

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

**SCHEDULE 14A
(Rule 14a-101)**

**INFORMATION REQUIRED IN PROXY STATEMENT
SCHEDULE 14A INFORMATION**

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)

SHAHRAM K. RABBANI
(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:

(5) Total fee paid:

- 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:

ANNUAL MEETING OF
STOCKHOLDERS OF ENZO BIOCHEM, INC.

PROXY STATEMENT OF
SHAHRAM K. RABBANI

This proxy statement and the enclosed Gold proxy card are being furnished to you, the holders of shares of Common Stock, \$.01 par value per share (the "Common Stock"), of Enzo Biochem, Inc., a New York corporation (the "Company"), in connection with the solicitation by Shahram K. Rabbani, a founder, director and stockholder of the Company, of proxies for use at the Annual Meeting of stockholders of the Company, scheduled to be held on January 29, 2010 (the "Annual Meeting"), and at any adjournments or postponements of the meeting. This proxy statement and the Gold proxy card are first being furnished to stockholders on or about January [*], 2010.

THIS SOLICITATION IS BEING MADE BY SHAHRAM K. RABBANI AND NOT ON BEHALF OF THE BOARD OF DIRECTORS OF THE COMPANY.

I am soliciting proxies to elect André de Bruin and Steven Katz (each an "Independent Nominee" and together the "Independent Nominees") to serve as Class I Directors of the Company. I am soliciting your vote in favor of the Independent Nominees because I believe that they will provide an improved voice for Company stockholders on the Board of Directors of the Company (the "Board"). I believe the Company has promising technology and talented employees but has failed to capitalize on these resources. Company management has managed the Company like a family business without regard to the interests of the public stockholders while the Board has consistently given its rubber stamp of approval. The Independent Nominees are committed to improving the value of the public's equity investment in the Company by working to help create a strong culture of board oversight and management accountability and identifying and advocating for appropriate corporate governance practices.

I believe that the Company's history of underperformance demonstrates the need for substantial operational improvements. The Independent Nominees have indicated that, if elected, they will carefully consider and strongly advocate for appropriate improvements. For example, over the last five years, 106% revenue growth has been outpaced by a 196% increase in operating expenses, while licensing and royalty revenue from the Company's vast intellectual property estate remains a paltry 10% of total revenue. At the same time, total shareholder returns as measured by RiskMetrics Group have plummeted while executive compensation for the Company's management team has continued to escalate. The Independent Nominees will advocate for improvements to control costs, identify and realize operating efficiencies, aggressively pursue revenue streams from the Company's intellectual property, and link management's compensation to actual performance.

The Independent Nominees collectively have extensive backgrounds in public company leadership, financial management, and the promotion of investor value, and are more than capable of guiding the Company's board of directors to attain these goals. The Independent Nominees have no direct or indirect relationships with me or any director, officer, or employee of the Company and, if elected to the Board, will serve independent of any outside influence to advance the best interests of the Company's stockholders. I believe these nominees will be advocates for all stockholders and will bring to the Company the independent judgment, experience, and perspective that stockholders can trust.

The Company has disclosed that the record date for determining stockholders entitled to notice of and to vote at the Annual Meeting is December 29, 2009 (the "Record Date"). Stockholders of record at the close of business on the Record Date will be entitled to vote at the Annual Meeting. According to the Company Proxy Statement filed with the Securities and Exchange Commission on December 23, 2009 for the Annual Meeting (the "Company Proxy Statement"), as of the Record Date, there were [*] shares of Common Stock outstanding and entitled to vote at the Annual Meeting. Each share of Common Stock is entitled to one vote on all matters to come before the Annual Meeting.

See "Information About the Participants" and "Item 2—Election of Class I Directors—Certain Information Regarding the Independent Nominees" for information about me and the Independent Nominees.

THE INDEPENDENT NOMINEES ARE COMMITTED TO ACTING IN THE BEST INTERESTS OF ALL STOCKHOLDERS. I BELIEVE THAT THE STOCKHOLDERS CAN BE BEST REPRESENTED BY DIRECTORS SELECTED BY STOCKHOLDERS AND NOT MANAGEMENT. ACCORDINGLY, WE STRONGLY RECOMMEND THAT YOU VOTE TO ELECT EACH INDEPENDENT NOMINEE TO SERVE AS A CLASS I DIRECTOR OF THE COMPANY. PLEASE VOTE WITH THE ENCLOSED GOLD PROXY CARD.

To vote FOR the Independent Nominees, you must sign, complete, and return the proxy card that we are furnishing to you or, if your shares are held by a bank or broker, instruct your bank or broker to vote your shares for the Independent Nominees on your behalf.

YOUR VOTE IS IMPORTANT, NO MATTER HOW MANY OR HOW FEW SHARES OF COMMON STOCK YOU OWN. WE URGE YOU TO MARK, SIGN, DATE AND RETURN THE ENCLOSED GOLD PROXY CARD PROMPTLY IN ACCORDANCE WITH THE INSTRUCTIONS SET FORTH BELOW. PLEASE DO NOT SIGN ANY PROXY CARD YOU MAY RECEIVE FROM THE COMPANY. HOLDERS OF SHARES OF COMMON STOCK AS OF THE RECORD DATE ARE URGED TO SUBMIT A GOLD PROXY CARD EVEN IF YOUR SHARES WERE SOLD AFTER THE RECORD DATE.

You are urged to mark, sign, and date the enclosed GOLD PROXY CARD and return it in the enclosed envelope whether or not you plan to attend the Annual Meeting. If you need assistance voting your Shares, please call our proxy solicitor, Mackenzie Partners, Inc., toll-free at 1-800-322-2885 or 1-212-929-5500 (call collect) at any time prior to 9:00 a.m., on January 29, 2010.

If you have already sent in the Company's proxy card or voted online and wish to change your vote, you have every legal right to do so. Please sign, date, and mail the enclosed GOLD PROXY CARD. Only your last dated and signed proxy card will count.

IMPORTANT NOTICE REGARDING INTERNET AVAILABILITY OF PROXY MATERIALS FOR THE ANNUAL MEETING OF STOCKHOLDERS TO BE HELD ON JANUARY 29, 2010:

The Proxy Statement of Shahram K. Rabbani and a form of this proxy card will be available at <http://www.ourmaterials.com/enzobiochem>.

REASONS FOR SEEKING ELECTION OF THE INDEPENDENT NOMINEES

This proxy solicitation is being conducted by Shahram K. Rabbani. Mr. Rabbani has an interest in the matters to be acted upon at the Annual Meeting indirectly through the beneficial ownership of the Company's Shares. The Independent Nominees may be deemed to be "participants" in this proxy solicitation, as the term participant is defined in Schedule 14A promulgated under the Securities Exchange Act of 1934, as amended. References to "we," "us," "our" or similar first person plural statements in this proxy statement shall mean Mr. Rabbani and the Independent Nominees, collectively.

