

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)

LONE STAR VALUE INVESTORS, LP
LONE STAR VALUE INVESTORS GP, LLC
LONE STAR VALUE MANAGEMENT, LLC
JEFFREY E. EBERWEIN
DIMITRIOS J. ANGELIS
JOHN M. CLIMACO

(Name of Persons(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:

Persons who are to respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB control number.

LONE STAR VALUE INVESTORS, LP

December 11, 2015

Dear Fellow Enzo Shareholder:

Lone Star Value Investors, LP (together with its affiliates, “Lone Star Value” or “we”), Dimitrios J. Angelis and John M. Climaco (collectively, the “Participants” and each a “Participant”) are the beneficial owners of an aggregate of 565,000 shares of common stock, par value \$0.01 per share (the “Common Stock”), of Enzo Biochem, Inc., a New York corporation (“Enzo” or the “Company”), representing approximately 1.23% of the outstanding shares of Common Stock. For the reasons set forth in the attached Proxy Statement, we believe significant changes to the composition of the Board of Directors of the Company (the “Board”) are necessary in order to ensure that the Company is being run in a manner consistent with your best interests. We are seeking your support for the election of our two nominees at the annual meeting of shareholders scheduled to be held on January 6, 2016, at 9:00 A.M., local time, at The Yale Club of New York City, 50 Vanderbilt Avenue, New York, New York 10017 (including any adjournments or postponements thereof and any meeting which may be called in lieu thereof, the “Annual Meeting”). We are seeking representation on the Board because we believe that the Board should include shareholder representatives who have appropriate and relevant skill sets, independence and a shared objective of enhancing value for the benefit of all Enzo shareholders. The individuals we have nominated are highly-qualified, capable and committed to serve shareholders to help make Enzo a stronger, more profitable and more valuable company.

Our interests are fully aligned with the interests of all Enzo shareholders. We believe there is significant value to be realized at Enzo. However, we are concerned that the Board is not taking the appropriate actions to address the Company’s perennial underperformance and unlock value for the benefit of all shareholders. We are also concerned by Enzo’s poor corporate governance and related party transactions. Given the Company’s long history of poor financial and stock price performance, failed execution and poor corporate governance under the oversight of the incumbent Board, we strongly believe that the Board must be reconstituted to ensure that the interests of the shareholders, the true owners of Enzo, are appropriately represented in the boardroom, and that the Board takes the necessary steps to help the Company’s shareholders realize maximum value for their investment.

The Company has a classified Board, which is currently divided into three classes. There are two directorships up for election at the Annual Meeting. We are seeking your support at the Annual Meeting to elect our two nominees in opposition to the Company’s director nominees for the class with terms expiring at the 2018 annual meeting of shareholders. Lone Star Value believes that any attempt to increase or decrease the size of the current Board or the number of directors up for election at the Annual Meeting would constitute an improper manipulation of Enzo’s corporate machinery. Lone Star Value further believes that because the incumbent Board has historically eroded shareholder value and failed to adequately address the Company’s continued financial underperformance, change on the Board is urgently needed. Your vote to elect our nominees will have the legal effect of replacing two incumbent directors with our nominees. If elected, our nominees will constitute a minority on the Board and there can be no guarantee that our nominees will be able to implement the actions that they believe are necessary to unlock shareholder value.

We urge you to carefully consider the information contained in the attached Proxy Statement and then support our efforts by signing, dating and returning the enclosed **GOLD** proxy card today. The attached Proxy Statement and the enclosed **GOLD** proxy card are first being furnished to the shareholders on or about December 11, 2015.

If you have already voted for the incumbent management slate, you have every right to change your vote by signing, dating and returning a later dated proxy or by voting in person at the Annual Meeting.

If you have any questions or require any assistance with your vote, please contact ICOM Advisors LLC dba InvestorCom, which is assisting us, at its address and toll-free numbers listed below.

Thank you for your support,

/s/ Jeffrey E. Eberwein

Jeffrey E. Eberwein
Lone Star Value Investors, LP

*If you have any questions, require assistance in voting your **GOLD** proxy card,
or need additional copies of Lone Star Value's proxy materials,
please contact InvestorCom at the phone numbers listed below.*



*65 Locust Avenue, Suite 302
New Canaan, CT 06840
Shareholders call toll free at (877) 972-0090
Banks and Brokers may call collect at (203) 972-9300*

**2015 ANNUAL MEETING OF SHAREHOLDERS
OF
ENZO BIOCHEM, INC.**

**PROXY STATEMENT
OF
LONE STAR VALUE INVESTORS, LP**

PLEASE SIGN, DATE AND MAIL THE ENCLOSED GOLD PROXY CARD TODAY

Lone Star Value Investors, LP (“Lone Star Value Investors”), Lone Star Value Investors GP, LLC (“Lone Star Value GP”), Lone Star Value Management, LLC (“Lone Star Value Management”) and Jeffrey E. Eberwein (together with Lone Star Value Investors, Lone Star Value GP and Lone Star Value Management, “Lone Star Value” or “we”) are shareholders of Enzo Biochem, Inc., a New York corporation (“Enzo” or the “Company”), who, together with Dimitrios J. Angelis and John M. Climaco (collectively, the “Participants” and each a “Participant”), beneficially own 565,000 shares of common stock, par value \$0.01 per share (the “Common Stock”), of the Company. We believe that the Board of Directors of the Company (the “Board”) must be reconstituted to ensure that the interests of the shareholders, the true owners of Enzo, are appropriately represented in the boardroom. We have nominated two directors who have strong, relevant backgrounds and who are committed to fully exploring all opportunities to unlock shareholder value. We are seeking your support at the annual meeting of shareholders scheduled to be held on January 6, 2016, at 9:00 A.M., local time, at The Yale Club of New York City, 50 Vanderbilt Avenue, New York, New York 10017 (including any adjournments or postponements thereof and any meeting which may be called in lieu thereof, the “Annual Meeting”), for the following:

1. To elect Lone Star Value’s two (2) Class I director nominees, Dimitrios J. Angelis and John M. Climaco (each a “Nominee” and, collectively, the “Nominees”), to the Board to serve until the 2018 annual meeting of shareholders and until their respective successors are duly elected and qualified;
2. To approve, in a nonbinding advisory vote, the compensation of Enzo’s named executive officers;
3. To ratify the appointment of EisnerAmper LLP to serve as the Company’s independent registered public accounting firm for the Company’s fiscal year ending July 31, 2016; and
4. To transact such other business as may properly come before the Annual Meeting or any adjournment or postponement thereof.

As of the date hereof, the members of Lone Star Value and the other Participants collectively own 565,000 shares of Common Stock (the “Lone Star Value Group Shares”). We intend to vote the Lone Star Value Group Shares FOR the election of the Nominees, in accordance with the recommendation of Institutional Shareholders Services Inc. (“ISS”) with respect to the approval of the advisory vote to approve named executive officer compensation, and FOR the ratification of the appointment of EisnerAmper LLP as the independent registered public accounting firm of the Company for fiscal 2016, as described herein.

THIS SOLICITATION IS BEING MADE BY LONE STAR VALUE AND NOT ON BEHALF OF THE BOARD OF DIRECTORS OR MANAGEMENT OF THE COMPANY. WE ARE NOT AWARE OF ANY OTHER MATTERS TO BE BROUGHT BEFORE THE ANNUAL MEETING OTHER THAN AS SET FORTH IN THIS PROXY STATEMENT. SHOULD OTHER MATTERS, WHICH LONE STAR VALUE IS NOT AWARE OF A REASONABLE TIME BEFORE THIS SOLICITATION, BE BROUGHT BEFORE THE ANNUAL MEETING, THE PERSONS NAMED AS PROXIES IN THE ENCLOSED **GOLD** PROXY CARD WILL VOTE ON SUCH MATTERS IN OUR DISCRETION.

LONE STAR VALUE URGES YOU TO SIGN, DATE AND RETURN THE **GOLD** PROXY CARD IN FAVOR OF THE ELECTION OF THE NOMINEES.

IF YOU HAVE ALREADY SENT A PROXY CARD FURNISHED BY COMPANY MANAGEMENT OR THE BOARD, YOU MAY REVOKE THAT PROXY AND VOTE ON EACH OF THE PROPOSALS DESCRIBED IN THIS PROXY STATEMENT BY SIGNING, DATING AND RETURNING THE ENCLOSED **GOLD** PROXY CARD. THE LATEST DATED PROXY IS THE ONLY ONE THAT COUNTS. ANY PROXY MAY BE REVOKED AT ANY TIME PRIOR TO THE ANNUAL MEETING BY DELIVERING A WRITTEN NOTICE OF REVOCATION OR A LATER DATED PROXY FOR THE ANNUAL MEETING OR BY VOTING IN PERSON AT THE ANNUAL MEETING.

Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting—This Proxy Statement and our **GOLD proxy card are available at www.icommaterials.com/ENZ**

IMPORTANT

Your vote is important, no matter how few shares of Common Stock you own. Lone Star Value urges you to sign, date and return the enclosed GOLD proxy card today to vote FOR the election of the Nominees and in accordance with Lone Star Value's recommendations on the other proposals on the agenda for the Annual Meeting.

If your shares of Common Stock are registered in your own name, please sign and date the enclosed **GOLD** proxy card and return it to Lone Star Value, c/o ICOM Advisors LLC dba InvestorCom ("InvestorCom"), in the enclosed postage-paid envelope today.

If your shares of Common Stock are held in a brokerage account or bank, you are considered the beneficial owner of the shares of Common Stock, and these proxy materials, together with a **GOLD** voting form, are being forwarded to you by your broker or bank. As a beneficial owner, you must instruct your broker, trustee or other representative how to vote. Your broker cannot vote your shares of Common Stock on your behalf without your instructions.

Depending upon your broker or custodian, you may be able to vote either by toll-free telephone or by the Internet. Please refer to the enclosed voting form for instructions on how to vote electronically. You may also vote by signing, dating and returning the enclosed voting form.

Since only your latest dated proxy card will count, we urge you not to return any proxy card you receive from the Company. Even if you return the management proxy card marked "withhold" as a protest against the incumbent directors, it will revoke any proxy card you may have previously sent to us. Remember, you can vote for our two Nominees only on our GOLD proxy card. So please make certain that the latest dated proxy card you return is the GOLD proxy card.



