

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

FORM 10-K/A

(Amendment No. 1)

(Mark One)

Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934
For the fiscal year ended July 31, 2019
Or

Transition Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934
For the transition period from _____ to _____
Commission File Number: 001-09974

Enzo Biochem, Inc.

(Exact name of Registrant as specified in its charter)

New York

(State or other jurisdiction of
incorporation or organization)

13-2866202

(IRS Employer
Identification Number)

527 Madison Ave., New York, New York 10022
(Address of Registrant's principal executive offices)

(212) 538-0100
(Registrant's telephone number, including area code)

Securities Registered Pursuant to Section 12(b) of the Act:

Title of Each Class	Trading Symbol	Name of Each Exchange on Which Registered
Common Stock, \$.01 par value	ENZ	The New York Stock Exchange

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.
Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act.
Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.
Yes No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).
Yes No

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

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting Company

Emerging growth
company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act of 1934).

Yes No

The aggregate market value of the registrant's voting stock held by non-affiliates of the registrant was approximately \$164,485,000 as of January 31, 2019.

The number of shares of the Company's common stock, \$.01 par value, outstanding at November 15, 2019 was 47,556,807.

DOCUMENTS INCORPORATED BY REFERENCE

None

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EXPLANATORY NOTE

Enzo Biochem, Inc. (the “Company”) is filing this Amendment No. 1 to Form 10-K on Form 10-K/A for the fiscal year ended July 31, 2019, in order to amend and restate Part III, Items 10 through 14 of the report on Form 10-K (the “original 10-K”) that we originally filed with the Securities and Exchange Commission (the “SEC”) on October 15, 2019.

This Form 10-K/A has been prepared and filed in reliance on General Instruction G to Form 10-K, which provides that registrants may provide the information required by Part III in a definitive proxy statement or an amendment to the Form 10-K filed with the SEC within 120 days after the end of the fiscal year covered by the report. The Company had initially planned to file the Part III information in a definitive proxy statement. Because the Company has filed a preliminary proxy statement on November 20, 2019, the Company has determined to instead file this Form 10-K/A to provide the Part III information within the required time period.

In accordance with Rule 12b-15 under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), each item of the original Form 10-K that is amended by this Form 10-K/A is restated in its entirety, and this Form 10-K/A is accompanied by currently dated certifications on Exhibits 31.3 and 31.4 by the Company’s Chief Executive Officer and Chief Financial Officer.

The original Form 10-K is therefore amended to (i) delete the reference on the cover of the original Form 10-K to the incorporation by reference of a definitive proxy statement into Part III of such Form 10-K and (ii) revise Part III, Items 10 through 14 of the Company’s original Form 10-K to include information previously omitted from the original Form 10-K.

Except as described above, no other changes have been made to the original Form 10-K. The original Form 10-K continues to speak as of October 15, 2019, the date the Company filed the original Form 10-K with the SEC, and other than as expressly indicated in this Form 10-K/A, the Company has not updated the disclosures

contained therein to reflect any events that have occurred at a date subsequent to October 15, 2019. Accordingly, this Form 10-K/A should be read in conjunction with the original Form 10-K and the Company's other reports filed thereafter.

FORWARD LOOKING STATEMENTS

This Annual Report contains "forward-looking statements" as defined in the Private Securities Litigation Reform Act of 1995. All statements other than statements of historical fact, including, without limitation, the statements under "Management's Discussion and Analysis of Financial Condition and Results of Operations" are "forward-looking statements." Forward-looking statements may include the words "believes," "expects," "plans," "intends," "anticipates," "continues" or other similar expressions. These statements are based on the Company's current expectations of future events and are subject to a number of risks and uncertainties that may cause the Company's actual results to differ materially from those described in the forward-looking statements. Should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, actual results may vary materially from those anticipated, estimated or projected. The Company assumes no obligation to revise or update any forward-looking statements for any reason, except as required by law.

Part III

ITEM 10. Directors, Executive Officers and Corporate Governance.

Directors

The Company's Board has three staggered classes of Directors, each of which serves for a term of three years. The names of our directors, their ages and their positions with the Company are set forth below, followed by certain other information about them:

Class II Directors: Term to Expire in 2020:

<u>Name</u>	<u>Year First Became A Director</u>
Barry W. Weiner (age 69)	1972
Bruce A. Hanna, Ph.D (age 76)	2017

Class III Director: Term to Expire in 2021

<u>Name</u>	<u>Year First Became a Director</u>
Elazar Rabbani, Ph.D (age 76)	1976

Class I Directors: Term to Expire in 2022

<u>Name</u>	<u>Year First Became a Director</u>
Gregory M. Bortz (age 50)	2010
Dov Perlysky (age 57)	2012

BARRY W. WEINER is the Company's President, Chief Financial Officer, Principal Accounting Officer as well as a director and founder of the Company. He has served as the Company's President since 1996, and previously held the position of Executive Vice President. Before his employment with Enzo Biochem, he worked in several managerial and marketing positions at the Colgate Palmolive Company. Mr. Weiner is a member of the New York Biotechnology Association. He received his Bachelor of Arts degree in Economics from New York University and his Master of Business Administration in Finance from Boston University.

