deem necessary or appropriate.

Communications with Board of Directors

Direct Communications – Any interested party desiring to communicate with the Board or with any Director regarding the Company may write to the Board or the Director, c/o Barry W. Weiner, Office of the President, Enzo Biochem, Inc., 527 Madison Avenue, New York New York 10022. The Office of the President will forward all such communications to the Director(s). Interested parties may also submit an email by filling out the email form on the Company's website at www.enzo.com. Moreover, any interested party may contact the non-management Directors of the Board and/or the presiding (or lead) Director.

Annual Meeting – The Company encourages its outside Directors to attend the annual meeting of shareholders each year. Messrs. Gerson, Kent, Lazar and Dr. Kasten attended the Annual Meeting of Shareholders held in January 2009.

Meetings of the Board of Directors and its Committees

During the fiscal year ended July 31, 2009, there were five formal meetings of the Board, several actions by unanimous consent and several informal meetings. None of the Directors attended less than 75% of the meetings. Currently, the Board has a Nominating/Governance Committee, an Audit Committee and a Compensation Committee. The Nominating/Governance Committee had one formal meeting, the Audit Committee had five formal meetings and the Compensation Committee had three formal meetings.

The Audit Committee was established by and among the Board for the purpose of overseeing the accounting and financial reporting processes of the Company and audits of the financial statements of the Company in accordance with Section 3(a)(58)(A) of the Securities Exchange Act of 1934 (the "Exchange Act"), as amended. The Audit Committee is authorized to review proposals of the Company's auditors regarding the annual audit, recommend the engagement or discharge of the auditors, review recommendations of such auditors concerning accounting principles and the adequacy of internal controls and accounting procedures and practices, review the scope of the annual audit, approve or disapprove each professional service or type of service other than standard auditing services to be provided by the auditors, and review and discuss the audited financial statements with the auditors. The current members of the Audit Committee are Messrs. Lazar, Gerson and Dr. Kasten. Mr. Lazar is the Chairman. The Board has determined that each of the Audit Committee members is independent, as defined in the NYSE's listing standards. The Board has further determined that Messrs. Lazar and Gerson are each "audit committee financial experts" as such term is defined under Item 407(d)(5)(ii) of Regulation S-K.

The Compensation Committee has the power and authority to (i) establish a general compensation policy for the officers and employees of the Corporation, including to establish and at least annually review executive officers' salaries and levels of officers' participation in the benefit plans of the Corporation, (ii) prepare any reports that may be required by the regulations of the Securities and Exchange Commission or otherwise relating to officer compensation, (iii) approve any increases in Directors' fees, (iv) grant stock options and/or other equity instruments and authorized by senior executives for non-executive officers, and (v) exercise all other powers of the Board with respect to matters involving the compensation of employees and the employee benefits of the Corporation as shall be delegated by the Board to the Compensation Committee. The current members of the Compensation Committee are Messrs. Gerson, Lazar and Dr. Kasten. Mr. Gerson is the Chairman.

The Nominating/Governance Committee has the power to recommend to the Board prior to each annual meeting of the shareholders of the Corporation: (i) the appropriate size and composition of the Board; and (ii) nominees: (1) for election to the Board for whom the Corporation should solicit proxies; (2) to serve as proxies in connection with the annual shareholders' meeting; and (3) for election to all committees of the Board other than the Nominating/Governance Committee. The Nominating/Governance Committee will consider nominations from the shareholders, provided that they are made in accordance with the Company's By-laws. When evaluating prospective Director candidates, the Nominating/Governance Committee conducts individual evaluations against the criteria stated in the committee's charter. All Director candidates, regardless of the source of their nomination, are evaluated using the same criteria. The current members of the Nominating/Governance Committee are Drs. Kent and Kasten and Mr. Gerson. Dr. Kent is the Chairman.

AUDIT COMMITTEE REPORT

In connection with the preparation and filing of the Company's Annual Report on Form 10-K for its fiscal year ended July 31, 2009:

- (1) The Audit Committee reviewed and discussed the audited financial statements and related footnotes with management and the independent registered public accounting firm. Management represented to the Audit Committee that the Company's financial statements were prepared in accordance with U.S. generally accepted accounting principles;
- (2) The Audit Committee discussed with the independent registered public accountants matters required to be discussed under Statement on Auditing Standards No. 61, as may be modified or supplemented;
- (3) The Audit Committee reviewed the written disclosures and the letter from the independent registered public accountants required by the applicable requirements of the Public Company Accounting Oversight Board, as may be modified or supplemented, regarding the independent registered public accounting firm's communication with the Audit Committee concerning independence and discussed with Ernst and Young their independence;
- (4) The Audit Committee discussed with the Company's independent registered public accountants the overall scope and plans for its audit. The Audit Committee met with the independent registered public accountants, with and without management present, to discuss the results of their examinations, their evaluations of the Company's internal controls, and the overall quality (and not merely the acceptability) of the Company's accounting principles and financial reporting, the reasonableness of significant estimates and judgments, and the disclosures in the Company's financial statements, including the disclosures relating to critical accounting policies. The Audit Committee held five formal meetings during the fiscal year ended July 31, 2009; and
- (5) Based on the review and discussions referred to above, the Audit Committee recommended to the Board that the audited financial statements be included in the Company's Annual Report on Form 10-K for the fiscal year ended July 31, 2009. We also selected Ernst and Young LLP as the independent registered public accounting firm for fiscal 2010. The Board is recommending that shareholders ratify that selection at the Annual Meeting.

Submitted by the members of the Audit Committee:

Melvin F. Lazar, CPA
Bernard L. Kasten, M.D.
Irwin C. Gerson

SECTION 16(A) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Section 16(a) of the Exchange Act requires the Company's executive officers, Directors and persons who beneficially own more than 10% of a registered class of the Company's equity securities (collectively, "Reporting Persons") to file with the Securities and Exchange Commission initial reports of ownership and reports of changes in ownership of common stock and other equity securities of the Company. Such executive officers, Directors and greater than 10% beneficial owners are required by Securities and Exchange Commission regulation to furnish the Company with copies of all Section 16(a) forms filed by such reporting persons.

Based solely on the Company's review of such forms furnished to the Company and written representations from certain Reporting Persons, the Company believes that the Reporting Persons have complied with all applicable filing requirements during the fiscal year ended July 31, 2009, except that Messrs. Shahram K. Rabbani and John B. Sias (a former Director) each filed one report one day late.

CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

Enzo Labs, a subsidiary of the Company, leases a facility located in Farmingdale, New York from Pari Management Corporation ("Pari"). Pari is owned equally by Elazar Rabbani, Ph.D., Shahram K. Rabbani and Barry Weiner and his wife, who are the officers and Directors of Pari. The lease originally commenced on December 20, 1989, but was amended and extended in March 2005 and now terminates on March 31, 2017. During fiscal year ended July 31, 2009, Enzo Labs paid approximately \$1,424,000 (including approximately \$150,000 in real estate taxes) to Pari with respect to such facility and future payments are subject to cost of living adjustments.