*65 Locust Avenue, Suite 302
New Canaan, CT 06840
Shareholders call toll free at (877) 972-0090
Banks and Brokers may call collect at (203) 972-9300*

Background to the Solicitation

The following is a chronology of events leading up to this proxy solicitation:

- On September 19, 2013, Mr. Eberwein met with Barry Weiner, the Company's President, Chief Financial Officer and a director, at the Company's headquarters on Madison Avenue in New York to discuss the history of the Company, its business and its Intellectual Property ("IP") litigation strategy. Mr. Eberwein asked about Enzo's high corporate expenses, its history of losses, its related party transactions, its poor corporate governance and its Board structure. Mr. Weiner mentioned that Enzo "would be profitable within the next 12 months." (Note: Enzo has yet to be profitable). Mr. Weiner suggested a follow-up meeting with Enzo co-founder, Chairman and Chief Executive Officer Dr. Elazar Rabanni for Mr. Eberwein to learn more about the history of the Company and its science.
- On October 29, 2013, Mr. Eberwein met with Dr. Rabanni and Mr. Weiner at the Company's headquarters in New York. Dr. Rabanni discussed Enzo's legacy as a science company and a leader in the genomics field, but there was no mention of earning profits or generating value for shareholders. There was further discussion of Enzo's business and IP litigation strategy.
- On November 5, 2013, Mr. Eberwein had a follow-up call with Mr. Weiner. Mr. Eberwein reiterated his belief that public shareholders have concerns about the "family-owned/family-run" structure of Enzo, its related party transactions (including the family-owned lab that is leased to Enzo), its poor corporate governance and the need for new talent and fresh perspectives on the Board. Mr. Weiner responded that the "family-owned/family-run" nature of Enzo was not a concern and that the family-owned facility leased to Enzo was at "market rates." Mr. Eberwein suggested that Mr. Weiner meet with John M. Climaco, with whom he became acquainted while serving on the board of directors of Digirad Corporation ("Digirad"). Mr. Eberwein mentioned Mr. Climaco as someone Enzo should consider adding to the Board given Mr. Climaco's biotechnology and legal background and the success Digirad has had in growing value for shareholders.
- From November 2013 to September 2015, Mr. Eberwein and Mr. Weiner had intermittent communications. During this period, Mr. Eberwein made an introduction between Mr. Climaco and Mr. Weiner, and had multiple conversations with Mr. Weiner wherein the parties discussed Mr. Climaco's potential addition to the Board as well as general business and IP matters related to the Company.
- In February 2014, Mr. Climaco met with Mr. Weiner at the Company's headquarters in New York to discuss the Company generally.
- On September 22, 2015, Mr. Eberwein met with Mr. Weiner at the Company's headquarters in New York to get an update on the Company's business and IP litigation strategy. Mr. Eberwein again mentioned shareholders' concerns about the Company's lack of profitability, its Board composition and its poor corporate governance.
- On September 25, 2015, Lone Star Value delivered a letter to Enzo notifying the Company in accordance with Enzo's Amended and Restated Bylaws (the "Bylaws") of Lone Star Value's nomination of Dimitrios J. Angelis and John M. Climaco for election to the Board at the Annual Meeting.

· On October 1, 2015, Mr. Eberwein had a call with Mr. Weiner to discuss Lone Star Value's director nominations and the value Mr. Climaco and Mr. Angelis could add to the Board for the benefit of all Enzo shareholders. Mr. Weiner expressed his displeasure with Lone Star Value's act of nominating and he encouraged Lone Star Value to withdraw its nomination. Mr. Weiner suggested an in-person meeting to discuss these matters.

· On October 14, 2015, Mr. Eberwein met with Mr. Weiner at the Company's headquarters in New York to further discuss Lone Star Value's nomination. Mr. Weiner again expressed his displeasure with Lone Star Value's nomination and asked Lone Star Value to withdraw its nomination. Mr. Eberwein noted Enzo's poor corporate governance, including that the leading proxy advisory firm ISS has given Enzo its worst rating on corporate governance.

· On October 20, 2015, Mr. Eberwein had a call with Mr. Weiner. Given the strength of the Lone Star Value Nominees' qualifications, Mr. Eberwein encouraged the Board to meet with them and consider the value that they could add to the Board. Mr. Weiner sent an email to Mr. Eberwein asking for additional information about the Nominees. Lone Star Value's two Nominees submitted this information to the Board and later met with the Nominating and Corporate Governance Committee of the Board.

· On November 25, 2015, Mr. Eberwein received a call from Mr. Weiner whereby Mr. Weiner informed him that after meeting with Lone Star Value's two Nominees, the Board refused to add either one to the Board. Mr. Weiner also mentioned that Enzo had retained legal and proxy advisers and was preparing for a contested proxy contest. Mr. Weiner again pressed Lone Star Value to withdraw its nomination and demanded a response within two hours. Mr. Eberwein expressed his disappointment with Enzo's response. Shortly thereafter, Mr. Eberwein responded to Mr. Weiner by email offering to withdraw Lone Star Value's nomination if Enzo agreed to add one of Lone Star Value's highly qualified Nominees to the Board. In the interest of avoiding a contest, Lone Star Value was further willing to accept increasing the Board size to create a new directorship for the Lone Star Value representative on the Board rather than have an existing director step down. Mr. Weiner responded by email the same day saying that Enzo convened a Board meeting to consider Lone Star Value's offer, but the offer was rejected by the Board.

REASONS FOR THE SOLICITATION

WE BELIEVE THAT CHANGE TO ENZO'S BOARD IS NEEDED NOW

For more than two years, Lone Star Value has made multiple attempts to lead a constructive dialogue with Enzo's Board and management team. We have privately discussed our concerns with Enzo and have clearly outlined our views regarding Enzo's long history of financial losses, its poor corporate governance and its related party transactions. Unfortunately, the Board has disregarded our input, and we have little confidence that the incumbent Board, as currently composed, will take the steps necessary to enhance shareholder value at Enzo given the lasting underperformance and apparent conflicts of interest under their stewardship.

Tellingly, this is not the first time a shareholder has raised similar concerns with the Company's continued underperformance. Prior to both the 2009 and 2010 annual meetings of shareholders, for example, Shahram K. Rabbani, a co-founder and former officer and director of the Company (and the current CEO's brother), initiated a proxy contest seeking the election of a new independent director due to, in his opinion, the "lack of a strategic direction within the Company, the 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."¹ We applaud Mr. Rabbani for voicing his concerns and believe immediate change is necessary to address the Company's financial and governance issues.

We believe that real and urgent change is needed on the Board. We are convinced that change to Enzo's Board needs to occur for shareholder rights and value to be maximized. Therefore, we are soliciting your support to elect our Nominees at the Annual Meeting, who we believe would bring significant and relevant experience and focus on representing the best interests of the public shareholders in the boardroom.

We Are Concerned with the Company's Consistently Poor Financial Performance

Enzo has continuously failed to post a profit since fiscal year ("FY") 2005, an almost unfathomable 10 consecutive years of unprofitability. From 2005 until plateauing in 2010, Enzo experienced significant revenue growth; however, the Company remained unprofitable each and every year after 2005.²

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|-------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------------------|-----------------------|
| Revenue | \$43.40 | \$39.83 | \$52.91 | \$77.79 | \$89.57 | \$97.08 | \$102.03 | \$103.08 | \$93.71 | \$95.95 | \$97.60 |
| Net Income | \$3.00 | \$(15.67) | \$(13.26) | \$(10.65) | \$(23.56) | \$(22.23) | \$(12.96) | \$(39.27) | \$(18.24) | \$(9.98) ³ | \$(2.29) ⁴ |

Dollar figures in millions.

Moreover, since FY 2005, the Company's gross margins have also experienced a significant decline. In FY 2005, the Company had a gross margin of 66%, and despite fluctuations in the interim, the Company's gross margin was 44%⁵ in FY 2015. In addition, the Company has failed to control costs considering total operating expenses have increased 159%⁶ from FY 2005 to FY 2015, while revenues have only grown 125%⁷ during the same period. Additionally, the Company has not generated positive free cash flow⁸ since FY 2005. Lone Star Value believes that the lack of free cash flow generation is a contributing factor to the Board's inability to create shareholder value. During 2015, free cash flow decreased 120%⁹ and the market value of the Company declined from approximately \$212.3 million¹⁰ to \$138.2 million.¹¹

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---------------------------------|---------|-----------|----------|-----------|-----------|-----------|----------|----------|-----------|----------|----------|
| SG&A Expenses | \$19.84 | \$24.75 | \$25.35 | \$33.27 | \$41.31 | \$48.40 | \$45.19 | \$47.93 | \$43.65 | \$41.80 | \$41.07 |
| SG&A as % of Revenue | 45.7% | 62.1% | 47.9% | 42.8% | 46.1% | 49.8% | 44.3% | 46.5% | 46.6% | 43.6% | 42.1% |
| Free Cash Flow | \$11.55 | \$(14.35) | \$(5.21) | \$(11.80) | \$(14.19) | \$(16.72) | \$(9.55) | \$(7.34) | \$(11.00) | \$(2.54) | \$(5.48) |

Dollar figures in millions.

¹ Preliminary Proxy Statement on Schedule 14A filed by Shahram K. Rabbani on November 24, 2010.

² All financial numbers taken from Enzo Annual Reports on Form 10-K filed each year from 2005 to 2015, unless otherwise noted.

³ Adjusted FY2014 non-GAAP net income figure as reported in Enzo's Q4 2014 Earnings Press Release as adjusted for legal settlements and legal fees associated with settlements was \$(11.22).

⁴ Adjusted FY2015 non-GAAP net income figure as reported in Enzo's Q4 2015 Earnings Press Release as adjusted for legal settlements and legal fees associated with settlements was \$(13.45).

⁵ Annual gross margin calculation = $(\text{Total Revenues}_{\text{Year1}} - \text{Cost of Clinical Laboratory Services}_{\text{Year1}} - \text{Cost of Product Revenues}_{\text{Year1}}) / (\text{Total Revenues}_{\text{Year1}})$.

Source: Total Revenues, Cost of Clinical Laboratory Services and Cost of Product Revenues taken from Enzo Annual Reports on Form 10-K filed for the referenced 2005 and 2015 fiscal years.