We believe that the Company has not been managed to maximize shareholder value and that the election of the Independent Nominees, who each has a proven record of monetizing intellectual property and creating stockholder value by implementing change as directors or chief executive officers of public companies, will best serve the interests of the Company and its stockholders. Mr. Rabbani is nominating the Independent Nominees because he believes that adding new, highly qualified, outside voices to the board of directors is an important first step in remedying what we believe are significant operational and corporate governance shortcomings. In particular, we believe that:

- ***The Company has failed to formulate a sustainable, long term strategic plan.*** The results of the past five years do not come close to reflecting the intrinsic value, nor commercial potential, of the company's strategic assets. Management's current commercialization strategies are reactive, short-term approaches to immediate concerns, and not the result of an execution of a long-term strategy. Consequently, the Company's resources have been spread very thin over an unsustainably broad portfolio of products and markets, and the Company has failed to develop strategic alliances.
- ***The Company has failed to manage its growth.*** During the Company's last five fiscal years, the Company's annual revenues increased from \$43.4 million to \$89.6 million, an increase of 106%. During this same period, however, the Company's annual operating expenses increased from \$38.2 million to \$113 million, an increase of 196%, and the Company reported aggregate net losses over this same five year period of \$60.1 million. The Company's uncontrolled spending is unsustainable, and if management does not act to increase operating efficiencies and curtail wasteful expenditures, the Company will face serious financial consequences in less than three years. Despite these serious operating deficiencies, neither the board of directors nor management has taken any action to remedy these problems or improve the Company's overall financial condition. The Independent Nominees have significant business acumen and experience and they understand how to set forth a cohesive strategic direction and overcome the operational challenges of large and small public and private companies in the biotechnology and pharmaceutical industries.
- ***The Company has failed to realize any commercial value from numerous products.*** Although the Company claims to be an internationally recognized leader in the commercialization, manufacturing and licensing of multiple technologies, the Company has no effective licensing program and has failed to effectively create corporate partnerships with respect to significant components of its technology platforms. It has licensed very few of the approximately 250 inventions for which it has patents and the approximately 100 inventions for which it has patent applications pending. In fact, a number of Company patents have lapsed without any commercialization effort. Despite numerous public statements about potentially promising inventions in the last five years in such areas as HIV, Hepatitis B, Hepatitis C, NASH, Diabetes, Uveitis, Osteoporosis and Crohn's Disease, the Company has not pursued any effective strategy to monetize or realize value from any products in these areas, and based on the Company's current public disclosures, the Company has only conducted Phase II trials for its Hepatitis B, Crohn's Disease and NASH products. We can only question why the Company has taken such a lackadaisical approach to products which would treat such serious or life-threatening diseases. The Company's management and board of directors are too theoretically-oriented and lack the experience and expertise necessary to realize the value of the Company's promising products and technologies. By contrast, the Independent Nominees have proven track records of commercializing products and technologies with expertise in regulatory compliance, licensing arrangements and development and collaboration agreements.
- ***The Company has wasted substantial resources on fruitless litigation.*** Over the last three years, the Company has spent more than \$20 million in legal fees, with the substantial majority of these fees incurred in connection with patent litigation. The Company is viewed in the biotech community as being highly litigious. Over the last several years, the Company has been involved in expensive actions against such large companies as Perkin Elmer and Roche. Such litigation has not resulted in any financial gain on behalf of the Company. We believe that the Company's resources are better allocated toward revenue generating initiatives rather than on failed litigations.
- ***The board of directors has allowed itself and management to operate without any accountability to stockholders.*** In addition to the Company's significant losses described above, the Company's stock price has declined more than 50%

over the Company's last five fiscal years. The Company has ignored the poor performance of its stock in recent years and has omitted from its SEC filings during the last two years the performance graph required by Item 201 of Regulation S-K that sets forth the Company's five-year total shareholder returns ("TSRs") as compared to the returns of an industry index or a peer group. As of the end of the Company's fiscal year ended July 31, 2009, the Company's one and three-year TSRs of -60.52% and -33.52%, respectively, were respectively 11.27% and 2.94% below the median average of the Company's peers in its global industry classification group. Despite this abysmal performance, the board of directors has rewarded management with increased and excessive salaries, discretionary cash bonuses and equity compensation awards during the prior three fiscal years, and in 2008 implemented a 50% increase in annual cash compensation for non-employee directors and an average of a 70% increase in annual equity compensation awards for non-employee directors. Dr. Elazar Rabbani, the Company's Chairman of the Board, Chief Executive Officer and Secretary, received increasing discretionary cash bonuses of \$350,000, \$375,000 and \$465,000 in fiscal years 2007, 2008, and 2009, respectively, and increasing total compensation of \$1,004,613, \$1,078,623, and \$1,186,705 for each of those fiscal years, respectively. Barry Weiner, the Company's President, Chief Financial Officer, Principal Accounting Officer and Treasurer, received increasing discretionary cash bonuses of \$225,000, \$250,000 and \$340,000 in fiscal years 2007, 2008, and 2009, respectively, and increasing total compensation of \$799,028, \$861,875, and \$980,720 for each of those fiscal years, respectively. The board of directors has failed in any way to hold management accountable for the Company's performance and has failed to act with any regard to the interests of stockholders and the actual performance of the Company. By contrast, the Independent Nominees are committed to holding management accountable and to creating a long-term compensation plan for directors and management that better aligns their compensation with building stockholder value. The Independent Nominees will also be advocates for corporate governance changes, such as mandatory equity ownership guidelines for directors, that will cause the board of directors to be more responsive to the interests of stockholders.

- ***The board of directors has allowed the Company's management to entrench itself and de facto control of the Company is vested in two individuals.*** Decision making authority for all of the Company's corporate, strategic and business development plans is vested in Elazar Rabbani, the Company's Chairman of the Board, Chief Executive Officer and Secretary, with the obeisance of Barry W. Weiner, his brother-in-law and the Company's President, Chief Financial Officer, Principal Accounting Officer and Treasurer. The Independent Nominees will seek to replace the current entrenched management with an expanded and experienced team that is committed to a robust licensing strategy and corporate development and achieving operational excellence.

We strongly believe that the above issues demonstrate the continued unacceptable performance and lack of accountability of management, as well as the serious absence of oversight by the existing board of directors. The election of the Independent Nominees will be a significant step toward remediating these serious breaches of the fiduciary responsibilities of the board of directors and management and establishing a business plan to monetize the Company's substantial unrealized value.

STRATEGIC PLAN FOR THE COMPANY

We urgently ask for your support as a stockholder, advisor or broker to return the Company to profitability, to drive growth, and to increase stockholder value. The Independent Nominees have a proven track record of success in the development and licensing of products and technologies in the pharmaceutical and biotechnology industries and intend for the Company to develop and implement a clear, sustainable strategic plan which would include aggressively exploiting near-term licensing opportunities currently available while immediately implementing an expense control plan that preserves the company's dwindling cash resources to stem losses while the Company pursues long term goals.