In accordance with the terms of Article 9 of the Company's Articles of Incorporation, the non-interested members of the Board reviewed the terms of this transaction and believe that the transaction is fair and reasonable to the Company, which has guaranteed Enzo Labs' obligations to Pari under the lease, and that the existing lease terms are as favorable to the Company as terms

that would be available from an unaffiliated party. Accordingly, the Board has approved this transaction.

COMPENSATION OF DIRECTORS

Effective January 1, 2008, each person who serves as a Director and who is not otherwise an officer or an employee (such Director being classified as an “Outside Director”) of the Company receives an annual Director’s fee of \$30,000. In addition, the Lead Independent Director receives an additional fee of \$25,000. Furthermore, each Outside Director who serves on a committee of the Board receives an annual fee of \$7,500. In addition to the annual Director fee, the Chairman of the Audit Committee receives an annual fee of \$20,000 and the Chairman of the Compensation Committee and the Chairman of the Nominating/Governance Committee each receives an additional annual fee of \$10,000. Each of the Outside Directors will also receive restricted stock units immediately following the Annual Meeting, provided such person is a Director of the Company at such time. The number of restricted stock units that the Outside Directors will receive grants equal to \$125,000 per year. Each of the restricted stock units referred to above shall be subject to a two-year vesting period; provided that at the time any non-employee Director ceases to be a Director of the Company (other than due to such Director’s resignation), such non-employee Director’s restricted stock units shall become fully vested at such time. The Company reimburses Directors for their travel and related expenses in connection with attending meetings of the Board and Board-related activities.

Director Compensation Table

The following table sets forth the information concerning compensation earned during our fiscal year ended July 31, 2009 by all Outside Directors:

Name	Fees Earned or Paid in Cash (\$)	Stock Awards (\$)(2)	Option Awards (\$)	Change in Pension Value and Non-Qualified Deferred Compensation Earnings (\$)	All Other Compensation (\$)	Total (\$)
Irwin C. Gerson <i>Director</i>	\$ 56,875	\$ 121,125	—	—	—	\$ 178,000
Bernard L. Kasten, M.D. <i>Director</i>	\$ 45,000	\$ 99,355	—	—	—	\$ 144,355
Stephen P. H. Kent, Ph.D. <i>Director</i>	\$ 72,500	\$ 121,245	—	—	—	\$ 193,745
Melvin F. Lazar, CPA <i>Director</i>	\$ 65,000	\$ 130,626	—	—	—	\$ 195,626
John B. Sias (1) <i>Director</i>	\$ 22,500	\$ 73,975	—	—	—	\$ 96,475

(1) Represents partial year as Director, term expired January 22, 2009.

(2) Each Outside Director, serving after the annual meeting in January 2009, was awarded 28,651 restricted stock units in fiscal 2009. The amounts reflect the dollar amount recognized for financial statement reporting purposes for the fiscal year ended July 31, 2009, in accordance with accounting standards for awards pursuant to the Company’s 2005 Plan for awards granted in and prior to fiscal 2009.

COMPENSATION OF EXECUTIVE OFFICERS

Compensation Discussion and Analysis

The Compensation Committee of our Board oversees our executive compensation program. In this role, the Compensation Committee reviews and approves all compensation decisions relating to our named executive officers. The Compensation Committee also reviews and approves all equity awards for all employees.

The Company strives to apply a uniform philosophy to compensation for all of its employees. This philosophy is based on the premise that the achievements of the Company result from the combined and coordinated efforts of all employees working toward common objectives.

Objectives and Philosophy of Our Executive Compensation Program

The primary objectives of the Compensation Committee with respect to executive compensation are to:

- align executive compensation with comparable companies in our industry sectors to attract, retain and motivate the best possible executive talent;
- ensure that executive compensation is aligned with our corporate business objectives and performance;
- promote the achievement of key strategic and financial performance objectives by linking cash and equity incentives; and
- align executives' incentives with the creation of long-term stockholder value.

To achieve these objectives, the Compensation Committee evaluates senior management with input from our CEO, with the goal of setting compensation at levels the Compensation Committee believes are competitive with those of other companies in our industry that compete with us for executive talent. The Compensation Committee also conducts an annual evaluation of the CEO in addition to senior management evaluations. As part of these evaluations, our Compensation Committee considers key strategic, financial and operational objectives, including but not limited to: award of new patents, intellectual property protection, advancement of strategic alliances, collaborations, M&A activity, licensing, clinical trial progress, new product introductions, provider contracts, investor relations, corporate governance, and our financial and operational performance, as measured by the respective value drivers in each of the operating segments.

We may also award long term incentive compensation in the form of restricted stock awards that vest over time. We believe this practice helps to retain our executives and aligns their interests with those of our stockholders by allowing them to participate in the longer term success of our Company as reflected in stock price appreciation.

In making compensation decisions, the Compensation Committee compares our executive compensation against a peer group of publicly traded companies which they believe have business life cycles, revenues, market capitalizations, products, research and development investment levels and/or number/capabilities of employees that are roughly comparable to ours and against which the Compensation Committee believes we compete for executive talent. In 2005, the Compensation Committee retained James F. Reda & Associates LLC, ("Consultant") an independent compensation consultant. The Company's senior management, with the assistance of the Consultant, compiled a list of peer companies. The Consultant then analyzed the executive compensation programs of these companies and issued a report to the Compensation Committee. In 2007 and 2008, the Consultant, with recommendations from senior management modified the peer company list to better reflect changes at the Company, with respect to operating segment significance, changes within the industries that the Company operates and changes among companies included in the peer group.

The companies included in the peer group, as updated, surveyed by the Consultants in 2008:

- Affymetrix, Inc.
- Alkermes, Inc.
- Amylin Pharmaceuticals
- Bio-Reference Laboratories, Inc.
- Cryolife, Inc.
- Gen Probe, Inc.,
- Genomic Health, Inc.
- Intermune, Inc.
- Incyte Corp.
- Isis Pharmaceuticals, Inc.
- Lexicon Pharmaceuticals, Inc.
- Myraid Genetics, Inc.
- PDL Bio Pharma, Inc.
- Progenics Pharmaceuticals
- The Medicines, Inc.
- United Therapeutics Corp.
- Vertex Pharmaceuticals

We compete with many other companies for executive personnel. The Compensation Committee generally targets total compensation for executives at the 50th percentile of total compensation paid to similarly situated executives of the companies in the peer group.