⁶ $(\text{Total Operating Expense}_{\text{FY2015}} - \text{Total Operating Expenses}_{\text{FY2005}}) / \text{Total Operating Expenses}_{\text{FY2005}}$

⁷ $(\text{Revenue}_{\text{FY2015}} - \text{Revenue}_{\text{FY2005}}) / \text{Revenue}_{\text{FY2005}}$

⁸ Free cash flow is a non-GAAP financial measure. Free cash flow is a measurement of the amount of available cash the Company could potentially return to its shareholders after considering investments for future growth. Lone Star Value believes this non-GAAP financial measure is an important metric because it demonstrates the potential shareholder value to be realized.

⁹ Source: Bloomberg; Cash Flow as of July 31, 2015, defined by Bloomberg as Operating Activities + Capital Expenditures.

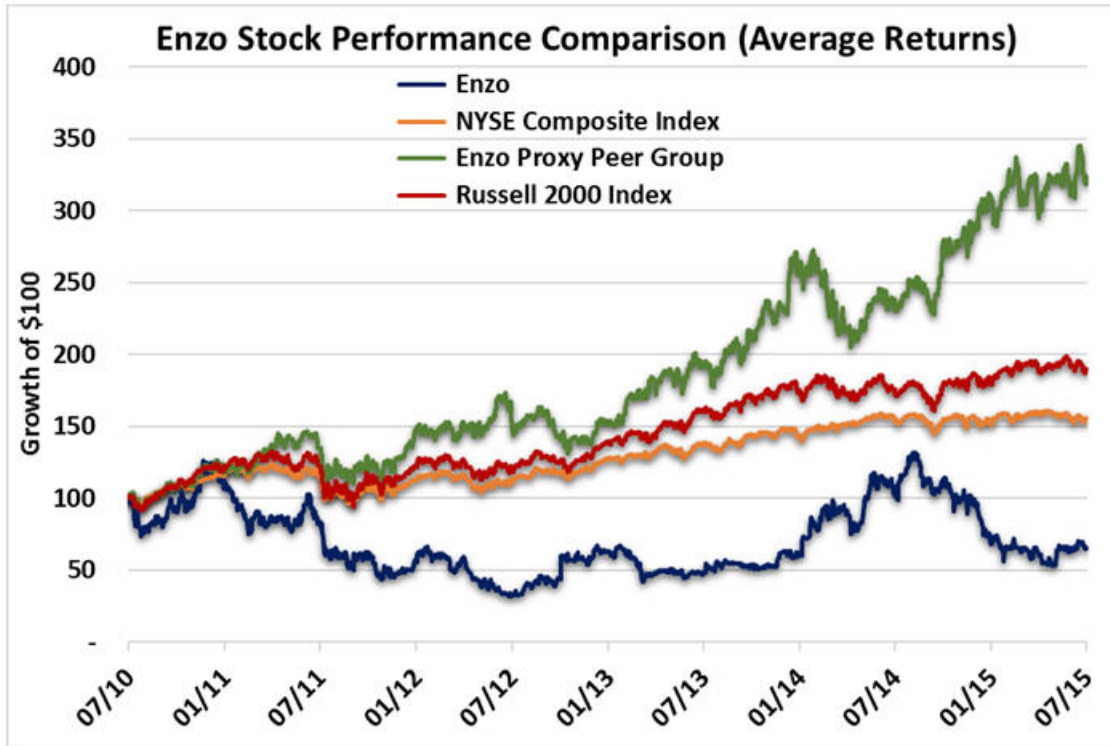
¹⁰ Source: Bloomberg; Market Cap as of July 31, 2014.

¹¹ Source: Bloomberg; Market Cap as of July 31, 2015.

We Are Concerned with the Company's Absolute and Relative Stock Performance

Enzo's stock has produced a negative 82%¹² return over the last 10 years and has significantly underperformed its peers during the same time period. To put this into perspective, the stock has fallen from a high of \$20.40¹³ per share in FY 2005 to a low of \$2.43¹⁴ in FY 2015, and the Company's market capitalization has declined from approximately \$539.3 million¹⁵ to \$138.2 million¹⁶ during the same period.

In addition, the Company has drastically underperformed its self-selected proxy peer group.¹⁷ It also has underperformed the indices used in its most recent 10-K filing¹⁸, wherein the Company used the NYSE Composite Index, Morningstar Diagnostic & Research Index and the SIC 8071 – Medical Laboratories Index as benchmarks. We believe that the Russell 2000 Index, which measures the performance of the small-cap segment of the U.S. equity market, is a more appropriate benchmark for Enzo given the size of the Company, and the Company also has underperformed this index. From the Company's self-selected proxy peer group, Enzo is the only company to have a significant negative return over the last five years. As shown in the chart below, the average return of the Company's self-selected proxy peer group is approximately 225%¹⁹ during the last five years, whereas Enzo has experienced a negative return of approximately 35%²⁰ during the same time period.



Moreover, when taking into consideration Enzo's peer group²¹ as selected by leading proxy advisory firm ISS (which only includes one overlapping company, Cryolife, Inc., from Enzo's self-selected proxy group), Enzo's underperformance relative to its peers is even greater, with the average return of Enzo's ISS peer group being approximately 255% over the past 5 years. In addition, as shown in the chart below, the Company has also significantly trailed the MSCI Life Sciences Tools & Services Index and Russell 3000 Indices over the past five years.²²

¹² Calculated using Bloomberg's Custom Total Return Holding Period from July 29, 2005 to July 31, 2015.

¹³ Source: Bloomberg; December 2, 2004. (Enzo's 2005 fiscal year: August 1, 2004 through July 31, 2005).

¹⁴ Source: Bloomberg; May 26, 2015.

¹⁵ Source: Bloomberg; Market Cap as of July 29, 2005.

¹⁶ Source: Bloomberg; Market Cap as of July 31, 2015.

¹⁷ Source: Enzo's Definitive Proxy Statement on Schedule 14A filed on November 26, 2014. Self-selected peers include: Affymetric Inc. (AFFX US), Alkermes PLC (ALKS US), Cepheid Inc. (CPHD US), Cryolife Inc. (CRY US), Genomic Health Inc. (GHDX US), Incyte Corp. (INCY US), Isis Pharmaceuticals Inc. (ISIS US), Lexicon Pharmaceuticals (LXRX US), Meridian Bioscience Inc. (VIVO US), Myriad Genetics (MYGN US), PDL BioPharma Inc. (PDLI US), Progenics Pharmaceuticals (PGNX US), United Therapeutics Corp. (UTHR US).

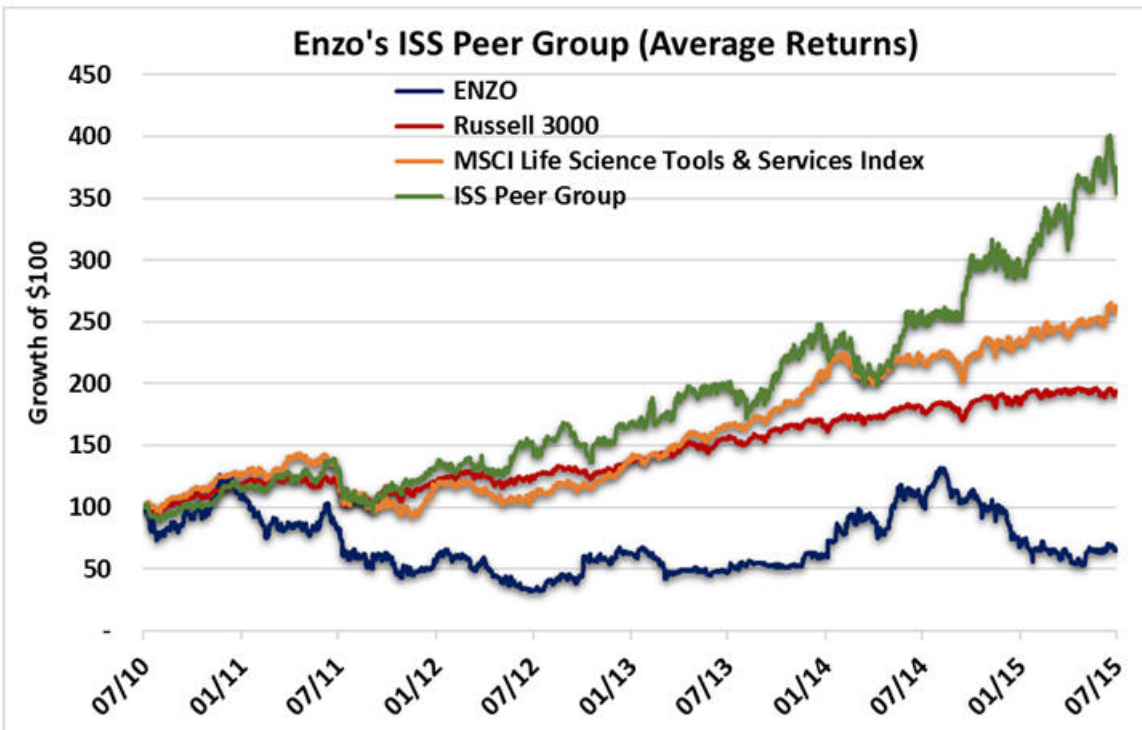
¹⁸ Enzo's 2015 Annual Report on Form 10-K filed on October 13, 2015.

¹⁹ Source: Bloomberg for historical price for the applicable companies and time periods.

²⁰ Source: Bloomberg for historical price for the applicable companies and time periods.

²¹ Enzo's ISS peer group outlined in ISS report for 2014 annual meeting of shareholders: AMAG Pharmaceuticals Inc. (AMAG US), BioTelemetry Inc. (BEAT US), Harvard Bioscience Inc. (HBIO US), NeoGenomics Inc. (NEO US), SciClone Pharmaceuticals Inc. (SCLN US), Spectrum Pharmaceuticals Inc. (SPPI US), Array BioPharma Inc. (ARRY US), Cryolife Inc. (CRY US), MiMedx Group Inc. (MDXG US), OraSure Technologies Inc. (OSUR US), Repligen Corp. (RGEN US), Sequenom Inc. (SWMN US).

²² The MSCI Life Sciences Tools & Services and Russell 3000 Indices were used as benchmarks by ISS in its report for Enzo's 2014 annual meeting of shareholders.