The Company's management team will be guided to carefully evaluate the strengths, weaknesses, opportunities, and threats with respect to its existing business model, while focusing on near-term strategic licensing and partnering opportunities. This strategy has long been anticipated by the investment community. For example, in September 2007, Lazard Capital Markets initiated coverage of the Company with a "buy" rating and a \$19 per share price target (the "Lazard Report"). In so doing, the Lazard Report stated, "We view the Intellectual Property estate as a key asset and an important component of the expansion of Enzo's business and thus classify it as the fourth business within Enzo Biochem."

The Company's therapeutics portfolio, which thus far has not been exploited by the Company, is well suited to take advantage of strategic marketing opportunities. The patents in the Company's therapeutic portfolio also are attractive to potential licensees since they could treat diseases which are of public interest and which provide a large number of patient opportunities such as HIV, Hepatitis B, Crohn's Disease, osteoporosis, and diabetes.

The Independent Nominees also would seek to have the Company substantially improve the strategic management of its diagnostics and clinical laboratory business. The molecular diagnostics market is exploding with a large number of recent corporate strategic partnerships and merger and acquisition activity. The Company has a large intellectual property portfolio which directly pertains to this rapidly growing market. The Lazard Report stated that the "broad portfolio of issued and pending patents supports its core technology platforms, and will allow Enzo to utilize them internally, cross-license them to obtain access to additional

technologies, or collect royalties from licensing agreements.” The Lazard Report also opined that “Enzo’s broad patent portfolio could provide various revenue options through licensing agreements or entry into new markets. Key markets related to Enzo’s intellectual property include DNA sequencing, microarrays, and molecular diagnostics.” Current management has failed to substantially improve the strategic management of the Company in these areas.

The Company also must reduce its current spending levels -- especially with respect to intellectual property related costs. As part of the process of evaluating which patents are commercially viable and suited for internal development or outside commercialization, it will be necessary to phase out those patents which do not fit into the Company’s overall strategy. In this way, the Company would reduce carrying costs of its intellectual property. The Company also must evaluate its current intellectual property litigation in an effort to reduce expenditures on legal fees. The likelihood of a successful outcome should be determined and the suits settled or discontinued as appropriate.

In addition to these changes in the Company’s core licensing business, revenue growth in the Company’s clinical laboratories business of markers, stains, and other diagnostics in excess of development costs must be achieved. The Company should evaluate those product development programs with the most promise while winding down or canceling others. The Company should focus on those products which offer the highest margins in a competitive and changing healthcare and reimbursement market. If managed efficiently, the Company’s clinical and diagnostic business can serve as a steady revenue source as the Company carries out its licensing program.

To execute this strategy, the Company may be required to undergo a change in senior management, replacing some or most of the current management team with a more experienced and focused team that is committed to a robust licensing strategy and corporate development and achieving operational excellence. The Company’s management has not been able to operate the Company profitably and has not demonstrated the ability or willingness to monetize the Company’s intellectual property as contemplated by the investment community. Furthermore, the Company’s organizational structure and management layering is top heavy, with too many presidents. In order to implement its strategy, the Independent Nominees would seek to replace the current Chairman of the Board and Chief Executive Officer with a leader who has the ability to embark on a program of licensing and collaboration to substantially increase stockholder value and to replace the current President, Chief Financial Officer, Principal Accounting Officer and Treasurer with a new Chief Financial Officer who possesses strong financial leadership capability. The Independent Nominees would also seek to have the board of directors separate the offices of Chairman and Chief Executive Officer and President and Chief Financial Officer so that the persons performing these disparate functions can be held individually accountable. Also, the management structure would be rationalized with improved corporate development, functional alignment, and operational effectiveness. The legal department would also be reorganized to reduce outside legal fees.

BACKGROUND OF THE PROXY SOLICITATION

Shahram K. Rabbani is a co-founder of the Company and has served as a director of the Company since its inception in 1976. In addition, until his separation from the Company in March 2009, Mr. Rabbani served as an employee of the Company in various offices, including Chief Operating Officer, Chief Financial Officer, and as President of Enzo Clinical Labs, Inc., the Company's largest operating subsidiary.

In recent years, Mr. Rabbani grew increasingly frustrated with the lack of a strategic direction within the Company, the poor performance of the management team, and the failure by the Board of Directors to implement any strategic or management changes to reverse the tide of increasing annual losses. In January 2009, the Company, through counsel, requested in writing that he amend his employment agreement with the Company to accept a demotion and substantial forfeiture of my responsibilities. Mr. Rabbani rejected this request. Subsequently, on February 19, 2009, the Company advised Mr. Rabbani that he would be replaced as President of Enzo Clinical Labs. Accordingly, on February 26, 2009, he served the Company with notice that, as a result of this demotion, he was terminating his employment agreement with the Company for good reason. The Company responded to Mr. Rabbani's termination for good reason by advising him on March 5, 2009 that he had been terminated for cause, making it clear that all of the severance benefits under his employment agreement would not be paid.

On April 27, 2009, Mr. Rabbani initiated an arbitration against the Company, Dr. Elazar Rabbani, the Company's Chairman of the Board, Chief Executive Officer and Secretary, and Mr. Barry Weiner, the Company's President, Chief Financial Officer, Principal Accounting Officer and Treasurer, in connection with the separation of his employment from the Company, seeking, among other things, the severance payments and other amounts owed to him under his employment agreement. Dr. Rabbani and Mr. Weiner subsequently filed an action in New York State court requesting a stay of the arbitration as to them. As of the date of this proxy statement, both the arbitration and the state court litigation remain pending.

On October 14, 2009, Mr. Rabbani engaged an advisory panel and commenced an extensive search for director candidates to be considered for a slate of independent candidates to be nominated for election to the Board of Directors at the next annual meeting of stockholders of the Company. On November 20, 2009, Mr. Rabbani notified the Company that he intended to nominate a slate of independent Class I Directors for election at the next annual meeting of stockholders of the Company in January 2010, including André de Bruin and Steven Katz. In connection with this notification, Mr. Rabbani also submitted a request for certain information about the Company's record and beneficial stockholders pursuant to Rule 14a-7. In response to the November 20, 2009 notice, the Company advised Mr. Rabbani that they deemed his exercise of his nomination and voting rights as a stockholder of the Company to be "dissident and adverse actions" and the Board of Directors removed him as Secretary and Treasurer of the Company at its meeting on November 25, 2009.

Immediately after the November 20, 2009 notice, the Company commenced its entrenchment campaign by communicating with certain stockholders about Mr. Rabbani's February 2009 resignation and November 2009 removal under the ruse of a so-called "investigation" into whether he was continuing to faithfully discharge his fiduciary duties as a director. During these communications, members of the Company's management team defamed Mr. personally and professionally.