The Compensation Committee may adjust compensation levels, upon consideration of the relevant drivers relating to the life sciences, clinical diagnostics or therapeutics industries we operate in, with respect to an executive's individual experience and performance level, and the overall performance of the Company.

The Compensation Committee met three times in fiscal 2009 in order to review and approve our compensation for named executives and non-employee Directors, review candidates presented by senior management for key positions, approve equity awards for all employees and review with our Consultant the peer group information. The results of the Compensation Committee activities were reported to the Board.

Components of our Executive Compensation Program

The primary elements of our executive compensation program are:

- base salary;
- cash bonus;
- equity awards;
- benefits and other compensation; and
- severance and change-of-control benefits.

Base Salary

Base salary levels recognize the experience, skills, knowledge and responsibilities of each executive's position within the Company.

Exclusive of the base salaries that are contractual, base salaries are reviewed annually by the Compensation Committee, and may be adjusted from time to time to realign salaries with market levels and among our peer group after taking into account individual responsibilities, performance, and experience and for cost of living. Base salaries also may be increased for merit reasons, based on the executive's success in meeting or exceeding individual performance objectives, promoting our core values and demonstrating leadership abilities.

The base salaries of the three founders - Dr. Elazar Rabbani, our Chairman of the Board, Chief Executive Officer and Secretary; Mr. Barry Weiner, our President, Chief Financial Officer, Treasurer and Director; and Mr. Shahram K. Rabbani, Director and the former Secretary and Treasurer and President of Enzo Labs (the "Founders") - are set in accordance with the terms of executed employment agreements with each individual. Pursuant to the terms of their respective employment agreements, Dr. Rabbani and Mr. Weiner are currently compensated for the calendar year 2009 at a base annual salary of \$546,192 and \$484,472, respectively. Mr. Rabbani's base salary was \$484,472 for the calendar year 2009 prior to the termination of his employment effective March 9, 2009. Base salaries in calendar year 2009 increased by 5.3% for the aforementioned executives.

The base salaries for Dr. Carl W. Balezentis and Andrew R. Crescenzo were based on their initial one year employment agreements in fiscal 2006. Dr. Balezentis and Mr. Crescenzo are currently compensated for the calendar year 2009 at the base salary of \$245,000 and \$235,000, respectively. Their base salaries increased 4% in calendar year 2009, reflective of cost of living increases, merit and alignment with market levels.

The base salary for Kevin Krenitsky, M.D., appointed President of Enzo Labs on March 2, 2009 was \$240,000 as set forth in his initial one year employment agreement.

Annual Cash Bonus

The Compensation Committee approves discretionary cash bonuses for certain employees, including our named executive officers.

The Compensation Committee awarded Dr. Rabbani a \$465,000 cash bonus in calendar 2009. Commencing in calendar 2009, the bonus includes the cost of life insurance previously provided by the Company in accordance with Dr. Rabbani's employment agreement. The Compensation Committee recognized Dr. Rabbani's broad contributions in the areas of his role as Chairman of the Board, oversight of and increases to our technology platform and scientific product development, recruitment of new members of the executive and scientific management and strategy for business development, including negotiating licensing and collaboration arrangements and M&A activities. During the period for which the aforementioned bonus was awarded, the Company, in addition to other actions, successfully completed the acquisition of Biomol International L.P. and subsidiary ("Biomol") in May 2008 increased its revenues and product offerings and expanded its capabilities.

The Compensation Committee awarded Mr. Weiner a \$340,000 cash bonus in calendar 2009. Commencing in calendar 2009, the bonus includes the cost of life insurance previously provided by the Company in accordance with Mr. Weiner's employment agreement. The Compensation Committee recognized Mr. Weiner's contributions in, strategic planning, financial management, including our Company's financial position and liquidity, M&A activity, corporate governance, communication efforts with our stockholders, investors and outside analysts, oversight of the finance group and the Company's compliance with the requirements of Section 404 of the Sarbanes Oxley Act of 2002, as well as his role in recruitment of new management personnel and divisional

management and his leadership role among the divisional executives. During the period for which the bonus was awarded, Mr. Weiner, in addition to other contributions, assisted with the acquisition of Biomol and the integration of our recent acquisitions from a financial and Section 404 standpoint.

The discretionary cash bonuses for Dr. Balezentis and Mr. Crescenzo were \$70,000 and \$55,000, respectively, as recommended by our CEO to the Compensation Committee, based on various objectives, specific to their positions, as further explained below.

The Compensation Committee reviewed the recommendation from our CEO with respect to Dr. Balezentis's performance in meeting objectives set forth to grow Enzo Life Sciences globally through organic and acquisition growth, strategic alliances or through licensing, develop the management team to meet the requirements of the subsidiary and his role in leadership among the division's management. During the period for which the aforementioned bonus was awarded, Dr. Balezentis was responsible for, among other matters, negotiating the acquisition of Biomol, the integration of Biomol and Axxora, Inc. (acquired in May 2007) and the management of the introduction of new products offerings.

The Compensation Committee reviewed the recommendation from our CEO with respect to Mr. Crescenzo's performance in meeting objectives set forth to enhance financial reporting to the Board and the Audit Committee, managing the financial and due diligence aspects of M&A transactions, implementing and monitoring internal controls and Section 404 requirements and his role in leadership among our finance group. During the period for which the aforementioned bonus was awarded, Mr. Crescenzo, among other matters, assisted with the negotiating and execution of the Biomol acquisition, the integration of finance teams acquired, the implementation of Section 404 for acquired companies and the global legal restructuring of a subsidiary's divisions.

Restricted Stock Awards

At its sole discretion, the Compensation Committee awards restricted stock as the primary vehicle for long-term incentives to our executives, including our named executive officers. Since August 1, 2005, we have not issued any stock options to any employees, including the named executives.

We believe that equity awards provide our executives with a strong link to our long-term performance, create an ownership culture, and help to align the interests of our named executive officers and our stockholders. Equity awards are intended as both a reward for contributing to the long-term success of our Company and an incentive for future performance.

Restricted stock awards vest ratably over a 2 to 4 year period with 50% to 25% of the award vesting 12 months after the named executive officer's start date or the annual anniversary of the award grant and the remainder of the awards vesting annually over the remaining period. The vesting feature of our equity grants is intended to further our goal of executive retention by providing an incentive to our named executive officers to remain in our employ during the vesting period.

In determining the size of equity awards to our executives, our Compensation Committee considers comparable equity awards of executives in our compensation peer group, our Company-level performance, the applicable executive's performance, the amount of equity previously awarded to the executive, the vesting schedule of such previous awards and the recommendations of management and its independent Consultant to the Compensation Committee.