We Are Concerned with the Board's Lack of Independence and Related Party Transactions

We find it quite troubling that two members of the incumbent five-person Board are co-founders Dr. Elazar Rabbani and Barry Weiner, who also happen to be brothers-in-law and the Company's most senior executive officers with Dr. Rabbani serving as Chief Executive Officer and Mr. Weiner serving as President and Chief Financial Officer. Compounding matters is the fact that Dr. Rabbani also serves as Chairman of the Board. Combining the Chairman and CEO roles is largely considered by governance experts and commentators to be a governance flaw because of the undue concentration of control and the inherent conflicts, which is only accentuated when only three of five directors are purportedly "independent."

We are also troubled by the Company's related party transactions. For example, Enzo Clinical Labs, Inc. ("Enzo Labs"), a subsidiary of the Company, leases a facility in Farmingdale, New York from Pari Management Corporation ("Pari"), which is owned equally by Dr. Elazar Rabbani, Barry Weiner (and his wife) and former officer and director Shahram Rabbani (who is also the current CEO's brother). The parties purchased the Farmingdale property in December 1989 for \$2.75 million, and shortly thereafter, Enzo Labs entered into a lease agreement with Pari (which has been guaranteed by the Company). Since then, the lease agreement with Pari has been renewed every 10 to 12 years at an annual rate with future payments "subject to cost of living adjustments." Interestingly, in prior proxy statements (as recent as the proxy statement for the 2013 annual meeting of shareholders), the Company has disclosed that payments to Pari include real estate taxes on the facility.

Between FY 1990 and FY 2015, Enzo Labs has made lease payments to Pari in excess of \$29 million (see chart below). In its public filings, the Company includes disclosure that the Board “believes that the existing lease terms are as favorable to the Company as would be available from an unaffiliated party;” however, it should be noted that the average annualized Cost-Of-Living-Adjustment (COLA)²³ since 1990 is 2.61%, while the average annualized increase in rent of the Farmingdale facility has been 6.94% during the same time period. When accounting for the total lease payments to date made by Enzo Labs, Pari has managed to earn a nearly 950% return on its initial investment of \$2.75 million. This raises questions as to why Enzo did not just purchase the facility outright from the beginning. Given Dr. Rabbani and Mr. Weiner’s relationship to Pari, we question whether the lease payments to Pari since 1990 could more accurately be characterized as an additional compensation expense rather than a rent expense.

| Fiscal Year | Lease Payment | % increase in Rent | COLA ⁽²⁴⁾ | Inflation Rate ⁽²⁵⁾ |
|----------------|---------------------|--------------------|----------------------|--------------------------------|
| 1990 | \$352,644 | | 5.4% | 5.4% |
| 1991 | \$454,756 | 28.96% | 3.7% | 4.2% |
| 1992 | \$482,000 | 5.99% | 3.0% | 3.0% |
| 1993 | \$530,600 | 10.08% | 2.6% | 3.0% |
| 1994 | \$687,367 | 29.55% | 2.8% | 2.6% |
| 1995 | \$729,433 | 6.12% | 2.6% | 2.8% |
| 1996 | \$771,372 | 5.75% | 2.9% | 3.0% |
| 1997 | \$791,347 | 2.59% | 2.1% | 2.3% |
| 1998 | \$924,000 | 16.76% | 1.3% | 1.6% |
| 1999 | \$1,050,609 | 13.70% | 2.5% | 2.2% |
| 2000 | \$1,017,000 | -3.20% | 3.5% | 3.4% |
| 2001 | \$1,055,000 | 3.74% | 2.6% | 2.8% |
| 2002 | \$1,237,581 | 17.31% | 1.4% | 1.6% |
| 2003 | \$1,302,000 | 5.21% | 2.1% | 2.3% |
| 2004 | \$1,370,800 | 5.28% | 2.7% | 2.7% |
| 2005 | \$1,375,283 | 0.33% | 4.1% | 3.4% |
| 2006 | \$1,337,000 | -2.78% | 3.3% | 3.2% |
| 2007 | \$1,376,000 | 2.92% | 2.3% | 2.8% |
| 2008 | \$1,395,000 | 1.38% | 5.8% | 3.8% |
| 2009 | \$1,424,000 | 2.08% | 0.0% | -0.4% |
| 2010 | \$1,470,000 | 3.23% | 0.0% | 1.6% |
| 2011 | \$1,509,000 | 2.65% | 3.6% | 3.2% |
| 2012 | \$1,556,000 | 3.11% | 1.7% | 2.1% |
| 2013 | \$1,605,000 | 3.15% | 1.5% | 1.5% |
| 2014 | \$1,649,000 | 2.74% | 1.7% | 1.6% |
| 2015 | \$1,623,000 | -1.58% | 0.0% | |
| Total | \$29,075,792 | 460.2% | | |
| Average | \$1,118,300 | 6.6% | 2.51% | 2.63% |

We Are Concerned With Enzo’s Classified Board Structure, Poor Corporate Governance and Limitations On Shareholder Rights

We are also concerned with the poor corporate governance that severely limits the ability of shareholders to seek effective change at Enzo. The Board is classified into three separate classes, meaning its directors are only subject to re-election by shareholders once every three years. In our view, the ability of shareholders to select directors each year is an important check on the performance of the Board and is critical in allowing shareholder input on the direction and state of the Company and ensuring the best group of individuals are on the Board to oversee their investment. To the contrary, the Board’s current classified structure, in our view, impedes shareholders’ ability to regularly and effectively evaluate the performance of their directors and insulates and entrenches the incumbents despite their apparent lapses in oversight.

We are also concerned with the poor corporate governance that severely limits the ability of shareholders to seek effective change at Enzo. Shareholders are prohibited from calling special meetings and effectively cannot act by written consent as such action must be unanimous. In addition, certain provisions of the Company’s Certificate of Incorporation may only be amended by a prohibitively high supermajority vote of 80% of the shares outstanding and business combinations may only be approved by a supermajority vote of two-thirds of the shares outstanding. These anti-shareholder provisions have caused ISS to assign Enzo the worst possible corporate governance “QuickScore” of 10 (on a scale of 1 to 10 where 1 indicates low risk and 10 maximum governance risk)²⁶.

We Are Concerned With the Seeming Lack of Relevant Expertise of the Independent Directors

We are concerned that the independent members of the Board do not have significant experience in the life sciences and biotechnology industry or in IP matters, which has become a very important source of potential value for Enzo’s shareholders. Dr. Bernard L. Kasten does have expertise in the healthcare and diagnostics sector, but Directors Gregory M. Bortz and Dov Perlysky’s experience appears to be primarily in the financial services industry, which leads to even greater concerns regarding Enzo’s continued underperformance during their tenure. Further, we do not believe that any member of the Board, independent or not, has meaningful experience with IP litigation, which is troubling because IP litigation could bring significant revenue to the Company from successful patent infringement cases.

²³ Source: The United States Social Security Administration.

²⁴ Source: The United States Social Security Administration.

²⁵ Source: The Bureau of Labor Statistics.

²⁶ As reported in the ISS report for the Company’s 2014 annual meeting of shareholders

OUR TWO NOMINEES HAVE THE EXPERIENCE, QUALIFICATIONS AND COMMITMENT NECESSARY TO FULLY EXPLORE AVAILABLE OPPORTUNITIES TO UNLOCK VALUE FOR SHAREHOLDERS

We have identified two highly-qualified, independent directors with complementary skill sets who together bring significant operating, financial, IP and transaction experience that is directly relevant to Enzo. We are confident our nominees will bring a fresh perspective into the boardroom and would be extremely helpful in evaluating and executing on initiatives to unlock value at the Company.

Dimitrios J. Angelis currently serves as a director of Digirad Corporation, a medical imaging company, and AMERI Holdings, Inc., a technology management solutions company. Mr. Angelis has held multiple positions related to the biotechnology and life sciences industry, including (i) General Counsel of Wockhardt Inc., a biologics and pharmaceutical company, (ii) senior counsel at Dr. Reddy's Laboratories, Ltd., a publicly traded pharmaceutical company and (iii) Chief Legal Officer and Corporate Secretary of Osteotech, Inc., a medical device company, where he was responsible for managing the patent portfolio of approximately 42 patents. Lone Star Value believes Mr. Angelis' prior experience within the pharmaceutical and medical device industries, and experience with patent portfolios will enable him to bring a wealth of strategic, legal and business acumen to the Board.

John M. Climaco is the Executive Vice President of Perma-Fix Medical S.A., a company involved in the research, development and manufacturing of medical radioisotopes. Mr. Climaco also currently serves as a director of Digirad Corporation, a medical imaging company, and Perma-Fix Environmental Solutions, Inc., an environmental solutions business. He previously served as the President, Chief Executive Officer and a director of Axial Biotech, Inc., a venture-backed molecular diagnostics and clinical laboratory company he co-founded specializing in the genetics of spine disorders. Mr. Climaco also previously served as a director of InfuSystem Holdings Inc., a medical device and services company. Lone Star Value believes that Mr. Climaco's significant executive experience, including nine years as the CEO of a company developing genetic tests and operating a clinical laboratory, as well as his experience raising capital, engineering strategic alliances, building executive teams and managing complex business operations and legal strategies, will make him a valuable addition to the Board.

PROPOSAL NO. 1

ELECTION OF DIRECTORS

The Company currently has a classified Board, which is divided into three classes. The directors in each class are elected for terms of three years so that the term of office of one class of directors expires at each annual meeting of shareholders. We believe there are two directorships up for election at the Annual Meeting. We are seeking your support at the Annual Meeting to elect our two Nominees in opposition to the Company's director nominees for terms ending at the 2018 annual meeting of shareholders. Your vote to elect such Nominees will have the legal effect of replacing two incumbent directors with the Nominees. If elected, such Nominees will represent a minority of the members of the Board, and therefore it is not guaranteed that they can implement any actions that they may believe are necessary to enhance shareholder value.

THE NOMINEES

The following information sets forth the name, age, business address, present principal occupation, and employment and material occupations, positions, offices, or employments for the past five years of each of the Nominees. The nominations were made in a timely manner and in compliance with the applicable provisions of the Company's governing instruments. The specific experience, qualifications, attributes and skills that led us to conclude that the Nominees should serve as directors of the Company are set forth above in the section entitled "Reasons for the Solicitation" and below. This information has been furnished to us by the Nominees. All of the Nominees are citizens of the United States.