Mr. Rabbani has dedicated himself to advancing the best interests of the Company for over thirty years and he is ready, willing, and able to continue to do so. However, in light of the family relationships between Mr. Rabbani and the Company's Chairman of the Board and Chief Executive Officer and Company's President, Chief Financial Officer, Principal Accounting Officer and Treasurer described below under the heading "Information About Shahram K. Rabbani and the Independent Nominees," he recognizes that stockholders possibly may view him as part of the entrenched management team, or focus on these family relationships rather than the qualifications and experience of the Independent Nominees for election to the Board of Directors. Accordingly, Mr. Rabbani has declined to run for re-election and will not seek to serve as an officer of the Company. He has nominated André de Bruin and Steven Katz for election as Class I Directors at the Annual Meeting to serve as truly independent directors who can bring real change, accountability, and value creation to the Company.

INFORMATION ABOUT SHAHRAM K. RABBANI AND THE INDEPENDENT NOMINEES

Interests of Mr. Rabbani and the Independent Nominees

As of the date of this proxy solicitation, Mr. Rabbani is the beneficial owner of 1,458,222 shares, or approximately 3.8%, of the Company's Common Stock, and includes (i) 1,354 shares of Common Stock held in the name of Mr. Rabbani's son, (ii) 1,671 shares of Common Stock that Mr. Rabbani holds as custodian for certain of his nephews, and (iii) 7,995 shares of Common Stock held in the Company's 401(k) plan. As of the date of this proxy solicitation, none of the Independent Nominees beneficially owns any shares of the Company's Common Stock.

Within the past two years, Mr. Rabbani purchased or sold the following securities of the Company:

- On September 23, 2008, Mr. Rabbani exercised stock options to purchase 60,755 shares of Common Stock and paid the exercise price thereof by the surrender of 29,406 shares of Common Stock, for a net gain in outstanding shares of Common Stock of 31,349 shares. The stated exercise price of the stock options was \$5.45 per share and the market value of the 29,406 shares of Common Stock surrendered was \$11.26 per share.
- On July 18, 2008, Mr. Rabbani transferred 82,645 shares of Common Stock with a market value of approximately \$1.1 million to an unaffiliated third party (the "Seller") as payment for the purchase price of a residential property. Simultaneous with this transaction, Mr. Rabbani loaned \$500,000 to the Seller who pledged the 82,645 shares to Mr. Rabbani as collateral for the loan. On January 18, 2009, the Seller defaulted on this loan and the 82,645 shares, with a market value of approximately \$378,000 as of July 1, 2009, were forfeited to Mr. Rabbani by the Seller pursuant to the Seller's pledge.
- On February 24, 2008, Mr. Rabbani gifted 3,000 shares of Common Stock to bona fide third parties.

Mr. Rabbani is currently a party to an arbitration proceeding with the Company in connection with the separation of his employment from the Company. See "Background of the Proxy Solicitation."

In connection with the Company's annual meetings of stockholders in 2000, 2001, 2002, 2003 and 2005, Mr. Rabbani was a designated proxy on the proxy card that the Company solicited from stockholders in connection with each of those meetings.

The table below sets forth summary information concerning compensation awarded to, paid to, or earned by Shahram K. Rabbani for all services rendered for each of the fiscal years ended July 31, 2009, 2008 and 2007.

Name and Principal Position	Year	Salary (\$)		Bonus (\$)	Stock Awards (\$)	All Other Compensation (\$)	Total (\$)
	(\$)						
Shahram K. Rabbani	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

Options Exercised and Stock Vested

The following table sets forth the options exercised by Shahram K. Rabbani during the Company's fiscal year ended July 31, 2009.

Name	Option Awards		Stock Awards	
	Number of Shares	Value Realized	Number Of Shares Acquired	Value Realized
	Acquired On Exercise	On Exercise	On Vesting	On Vesting
Shahram K. Rabbani	60,755	\$ 352,987		

As of the date of this proxy solicitation, neither of the Independent Nominees beneficially owns any shares of the Company's Common Stock. Except as set forth in this proxy statement, neither Mr. Rabbani, any of the Independent Nominees, nor any of their respective associates (within the meaning of Rule 14a-1 of the Securities Exchange Act of 1934) (i) owns beneficially, directly or indirectly, any securities of the Company, (ii) owns beneficially, directly or indirectly, any securities of any parent or subsidiary of the

Company, (iii) owns any securities of the Company of record but not beneficially, (iv) has purchased or sold any securities of the Company within the past two years, (v) has incurred indebtedness for the purpose of acquiring or holding securities of the Company, (vi) is or has within the past year been a party to any contract, arrangement or understanding with respect to any securities of the Company, (vii) since the beginning of the Company's last fiscal year has been indebted to the Company or any of its subsidiaries, (viii) has any arrangement or understanding with respect to future employment by the Company or with respect to any future transactions to which the Company or any of its affiliates will or may be a party, (ix) has not been, during the past ten years, convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors), or (x) was not, within the past ten years, a party to any contract, arrangements or understandings with any person with respect to any securities of the registrant, including, but not limited to joint ventures, loan or option arrangements, puts or calls, guarantees against loss or guarantees of profit, division of losses or profits, or the giving or withholding of proxies. In addition, except as set forth in this proxy statement, neither Mr. Rabbani, any of the Independent Nominees, nor any of their respective associates, has had or is to have a direct or indirect material interest in any transaction or proposed transaction with the Company, in which the amount involved exceeds \$120,000, since the beginning of the Company's last fiscal year.

Neither Mr. Rabbani, any of the Independent Nominees, nor any of their respective associates, since the beginning of the Company's last fiscal year, has been affiliated with (i) any entity that made or received, or during the Company's current fiscal year proposes to make or receive, payments to or from the Company or its subsidiaries for property or services in excess of five percent of either the Company's or such entity's consolidated gross revenues for its last full fiscal year, or (ii) any entity to which the Company or its subsidiaries were indebted at the end of the Company's last full fiscal year in an aggregate amount exceeding five percent of the Company's total consolidated assets at the end of such year. None of the Independent Nominees is, or during the Company's last fiscal year has been, affiliated with any law or investment banking firm that has performed or proposes to perform services for the Company.

Except as set forth in this proxy statement, none of the corporations or organizations in which Mr. Rabbani or the Independent Nominees have conducted their principal occupation or employment was a parent, subsidiary, or other affiliate of the Company, and the Independent Nominees do not hold any employment position or office with the Company or have any family relationship with any executive officer or director of the Company or have been involved in any proceedings, legal or otherwise, of the type required to be disclosed by the rules governing this solicitation.

None of the Independent Nominees nor any of their associates has received any cash compensation, cash bonuses, deferred compensation, compensation pursuant to plans, or other compensation, from, or in respect of, services rendered on behalf of the Company, or is subject to any arrangement described in Item 402 of Regulation S-K ("Regulation S-K"). Other than as described above under the heading "Reasons for Seeking Election of the Independent Nominees," Mr. Rabbani is not aware of any other arrangements pursuant to which outside directors of the Company were to be compensated for services during the Company's last fiscal year.