We believe that Mr. Weiner's qualifications to serve on our Board are demonstrated by his deep knowledge of our businesses and the industries in which we are involved, along with his experience in finance, management and marketing, including the identification of acquisition targets, business development and partnering and raising capital.

BRUCE A. HANNA, Ph.D. has been a director of the Company since January 2017. He is currently a member of the Company's Audit, Compensation and Nominating/Governance Committees and is the chairman of the Nominating/Governance Committee. He has served as a Clinical Professor of Pathology and Clinical Professor of Microbiology at the New York University School of Medicine since 1979 and Adjunct Professor of Science at New York University College of Dentistry since 2010. From 2006 to 2015, he served on the ASM International Committee and WHO Global Committee; from 2000 to 2012, he served as the Editor of the Clinical Microbiology Review; from 1982 to 2010, he was a director of Clinical Microbiology and Immunology; and from 2008 to 2010 he was Interim director of Pathology, Bellevue Hospital Center. Dr. Hanna earned a Bachelor of Science in Biology from Saint Bonaventure University, a Masters in Science in Microbiology from Northeastern University and a Ph.D. in Microbiology from Saint John's University. Dr. Hanna's post-doctorate work in Clinical Microbiology was at Mt. Sinai Hospital.

We believe that Dr. Hanna's qualifications to serve on our Board are demonstrated by his professional background, experience in the healthcare field, including his academic background and technical experience.

ELAZAR RABBANI, Ph.D. is an Enzo Biochem founder and has served as the Company's Chairman of the Board and Chief Executive Officer since its inception in 1976 and as Secretary since November 25, 2009. Dr. Rabbani has authored numerous scientific publications in the field of molecular biology, in particular, nucleic acid labeling and detection. He is also the lead inventor of many of the Company's pioneering patents covering a wide range of technologies and products.

Dr. Rabbani received his Bachelor of Arts degree from New York University in Chemistry and his Ph.D. in Biochemistry from Columbia University. He is a member of the American Society for Microbiology.

We believe that Dr. Rabbani's qualifications to serve on our Board are demonstrated by his extensive knowledge of our industry and his accomplishments over the last 42 years, including building our intellectual property estate and the commercialization of technology, which has generated significant revenues for the Company.

GREGORY M. BORTZ has been a director of the Company since January 2010. He is currently a member of the Company's Audit, Compensation and Nominating/Governance Committees and has been the chairman of the Audit Committee since November 2010. Mr. Bortz became Enzo's Lead Independent Director in 2017. Mr. Bortz is the founder of the CREO group of companies ("CREO") and serves as CREO's managing partner. CREO's interests include a combination of private equity and hedge fund investments. On the private equity side, CREO is currently investing through its third fund, CREO Capital Partners Fund III, L.P. Under Mr. Bortz's leadership, CREO has achieved successful exits from several private equity investments. CREO's success is driven by its strategy of acquiring middle market companies at reasonable prices, strengthening and improving their operations and balance sheets and adding scale through selective, accretive mergers and acquisitions. Mr. Bortz serves as a board member of the companies in CREO's private equity portfolio. In addition, Mr. Bortz serves as the Chief Investment Officer of the CREO Select Opportunities Fund, a hedge fund that focuses on investing in public fixed income and equity securities.

From October 2000 to February 2005, Mr. Bortz was Senior Vice President in the Investment Banking Division, of Lehman Brothers, Inc., an international investment bank. During his tenure at Lehman Brothers, Mr. Bortz was involved in numerous public and private debt and equity offerings, mergers and acquisitions and restructurings. Prior to joining Lehman Brothers, Mr. Bortz held the position of Vice President of Investment Banking at Credit Suisse First Boston, an international investment bank, from January 1998 to October 2000. Mr. Bortz also previously held the position of Manager at the accounting firm of Ernst and Young (1994-1997) and Senior at the public accounting firm of Arthur Andersen (1993-1994), both in those firms' respective audit groups. Mr. Bortz was qualified as a chartered accountant in England and Wales as well as in South Africa. He graduated with honors from the University of Cape Town with a Bachelors of Business Science in Finance and holds a Postgraduate Diploma in Accounting from that same institution.

We believe that Mr. Bortz's qualifications to serve on our Board are demonstrated by his more than 24 years of accounting, auditing, financial and investment banking experience, as well as his experience as a board member of CREO's portfolio companies.