Dimitrios J. Angelis, age 45, has served as a director of Digirad (NASDAQ: DRAD), a medical imaging company, since July 2015, and AMERI Holdings, Inc. (OTC: AMRH), a technology management solutions company, since June 2015. He previously served as a director of On Track Innovations Ltd. (NASDAQ:OTIV) ("On Track Innovations"), a pioneer of cashless payment technology, from December 2012 to August 2015, and as its Chairman from April 2013 to August 2015. In December 2013, Mr. Angelis was appointed at the general shareholders meeting as the Chief Executive Officer of OTI America Inc., the U.S. based subsidiary of On Track Innovations, a position that he held until August 2015. From October 2012 until December 2013, Mr. Angelis served as the General Counsel of Wockhardt Inc., a biologics and pharmaceutical company. From October 2008 to October 2012, Mr. Angelis was a senior counsel at Dr. Reddy's Laboratories, Ltd. (NYSE:RDY), a publicly traded pharmaceutical company, and during 2008 he was the Chief Legal Officer and Corporate Secretary of Osteotech, Inc. (formerly NASDAQ:OSTE), a medical device company, with responsibility for managing the patent portfolio of approximately 42 patents. Prior to that, Mr. Angelis worked in the pharmaceutical industry in various corporate, strategic and legal roles. In addition, he worked for McKinsey & Company, Merrill Lynch and the Japanese government. He began his legal career as a transactional associate with the law firm Mayer Brown. Mr. Angelis holds a B.A. in Philosophy and English from Boston College, an M.A. in Behavioral Science from California State University and Juris Doctor from New York University School of Law.

Lone Star Value believes Mr. Angelis' experience of over a decade as an accomplished negotiator and general counsel to public and private companies, prior experience within the pharmaceutical and medical device industries, and experience with patent portfolios will enable him to bring a wealth of strategic, legal and business acumen to the Board, well qualifying him to serve as a director of the Company.

John M. Climaco, Esq., age 47, has served as the Executive Vice President of Perma-Fix Medical S.A., a Polish corporation involved in the research, development and manufacturing of medical radioisotopes, since June 2015. Mr. Climaco is an attorney and an executive with a distinctive record of business successes and 15 years of experience managing business operations and strategies in both public and private companies. Mr. Climaco has served as a director of Digirad (NASDAQ:DRAD) since December 2012, where he is the Chairman of the Strategic Advisory Committee and a member of the Audit and Compensation Committees. Mr. Climaco has also served as a director of Perma-Fix Environmental Solutions, Inc. (NASDAQ:PESI), an environmental solutions business, since October 2013. Previously, he served as a director of PDI, Inc. (NASDAQ:PDII), an outsourced sales and marketing company, from December 2013 until October 2014, and InfuSystem Holdings Inc. (NYSE:INFU), a medical device and services company, from April 2012 to April 2013. From 2003 to 2012, Mr. Climaco served as the President, Chief Executive Officer and a director of Axial Biotech, Inc., a venture-backed molecular diagnostics and clinical laboratory company he co-founded specializing in the genetics of spine disorders. From 1997 to 2003, Mr. Climaco practiced law with the firm Fabian & Clendenin, where he specialized in corporate and tax legal strategies. Mr. Climaco holds a BA in Philosophy, cum laude, from Middlebury College and a Juris Doctorate from the University of California, Hastings College of Law.

Lone Star Value believes that Mr. Climaco's significant executive experience, including nine years as the CEO of a company developing genetic tests and operating a clinical laboratory, as well as his experience raising capital, engineering strategic alliances, building executive teams and managing complex business operations and legal strategies, will make him a valuable addition to the Board.

The principal business address of Mr. Angelis is 430 Maintain Ave, Suite 407, New Providence, New Jersey 07974. The principal business address of Mr. Climaco is PO Box 326, Park City, Utah 84060.

As of the date hereof, Messrs. Angelis and Climaco do not beneficially own any securities of the Company.

Each of the Nominees may be deemed to be a member of the Group (as defined below) for the purposes of Section 13(d)(3) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Each of the Nominees specifically disclaims beneficial ownership of shares of Common Stock that he does not directly own. For information regarding purchases and sales during the past two years by the members of the Group of securities of the Company, see [Schedule I](#).

Lone Star Value Investors and certain of its affiliates have signed letter agreements, pursuant to which they agreed to indemnify Messrs. Angelis and Climaco against claims arising from the solicitation of proxies from the Company's shareholders in connection with the Annual Meeting and any related transactions.

On September 23, 2015, Lone Star Value entered into a Joint Filing and Solicitation Agreement with the Nominees pursuant to which, among other things, the parties agreed to (a) the joint filing on behalf of each of them of statements on Schedule 13D, and any amendments thereto, with respect to the securities of the Company, to the extent required by applicable law, and (b) solicit proxies for the election of the Nominees at the Annual Meeting.

The members of Lone Star Value and the Nominees are collectively referred to as the "Group" herein.

Other than as stated herein, there are no arrangements or understandings between the members of Lone Star Value and any of the Nominees or any other person or persons pursuant to which the nomination of the Nominees described herein is to be made, other than the consent by each of the Nominees to be named in this Proxy Statement and to serve as a director of the Company if elected as such at the Annual Meeting. None of the Nominees 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 pending legal proceedings.

Each Nominee presently is, and if elected as a director of the Company, each of the Nominees would, in our view, be, an “independent director” within the meaning of (i) applicable NYSE listing standards applicable to board composition, including Rule 303.A and (ii) Section 301 of the Sarbanes-Oxley Act of 2002. No Nominee is a member of the Company’s compensation, nominating or audit committee that is not independent under any such committee’s applicable independence standards.

We do not expect that the Nominees will be unable to stand for election, but, in the event any Nominee is unable to serve or for good cause will not serve, the shares of Common Stock represented by the enclosed **GOLD** proxy card will be voted for substitute nominee(s), to the extent this is not prohibited under the Bylaws and applicable law. In addition, we reserve the right to nominate substitute person(s) if the Company makes or announces any changes to its Bylaws or takes or announces any other action that has, or if consummated would have, the effect of disqualifying any Nominee, to the extent this is not prohibited under the Bylaws and applicable law. In any such case, we would identify and properly nominate such substitute nominees in accordance with the Company’s Bylaws and shares of Common Stock represented by the enclosed **GOLD** proxy card will be voted for such substitute nominee(s). We reserve the right to nominate additional person(s), to the extent this is not prohibited under the Bylaws and applicable law, if the Company increases the size of the Board above its existing size or increases the number of directors whose terms expire at the Annual Meeting. Additional nominations made pursuant to the preceding sentence are without prejudice to the position of Lone Star Value that any attempt to increase the size of the current Board or to reconstitute or reconfigure the classes on which the current directors serve constitutes an unlawful manipulation of the Company’s corporate machinery.

WE URGE YOU TO VOTE FOR THE ELECTION OF THE NOMINEES ON THE ENCLOSED GOLD PROXY CARD.

PROPOSAL NO. 2

ADVISORY VOTE TO APPROVE THE COMPENSATION OF THE COMPANY'S NAMED EXECUTIVE OFFICERS

As discussed in further detail in the Company's proxy statement, the Company is asking shareholders to indicate their support for the compensation of the Company's named executive officers. This proposal, commonly known as a "Say-on-Pay" proposal, asks the Company's shareholders to vote, on a non-binding, advisory basis, to approve the compensation of the Company's named executive officers as disclosed in the Company's proxy statement. Accordingly, the Company is asking shareholders to vote for the following resolution:

"RESOLVED, that the Company's shareholders approve, on a nonbinding advisory basis, the compensation paid to the Company's Named Executive Officers, as disclosed in the Company's Proxy Statement for the 2015 Annual Meeting of Shareholders pursuant to the compensation disclosure rules of the Securities and Exchange Commission, including the Compensation Discussion and Analysis, the Summary Compensation table and the related compensation tables and narrative discussion."

According to the Company's proxy statement, the shareholder vote on the Say-on-Pay Proposal is an advisory vote only, and it is not binding on the Company, the Board or the Compensation Committee of the Board; however, the Board and the Compensation Committee of the Board will take into account the outcome of the vote when considering future compensation decisions.

WE MAKE NO RECOMMENDATION WITH RESPECT TO THIS SAY-ON-PAY PROPOSAL AND INTEND TO VOTE OUR SHARES ON THIS PROPOSAL ACCORDING TO THE RECOMMENDATION OF ISS.

PROPOSAL NO. 3

RATIFICATION OF APPOINTMENT OF EISNERAMPER LLP AS INDEPENDENT REGISTERED PUBLIC ACCOUNTANTING FIRM

As discussed in further detail in the Company's proxy statement, the Audit Committee of the Board has selected and the Board has appointed EisnerAmper LLP as the Company's independent registered public accounting firm for the fiscal year ending July 31, 2016. The Board is seeking shareholder ratification of the appointment of EisnerAmper LLP as the Company's independent registered public accounting firm for the fiscal year ending July 31, 2016.

As disclosed in the Company's proxy statement, although shareholder ratification is not required by the Bylaws or otherwise, if the appointment is not ratified, the Audit Committee of the Board will consider selecting another independent registered public accounting firm for the following fiscal year, but it is not required to do so. Further, even if the appointment is ratified, the Audit Committee of the Board, in its discretion, may select a new independent registered public accounting firm at any time during the year if it believes that such a change would be in the Company's best interest.

WE MAKE NO RECOMMENDATION WITH RESPECT TO THE RATIFICATION OF THE APPOINTMENT OF EISNERAMPER LLP AS THE INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM OF THE COMPANY FOR FISCAL 2016 AND INTEND TO VOTE OUR SHARES "FOR" THIS PROPOSAL.

VOTING AND PROXY PROCEDURES

Shareholders are entitled to one vote for each share of Common Stock held of record on the Record Date with respect to each matter to be acted on at the Annual Meeting. Only shareholders of record on the Record Date will be entitled to notice of and to vote at the Annual Meeting. Shareholders who sell their shares of Common Stock before the Record Date (or acquire them without voting rights after the Record Date) may not vote such shares of Common Stock. Shareholders of record on the Record Date will retain their voting rights in connection with the Annual Meeting even if they sell such shares of Common Stock after the Record Date. Based on publicly available information, Lone Star Value believes that the only outstanding class of securities of the Company entitled to vote at the Annual Meeting is the shares of Common Stock.