Shahram K. Rabbani is the brother of Elazar Rabbani, the Company's Chairman of the Board, Chief Executive Officer and Secretary, and the brother-in-law of Barry Weiner, the Company's President, Chief Financial Officer, Principal Accounting Officer and Treasurer. Except as set forth herein above, there are no family relationships (as defined in Item 401(d) of Regulation S-K) between any of the Independent Nominees or between any of the Independent Nominees and any director or executive officer of the Company. Except as disclosed in this proxy statement, there are no arrangements or understandings between Shahram K. Rabbani and any Independent Nominee or any other person or persons with respect to the nomination of the Independent Nominees.

Each of the Independent Nominees are independent of the Company under the independence standards applicable to the Company under Rule 10A-3 of the Exchange Act and Section 303A.02 of the Listed Company Manual of the New York Stock Exchange.

Except as disclosed in this proxy statement, (i) no Independent Nominee or any associate of an Independent Nominee is a party adverse to the Company or any of its subsidiaries or has a material interest adverse to the Company or any of its subsidiaries in any material proceeding and (ii) there is no event that occurred during the past ten years with respect to any of the Independent Nominees that is required to be described under Item 401(f) of Regulation S-K. The information in this proxy statement regarding the Independent Nominees has been furnished to Mr. Rabbani by such Independent Nominees.

Please see "Item 1—Election of Class I Directors" for additional information about the Independent Nominees.

THE PROPOSALS

According to the Company Proxy Statement, the following proposals will be presented at the Annual Meeting:

- Item 1: Election of Class I Directors
- Item 2: Ratification of Appointment of Independent Auditors
- Item 3: Such other business as may properly come before the Annual Meeting or any adjournments or postponements thereof

Mr. Rabbani is soliciting proxies from the stockholders of the Company to elect the Independent Nominees to fill two of the three seats of the Company's Class I directorships that expire at the Annual Meeting (Item 1). **we therefore urge stockholders to vote FOR Item 1 on the attached Gold proxy card.**

If the gold proxy card furnished with this proxy statement is signed but no direction is given with respect to the vote on the proposal, we will, in respect of the Shares represented by that proxy card, vote FOR Item 1 to elect the Independent Nominees as Class I directors.

**ITEM 1
ELECTION OF CLASS I DIRECTORS**

The Company's Board of Directors is currently comprised of seven directors, divided into three separate classes which are elected for staggered three-year terms. At the Annual Meeting, three of the seven directors will be up for election.

Background of Mr. Rabbani's Nomination of the Independent Nominees

On November 20, 2009, Mr. Rabbani notified the Company of his intent to nominate a slate of three directors for election as Class I Directors at the Annual Meeting. Currently, André de Bruin and Steven Katz have agreed to be nominated for such election. We are seeking your support to elect these two Independent Nominees to the Board of Directors at the Annual Meeting. Mr. Rabbani is proposing the election of the Independent Nominees, consisting of Messrs. de Bruin and Katz, to serve as Class I Directors for a term of three years expiring at the annual meeting of stockholders to be held in January 2013 and until each of his successors has been elected and qualified. See "Certain Other Information Regarding the Independent Nominees" below for information concerning the background and experience of Messrs. De Bruin and Katz. Mr. Rabbani intends to seek to have the meeting for the election of directors postponed to a later date in order to allow adequate time for stockholders to evaluate the director nominees and for us to solicit proxies for the election of the Independent Nominees. In the event that such meeting is so postponed, Mr. Rabbani intends to nominate a third Independent Nominee for election as a Class I Director. However, Mr. Rabbani reserves the right not to nominate a third person and to proceed with the nomination of the two Independent Nominees, without regard to whether the meeting is postponed. As a founder, director, and stockholder of the Company, Mr. Rabbani believes that his economic interests are directly aligned with the economic interests of his fellow stockholders.

Reasons to Vote For the Independent Nominees

We believe that adding new, highly qualified, outside voices in the boardroom to represent the interests of all Enzo Biochem stockholders is an important first step in remedying what we consider to be significant operational and corporate governance deficiencies. The Independent Nominees are committed to improving the value of the public's equity investment in the Company by working to help create a strong culture of board oversight and management accountability and identifying and advocating for appropriate corporate governance practices.

The Independent Nominees collectively have extensive backgrounds in public company leadership, financial management, and the promotion of investor value. The Independent Nominees have no direct or indirect relationships with me or any Director, officer, or employee of the Company and, if elected to the Board, will serve independent of any outside influence to advance the best interests of the Company's stockholders. We believe these nominees will be advocates for all stockholders and will bring to the Company the independent judgment, experience, and perspective that stockholders can trust. We believe the Independent Nominees, collectively, have the relevant experience and expertise to address the following key focus areas:

- **Develop a sustainable long term strategic plan focused on creating shareholder value.** Clearly the Company has not met expectations despite rich, growing, and valuable strategic assets. Operational execution has been complicated, diffused, and bureaucratic. The Independent Nominees will drive a process of creating a clear, executable strategic plan with a management team that is able to perform.
- **Generate profitable growth through an aggressive program of licensing and collaborations.** Despite the Company's significant intellectual property estate, these assets are largely underutilized as licensing and royalty revenue currently represent only 10% of the Company's total revenues. The Independent Nominees believe that the Company's management team must focus on a core strategy of an attractive, high return on investment licensing business model.
- **Evaluate and implement operating efficiencies and cost controls to convert revenue growth to positive net income.** Annual increases in operating expenses cannot continue to outpace revenue growth. The Company must evaluate all operating expenses to control costs and adopt internal controls to identify and realize operating efficiencies.
- **Make management and the board of directors accountable.** Management and the board of directors must be accountable to the stockholders of the Company. Executive and director compensation cannot continue to increase steadily while operating results rapidly decline. Compensation of management and the board of directors must be in proportion to the performance of the Company. The adoption of a strict pay-for-performance compensation model will better align management's interests with those of the Company's stockholders. In addition, mandatory equity ownership guidelines for directors will motivate the board of directors to be more responsive to the Company's stockholders and better align the interests of directors with those of the Company's stockholders.
- **Diversify the management structure of the Company.** Management of the Company cannot continue to be consolidated in only two individuals. Separating the offices of Chairman of the Board and Chief Executive Officer as well as the

offices of President and Chief Financial Officer and having different persons serve in each of these offices will enable the board of directors and, where appropriate, management, to hold each person performing these disparate functions individually accountable for their performance. We believe that rationalizing the management structure will result in improved corporate development, functional alignment, and operational effectiveness.

Mr. Rabbani believes each of the Independent Nominees has the necessary independence, experience, energy, skills, and personality to work with their fellow directors to meet the Company's operational, strategic, and corporate governance challenges. Mr. Rabbani also believes the Independent Nominees will bring to the Board much needed finance and capital markets, corporate governance, and life sciences and biotechnology expertise. Each of the Independent Nominees has consented to being named herein as a nominee or director of the Company, has agreed to stand for election as a director, and has agreed to serve if elected.

The Independent Nominees will not receive any compensation from me or any of my affiliates for their services as directors of the Company if elected. If elected, the Independent Nominees will be entitled to receive cash and equity compensation for serving on the Board, as determined from time to time by the Compensation Committee with subsequent approval thereof by the Board.