Equity awards of restricted stock are discretionary, and may be granted annually in conjunction with the review of an executive's individual performance. The Compensation Committee reviews all components of the executive's compensation, including the allocation between cash and equity, when determining annual equity awards to ensure that an executive's total compensation conforms to our overall philosophy and objectives.

In January 2009, Dr. Balezentis and Mr. Crescenzo were awarded 10,000 and 9,000 shares of restricted stock, respectively, as a component of their total compensation package.

In March 2009, Dr. Rabbani and Mr. Weiner were awarded 57,326 and 45,861 shares of restricted stock, respectively, as a component of their total compensation package.

The Compensation Committee has a policy not to approve annual equity awards to any employees, including named executive officers, at a time when our Company is in possession of material non-public information. We do not engage in timing of restricted stock awards to named executive officers in coordination with the release of material non-public information.

Summary Compensation Table

The following table sets forth summary information concerning compensation awarded to, paid to or earned by each of the following persons: (i) our Chairman of the Board, Chief Executive Officer and Secretary, (ii) our President, Chief Financial Officer, Principal Accounting Officer and Treasurer, (iii) each of our three most highly compensated executive officers, other than the foregoing two individuals, and (iv) one additional executive officer who commenced employment with the Company in 2009 (the "Named Executive Officers"), for all services rendered to the Company during each of the fiscal years ended July 31, 2009, 2008 and 2007.

Name and Principal Position	Year	Salary (\$)	Bonus (1)(\$)	Stock Awards (2) (\$)	Option Awards (\$)	Non-Equity Incentive Plan Compensation (\$)	Change in Pension Value and Nonqualified Deferred Compensation Earnings (\$)	All Other Compensation (3) (\$)	Total (\$)
Elazar Rabbani, Ph.D. (4) <i>Chairman of the Board, Chief Executive Officer and Secretary</i>	2009	\$ 534,582	\$ 465,000	\$ 72,000	—	—	—	\$ 115,123	\$ 1,186,705
	2008	\$ 510,817	\$ 375,000	\$ 76,950	—	—	—	\$ 115,856	\$ 1,078,623
	2007	\$ 485,006	\$ 350,000	\$ 65,669	—	—	—	\$ 103,938	\$ 1,004,613
Barry W. Weiner (4) <i>President, Chief Financial Officer, Principal Accounting Officer, Treasurer and Director</i>	2009	\$ 474,174	\$ 340,000	\$ 53,100	—	—	—	\$ 113,446	\$ 980,720
	2008	\$ 453,094	\$ 250,000	\$ 51,300	—	—	—	\$ 107,481	\$ 861,875
	2007	\$ 434,932	\$ 225,000	\$ 43,779	—	—	—	\$ 95,317	\$ 799,028
Carl W. Balezantis, Ph.D. <i>President, Enzo Life Sciences</i>	2009	\$ 240,769	\$ 70,000	\$ 19,263	—	—	—	\$ 18,700	\$ 348,732
	2008	\$ 226,537	\$ 65,000	\$ 11,914	—	—	—	\$ 13,790	\$ 317,241
	2007	\$ 215,000	\$ 40,000	\$ 19,088	—	—	—	\$ 20,134	\$ 294,222
Kevin Krenitsky, M.D. (5) <i>President, Enzo Labs</i>	2009	\$ 92,308	—	—	—	—	—	\$ 2,900	\$ 95,208
Andrew R. Crescenzo <i>Senior Vice President of Finance</i>	2009	\$ 230,769	\$ 55,000	\$ 18,660	—	—	—	\$ 18,700	\$ 323,129
	2008	\$ 216,538	\$ 50,000	\$ 19,040	—	—	—	\$ 14,125	\$ 299,703
	2007	\$ 205,000	\$ 35,000	\$ 31,160	—	—	—	—	\$ 271,160
Shahram K. Rabbani (4)(6) <i>Director, former Secretary and Treasurer of the Company, and former President of Enzo Labs</i>	2009	\$ 295,291	—	\$ 38,670	—	—	—	\$ 55,975	\$ 389,936
	2008	\$ 453,094	\$ 225,000	\$ 35,910	—	—	—	\$ 72,440	\$ 786,444
	2007	\$ 436,334	\$ 200,000	\$ 30,645	—	—	—	\$ 69,590	\$ 736,569

- (1) Represents the discretionary cash bonus awards paid or accrued in the respective fiscal year - see Compensation Discussion & Analysis.
- (2) Represents value of vested restricted stock awards.
- (3) See the All Other Compensation Table for additional information.
- (4) Effective November 25, 2009, the Board removed Shahram K. Rabbani as Secretary and Treasurer of the Company and appointed Dr. Elazar Rabbani as Secretary and Barry W. Weiner as Treasurer.
- (5) Employment commenced on March 2, 2009.
- (6) On March 9, 2009, Shahram K. Rabbani was terminated as President of Enzo Labs, a subsidiary of the Company.

Grants of Equity Awards in Fiscal 2009

During the fiscal year ended July 31, 2009, the Compensation Committee approved the following equity awards to the Named Executive Officers:

Name	Grant Date	Estimated Future Payouts Under Non-Equity Incentive Plan Awards			Estimated Future Payouts Under Equity Incentive Plan Awards			All Other stock Awards:	All Other Option Awards:	Exercise or Base Price of Option Awards (\$/Sh)	Grant Date Fair Value of Stock and Option Awards
		Threshold (\$)	Target (\$)	Maximum (\$)	Threshold (#)	Target (#)	Maximum (#)	Number of Shares or Units (#)	Number of Securities Underlying Options (#)		
Dr. Elazar Rabbani, Ph.D	3/4/2009	—	—	—	—	—	—	57,326	—	—	\$ 189,750
Barry W. Weiner	3/4/2009	—	—	—	—	—	—	45,861	—	—	\$ 151,800
Carl W. Balezentis, Ph.D	1/22/2009	—	—	—	—	—	—	10,000	—	—	\$ 44,100
Kevin Krenitsky, M.D. (1)	3/2/2009	—	—	—	—	—	—	5,000	—	—	\$ 17,100
Andrew R. Crescenzo, CPA	1/22/2009	—	—	—	—	—	—	9,000	—	—	\$ 39,690

(1) Granted in connection with employment agreement.

Outstanding Equity Awards at Fiscal Year End – July 31, 2009

The following table sets forth summary information regarding the outstanding equity awards made to the Named Executive Officers at July 31, 2009.