DOV PERLYSKY has been a director of the Company since September 2012. He is currently a member of the Company's Audit, Compensation and Nominating/Governance Committees. Mr. Perlysky became the chairman of the Compensation Committee in 2017. Mr. Perlysky has been a member of the Board of Directors of Pharma-Bio Serv, Inc. since 2004, Highlands State Bank since 2010 and News Communications since 2007. Mr. Perlysky has also been the managing member of Neshor, LLC, a private investment firm, since 2000 and a director of Engex, Inc., a closed-end mutual fund, since 1999. From 1998 until 2002, Mr. Perlysky was a vice president in the private client group of Laidlaw Global Securities, a registered broker-dealer. Mr. Perlysky received his Bachelor of Science in Mathematics and Computer Science from the University of Illinois in 1985 and his Master of Science in Management Studies from the J.L. Kellogg School of Management of Northwestern University in 1991.

We believe that Mr. Perlysky's qualifications to serve on our Board are demonstrated by his professional background, experience in the healthcare field (including his director position at Pharma-Bio Serv, Inc.), other current and past board positions and finance background, making him well qualified as a member of our Board.

Family Relationships

There are no family relationship of first cousins or closer, among the Company's directors and executive officers, by blood marriage or adoption, except that Dr. Elazar Rabbani and Barry W. Weiner are brothers-in-law.

Corporate Governance Policies and Practices

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

Corporate Governance Guidelines—The Board adopted Corporate Governance Guidelines, which collect in one document many of the corporate governance practices and procedures that had evolved over the years. These guidelines address the duties of the Board, director qualifications and selection process, Board operations, Board committee matters and continuing education. The guidelines also provide for annual self-evaluations by the Board and its committees. The Board reviews these guidelines on an annual basis. The guidelines are available on the Company's website at www.enzo.com and in print by contacting Investor Relations at (212) 583-0100.

Corporate Code of Business Conduct and Ethics—The Company has a Code of Business Conduct and Ethics that applies to all of the Company's employees, officers and members of the Board. The Code of Business Conduct and Ethics is available on the Company's website at www.enzo.com and in print by contacting Investor Relations at (212) 583-0100.

Board Committee Charters—Each of the Company's Audit, Compensation and Nominating/Governance Committees has a written charter adopted by the Board that establishes practices and procedures for such committee in accordance with applicable corporate governance rules and regulations. The charters are available on the Company's website at www.enzo.com and in print by contacting Investor Relations at (212) 583-0100.

Diversity Policy—As part of the Company's commitment to improved governance and in connection with the Company's shareholder engagement program, the Board adopted a diversity policy this year. The Nominating/Governance Committee shall consider diversity in its evaluation of candidates for Board membership in accordance with this policy. To reflect this policy, the Nominating/Governance Committee seeks to include diverse candidates in all director searches, taking into account diversity of age, gender, race, culture, business experience, education, skills, character and judgment, including by affirmatively instructing any search firm retained to assist the Nominating/Governance Committee in identifying director candidates, to seek to include diverse candidates from traditional and nontraditional candidate groups.

Director Term Limits—The total cumulative length of time an Outside Director may serve on the Board is limited to a maximum of three, three-year terms, whether consecutively or in total, plus any portion of an earlier three-year term that such Outside Director may have been appointed to serve. The term limit set forth above may be extended for a maximum of one additional term if such individual is re-nominated by the unanimous agreement of the Board.

Lead Independent Director Charter—As part of the Company’s ongoing commitment to improved governance and in connection with the Company’s shareholder engagement program, the Company amended the Lead Independent Director Charter this year to strengthen the duties of the Lead Independent Director role. The duties of the Lead Independent Director, as set forth in the amended Lead Independent Director Charter, among other things, are to:

- develop the agendas for and serve as chairman of the executive sessions of the independent directors of the Company;
- serve as principal liaison between the independent directors of the Company and the Chairman of the Board and between the independent directors and senior management;
- approve the agendas for Board meetings;
- call meetings of the independent directors;
- approve the appropriate schedule of Board meetings; advise the Chairman of the Board as to the quality, quantity and timeliness of the information submitted by the Company’s management that is necessary or appropriate for the independent directors to effectively and responsibly perform their duties;
- ensure that independent directors have adequate opportunities to meet and discuss issues in executive sessions without management present; if the Chairman of the Board is unable to attend a Board meeting, act as chairman of such Board meeting;
- ensure that he or she is available for consultation and direct communication with major shareholder, if requested, and acts as a contact for other interested persons;
- share with other directors, as he or she deems appropriate, letters and other communications and contact that he or she receives;
- and perform such other duties as the Board shall from time to time delegate.