WE STRONGLY URGE YOU TO VOTE FOR THE ELECTION OF THE INDEPENDENT NOMINEES BY SIGNING, DATING, AND RETURNING THE GOLD PROXY CARD TODAY IN THE ENCLOSED POSTAGE-PAID ENVELOPE.

Certain Information Regarding the Independent Nominees

Set forth below are the name, age, present principal occupation, employment history and directorships of each of the Independent Nominees for at least the past five years. This information has been furnished to Mr. Rabbani by the respective Independent Nominees, each of whom has consented to serve as a director of the Company.

André de Bruin, age 62, does not now, nor has he ever, held a position or office with the Company nor does he own any securities of the Company. Mr. de Bruin has more than 35 years of global healthcare industry experience spanning the bio-pharmaceutical, medical device, and diagnostics markets. Since 2005, Mr. de Bruin has served on the Board of Directors of Nanosphere, Inc., a public company engaged in applying nanotechnology to the genetic testing and molecular diagnostics markets. He is a member of its audit and compensation committees. Mr. de Bruin also is the founder and Chief Executive Officer of DuraPorts Inc., a private company that is a manufacturer of steel and fabric structures. Mr. de Bruin served on the Board of Directors of HandyLab Inc., a private company engaged in the business of nucleic acid extraction and detection of infectious diseases, from 2004 until it was acquired by Becton Dickenson & Co. in November 2009. In addition, in November 2009, Mr. de Bruin was elected to the Board of Directors of NxThera Inc, a private device company engaged in the diagnoses and treatment of prostate and other urologic cancers, where he serves as Chairman of the Compensation Committee. Prior to his retirement in 2004 as executive chairman of Quidel Corporation's board of directors, Mr. de Bruin served as the company's Chief Executive Officer from 1998 until 2001. He was President and Chief Executive Officer of Somatogen Inc., in Boulder, CO from 1994 to 1998 and was elected Chairman in 1996. Prior to joining Somatogen, from 1989 to 1994 Mr. de Bruin was President of Boehringer Mannheim Corporation, a global healthcare concern subsequently acquired by Hoffman-La Roche, and served as its Chairman and Chief Executive Officer from 1990 to 1994. Past experience includes advisory services for Ferrer, Freeman and Company, LLC and various boards of directors. Mr. de Bruin graduated from the University of Potchefstroom in South Africa, where he earned a Bachelors degree in finance, economics and business with an Honors degree in business administration.

Steven Katz, age 61, does not now, nor has he ever, held a position or office with the Company nor does he own any securities of the Company. Since 1982, Mr. Katz has been the President of Steven Katz & Associates, Inc., a life science and technology-based management consulting firm specializing in strategic planning, corporate development, new product planning, licensing, technology transfer, corporate structuring, and financing. From January 2000 to October 2001, he was also President and Chief Operating Officer of Senesco Technologies, Inc., a publicly traded company engaged in the identification and development of proprietary gene technology. From 1983 to 1984 he was Executive Vice President of S.K.Y. Polymers, Inc., a biomaterials company which he co-founded. Prior to his starting S.K.Y. Polymers, Mr. Katz was a Vice President and General Manager of a non-banking division of Citicorp from 1980 to 1981. He was also an executive, including the President of three subsidiaries, of National Patent Development Corporation, a publicly traded biotechnology and medical device company, from 1976 to 1980. Mr. Katz was also a Manager of Financial Planning at Revlon, Inc. from 1975 to 1976. He began his career at Price Waterhouse & Co., where he worked from 1969 to 1975. Mr. Katz is a graduate of the City College of New York, where he earned a Bachelors of Business Administration in Accounting. Mr. Katz currently serves as a director of publicly traded companies USA Technologies, Inc. and Health Systems Solutions, Inc. During the last five years, he has also been a director of the following publicly traded biotechnology, medical device, and other companies: Senesco Technologies, Inc., Vital Signs, Inc., Biophan Technologies, Inc., Vivid Learning Systems, Inc., and Natural Nano, Inc. Mr. Katz is also a director of Expert Real Estate Services, Inc. and MDSERVE, Inc., each a privately held corporation. He is also an officer and board member of various charitable organizations and schools.

ITEM 2
RATIFICATION OF APPOINTMENT OF INDEPENDENT AUDITORS

According to the Company Proxy Statement, the Company is soliciting proxies to ratify the appointment of the Company's independent auditors. Please refer to the Company Proxy Statement for information on this proposal.

According to information contained in the Company Proxy Statement, the Company's Board has appointed Ernst & Young, LLP to serve as the Company's independent registered public accounting firm for fiscal year 2010. According to the Company Proxy Statement, a representative of Ernst & Young, LLP is expected to be present at the Annual Meeting and will have the opportunity to make a statement if desired and is expected to be available to respond to appropriate questions.

We make no recommendation to other stockholders with respect to this proposal.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following information is based solely on the Company's definitive proxy statement on Schedule 14A as filed with the Securities and Exchange Commission on December 23, 2009. To the knowledge of Mr. Rabbani, the following table sets forth as of the Record Date the beneficial ownership of the Common Stock of each of the Company's directors and executive officers, the other employees named in the summary compensation table set forth below, as well as by the Company's directors and executive officers as a group. Except as set forth below, Mr. Rabbani is not aware of any beneficial owner of more than five percent of the Common Stock. Except as otherwise indicated, Mr. Rabbani believes that the beneficial owners of the Common Stock listed below, based on information furnished by such owners, have sole investment and voting power with respect to such shares, subject to community property laws where applicable:

Name and Address of Beneficial Owner	Amount and Nature of Beneficial Ownership		Percent of Class (2)
	(1)		
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, (iv) an aggregate of 5,100 shares of Common Stock held in the name of Dr. Rabbani's children; and (v) 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, (ii) 3,642 shares of Common Stock that Mr. Weiner holds as custodian for certain of his children; and (iii) 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, (ii) 1,671 shares of Common Stock that Mr. Rabbani holds as custodian for certain of his nephews, and (iii) 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.

SOLICITATION OF PROXIES

Mr. Rabbani has retained Mackenzie Partners, Inc. to act as an advisor and to provide solicitation services for a fee estimated not to exceed \$[], plus expenses. Mr. Rabbani also agreed to indemnify Mackenzie against certain liabilities, including liabilities arising under the federal securities laws. Proxies may be solicited by mail, facsimile, telephone, internet, and by advertisements. It is anticipated that Mackenzie will employ approximately [*] persons to solicit the Company's stockholders at the Annual Meeting.

Banks, brokerage houses and other custodians, nominees and fiduciaries will be requested to forward the proxy materials to the beneficial owners of Shares for which they hold of record and Mr. Rabbani will reimburse them for their reasonable out-of-pocket expenses.

The expenses related directly to this proxy solicitation are expected to aggregate approximately \$[*] and will be borne by Mr. Rabbani. These expenses include fees and expenses for attorneys, proxy solicitors, printing, postage, filing expenses, and other costs incidental to the solicitation. Of this estimated amount, approximately \$[*] has been spent to date. The actual costs and expenses could be materially different than the estimated amounts and, in particular, could be substantially higher if for any reason litigation is instituted in connection with the matters related to this proxy statement.