Shares of Common Stock represented by properly executed **GOLD** proxy cards will be voted at the Annual Meeting as marked and, in the absence of specific instructions, will be voted **FOR** the election of the Nominees, **AGAINST** the Say-on-Pay Proposal, and **FOR** the ratification of EisnerAmper LLP as the Company's independent registered public accounting firm for fiscal 2016.

According to the Company's proxy statement for the Annual Meeting, the current Board intends to nominate two candidates for election at the Annual Meeting. This Proxy Statement is soliciting proxies to elect only our Nominees. Accordingly, the enclosed **GOLD** proxy card may only be voted for the Nominees and does not confer voting power with respect to the Company's nominees. The Participants in this solicitation intend to vote all of the Lone Star Value Group Shares in favor of the Nominees.

QUORUM; BROKER NON-VOTES; DISCRETIONARY VOTING

A quorum is the minimum number of shares of Common Stock that must be represented at a duly called meeting in person or by proxy in order to legally conduct business at the meeting. For the Annual Meeting, the presence, in person or by proxy, of the holders of at least 23,034,408 shares of Common Stock, which represents a majority of the 46,068,815 shares of Common Stock outstanding as of the Record Date, will be considered a quorum allowing votes to be taken and counted for the matters before the shareholders.

Abstentions are counted as present and entitled to vote for purposes of determining a quorum. Shares represented by "broker non-votes" also are counted as present and entitled to vote for purposes of determining a quorum. However, if you hold your shares in street name and do not provide voting instructions to your broker, your shares will not be voted on any proposal on which your broker does not have discretionary authority to vote (a "broker non-vote"). Under rules of the New York Stock Exchange, your broker will not have discretionary authority to vote your shares at the Annual Meeting on any of the proposals.

If you are a shareholder of record, you must deliver your vote by mail, attend the Annual Meeting in person and vote, vote by Internet or vote by telephone in order to be counted in the determination of a quorum.

If you are a beneficial owner, your broker will vote your shares pursuant to your instructions, and those shares will count in the determination of a quorum. Brokers do not have discretionary authority to vote on any of the proposals at the Annual Meeting. Accordingly, unless you vote via proxy card or provide instructions to your broker, your shares of Common Stock will count for purposes of attaining a quorum, but will not be voted on those proposals.

VOTES REQUIRED FOR APPROVAL

Election of Directors — The Company has adopted a plurality vote standard for non-contested and contested director elections. As a result of our nomination of the Nominees, the director election at the Annual Meeting will be contested, so the two nominees for director receiving the highest vote totals will be elected as directors of the Company. With respect to the election of directors, only votes cast “FOR” a nominee will be counted. Proxy cards specifying that votes should be withheld with respect to one or more nominees will result in those nominees receiving fewer votes but will not count as a vote against the nominees. Neither an abstention nor a broker non-vote will count as a vote cast “FOR” or “AGAINST” a director nominee. Therefore, abstentions and broker non-votes will have no direct effect on the outcome of the election of directors.

Advisory (nonbinding) Vote on Executive Compensation — According to the Company’s proxy statement, although the vote is non-binding, assuming that a quorum is present, the advisory vote on executive compensation will be approved if a majority of the shares present in person or represented by proxy at the Annual Meeting vote in favor of approval. The Company has indicated that broker non-votes will have no effect on the approval of the proposal, but abstentions will act as a vote against approval.

Ratification of the Appointment of Accounting Firm — According to the Company’s proxy statement, assuming that a quorum is present, the selection of EisnerAmper LLP will be deemed to have been ratified if a majority of the shares present in person or represented by proxy at the Annual Meeting vote in favor of ratification. The Company has indicated that broker non-votes will have no effect on the ratification of the appointment, but abstentions will act as a vote against ratification of the appointment.

Under applicable New York law, none of the holders of Common Stock are entitled to appraisal rights in connection with any matter to be acted on at the Annual Meeting. If you sign and submit your **GOLD** proxy card without specifying how you would like your shares voted, your shares will be voted in accordance with Lone Star Value’s recommendations specified herein and in accordance with the discretion of the persons named on the **GOLD** proxy card with respect to any other matters that may be voted upon at the Annual Meeting.

REVOCAION OF PROXIES

Shareholders of the Company may revoke their proxies at any time prior to exercise by attending the Annual Meeting and voting in person (although attendance at the Annual Meeting will not in and of itself constitute revocation of a proxy) or by delivering a written notice of revocation. The delivery of a subsequently dated proxy which is properly completed will constitute a revocation of any earlier proxy. The revocation may be delivered either to Lone Star Value in care of InvestorCom at the address set forth on the back cover of this Proxy Statement or to the Company at 527 Madison Avenue, New York, New York 10022 or any other address provided by the Company. Although a revocation is effective if delivered to the Company, we request that either the original or photostatic copies of all revocations be mailed to Lone Star Value in care of InvestorCom at the address set forth on the back cover of this Proxy Statement so that we will be aware of all revocations and can more accurately determine if and when proxies have been received from the holders of record on the Record Date of a majority of the outstanding shares of Common Stock. Additionally, InvestorCom may use this information to contact shareholders who have revoked their proxies in order to solicit later dated proxies for the election of the Nominees.

IF YOU WISH TO VOTE FOR THE ELECTION OF THE NOMINEES TO THE BOARD, PLEASE SIGN, DATE AND RETURN PROMPTLY THE ENCLOSED GOLD PROXY CARD IN THE POSTAGE-PAID ENVELOPE PROVIDED.

SOLICITATION OF PROXIES

The solicitation of proxies pursuant to this Proxy Statement is being made by Lone Star Value. Proxies may be solicited by mail, facsimile, telephone, telegraph, Internet, in person and by advertisements.

Members of Lone Star Value have entered into an agreement with InvestorCom for solicitation and advisory services in connection with this solicitation, for which InvestorCom will receive a fee not to exceed \$80,000, together with reimbursement for its reasonable out-of-pocket expenses, and will be indemnified against certain liabilities and expenses, including certain liabilities under the federal securities laws. InvestorCom will solicit proxies from individuals, brokers, banks, bank nominees and other institutional holders. Lone Star Value has requested banks, brokerage houses and other custodians, nominees and fiduciaries to forward all solicitation materials to the beneficial owners of the shares of Common Stock they hold of record. Lone Star Value will reimburse these record holders for their reasonable out-of-pocket expenses in so doing. It is anticipated that InvestorCom will employ approximately 25 persons to solicit shareholders for the Annual Meeting.

The entire expense of soliciting proxies is being borne by Lone Star Value. Costs of this solicitation of proxies are currently estimated to be approximately \$150,000. Lone Star Value estimates that through the date hereof its expenses in connection with this solicitation are approximately \$40,000. Lone Star Value intends to seek reimbursement from the Company of all expenses it incurs in connection with this solicitation. Lone Star Value does not intend to submit the question of such reimbursement to a vote of security holders of the Company.

ADDITIONAL PARTICIPANT INFORMATION

The Nominees and the members of Lone Star Value are the Participants in this solicitation. The principal business of Lone Star Value Investors is investing in securities. The principal business of Lone Star Value GP is serving as the general partner of Lone Star Value Investors. The principal business of Lone Star Value Management is serving as the investment manager of Lone Star Value Investors and of a certain separately managed account (the "Separately Managed Account"). The principal occupation of Mr. Eberwein is serving as the manager of Lone Star Value GP and sole member of Lone Star Value Management.

The address of the principal office of each of Lone Star Value Investors, Lone Star Value GP, Lone Star Value Management and Mr. Eberwein is 53 Forest Avenue, 1st Floor, Old Greenwich, Connecticut 06870.

As of the date hereof, Lone Star Value Investors directly beneficially owned 550,000 shares of Common Stock. Lone Star Value GP, as the general partner of Lone Star Value Investors, may be deemed the beneficial owner of the 550,000 shares of Common Stock beneficially owned by Lone Star Value Investors. As of the date hereof, 15,000 shares of Common Stock were held in the Separately Managed Account. Lone Star Value Management, as the investment manager of Lone Star Value Investors and the Separately Managed Account, may be deemed the beneficial owner of the 565,000 shares of Common Stock beneficially owned in the aggregate by Lone Star Value Investors and held in the Separately Managed Account. Mr. Eberwein, as the manager of Lone Star Value GP and sole member of Lone Star Value Management, may be deemed the beneficial owner of the 565,000 shares of Common Stock beneficially owned in the aggregate by Lone Star Value Investors and held in the Separately Managed Account.

Each Participant in this solicitation is a member of a “group” with the other Participants for the purposes of Section 13(d)(3) of the Exchange Act. The Group may be deemed to beneficially own the 565,000 shares of Common Stock owned in the aggregate by all of the Participants in this solicitation. Each Participant in this solicitation disclaims beneficial ownership of the shares of Common Stock he or it does not directly own. For information regarding purchases and sales of securities of the Company during the past two years by the Participants in this solicitation, see Schedule I.

The shares of Common Stock purchased by Lone Star Value Investors and held in the Separately Managed Account were purchased with working capital (which may, at any given time, include margin loans made by brokerage firms in the ordinary course of business).

Except as set forth in this Proxy Statement (including the Schedules hereto), (i) during the past 10 years, no Participant in this solicitation has been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors); (ii) no Participant in this solicitation directly or indirectly beneficially owns any securities of the Company; (iii) no Participant in this solicitation owns any securities of the Company which are owned of record but not beneficially; (iv) no Participant in this solicitation has purchased or sold any securities of the Company during the past two years; (v) no part of the purchase price or market value of the securities of the Company owned by any Participant in this solicitation is represented by funds borrowed or otherwise obtained for the purpose of acquiring or holding such securities; (vi) no Participant in this solicitation is, or within the past year was, a party to any contract, arrangements or understandings with any person with respect to any securities of the Company, 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; (vii) no associate of any Participant in this solicitation owns beneficially, directly or indirectly, any securities of the Company; (viii) no Participant in this solicitation owns beneficially, directly or indirectly, any securities of any parent or subsidiary of the Company; (ix) no Participant in this solicitation or any of his or its associates was a party to any transaction, or series of similar transactions, since the beginning of the Company’s last fiscal year, or is a party to any currently proposed transaction, or series of similar transactions, to which the Company or any of its subsidiaries was or is to be a party, in which the amount involved exceeds \$120,000; (x) no Participant in this solicitation or any of his or its associates has any arrangement or understanding with any person with respect to any future employment by the Company or its affiliates, or with respect to any future transactions to which the Company or any of its affiliates will or may be a party; and (xi) no Participant in this solicitation has a substantial interest, direct or indirect, by securities holdings or otherwise, in any matter to be acted on at the Annual Meeting.