In addition, the Lead Independent Director may require information relating to any matter be distributed to the Board. Gregory M. Bortz has served as Lead Independent Director since January 2017. The Lead Director role was established in October 2005.

The Lead Independent Director Charter, as amended, is available on the Company’s website at www.enzo.com, and in print by contacting Investor Relations at (212) 583-0100.

Director Independence

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

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

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

- A director, or an immediate family member of the director, received more than \$120,000 per year in direct compensation from the Company, other than director and committee fees and pension or other forms of deferred compensation for prior services (provided such compensation is not contingent in any way on continued service);
- The director, or an immediate family member of the director, was employed as an executive officer of another company where any of the Company's executives served on that company's compensation committee of the board of directors;
- The director was an executive officer or employee, or an immediate family member of the director was an executive officer, of another company that made payments to, or received payments from, the Company for property or services in an amount which, in any single fiscal year, exceeded the greater of \$1 million or two percent (2%) of such other company's consolidated gross revenues;
- The director, or an immediate family member of the director, was an executive officer of another company that was indebted to the Company, or to which the Company was indebted, where the total amount of either company's indebtedness to the other was five percent (5%) or more of the total consolidated assets of the Company he or she served as an executive officer; or
- The director, or an immediate family member of the director, was an officer, director or trustee of a charitable organization where the Company's annual discretionary charitable contributions to the charitable organization exceeded the greater of \$1 million or two percent (2%) of that organization's consolidated gross revenues.

The Board has reviewed all material transactions and relationships among each director, and any member of his or her immediate family, and the Company, its senior management and its independent auditors. Based on this review and in accordance with its independence standards outlined above, the Board has affirmatively determined that all of the non-employee directors are independent as such term is defined by the NYSE.

Board Leadership Structure and Role in Risk Oversight

Elazar Rabbani, Ph.D., has been the Company's Chairman of the Board and Chief Executive Officer since the Company's inception in 1976. The Company believes that having one person, particularly Dr. Rabbani with his deep industry and executive management experience, his extensive knowledge of the operations of the Company and his own history of innovation and strategic thinking, to serve as both Chief Executive Officer and Chairman is the best leadership structure for the Company. The Board believes this demonstrates to employees, customers and shareholders that the Company is under strong leadership with a single person setting the tone and having primary responsibility for managing the Company's operations. This unity of leadership promotes strategy development and execution, timely decision-making and effective management of Company resources. The Company believes that it has been well served by this structure.

As described above, three of the Company's five directors are independent. In addition, all of the directors on each of the Audit Committee, Compensation Committee and Nominations and Corporate Governance Committee are independent directors and each of these committees is led by a committee chair. The committee chairs set the agendas for their committees and report to the full Board. All of the independent directors are highly accomplished and experienced business people in their respective fields, have demonstrated leadership in significant enterprises and are familiar with board processes. The Company's independent directors bring experience, oversight and expertise from outside the Company and industry, while the Company's Chairman and Chief Executive Officer and Mr. Weiner, as President and Chief Financial Officer bring Company-specific experience and expertise.

Additionally, the Company has had a Lead Independent Director since October 2005, whose duties, among other things, are to approve the agendas for all Board meetings, call and lead the executive sessions of the independent directors of the Company, be available for engagement with major shareholders, serve as liaison between the independent directors of the Company on one hand and the Chairman of the Board and senior management on the other hand, advise the Chairman of the Board as to the quality, quantity and timeliness of the information submitted by the Company's management to the independent directors; and perform such other duties as the Board shall from time to time delegate.

While the Board is responsible for overseeing the Company's risk management, the Board has delegated many of these functions to the Audit Committee. Under its charter, the Audit Committee is responsible for discussing the Company's major financial risk exposures, the guidelines and policies by which risk assessment and management is undertaken, and the steps management has taken to monitor and control risk exposure with management and the independent auditors. In addition to the Audit Committee's work in overseeing risk management, the full Board regularly engages in discussions regarding the most significant risks that the Company is facing and how those risks are being managed. The Board also receives risk management updates directly from the Company's senior management and from the chair of the Audit Committee. In addition, the Chairman and Chief Executive Officer's extensive knowledge of the Company and experience in the industries in which we operate uniquely qualifies him to lead the Board in assessing the whole panoply of risks the Company faces. The Board believes that the work undertaken by the Audit Committee, the full Board and the Chairman and Chief Executive Officer, enables the Board to effectively oversee the Company's risk management function. Gregory M. Bortz has served as Lead Independent Director since January 2017.