Name	Number of Securities Underlying Unexercised Options (#) Exercisable (1)	Number of Securities Underlying Unexercised Options (#) Unexercisable	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#)		Option Exercise Price (\$)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)	Market Value of Shares or Units of Stock That Have Not Vested (\$)	Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#)		Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested (\$)
Dr. Elazar Rabbani, Ph.D. (2)	86,822	—	—	\$ 12.05	3/22/2011	64,826	\$ 330,613	—	—	—	
	110,250	—	—	\$ 12.24	1/25/2013	—	—	—	—	—	
	78,750	—	—	\$ 17.45	3/8/2014	—	—	—	—	—	
	50,000	—	—	\$ 17.66	1/21/2015	—	—	—	—	—	
Barry W. Weiner (3)	86,822	—	—	\$ 12.05	3/22/2011	51,861	\$ 264,491	—	—	—	
	110,250	—	—	\$ 12.24	1/25/2013	—	—	—	—	—	
	78,750	—	—	\$ 17.45	3/8/2014	—	—	—	—	—	
	50,000	—	—	\$ 17.66	1/21/2015	—	—	—	—	—	
Carl W. Balezentis, Ph.D. (4)	—	—	—	—	—	16,250	\$ 82,875	—	—	—	
Kevin Krenitsky, M.D. (5)	—	—	—	—	—	5,000	\$ 25,500	—	—	—	
Andrew R. Crescenzo, CPA (6)	—	—	—	—	—	13,000	\$ 66,301	—	—	—	

(1) Options fully vested as of July 31, 2009.

(2) 36,163 and 28,613 restricted stock units vest on January 22, 2010 and 2011, respectively.

(3) 28,931 and 22,931 restricted stock units vest on January 22, 2010 and 2011, respectively.

(4) 3,333 restricted shares vest on January 22, 2010, 2011 and 2012 and 2,500 restricted shares vest on December 7, 2010.

(5) 1,250 restricted shares vest on March 2, 2010, 2011, 2012 and 2013.

(6) 3,000 restricted shares vest on January 22, 2010, 2011 and 2012 and 2000 restricted shares vest on December 7, 2010.

Options Exercised and Stock Vested

The following table sets forth the options exercised by and stock vested for the Named Executive Officers during the fiscal year ended July 31, 2009.

Name	Option Awards		Stock Awards	
	Number of Shares Acquired On Exercise (#)	Value Realized On Exercise (\$)(1)	Number Of Shares Acquired On Vesting (#)	Value Realized On Vesting (\$)
Dr. Elazar Rabbani, Ph.D.	60,755	\$ 352,987	15,000	\$ 72,000
Barry W. Weiner	60,755	\$ 352,987	11,000	\$ 53,100
Dr. Carl W. Balezentis, Ph.D.	—	—	3,750	\$ 19,203
Kevin Krenitsky, M.D. (2)	—	—	—	—
Andrew R. Crescenzo, CPA	—	—	4,000	\$ 18,660
Shahram K. Rabbani (3)	60,755	\$ 352,987	8,000	\$ 38,670

(1) Represents the difference between the closing stock price and the exercise price multiplied by the number of shares exercised.

(2) Employment commenced March 2, 2009.

(3) On March 9, 2009, Shahram K. Rabbani was terminated as President of Enzo Labs, a subsidiary of the Company. Effective November 25, 2009, the Board removed Shahram K. Rabbani as Secretary and Treasurer of the Company.

Employment Agreements

Each of Mr. Barry Weiner and Dr. Elazar Rabbani (the “Executives”) are parties to employment agreements with the Company, effective May 4, 1994, as amended as of July 13, 2000 (the “Employment Agreements”). Each Executive also receives an annual bonus, the amount of which shall be determined by the Board in its discretion. Each Employment Agreement provides that, in the event of termination of employment by the Executive for “good reason,” or a termination of employment by the Company without “cause,” change in control or non renewal, as such terms are defined in the Employment Agreement, each Executive shall be entitled to receive: (a) a lump sum in an amount equal to three years of the Executive’s base annual salary; (b) a lump sum in an amount equal to the annual bonus paid by the Company to the Executive for the last fiscal year of the Company ending prior to the date of termination multiplied by three; (c) insurance coverage for the Executive and his dependents, at the same level and at the same charges to the Executive as immediately prior to his termination, for a period of three (3) years following his termination from the Company; (d) all accrued obligations, as defined therein; and (e) with respect to each incentive pay plan (other than stock option or other equity plans) of the Company in which the Executive participated at the time of termination, an amount equal to the amount the Executive would have earned if he had continued employment for three additional years. If the Executive is terminated by reason of his disability, he shall be entitled to receive, for three years after such termination, his base annual salary less any amounts received under a long term disability plan. If the Executive’s employment with the Company is terminated by reason of his death, his legal representatives shall receive the balance of any remuneration due him under the terms of his Employment Agreement. The Employment Agreements currently expire on May 4, 2010, but will automatically renew for successive two year periods unless notice is given to the Company within 180 days of the end of such successive term.

Mr. Shahram K. Rabbani was also party to an employment agreement with the Company, effective May 4, 1994, as amended July 13, 2000, which was terminated on March 9, 2009 in connection with the termination of Mr. Rabbani’s employment with Enzo Labs (the “Terminated Employment Agreement”). The Terminated Employment Agreement contained provisions identical to those described immediately above.

On April 16, 2006 and May 1, 2006, Mr. Crescenzo and Dr. Balezentis, respectively, entered into one year employment agreements in connection with their initial employment. These agreements have since expired and were not renewed by the Company, but the executives have continued their employment with the Company “at will.” Currently, both Mr. Crescenzo and Dr. Balezentis are parties to certain severance arrangements and change in control provisions with the Company which are deemed customary practice for their respective positions, as more fully discussed below.

On March 2, 2009, Dr. Krenitsky entered into an employment agreement with the Company. The agreement has an initial term of one year and provides for a severance arrangement of three months, if terminated without cause, and a change in control provision with the Company which is deemed customary practice for his position, as more fully discussed below. The severance arrangement and the change in control provisions survive the one year term.

Benefits and All Other Compensation

We maintain broad-based benefits that are provided to all employees, including health and dental insurance, group life insurance and a 401(K) plan. Named executive officers are eligible to participate in our employee benefit plans. The annual Company match for our named executive officers is up to 10,250 or limited to 50% of the maximum contribution by the named executive.

Certain of our named executive officers may be entitled to benefits that are not otherwise available to all of our employees, including life insurance and disability benefits. We do not provide pension arrangements, post-retirement health coverage to our named executive officers or our employees. Our health and insurance plans are substantially the same among all management levels and sales personnel at the Company. On July 31, 2008, the Company terminated the Split Dollar life insurance arrangements with the three founders and their related trusts. In connection with the terminations of the Split Dollar life insurance arrangements, the executives will be provided the annual benefit attributed to the life insurance in their future total compensation arrangement.

In particular circumstances, we may provide relocation allowances when executives first join us. The purpose of this program is to attract talented executives outside our geographic area. Certain named executives are provided use of a Company owned vehicle for business and personal use or provided a car allowance.