There are no material proceedings to which any Participant in this solicitation or any of his or its associates 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. With respect to each of the Nominees, none of the events enumerated in Item 401(f)(1)-(8) of Regulation S-K of the Exchange Act occurred during the past ten years.

OTHER MATTERS AND ADDITIONAL INFORMATION

Lone Star Value is unaware of any other matters to be considered at the Annual Meeting. However, should other matters, which Lone Star Value is not aware of a reasonable time before this solicitation, be brought before the Annual Meeting, the persons named as proxies on the enclosed **GOLD** proxy card will vote on such matters in their discretion.

SHAREHOLDER PROPOSALS

Proposals of shareholders intended to be presented at the 2016 annual meeting of shareholders (the “2016 Annual Meeting”) must, in order to be included in the Company’s proxy statement and the form of proxy for the 2016 Annual Meeting, be received by the Company’s Secretary at Enzo’s principal executive offices at 527 Madison Avenue, New York, New York 10022, by August 11, 2016.

Under the Bylaws, any shareholder intending to nominate one or more candidates for election to the Board at the 2016 Annual Meeting must give written notice of the nomination to the Company’s Secretary not less than 90 days and not more than 120 days prior to the earlier date of the date of the 2016 Annual Meeting or January 6, 2016. Also pursuant to the Bylaws, any shareholder intending to present any proposal (other than a proposal made by, or at the direction of, the Board) at the 2016 Annual Meeting, must give written notice of that proposal to the Company’s Secretary not less than 90 days and not more than 120 days prior to the first anniversary of the preceding year’s annual meeting (subject to certain exceptions if the annual meeting is advanced or delayed a certain number of days).

The information set forth above regarding the procedures for submitting shareholder proposals for consideration at the 2016 Annual Meeting is based on information contained in the Company’s proxy statement and organizational documents. The incorporation of this information in this proxy statement should not be construed as an admission by Lone Star Value that such procedures are legal, valid or binding.

INCORPORATION BY REFERENCE

WE HAVE OMITTED FROM THIS PROXY STATEMENT CERTAIN DISCLOSURE REQUIRED BY APPLICABLE LAW THAT IS EXPECTED TO BE INCLUDED IN THE COMPANY’S PROXY STATEMENT RELATING TO THE ANNUAL MEETING. THIS DISCLOSURE IS EXPECTED TO INCLUDE, AMONG OTHER THINGS, CURRENT BIOGRAPHICAL INFORMATION ON THE COMPANY’S DIRECTORS, INFORMATION CONCERNING EXECUTIVE COMPENSATION AND OTHER IMPORTANT INFORMATION. SEE SCHEDULE II FOR INFORMATION REGARDING PERSONS WHO BENEFICIALLY OWN MORE THAN 5% OF THE SHARES AND THE OWNERSHIP OF THE SHARES BY THE DIRECTORS AND MANAGEMENT OF THE COMPANY.

The information concerning the Company contained in this Proxy Statement and the Schedules attached hereto has been taken from, or is based upon, publicly available information.

Lone Star Value Investors, LP

December 11, 2015

SCHEDULE I

**TRANSACTIONS IN SECURITIES OF THE COMPANY
DURING THE PAST TWO YEARS**

| <u>Class of Security</u> | <u>Amount of Securities Acquired/(Disposed)</u> | <u>Date of Acquisition/Disposition</u> |
|---|--|---|
| <u>LONE STAR VALUE INVESTORS, LP</u> | | |
| Common Stock | 10,000 | 11/29/2013 |
| Common Stock | 15,000 | 12/02/2013 |
| Common Stock | 19,050 | 12/03/2013 |
| Common Stock | 50,000 | 12/04/2013 |
| Common Stock | 5,950 | 12/04/2013 |
| Common Stock | 25,000 | 12/05/2013 |
| Common Stock | 25,000 | 12/06/2013 |
| Common Stock | 50,000 | 12/09/2013 |
| Common Stock | 25,000 | 12/10/2013 |
| Common Stock | 6,400 | 12/10/2013 |
| Common Stock | 18,600 | 12/11/2013 |
| Common Stock | 25,000 | 12/12/2013 |
| Common Stock | 25,000 | 12/13/2013 |
| Common Stock | 25,000 | 12/17/2013 |
| Common Stock | 25,000 | 12/18/2013 |
| Common Stock | 25,000 | 12/18/2013 |
| Common Stock | 25,000 | 12/19/2013 |
| Common Stock | 600 | 01/17/2014 |
| Common Stock | 10,000 | 01/17/2014 |
| Common Stock | 15,000 | 01/17/2014 |
| Common Stock | 24,400 | 01/21/2014 |
| Common Stock | 10,000 | 01/22/2014 |
| Common Stock | 15,000 | 01/22/2014 |
| Common Stock | 1,200 | 01/24/2014 |
| Common Stock | 25,000 | 01/27/2014 |
| Common Stock | 8,800 | 01/27/2014 |
| Common Stock | 15,000 | 01/27/2014 |
| Common Stock | 10,000 | 01/28/2014 |
| Common Stock | 15,000 | 01/28/2014 |
| Common Stock | (50,000) | 02/04/2014 |
| Common Stock | (100,000) | 02/05/2014 |
| Common Stock | (50,000) | 02/05/2014 |
| Common Stock | (4,645) | 02/07/2014 |
| Common Stock | (15,000) | 02/07/2014 |
| Common Stock | (18,703) | 02/10/2014 |
| Common Stock | (11,652) | 02/11/2014 |
| Common Stock | (15,100) | 02/12/2014 |
| Common Stock | (34,900) | 02/13/2014 |
| Common Stock | (20,962) | 02/13/2014 |
| Common Stock | (29,038) | 02/14/2014 |

| | | |
|--------------|-----------|------------|
| Common Stock | (50,000) | 02/18/2014 |
| Common Stock | (50,000) | 02/21/2014 |
| Common Stock | (25,000) | 02/21/2014 |
| Common Stock | (25,000) | 02/21/2014 |
| Common Stock | (25,000) | 02/21/2014 |
| Common Stock | (52,000) | 02/21/2014 |
| Common Stock | (130,506) | 02/24/2014 |
| Common Stock | (110,594) | 02/25/2014 |
| Common Stock | (76,875) | 02/26/2014 |
| Common Stock | (114,863) | 02/27/2014 |
| Common Stock | (106,000) | 02/28/2014 |
| Common Stock | (81,144) | 03/03/2014 |
| Common Stock | (90,000) | 03/04/2014 |
| Common Stock | (74,918) | 03/05/2014 |
| Common Stock | (38,100) | 03/06/2014 |
| Common Stock | 50,000 | 05/13/2014 |
| Common Stock | 50,000 | 05/15/2014 |
| Common Stock | 25,000 | 05/16/2014 |
| Common Stock | 25,000 | 05/21/2014 |
| Common Stock | 25,000 | 05/22/2014 |
| Common Stock | 25,000 | 05/23/2014 |
| Common Stock | 25,000 | 05/28/2014 |
| Common Stock | (25,000) | 06/09/2014 |
| Common Stock | (100) | 06/10/2014 |
| Common Stock | (25,000) | 06/10/2014 |
| Common Stock | (25,000) | 06/10/2014 |
| Common Stock | (21,718) | 06/10/2014 |
| Common Stock | (1,400) | 06/11/2014 |
| Common Stock | (126,782) | 06/11/2014 |
| Common Stock | 25,000 | 08/05/2014 |
| Common Stock | 25,000 | 08/06/2014 |
| Common Stock | (50,000) | 08/07/2014 |
| Common Stock | 1,000 | 02/04/2015 |
| Common Stock | 25,000 | 02/24/2015 |
| Common Stock | 24,000 | 02/24/2015 |
| Common Stock | 24,835 | 02/25/2015 |
| Common Stock | 12,405 | 02/26/2015 |
| Common Stock | 12,760 | 02/27/2015 |
| Common Stock | 25,000 | 02/27/2015 |
| Common Stock | 10,300 | 03/02/2015 |
| Common Stock | 3,700 | 03/03/2015 |
| Common Stock | 17,084 | 03/04/2015 |
| Common Stock | 2,900 | 03/05/2015 |
| Common Stock | 10,000 | 03/05/2015 |
| Common Stock | 17,016 | 03/06/2015 |
| Common Stock | 15,000 | 03/06/2015 |
| Common Stock | 18,674 | 04/06/2015 |
| Common Stock | 6,326 | 04/07/2015 |
| Common Stock | 25,000 | 04/08/2015 |
| Common Stock | 38,371 | 04/17/2015 |

| | | |
|--------------|-----------|------------|
| Common Stock | 11,629 | 04/20/2015 |
| Common Stock | (300,000) | 05/12/2015 |
| Common Stock | 10,000 | 09/08/2015 |
| Common Stock | 10,000 | 09/08/2015 |
| Common Stock | 5,000 | 09/09/2015 |
| Common Stock | 1,800 | 09/21/2015 |
| Common Stock | 3,200 | 09/22/2015 |
| Common Stock | 25,000 | 09/22/2015 |
| Common Stock | 360,781 | 09/23/2015 |
| Common Stock | 53,219 | 09/23/2015 |
| Common Stock | 50,000 | 09/24/2015 |
| Common Stock | 50,000 | 09/25/2015 |
| Common Stock | 50,000 | 09/28/2015 |
| Common Stock | 50,000 | 09/29/2015 |
| Common Stock | 50,000 | 09/30/2015 |
| Common Stock | 25,000 | 10/01/2015 |
| Common Stock | 10,000 | 10/19/2015 |
| Common Stock | (55,000) | 10/30/2015 |
| Common Stock | (5,000) | 10/30/2015 |
| Common Stock | (25,000) | 11/02/2015 |
| Common Stock | (31,300) | 11/04/2015 |
| Common Stock | (18,897) | 11/05/2015 |
| Common Stock | (19,803) | 11/06/2015 |
| Common Stock | (30,100) | 11/18/2015 |
| Common Stock | (5,316) | 11/19/2015 |
| Common Stock | (7,800) | 11/20/2015 |
| Common Stock | (6,784) | 11/23/2015 |

LONE STAR VALUE MANAGEMENT, LLC
(Through the Separately Managed Account)

| | | |
|--------------|---------|------------|
| Common Stock | 10,000 | 05/28/2015 |
| Common Stock | 5,000 | 05/29/2015 |
| Common Stock | 5,000 | 06/04/2015 |
| Common Stock | 5,000 | 07/06/2015 |
| Common Stock | 2,500 | 09/16/2015 |
| Common Stock | 2,500 | 09/18/2015 |
| Common Stock | 5,000 | 10/01/2015 |
| Common Stock | (5,000) | 11/02/2015 |
| Common Stock | (2,236) | 11/04/2015 |
| Common Stock | (2,591) | 11/05/2015 |
| Common Stock | (173) | 11/06/2015 |
| Common Stock | (5,000) | 11/18/2015 |
| Common Stock | (1,784) | 11/19/2015 |
| Common Stock | (5,000) | 11/20/2015 |
| Common Stock | 1,784 | 11/30/2015 |

SCHEDULE II

The following table is reprinted from the definitive proxy statement filed by Enzo Biochem, Inc. with the Securities and Exchange Commission on December 10, 2015.