Board Nomination Policies and Procedure

Nomination Procedure—The Nominating/Governance Committee is responsible for identifying, evaluating and recommending candidates for election to the Board, with due consideration for recommendations made by other Board members, the Chief Executive Officer and other sources, including shareholders. The total cumulative length of time that any Outside Director may serve on the Board is limited to a maximum of three three-year terms, whether consecutively or in total, plus any portion of an earlier three-year term that such Outside Director may have been appointed to serve. The term limit set forth above may be extended for a maximum of one additional term if such individual is re-nominated by the unanimous agreement of the Board. The Nominating/Governance Committee also considers the appropriate balance of experience, skills and characteristics desirable among the members of the Board to maintain a diverse Board. The independent members of the Board review the Nominating/Governance Committee candidates and nominate candidates for election by the Company shareholders. The Nominating/Governance Committee will consider candidates for election to the Board recommended by shareholders of the Company.

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

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

The Nominating/Governance Committee will consider, among other factors, the following to evaluate recommended nominees:

- The Board's current composition, including expertise, diversity, balance of management and non-management directors;
- Independence and other qualifications required or recommended by applicable laws, rules and regulations (including NYSE requirements) and the Company's policies and procedures; and
- The general qualifications of potential nominees, including, but not limited to: personal integrity, loyalty to the Company and concern for its success and welfare; experience at strategy and policy setting; high-level leadership experience in business; breadth of knowledge about issues affecting Enzo Biochem; an ability to work effectively with others; sufficient time to devote to the Company; and freedom from conflicts of interest.

Director candidates recommended to the Committee are subject to full Board approval and subsequent election by the shareholders. The Board is also responsible for electing directors to fill vacancies on the Board that occur due to retirement, resignation, expansion of the Board or other reasons between the annual meetings of shareholders. The Nominating/Governance Committee may retain a recruitment firm, from time to time, to assist in identifying

and evaluating director candidates. When a firm is used, the committee provides specified criteria for director candidates, tailored to the needs of the Board at that time, and pays the firm a fee for these services. Suggestions for director candidates are also received from Board members, management, shareholders and may be solicited from professional associations as well.

Audit Committee

The Audit Committee was established by and among the Board for the purpose of overseeing the accounting and financial reporting processes of the Company and audits of the financial statements of the Company in accordance with Section 3(a)(58)(A) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). The Audit Committee is authorized to review proposals of the Company’s auditors regarding the annual audit, recommend the engagement or discharge of the auditors, review recommendations of such auditors concerning accounting principles and the adequacy of internal controls and accounting procedures and practices, review the scope of the annual audit, approve or disapprove each professional service or type of service other than standard auditing services to be provided by the auditors, and review and discuss the audited financial statements with the auditors. The current members of the Audit Committee are Messrs. Bortz and Perlysky and Dr. Hanna. Mr. Bortz has been the Chairman since November 2010. The Board has determined that each of the Audit Committee members is independent, as defined in the NYSE’s listing standards and applicable SEC Rules. The Board has further determined that Mr. Bortz is an “audit committee financial expert” as such term is defined under Item 407(d)(5)(ii) of Regulation S-K promulgated under the Exchange Act, and that each director is financially literate as required under the NYSE listing standards.

Executive officers and key employees

Set forth below is the name, age and title of each executive officer and key employee of the Company followed by a summary of each executive’s and key employee’s background.

Name	Age	Year Became a Director, Executive Officer or Key Employee	Position
Elazar Rabbani, Ph.D.	76	1976	Chairman of the Board, Chief Executive Officer and Secretary
Barry W. Weiner	69	1977	President, Chief Financial Officer, Principal Accounting Officer, Treasurer and Director (1)
Dieter Schapfel, M.D.	56	2014	Chief Medical Director, Enzo Clinical Labs
Kara Cannon	51	2018	Corporate Vice President, Commercial Operations
Bruce A. Dey	61	2014	Vice President of Sales, Enzo Clinical Labs

(1) Director term expires at the Annual Meeting.

Biographical Information Regarding Directors, Executive Officers and Key Employees

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

BARRY W. WEINER is the Company’s President, Chief Financial Officer, Principal Accounting Officer as well as a director and founder of the Company. He has served as the Company’s President since 1996, and

previously held the position of Executive Vice President. Before his employment with Enzo Biochem, he worked in several managerial and marketing positions at the Colgate Palmolive Company. Mr. Weiner is a member of the New York Biotechnology Association. He received his Bachelor of Arts degree in Economics from New York University and his Master of Business Administration in Finance from Boston University.

DIETER SCHAPFEL, M.D. is the Chief Medical director for Enzo Clinical Labs and has been employed with the Company since 2012, initially as a consulting pathologist. Dr.Schapfel served as Medical Director of Pathology at Southside Hospital–North Shore/Long Island Jewish Health System from 2006 to 2012. He served as a staff pathologist at Huntington Hospital from January 2004 to June 2006. Dr. Schapfel served as director of Pathology and Medical Affairs and the College of American Pathologists director of Pathology, Dublin, Ireland and Farmingdale, New York for Icon Laboratories from February 2002 to October 2003. Dr. Schapfel is a graduate of the State University of New York at Stony Brook, College of Medicine, where he also served his residency. He is a diplomat of the American Board of Pathology with certification in Anatomic and Clinical Pathology and is also a diplomat of The National Board of Medical Examiners.