All Other Compensation in Fiscal 2009, 2008 and 2007

The following table contains information regarding each component of "All Other Compensation" in the Summary Compensation Table to the Named Executive Officers for the fiscal years ended July 31, 2009, 2008 and 2007.

Name	Year	401(K) (\$)(1)	Life Insurance (\$)(2)	Medical and Disability Insurance (\$)(3)	Personal Use of Auto (\$)(4)	Relocation (\$)(5)	Total All Other Compensation (\$)
Dr. Elazar Rabbani, Ph.D.	2009	\$ 10,250	\$ 41,705	\$ 54,368	\$ 8,800	—	\$ 115,123
	2008	\$ 10,250	\$ 47,806	\$ 44,000	\$ 13,800	—	\$ 115,856
	2007	\$ 10,000	\$ 47,030	\$ 33,200	\$ 13,708	—	\$ 103,938
Barry W. Weiner	2009	\$ 10,250	\$ 35,178	\$ 53,668	\$ 14,350	—	\$ 113,446
	2008	\$ 10,250	\$ 39,131	\$ 43,300	\$ 14,800	—	\$ 107,481
	2007	\$ 10,000	\$ 38,017	\$ 32,500	\$ 14,800	—	\$ 95,317
Carl W. Balezentis, Ph.D.	2009	\$ 10,250	—	—	\$ 8,450	—	\$ 18,700
	2008	\$ 9,890	—	—	\$ 3,900	—	\$ 13,790
	2007	—	—	—	—	\$ 20,134	\$ 20,134
Kevin Krenitsky, M.D. (6)	2009	—	—	—	—	\$ 2,900	\$ 2,900
Andrew R. Crescenzo, CPA	2009	\$ 10,250	—	—	\$ 8,450	—	\$ 18,700
	2008	\$ 10,225	—	—	\$ 3,900	—	\$ 14,125
	2007	—	—	—	—	—	—
Shahram K. Rabbani (7)	2009	\$ 10,250	\$ 7,000	\$ 19,392	\$ 19,333	—	\$ 55,975
	2008	\$ 10,250	\$ 14,100	\$ 42,000	\$ 6,090	—	\$ 72,440
	2007	\$ 10,000	\$ 14,100	\$ 31,200	\$ 14,290	—	\$ 69,590

(1) Represents our Company match under our 401(K) plan.

(2) Represents premiums of term policies of which the Named Executive or other party is the beneficiary.

(3) Represents incremental medical and disability benefit costs, 2008 and 2007 amounts adjusted to reflect incremental medical benefits.

(4) Represents the personal use of company provided auto or provided car allowance.

(5) Represents relocation costs paid in connection with employment agreements.

(6) Employment commenced on March 2, 2009.

(7) On March 9, 2009, Shahram K. Rabbani was terminated as President of Enzo Labs, a subsidiary of the Company. Effective November 25, 2009, the Board removed Shahram K. Rabbani as Secretary and Treasurer of the Company.

Severance and Change-of-Control Benefits

Pursuant to Employment Agreements entered into with Drs. Rabbani, Balezentis and Krenitsky and Messrs. Weiner and Crescenzo, these executives are entitled to specified benefits in the event of the termination of their employment under specified circumstances, including termination following a change of ownership or control of our Company. We have provided more information about these benefits, along with estimates of their value under various circumstances within the below table.

Based on market trends, we believe these benefits help us compete for executive talent. We believe our severance and change of control benefits are in line with severance packages offered to executives by the companies identified in our peer group.

Our practice in the case of change of control benefits has been structured to trigger only in the event of a termination of the executive without cause or by the executive for good reason during a specified period before or after the change of control. A change of control in of itself would not trigger most severance benefits.

Potential Payments Upon Termination or Change of Control

The following table contains information regarding each component of Potential Payments Upon Termination or Change in Control Compensation Table to the Named Executive Officers as of July 31, 2009.

Name and Principal Position	Acceleration of Vesting	Severance Pay (1)	Continuation of Benefits	Tax Gross-Up	Total
Dr. Elazar Rabbani, Ph.D.					
Termination without cause or by Executive for Good Reason	\$ 315,313	\$ 2,763,575	\$ 589,830	—	\$ 3,668,718
Change in control transaction without termination	—	—	—	—	—
Change in control transaction with termination	\$ 315,313	\$ 2,763,575	\$ 589,830	\$ 1,503,451	\$ 5,172,169
Barry W. Weiner					
Termination without cause or by Executive for Good Reason	\$ 264,491	\$ 2,203,417	\$ 574,830	—	\$ 3,042,738
Change in control transaction without termination	—	—	—	—	—
Change in control transaction with termination	\$ 264,491	\$ 2,203,417	\$ 574,830	\$ 1,221,649	\$ 4,264,387
Carl W. Balezentis, Ph.D.					
Termination without cause or by Executive for Good Reason	—	\$ 122,500	—	—	\$ 122,500
Change in control transaction without termination	—	—	—	—	—
Change in control transaction with termination	\$ 82,875	\$ 122,500	—	—	\$ 205,375
Kevin Krenitsky, M.D.					
Termination without cause or by Executive for Good Reason	—	\$ 60,000	—	—	\$ 60,000
Change in control transaction without termination	—	—	—	—	—
Change in control transaction with termination	\$ 25,500	\$ 60,000	—	—	\$ 85,500
Andrew R. Crescenzo, CPA					
Termination without cause or by Executive for Good Reason	—	\$ 78,333	\$ —	—	\$ 78,333
Change in control transaction without termination	—	—	—	—	—
Change in control transaction with termination	\$ 66,300	\$ 78,333	\$ —	—	\$ 144,633

(1) The amounts listed in this column do not include accrued amounts such as accrued salary or vacation.

Tax and Accounting Considerations

The federal tax laws impose requirements in order for compensation payable to the CEO and certain executive officers to be fully deductible. The Company believes it has taken appropriate actions to maximize its income tax deduction. IRC Section 162(m) generally precludes a public corporation from taking a deduction for compensation in excess of \$1,000,000 for its CEO or any of its three other highest-paid executive officers (other than the CEO or Chief Financial Officer), unless certain specific and detailed criteria are satisfied.

Annually, the Company reviews all compensation programs and payments to determine the tax impact on the Company as well as on the executive officers. In addition, the Company reviews the impact of its programs against other considerations, such as accounting impact, stockholder alignment, market competitiveness, effectiveness and perceived value to employees. Because many different factors influence a well-rounded, comprehensive executive compensation program, some compensation may not be deductible under IRC Section 162(m). The Company will continue to monitor developments and assess alternatives for preserving the deductibility of compensation payments and benefits to the extent reasonably practicable, consistent with its compensation policies and as determined to be in the best interests of the Company and its stockholders.