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 (which includes the Board's Class I Director-nominees), and all current Directors and executive officers of the Company as a group.

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 from the date thereof (for example, through the exercise of an option or warrant). 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, PhD | 1,853,861 ⁽³⁾ | 3.9% |
| Barry W. Weiner | 1,289,909 ⁽⁴⁾ | 2.7% |
| James M. O'Brien | 14,496 ⁽⁵⁾ | * |
| David C. Goldberg | 143,640 ⁽⁶⁾ | * |
| Gregory M. Bortz | 158,953 ⁽⁷⁾ | * |
| Bernard L. Kasten, M.D. | 223,800 ⁽⁸⁾ | * |
| Dov Perlysky | 617,382 ⁽⁹⁾ | 1.3% |
| Wellington Management Group LLP | 4,559,840 ⁽¹⁰⁾ | 9.9% |
| Rosalind Davidowitz | 3,565,960 ⁽¹¹⁾ | 7.7% |
| All Directors and executive officers as a group (7 persons) | 4,302,039 ⁽¹²⁾ | 9.1% |

* Represents beneficial ownership of less than 1%.

(1) Except as otherwise noted in the footnotes to the table, 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 46,068,815 shares of Common Stock of the Company outstanding as of the close of business on the Record Date. 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 hereof is treated as outstanding only when determining the amount and percentage of Common Stock owned by directors and executive officers individually and as a group.

- (3) Includes (i) 262,038 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof, (ii) 5,308 shares of Common Stock held in the name of Dr. Rabbani as custodian for certain of his children, (iii) 18,794 shares of Common Stock held in the name of Dr. Rabbani's wife as custodian for certain of their children, and (iv) 27,108 shares of Common Stock held in the Company's 401(k) plan.
- (4) Includes (i) 194,852 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof, (ii) 3,638 shares of Common Stock that Mr. Weiner holds as custodian for certain of his children, and (iii) 27,116 shares of Common Stock held in the Company's 401(k) plan.
- (5) Includes (i) 11,655 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof, and (ii) 2,841 shares of Common Stock held in the Company's 401(k) plan.
- (6) Includes (i) 47,046 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof, and (ii) 21,838 shares of Common Stock held in the Company's 401(k) plan.
- (7) Includes 158,953 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof.
- (8) Includes 158,953 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof.
- (9) Includes (i) 158,953 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof, (ii) 30,000 shares owned by Laya Perlysky (Mr. Perlysky's wife) in an IRA account of which Mr. Perlysky disclaims beneficial ownership, (iii) 18,250 shares owned by Irwin Dov Perlysky IRA, (iv) 109,239 shares owned directly by RSD 2012 GRAT, of which Mr. Perlysky is the trustee; (v) 45,000 shares owned by Sky Ventures LLC, of which Mr. Perlysky is the manager, (vi) 1,714 shares owned directly by Mr. Perlysky, (vii) 244,020 shares owned by Kinger Investments LLP, (viii) 6,981 shares owned by Krovim LLC and (ix) 3,225 shares owned by MidAtlantic Capital LLC. Does not include shares owned by Mrs. Rosalind Davidowitz, who is Mr. Perlysky's mother-in-law.
- (10) The address of Wellington Management Group LLP is 280 Congress Street, Boston, MA 02210. This information is based solely on a Schedule 13F filed on November 16, 2015.
- (11) Mrs. Davidowitz's address is 7 Sutton Place South, Lawrence, New York, 11559. Includes (i) 1,312,654 shares owned by Mrs. Davidowitz, (ii) 381,713 shares owned directly by Mr. J. Morton Davis (Mrs. Davidowitz's husband), (iii) 1,216,196 shares owned by Engex, Inc., (iv) 124,738 shares owned by the Morton Foundation, and (v) 11,233 shares owned by an investment advisor whose principal is Mr. Davis. This information is based solely on information provided to the Company by the stockholder on November 19, 2015. This amount does not include shares owned by Laya Perlysky or Mr. Perlysky, her daughter and son-in-law.
- (12) Includes 992,448 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof.

IMPORTANT

Tell the Board what you think! Your vote is important. No matter how many shares of Common Stock you own, please give Lone Star Value your proxy FOR the election of the Nominees and in accordance with Lone Star Value's recommendations on the other proposals on the agenda for the Annual Meeting by taking three steps:

- SIGNING the enclosed **GOLD** proxy card;
- DATING the enclosed **GOLD** proxy card; and
- MAILING the enclosed **GOLD** proxy card TODAY in the envelope provided (no postage is required if mailed in the United States).

If any of your shares of Common Stock are held in the name of a brokerage firm, bank, bank nominee or other institution, only it can vote such shares of Common Stock and only upon receipt of your specific instructions. Depending upon your broker or custodian, you may be able to vote either by toll-free telephone or by the Internet. Please refer to the enclosed voting form for instructions on how to vote electronically. You may also vote by signing, dating and returning the enclosed GOLD voting form.

If you have any questions or require any additional information concerning this Proxy Statement, please contact InvestorCom at the address set forth below.



*65 Locust Avenue, Suite 302
New Canaan, CT 06840
Shareholders call toll free at (877) 972-0090
Banks and Brokers may call collect at (203) 972-9300*

ENZO BIOCHEM, INC.

2015 ANNUAL MEETING OF SHAREHOLDERS

THIS PROXY IS SOLICITED ON BEHALF OF LONE STAR VALUE INVESTORS, LP

**THE BOARD OF DIRECTORS OF ENZO BIOCHEM, INC.
IS NOT SOLICITING THIS PROXY**

P R O X Y

The undersigned appoints Jeffrey E. Eberwein and Steve Wolosky, and each of them, attorneys and agents with full power of substitution to vote all shares of common stock of Enzo Biochem, Inc. (the "Company") which the undersigned would be entitled to vote if personally present at the 2015 Annual Meeting of Shareholders of the Company scheduled to be held on January 6, 2016, at 9:00 A.M., local time, at The Yale Club of New York City, 50 Vanderbilt Avenue, New York, New York 10017 (including any adjournments or postponements thereof and any meeting called in lieu thereof, the "Annual Meeting").

The undersigned hereby revokes any other proxy or 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 action the herein named attorneys and proxies, 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 and in the discretion of the herein named attorneys and proxies or their substitutes with respect to any other matters as may properly come before the Annual Meeting that are unknown to Lone Star Value Investors, LP ("Lone Star Value") a reasonable time before this solicitation.

IF NO DIRECTION IS INDICATED WITH RESPECT TO THE PROPOSALS ON THE REVERSE, THIS PROXY WILL BE VOTED "FOR" PROPOSAL 1, "AGAINST" PROPOSAL 2, AND "FOR" PROPOSAL 3.

This Proxy will be valid until the completion of the Annual Meeting. This Proxy will only be valid in connection with Lone Star Value's solicitation of proxies for the Annual Meeting.

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

CONTINUED AND TO BE SIGNED ON REVERSE SIDE

GOLD PROXY CARD

[X] Please mark vote as in this example

LONE STAR VALUE STRONGLY RECOMMENDS THAT SHAREHOLDERS VOTE IN FAVOR OF THE NOMINEES LISTED BELOW IN PROPOSAL 1. LONE STAR VALUE MAKES NO RECOMMENDATION WITH RESPECT TO PROPOSALS 2 AND 3.

1. Lone Star Value's proposal to elect Dimitrios J. Angelis and John M. Climaco as directors of the Company.

| | FOR ALL NOMINEES | WITHHOLD AUTHORITY TO VOTE FOR ALL NOMINEES | FOR ALL EXCEPT NOMINEE(S) WRITTEN BELOW |
|----------------------|-----------------------------|--|--|
| Nominees: | [X] | [] | [] |
| Dimitrios J. Angelis | | | |
| John M. Climaco | | | |
| | | | _____ |
| | | | _____ |

Lone Star Value does not expect that any of the nominees will be unable to stand for election, but, in the event that any nominee is unable to serve or for good cause will not serve, the shares of common stock represented by this proxy card will be voted for substitute nominee(s), to the extent this is not prohibited under the Bylaws and applicable law. In addition, Lone Star Value has reserved the right to nominate substitute person(s) if the Company makes or announces any changes to its Bylaws or takes or announces any other action that has, or if consummated would have, the effect of disqualifying any nominee, to the extent this is not prohibited under the Bylaws and applicable law. In any such case, shares of common stock represented by this proxy card will be voted for such substitute nominee(s).

2. Company's proposal to approve, in a non-binding advisory vote, the compensation of the Company's named executive officers.

FOR AGAINST ABSTAIN

3. Company's proposal to ratify the appointment of EisnerAmper LLP as the Company's independent registered public accounting firm for the Company's fiscal year ending July 31, 2016.

FOR AGAINST ABSTAIN

DATED: _____

(Signature)

(Signature, if held jointly)

(Title)

WHEN SHARES ARE HELD JOINTLY, JOINT OWNERS SHOULD EACH SIGN. EXECUTORS, ADMINISTRATORS, TRUSTEES, ETC., SHOULD INDICATE THE CAPACITY IN WHICH SIGNING. PLEASE SIGN EXACTLY AS NAME APPEARS ON THIS PROXY.