KARA CANNON is Corporate Vice President of Commercial Operations and has been employed with the Company since 2011. She is responsible for strategic and tactical marketing, sales, manufacturing and general management of the operations. Ms. Cannon previously held executive positions at Pall Corporation, where she focused on commercial operations within the areas of diagnostics, biotechnology and biosciences. She has also held marketing and technical positions at Dynal Biotech (now ThermoFisher Scientific). She has had extensive experience in the marketing and selling of innovative platforms for the diagnostics markets, as well as, the development and execution of strategic plans for the growth and sustainability of diagnostic-related businesses. Ms. Cannon holds a BA from Franklin and Marshall College.

BRUCE A. DEY is Vice President, Sales & Marketing for Enzo Clinical Labs and joined on December 6, 2003. Mr. Dey has over 31 years of experience developing sales and commercial operations in the laboratory services industry. Prior to joining Enzo Clinical Labs, Mr. Dey served as Vice President, Sales & Marketing for CDS Laboratories from 1989 to 2001, which was acquired by Quest Diagnostics in November 2001. He began his career with SmithKline Beecham Clinical Laboratories. Mr. Dey earned a Bachelor of Science in Economics and a Master of Business Administration from The State University of New York at Albany.

Section 16(A) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires the Company’s executive officers, directors and persons who beneficially own more than 10% of a registered class of the Company’s equity securities (collectively, “Reporting Persons”) to file with the SEC initial reports of ownership and reports of changes in ownership of Common Stock and other equity securities of the Company within two business days. Such executive officers, directors and greater than 10% beneficial owners are required by SEC regulation to furnish the Company with copies of all Section 16(a) forms filed by such Reporting Persons. Based solely on a review of the copies of such forms furnished to us and on written representations that no Form 5 was required to be filed, we believe that, during the fiscal year ended July 31, 2019, all of our directors and executive officers timely complied with the Section 16(a) filing requirements.

Code of Business Conduct and Ethics

The Company has adopted a Code of Business Conduct and Ethics (as such term is defined in Item 406 of Regulation S-K). The Code of Business Conduct and Ethics is available on the Company’s website at www.enzo.com, and in print by contacting Investor Relations at (212) 583-0100. The Code of Business Conduct and Ethics applies to the Company’s employees, officers and members of the Board. The Code of Business Conduct and Ethics has been designed to deter wrongdoing and to promote:

- Honest and ethical conduct, including the ethical handling of actual or apparent conflicts of interest between personal and professional relationships;
- Full, fair, accurate, timely and understandable disclosure in reports and documents that the Company files with, or submits to, the SEC and in other public communications made by the Company;
- Compliance with applicable governmental laws, rules and regulations;

- The prompt internal reporting or violations of the Code of Business Conduct and Ethics to an appropriate person or persons identified in the Code of Business Conduct and Ethics; and
- Accountability for adherence to the Code of Business and Conduct and Ethics.

ITEM 11. Executive Compensation.

Director Compensation

The following table sets forth the information concerning compensation earned during our fiscal year ended July 31, 2019 by all non-employee Directors (table format below):

<u>Name</u>	<u>Fees Earned or Paid in Cash</u>	<u>Stock Options Awards⁽¹⁾</u>	<u>Change in Pension Value and Non-Qualified Deferred Compensation Earnings</u>	<u>All Other Compensation</u>	<u>Total</u>
Gregory M. Bortz <i>Lead Director</i>	\$97,500	\$100,000	—	—	\$197,500
Dov Perlysky <i>Director</i>	\$62,500	\$100,000	—	—	\$162,500
Bruce A. Hanna, Ph.D. <i>Director</i>	\$62,500	\$100,000	—	—	\$162,500

(1) Represents the grant fair value on the respective grant date for the fiscal year ended July 31, 2019, in accordance with accounting authoritative guidance. The assumptions used in calculating these amounts are set forth in Notes 1 and 11 to the Company's consolidated financial statements for the fiscal year ended July 31, 2019, included in the Company's Form 10-K filed with the SEC on October 15, 2019. As of July 31, 2019, each non-Employee Director serving during the fiscal year ended July 31, 2019 had the following number of outstanding options: Mr. Bortz – 306,813; Mr. Perlysky – 306,813; and Dr. Hanna – 175,099.