Insurance for Indemnification of Directors and Officers

The Company has in effect with American International Group and XL Specialty Insurance Company, under a policy effective February 21, 2009 and expiring on February 22, 2010, insurance covering all of its Directors and officers and certain other employees of the Company against certain liabilities and reimbursing the Company for obligations which it incurs as a result of its indemnification of such Directors, officers and employees. Such insurance has been obtained in accordance with the provisions of Section 726 of the Business Corporation Law of the State of New York. The annual premium is \$240,000.

C OMPENSATION COMMITTEE REPORT

The Compensation Committee has reviewed and discussed the Compensation Discussion and Analysis in this proxy report with management. Based on its review and discussion with management, the Compensation Committee recommended to our Board that the Compensation Discussion and Analysis be included in the Company's Annual Report on Form 10-K for the fiscal year ended July 31, 2009, as amended, and in this Proxy Statement.

Submitted by members of the Compensation Committee:

Irwin W. Gerson, Chairman
Dr. Bernard L. Kasten
Melvin F. Lazar, CPA

C OMPENSATION COMMITTEE INTERLOCKS AND INSIDER PARTICIPATION

The current members of the Compensation Committee are Messrs. Gerson, and Lazar and Dr. Kasten. No member of the Compensation Committee has a relationship that would constitute an interlocking relationship with the Company's executive officers or other Directors.

P ROPOSAL 2
RATIFICATION OF APPOINTMENT OF INDEPENDENT AUDITORS

The Board has appointed Ernst & Young LLP, as its independent auditors, to audit the accounts of the Company for the fiscal year ending July 31, 2010. The Board approved the reappointment of Ernst & Young LLP (which has been engaged as the Company's independent registered public accounting firm since 1983). Ernst & Young LLP has advised the Company that neither the firm nor any of its members or associates has any direct financial interest in the Company or any of its affiliates other than as auditors. Although the selection and appointment of independent auditors is not required to be submitted to a vote of shareholders, the Board deems it desirable to obtain the shareholders' ratification and approval of this appointment.

The following table sets forth the aggregate fees billed by Ernst & Young LLP for the years ended July 31, 2009 and 2008 for audit and non-audit services and are categorized as Audit Fees, Audit-Related Fees, Tax Fees and All Other Fees, which have all been pre-approved by the Audit Committee. The nature of the services provided in each such category is described following the table.

	2009	2008
Audit Fees	\$ 1,272,000	\$ 919,000
Audit-Related Fees	88,000	120,000
Tax Fees	104,000	10,000
All Other Fees	0	0
Total Fees	\$ 1,464,000	\$ 1,049,000

Audit Fees – Consists of fees for professional services necessary to perform an audit or review in accordance with the Public Company Accounting Oversight Board, including services rendered for the audit of our annual financial statements (including services incurred with rendering an opinion under Section 404 of the Sarbanes-Oxley Act of 2002) and quarterly reviews of the Company's interim financial statements. Audit fees also include fees for services performed by Ernst & Young LLP that are closely related to the audit and in many cases could only be provided by the Company's independent registered public accountants. Such services include the issuance of consents related to the Company's registration statements and capital raising activities, assistance with and review of other documents filed with the Commission and accounting advice on completed transactions.

Audit-Related Fees – Audit-related fees in fiscal 2009 and 2008 related to Merger & Acquisition due diligence performed in connection with acquisitions in both fiscal years.

Tax Fees – During fiscal 2009 and 2008, Ernst & Young LLP performed certain tax compliance services.

All Other Fees – There were no professional services rendered by Ernst & Young LLP that would be classified as other fees during the years ended July 31, 2009 and 2008.

Pre-Approval Policies and Procedures – The Audit Committee has adopted a policy that requires advance approval of all audit, audit-related, tax services, and other services performed by the independent auditor. The policy provides for pre-approval by the Audit Committee of specifically defined audit and non-audit services. Unless the specific service has been previously pre-approved with respect to that year, the Audit Committee must approve the permitted service before the independent auditor is engaged to perform it. The Audit Committee has delegated to the Chair of the Audit Committee authority to approve permitted services provided that the Chair reports any decisions to the Audit Committee at its next scheduled meeting.

In making its recommendations to ratify the Company's appointment of Ernst & Young LLP to serve as the Company's independent auditors for the fiscal year ending July 31, 2010, the Audit Committee has considered whether the services provided by Ernst & Young LLP are compatible with maintaining the independence of Ernst & Young LLP.

Representatives of Ernst & Young LLP are expected to be present at the Annual Meeting with the opportunity to make a statement if they desire to do so and are expected to be available to respond to appropriate questions.

THE BOARD OF DIRECTORS OF THE COMPANY RECOMMENDS A VOTE "FOR" PROPOSAL 2 RELATING TO THE RATIFICATION OF THE COMPANY'S APPOINTMENT OF ERNST & YOUNG LLP TO SERVE AS THE COMPANY'S INDEPENDENT AUDITORS FOR THE FISCAL YEAR ENDING JULY 31, 2010. PROXIES SOLICITED BY THE BOARD OF DIRECTORS WILL BE SO VOTED UNLESS SHAREHOLDERS SPECIFY IN THEIR PROXIES A CONTRARY CHOICE.

OTHER MATTERS

Except as discussed in this Proxy Statement, the Board does not know of any matters that are to be properly presented at the Annual Meeting other than those stated in the Notice of 2009 Annual Meeting of Shareholders and referred to in this Proxy Statement. If other matters properly come before the Annual Meeting, it is the intention of the persons named in the enclosed proxy card to vote thereon in accordance with their best judgment. Moreover, the Board reserves the right to adjourn or postpone the Annual Meeting for failure to obtain a quorum, for legitimate scheduling purposes or based on other circumstances that, in the Board's belief, would cause such adjournments or postponements to be in the best interests of all Enzo shareholders.

METHOD AND COST OF SOLICITATION OF PROXIES

The Company will bear the cost of preparing, assembling and mailing the Proxy Statement, the enclosed proxy card and other material which may be sent to the shareholders in connection with this solicitation. In addition to the solicitation of proxies by use of the mails, officers and regular employees may solicit the return of proxies. The Company may reimburse persons holding stock in their names or in the names of other nominees for their expense in sending proxies and proxy material to principals. In addition, The Altman Group, Inc. has been engaged to solicit proxies on behalf of the Company for a fee, excluding expenses, of approximately \$10,000. Proxies may be solicited by mail, personal interview, telephone and telegraph.

ANNUAL REPORT

The Company's 2009 Annual Report to Shareholders, which includes the Company's Annual Report on Form 10-K for its fiscal year ended July 31, 2009, as amended, is being mailed to shareholders together with this Proxy Statement.