The purpose of the proposals in this proxy statement is to advance the interests of all the Company's stockholders. Therefore, Mr. Rabbani believes that his expenses related to this proxy solicitation should be borne by the Company and he intends to seek reimbursement of such expenses from the Company whether or not this proxy solicitation is successful. The question of reimbursement of the expenses of Mr. Rabbani by the Company will not be submitted to a stockholder vote.

If you have any questions about this proxy solicitation or voting your shares or require assistance, please contact:



105 Madison Avenue
New York, New York 10016
proxy@mackenziepartners.com
Call Collect: (212) 929-5500
Or Toll-Free (800) 322-2885

OTHER MATTERS

This proxy solicitation is being made by Shahram K. Rabbani and not on behalf of the Board or management of the Company. Except as set forth in this proxy statement, Mr. Rabbani is not aware of any other matters to be brought before the Annual Meeting.

The Company is subject to the periodic reporting requirements of the Exchange Act and, in accordance therewith, is required to file reports, proxy statements and other information with the SEC. Reports, registration statements, proxy statements and other information filed by the company with the SEC may be inspected at, and copies may be obtained from, the public reference facilities maintained at the SEC at 100 F Street, N.E., Washington, DC 20549. Copies of such material can also be obtained upon written request addressed to the SEC, Public Reference Section, 100 F Street, N.E., Washington, DC 20549, at prescribed rates. You may obtain information on the operation of the SEC's Public Reference Room by calling the SEC at (800) SEC-0330. The SEC also maintains a web site on the Internet (<http://www.sec.gov>) where reports, proxy and information statements and other information regarding issuers and others that file electronically with the SEC may be obtained free of charge.

I have omitted from this proxy statement certain disclosure required by applicable law to be included in the Company Proxy Statement. Such disclosure includes, among other things, information regarding securities of the Company beneficially owned by the Company's director's, nominees and management; certain stockholder's beneficial ownership of more than 5% of the Company's voting securities; information concerning executive compensation; and information concerning the procedures for submitting stockholder proposals and director nominations intended for consideration at the annual meeting of stockholders of the Company to be held in January 2011 and for consideration for inclusion in the proxy materials for that meeting. Please refer to the Company Proxy Statement for such information. I take no responsibility for the accuracy or completeness of information contained in the Company Proxy Statement.

INFORMATION REGARDING THE COMPANY

The information concerning the Company contained in this proxy statement has been taken from or is based upon the Company Proxy Statement, other documents and records on file with the SEC, and other publicly available information. I have no knowledge that would indicate that statements relating to the Company contained in this proxy statement in reliance upon publicly available information are inaccurate or incomplete.

VOTING PROCEDURES

Who is entitled to vote?

Only holders of Common Stock of record at the close of business on December 29, 2009 will be entitled to notice of and to vote at the Annual Meeting. Each share of Common Stock is entitled to one vote on all matters to come before the Annual Meeting. On December 29, 2009, the Record Date for the Annual Meeting, the Company had issued and outstanding [*] shares of Common Stock.

Stockholders of Record. If, on the Record Date, your shares were registered directly in your name with the Company's transfer agent, American Stock Transfer & Trust Company, then you are a stockholder of record. As a stockholder of record, you may vote in person at the meeting or vote by proxy.

Beneficial Owners. If, on the Record Date, your shares were not held in your name, but rather were held in an account at a brokerage firm, bank or other nominee (commonly referred to as being held in "street name"), you are the beneficial owner of those shares. The organization holding your account is considered to be the stockholder of record for purposes of voting at the Annual Meeting. As a beneficial owner, you have the right to direct your broker or other nominee regarding how to vote the shares held in your account. You are also invited to attend the Annual Meeting. However, since you are not the stockholder of record, you may not vote your shares in person at the meeting unless you obtain a valid legal proxy from your broker or other nominee and bring the legal proxy to the Annual Meeting. If you want to attend the Annual Meeting, but not vote at the Annual Meeting, you must provide proof of beneficial ownership as of the Record Date, such as your most recent account statement prior to the Record Date. Please contact MacKenzie with any questions or should you need assistance toll-free at 1-800-322-2885 or 1-212-929-5500 (call collect).

What constitutes a quorum?

The presence, in person or by proxy, of the holders of a majority of the votes entitled to be cast on a particular matter by the stockholders at the Annual Meeting is necessary to constitute a quorum for purposes of consideration and action on the matter. Votes withheld for director nominees and abstentions on the other proposals to be considered at the Annual Meeting will be counted in determining whether a quorum has been reached, but the failure to execute and return a proxy will result in a shareholder not being considered present at the meeting. If a quorum is not present at the Annual Meeting, we expect that the Annual Meeting will be adjourned or postponed to solicit additional proxies.

How is each proposal to be adopted at the Annual Meeting?

If a quorum is present, the votes required for the two proposals to be considered at the Annual Meeting and the treatment of abstentions and broker non-votes in respect of such proposals are as follows:

- Item 1: The three nominees for Class I Directors receiving the highest number of votes will be elected Class I Directors. Abstentions and broker non-votes will not have any effect on the election of directors.
- Item 2: The affirmative vote of a majority of the votes cast by all holders of the issued and outstanding shares of Common Stock is required to approve the ratification of the selection of our independent auditors. Abstentions will have the same effect as votes against the proposal and broker non-votes will not have any effect on the outcome of this proposal.

When are the votes due?

Shares represented by proxies on the enclosed proxy card will be counted in the vote at the Annual Meeting only if your proxy card is submitted prior to the closing of the polls at the Annual Meeting.

How do I vote?

You may vote either in person at the Annual Meeting or by proxy.

• *At the Meeting.* Shares held in your name as the stockholder of record may be voted by you in person at the Annual Meeting. Shares held beneficially in street name may be voted by you in person at the Annual Meeting only if you obtain a legal proxy from the broker or other agent that holds your shares, giving you the right to vote the shares, and you bring the legal proxy to the Annual Meeting.

• *Vote by Proxy.* To vote by proxy, you must complete the Gold proxy card, complete all of the required information on the proxy card, date and sign the proxy card, and return the proxy card in the postage-paid envelope provided as soon as possible.

If you are not the stockholder of record and hold shares through a custodian, broker or other agent, such agent may have

special voting instructions that you should follow. Please refer to the voting instruction form sent to you for information on voting.

What should I do if I receive a proxy card which is not Gold?

If you submit a proxy to us by signing and returning the enclosed Gold proxy card, do NOT sign or return the proxy card or follow any voting instructions provided by the Company's Board unless you intend to change your vote, because only your latest-dated proxy will be counted.

Can I revoke my proxy instructions?