Compensation of Executive Officers

Compensation Discussion and Analysis

The Compensation Committee of our Board oversees our executive compensation program. In this role, the Compensation Committee reviews and approves all compensation decisions relating to our Named Executive Officers. The Compensation Committee also reviews and approves all equity awards for all employees except for annual amounts pre-approved for granting by the Chief Executive Officer or President for non-officers or new employees in connection with employment offers.

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

Say-on-Pay Feedback from Shareholders –

For the past three years, the Company has conducted regular outreach on compensation and governance-related matters to its top shareholders. At our 2018 Annual Meeting of Shareholders, 86% of the shares that were voted were cast in favor of our say-on-pay proposal. As part of our continued commitment towards shareholder engagement and our responsiveness to shareholder concerns, in 2018 we engaged in these discussions with approximately 60% of our top 25 shareholders that own over 57% of our outstanding shares. While our engagements this year have become more focused on Board and governance matters, compensation matters were discussed in some of these conversations. As a whole, we continued to receive positive feedback regarding the evolution of our compensation program and the incorporation of prior shareholder feedback received regarding our compensation program. Other comments from shareholders are as follows:

- Investors supported the decision of the Compensation Committee to include performance-vested equity for fiscal 2018 that along with stock options that could over time comprise up to 50% of long-term incentive

grant value of our Named Executive Officers, despite the fact that performance-vested equity awards are not used in any significant degree in our peer group.

- Investors generally supported the long-term focus of our executive compensation program, and in fact noted that the non-equity-based compensation of our executive officers was low compared to our peer group.
- Shareholders appreciated the successful patent defense program and commented that management should be recognized for the economic benefit to the Company.

The feedback of our shareholders and the operating performance of the Company were significant factors that impacted fiscal 2019 executive compensation. The market price of the Common Stock decreased during fiscal 2019 resulting in a one-year shareholder return of (22.7%). Even though the Company experienced strong performance, the Compensation Committee kept executive base pay salary in fiscal 2019 essentially the same compared to fiscal 2018. The Company's three-year annualized total shareholder return was 16.1% for the period ending fiscal year 2019 putting us in the 6th percentile of our peer group.

Objectives and Philosophy of Our Executive Compensation Program

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

- align executives' incentives with the creation of shareholder value;
- align executive compensation with our corporate business objectives and performance;
- promote the achievement of key strategic and financial performance objectives through cash and equity incentives; and
- align executive compensation with comparable companies in our industry sectors to attract, retain and motivate the best possible executive talent.

The Compensation Committee views base salary, cash bonus and long-term incentives as the elements of a compensation mixture, which aligns the Company's goals with the elements of compensation of the broader peer group. We award long-term incentive compensation in the form of stock, stock options or restricted stock awards that vest over time. We believe this practice helps to retain our executives and aligns their interests with those of our shareholders by allowing them to participate in the longer term success of our Company as reflected in stock price appreciation. We believe that the use of both time and performance-vested stock, stock options and restricted stock minimizes the likelihood of risky behavior and risky decision-making that would be influenced by opportunities for short-term gains.

To achieve these objectives, the Compensation Committee evaluates senior management, with input from our Chief Executive Officer, with the goal of setting compensation at levels that are competitive with our industry competitors who compete with us for executive talent. The Compensation Committee also conducts an annual evaluation of the Chief Executive Officer in addition to senior management evaluations. Our Compensation Committee considers key financial, strategic and operational objectives including, but not limited to: design and implementation of the Company's strategic plan, award of new patents, intellectual property protection, advancement of strategic alliances, operational efficiencies, M&A activity, licensing, new product introductions, provider contracts, investor relations, corporate governance and our financial and operational performance, as quantified by measures at the consolidated level and for each of the operating segments.

The Compensation Committee each year re-evaluates and uses a peer group of publicly traded companies, which they believe have business life cycles, revenues, market capitalizations, products, research and development investment levels and/or number/capabilities of employees that are roughly comparable to ours and, which the Compensation Committee believes we compete with for executive talent. The Compensation Committee has retained Gallagher as an independent compensation consultant. The Company's senior management, with the assistance of Gallagher, compiled a list of peer companies. Since 2005, Gallagher has analyzed the executive compensation programs of these companies and issued reports to the Compensation Committee – most recently in

November 2018. Gallagher advised the Compensation Committee during the fiscal 2018 compensation process that the total executive compensation was below the median of executive compensation of the Company's peer group. For fiscal 2018, the Compensation Committee kept fiscal 2018 compensation at or near the prior year levels and used the fiscal 2017 market review to confirm that compensation was below the median of market range.