The Company will provide, without charge to each person being solicited by this Proxy Statement, upon request, a copy of its 2009 Annual Report to Shareholders, which includes the Company's Annual Report on Form 10-K for its fiscal year ended July 31, 2009. Upon payment of a reasonable fee, shareholders may also obtain a copy of the exhibits to our Annual Report on Form 10-K for our fiscal year ended July 31, 2009, as amended. All such requests should be directed to Barry W. Weiner, President, Enzo Biochem, Inc., 527 Madison Avenue, New York, New York 10022.

ENZO WEBSITE

In addition to the information about the Company and its subsidiaries contained in this Proxy Statement, additional information about the Company can be found on our website located at www.enzo.com, including information about our management team, products and services and our corporate governance practices.

The corporate governance information on our website includes the Company's Corporate Governance Guidelines, the Code of Conduct and the charters of each of the committees of the Board. These documents can be accessed at www.enzo.com. Printed versions of our Corporate Governance Guidelines, our Code of Conduct and the charters for our Board committees can be obtained, free of charge, by writing to the Company at: 527 Madison Avenue, New York, New York 10022, Attn: Barry W. Weiner, President.

This information about Enzo's website and its content, together with other references to the website made in this Proxy Statement, is for information only and the content of the Company's website is not deemed to be incorporated by reference in this Proxy Statement or otherwise filed with the Securities and Exchange Commission.

SHAREHOLDER PROPOSALS

Shareholder Proposals

Proposals of shareholders intended to be included in the Company's Proxy Statement and form of proxy for use in connection with the Company's 2010 Annual Shareholder Meeting must be received by the Company's Secretary at the Company's principal executive offices at 527 Madison Avenue, New York, New York 10022, no later than August 25, 2010 (120 calendar days preceding the one-year anniversary of the date this Proxy Statement was first mailed to our shareholders for the 2009 Annual Shareholder Meeting), and must otherwise satisfy the procedures prescribed by Rule 14a-8 under the Exchange Act. It is suggested that any such proposals be submitted by certified mail, return receipt requested.

Pursuant to Rule 14a-4 under the Exchange Act, shareholder proxies obtained by our Board in connection with our 2010 Annual Shareholder Meeting will confer on the proxies and attorneys-in-fact named therein discretionary authority to vote on any matters presented at the annual meeting which were not included in the Company's Proxy Statement in connection with such annual meeting, unless notice of the matter to be presented at the annual meeting is provided to the Company's Secretary before November 8, 2010 (the 45th day preceding the one-year anniversary of the date this Proxy Statement was first mailed to our shareholders for the 2009 Annual Shareholder Meeting).

Director Nominations

Under our Bylaws, shareholders intending to nominate one or more candidates for election to our Board at our 2010 Annual Shareholder Meeting may do so only if written notice of the intent to make such nomination(s) has been given, either by personal delivery or by United States mail, postage prepaid, to the Secretary of the Company, at the Company's principal executive offices at 527 Madison Avenue, New York, New York 10022, not later than 60 days in advance of the date of such annual meeting. We have not yet set the date for our 2010 Annual Shareholder Meeting. For illustration purposes only, however, if our 2010 Annual Shareholder Meeting were to be held on January 19, 2011, to be timely, such notice of an intent to make such nomination(s) would have to be received by the Company's Secretary in the manner set forth above not later than November 20, 2010 (60 days in advance of the date of such meeting). Such notice must contain all of the information required by our Bylaws, including, without limitation, all information that would be required in connection with such nomination(s) under the Securities and Exchange Commission's proxy rules if such nomination were the subject of a proxy solicitation and the written consent of each nominee for election to our Board named therein to serve if elected. The chairman of the meeting may refuse to acknowledge the nomination of any person not made in compliance with our Bylaws.

TO DELIVER YOUR PROXY BY MAIL, PLEASE DETACH PROXY CARD HERE

Please mark votes as in this example.



- | | | | |
|---|--|---|---|
| <p>Item 1. Election of Class I Directors. THE BOARD OF DIRECTORS RECOMMENDS A VOTE "FOR" THE ELECTION OF EACH OF THE NOMINEES LISTED BELOW.</p> <p>IRWIN C. GERSON
GREGORY M. BORTZ
DR. STEPHEN B.H. KENT</p> | <p>FOR all nominees listed below (except as marked to the contrary below)</p> <p><input type="checkbox"/></p> | <p>WITHHOLD AUTHORITY to vote for all nominees as listed below</p> <p><input type="checkbox"/></p> | <p>Item 2. To ratify the appointment of Ernst & Young LLP as the Company's independent auditors for the Company's fiscal year ending July 31, 2010.</p> <p style="text-align: center;">FOR AGAINST ABSTAIN</p> <p style="text-align: center;"><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> |
|---|--|---|---|

IN THEIR DISCRETION, THE PROXIES ARE AUTHORIZED TO VOTE UPON SUCH OTHER MATTERS AS MAY PROPERLY COME BEFORE THE MEETING

(INSTRUCTION: To withhold authority to vote for any individual nominee, write the nominee's name in the space provided below.)

Change of address and/or comments Mark here.

Date: _____, 2010

Signature(s)

Signature(s)

Sign exactly as your name appears hereon. (If shares are held by joint tenants, both should sign. If signing as Attorney, Executor, Administrator, Trustee or Guardian, please give your title as such. If the signer is a corporation, please sign in the full corporate name by duly authorized officer.) Votes must be indicated [X] in black or blue ink.



(Please complete, date and sign this proxy card and return it promptly in the enclosed postage prepaid envelope.)



PLEASE DETACH PROXY CARD HERE

FORM OF PROXY

ENZO BIOCHEM, INC.

**527 MADISON AVENUE
NEW YORK, NEW YORK 10022**

THIS PROXY IS SOLICITED ON BEHALF OF THE BOARD OF DIRECTORS

The undersigned hereby appoints Barry Weiner and Elazar Rabbani as Proxies, each with the power to appoint his substitute, and hereby authorizes them to represent and to vote, as designated on the reverse side, all the shares of the Common Stock of Enzo Biochem, Inc. held of record by the undersigned on December 29, 2009, at the Annual Meeting of Shareholders to be held on January 29, 2010 or at any adjournments or postponements thereof.

The shares represented by this proxy, when properly executed and returned, will be voted as directed herein. IF THIS PROXY IS DULY EXECUTED AND RETURNED, AND NO VOTING DIRECTIONS ARE GIVEN HEREIN, SUCH SHARES WILL BE VOTED "FOR" APPROVAL OF ITEMS 1 AND 2. The undersigned hereby acknowledges receipt of notice of, and the proxy statement for, the aforesaid Annual Meeting of Shareholders.

(Continued and to be signed and dated on the reverse side)

SEE REVERSE SIDE

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