Yes. You may revoke or change your vote by:

- submitting another written proxy with a later date,
- sending a written notice of revocation either to Mackenzie, or the Secretary of the Company at Enzo Biochem, Inc., 527 Madison Avenue, New York, New York 10022, if received the day before the Annual Meeting,
- if you are a beneficial owner, by following the instructions sent to you by your broker, bank or other agent, or
- revoking the grant of a previously submitted proxy and voting in person at the Annual Meeting. Please note that your attendance at the Annual Meeting itself will not revoke a proxy.

Although a revocation is effective if delivered to the Company, I request that either the original or a copy of any revocation be mailed to Mackenzie, so that I will be aware of all revocations.

If you previously signed and returned a proxy card to the Company, we urge you to revoke it by (1) signing, dating, and returning the Gold proxy card, (2) attending the annual meeting and voting in person, or (3) delivering a written notice of revocation to Mackenzie or to the corporate secretary of the Company.

Will other matters be voted on at the Annual Meeting?

Mr. Rabbani is not aware of any matters to be presented at the Annual Meeting other than a vote for the election of Class I Directors and the ratification of the appointment of the independent auditors.

If I plan to attend the Annual Meeting, should I still submit a proxy?

Whether you plan to attend the Annual Meeting or not, Mr. Rabbani urges you to submit a proxy. Returning the enclosed Gold proxy card will not affect your right to attend the Annual Meeting.

How can I obtain directions to be able to attend the Annual Meeting and vote in person?

According to the Company Proxy Statement, the Annual Meeting will be held at The Yale Club, 50 Vanderbilt Avenue, New York, New York 10017. You may obtain directions to the venue by contacting Mackenzie toll-free at 1-800-322-2885 or 1-212-929-5500 (call collect).

How will my shares be voted?

If you give a proxy on the accompanying Gold proxy card, your shares will be voted as you direct. Shares as to which a proxy is submitted to Mr. Rabbani without instructions will be voted in favor of Item 1. Unless a proxy specifies otherwise, it will be presumed to relate to all shares held of record on the Record Date for the Annual Meeting by the person who submitted it.

How can I receive more information?

If you would like an additional copy of this Proxy Statement or a copy of any other proxy material made available by Shahram K. Rabbani, please visit his free website at <http://www.ourmaterials.com/enzobiochem>. You may access, download and print all proxy materials made available by Shahram K. Rabbani including this Proxy Statement at this website. If you have any questions about giving your proxy or about this solicitation, or if you require assistance, please call Mackenzie toll-free at 1-800-322-2885 or 1-212-929-5500 (call collect).

Your vote is important. No matter how many or how few shares you own, please vote to elect the Independent Nominees by marking, signing, dating, and mailing the enclosed Gold proxy card promptly.

Shahram K. Rabbani
January [*], 2010

ENZO BIOCHEM, INC.

ANNUAL MEETING OF STOCKHOLDERS

DATE: January 29, 2010
TIME: 9:00 A.M.
PLACE: THE YALE CLUB
50 VANDERBILT AVENUE
NEW YORK, NEW YORK 10017

THIS GOLD PROXY IS SOLICITED BY SHAHRAM K. RABBANI AND NOT BY THE BOARD OF DIRECTORS OF THE COMPANY

The undersigned hereby appoint(s) Shahram K. Rabbani, André de Bruin and Steven Katz, or any of them, lawful attorneys and proxies of the undersigned, with full power of substitution, for and in the name, place and stead of the undersigned to attend the Annual Meeting of Stockholders (the "Annual Meeting") of Enzo Biochem, Inc. (the "Company") to be held at The Yale Club, 50 Vanderbilt Avenue, New York, New York, 10017, on Friday, January 29, 2010, 9:00 a.m., local time, and any adjournment(s) or postponement(s) thereof, with all powers the undersigned would possess if personally present, and to vote the number of shares the undersigned would be entitled to vote if personally present.

The undersigned hereby acknowledges receipt of the proxy statement of Shahram K. Rabbani dated January [*], 2010, revokes any other proxies heretofore given to vote or act with respect to the shares of common stock of the Company held by the undersigned, and hereby ratifies and confirms all actions of the proxies named herein, their substitutes, or any of them may lawfully take by virtue hereof. If properly executed, this Proxy will be voted as directed on the reverse side, and in the discretion of the proxies named herein or their substitutes with respect to any other matters that properly come before the Annual Meeting (including any motions to cancel, adjourn, continue or postpone the Annual Meeting).

If you execute, date, and return this GOLD Proxy Card without indicating on the reverse side how you want your shares to be voted, your shares will be voted (i) "FOR" the election of the Independent Nominees, Messrs. de Bruin and Katz; and (ii) in the proxy holder's discretion as to any other matters that may properly come before the Annual Meeting. Mr. Rabbani is NOT seeking authority to vote for and WILL NOT exercise any authority to vote for any of the Company's director nominees or for the ratification of the appointment of Ernst & Young LLP as the Company's independent registered public accounting firm. You should refer to the proxy statement and form of proxy distributed by the Company for the names, background, qualifications and other information concerning the Company's nominees or Ernst & Young LLP.

This proxy will be valid until the completion of the Annual Meeting.

IMPORTANT NOTICE REGARDING INTERNET AVAILABILITY OF PROXY MATERIALS FOR THE ANNUAL MEETING OF STOCKHOLDERS TO BE HELD ON JANUARY 29, 2010:

The Proxy Statement of Shahram K. Rabbani and a form of this proxy card will be available at <http://www.ourmaterials.com/enzobiochem>.

PLEASE VOTE, DATE AND SIGN THIS PROXY ON THE OTHER SIDE AND RETURN PROMPTLY IN THE ENCLOSED ENVELOPE.

IMPORTANT: PLEASE SIGN, DATE, AND MAIL THIS GOLD PROXY CARD PROMPTLY!

PLEASE MARK YOUR VOTE AS IN THIS EXAMPLE:

DETACH PROXY CARD HERE TO VOTE BY MAIL

SHAHRAM K. RABBANI RECOMMENDS THAT YOU VOTE "FOR" THE INDEPENDENT NOMINEES.

PROPOSAL 1: Election of Directors. Shahram K. Rabbani is nominating 1. André de Bruin and 2. Steven Katz for election to the Enzo Biochem, Inc. board of directors as Class I Directors for a term expiring in January 2013.

FOR ALL	WITHHOLD FROM ALL	FOR ALL WITH EXCEPTIONS
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note: if you do not wish to vote "FOR" a particular nominee, mark the "for all with exceptions" box and write in the name(s) of the specific nominee(s) you do not support in the space provided above.

The proxy holders named herein or their substitutes will vote in their discretion upon any other business that may properly come before the Annual Meeting.

Please sign exactly as your name(s) appear(s) hereon. If shares are issued in the name of two or more persons, all such persons should sign the proxy. A proxy executed by a corporation or other company should be signed in its name by its authorized officers. Executors, administrators, trustees and partners should indicate their positions when signing.

Dated: _____, 2010

Signature:

Titles or Authority:

Signature (if held jointly):

PLEASE SIGN, DATE AND RETURN THIS PROXY IN THE ENCLOSED POSTAGE PAID ENVELOPE TODAY.