The peer companies for fiscal 2019 were selected primarily based on their participation in the medical device services, and biotechnology research-related industries and were comparable to us with respect to size, market capitalization and revenue based upon information available. We also considered their similarity in organizational and operational complexity and stage of development where practicable. We believe the size of the peer group, 17 entities, is appropriate in light of the diverse nature of our industries and industry and sector volatility. For fiscal 2019, the peer group is the same as fiscal 2018. The companies that were included in the most recent peer group this year are as follows:

- Array BioPharma, Inc.
- Fluidigm Corp.
- Harvard Bioscience, Inc.
- Invitae Corp.
- Luminex Corp.
- Meridian Biosciences, Inc.
- Merrimack Pharmaceuticals, Inc.
- Momenta Pharmaceuticals, Inc.
- Nanostring Technologies, Inc.
- Natera, Inc.
- Neogenomics, Inc.
- OraSure Technologies, Inc.
- Oxford Immunotec Global PLC
- Pacific Biosciences of California
- Quidel Corp.
- Repligen Corp.
- Spectrum Pharmaceuticals, Inc.

We compete with many other companies for executive personnel. The Compensation Committee generally targets total compensation for executives to be no higher than the 50th percentile of total compensation paid to similarly situated executives of the companies in the peer group.

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

The Compensation Committee met two times in fiscal 2019 in order to review and approve our compensation for Named Executive Officers and non-employee directors, and approve equity awards for all employees. The results of the Compensation Committee activities were reported to the Board.

Components of our Executive Compensation Program

The primary elements of our executive compensation program are:

- base salary;

- time-based stock options awards;
- performance-based equity awards;
- non-equity incentive plan compensation;
- benefits and other compensation; and
- severance and change in control benefits.

Base Salary

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

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

The base salaries of the two founders, Dr. Elazar Rabbani, our Chairman of the Board, Chief Executive Officer, Secretary and Director and Mr. Barry Weiner, our President, Chief Financial Officer, Principal Accounting Officer, Treasurer and Director are set in accordance with the terms of executed employment agreements with each individual. Pursuant to the terms of their respective employment agreements, Dr. Rabbani and Mr. Weiner were at a base annual salary of \$611,000 and \$542,000, respectively.

The base salary for Mr. O'Brien for fiscal 2019 was \$317,000, which was unchanged from fiscal 2018. The base salary of Dr. Schapfel was increased from \$323,077 to \$330,000 for fiscal 2019. Mr. Dey's base salary decreased in fiscal 2019 from \$448,565 to \$324,765, due to lower commission related to a decrease in Clinical Services revenue. The base salary for Ms. Kara Cannon was increased from \$198,462 to \$220,000.

Non-Equity Incentive Compensation

The Company adopted a "Pay for Performance" Plan (the "Plan") for the Named Executive Officers and key management personnel to align incentive pay with performance as set forth with the individual based on their role with the Company. The performance goals for the Named Executive Officers and the annual performance awards are determined and approved by the Compensation Committee annually. The Plan provides for performance measures based on financial and non-financial measures and rewards for achievement for targets attained and/or improvements realized.

The weights on financial performance measures vary for corporate and divisional officers from 30% to 60% and include product and services revenue growth, planned improvement in margins (divisional only), profitability and cash flows, with adjustments for non-recurring, uncontrollable events impacting revenues, expenses or cash flow beyond the control of management and certain legal expenses over the prior fiscal year. The Compensation Committee chose these measures for fiscal 2018 and 2019 because they believe they are aligned with our core operating performance for fiscal 2018 and 2019, which focused on the business improvement over the prior year.

The weights on non-financial performance measures are between 20% and 30% and include strategic, operational and individual goals. Strategic and operational measures for fiscal 2019, depending on whether a corporate or divisional Named Executive Officer, include among others, business and technology advancement, advancement of partnering arrangements and litigation proceedings, customer satisfaction, process and infrastructure improvements, implementation of cost reductions, quality assurance and employee satisfaction. Individual performance measures, which are 30% of target goals, include communication, leadership and process improvement. The measures provide for Threshold, Target and Maximum awards and are based on various ranges of performance.

For the fiscal year ended July 31, 2019, the Compensation Committee considered the following non-equity incentive plan awards ranges for the Named Executive Officers and Dieter Schapfel, M.D., Kara Cannon and Bruce A. Dey (“Key Employees”):

Name	Calculated payouts under non-equity incentive plan awards ⁽¹⁾		
	Threshold (\$)	Target (\$)	Maximum (\$)
Elazar Rabbani, Ph.D.	458,250	611,000	675,100
Barry W. Weiner	406,500	542,000	596,200
Dieter Schapfel, M.D.	52,800	66,000	99,000
Kara Cannon	48,000	60,000	90,000
Bruce A. Dey	—	—	—

(1) See the “Summary Compensation Table” below for the actual amounts awarded to the Named Executive Officers and Key Employees.

The corporate financial measures applicable to the Chief Executive Officer and President, exclusive of adjustments (none in fiscal 2019) and third-party royalties income (none in fiscal 2019), include revenue, operating loss improvement and Adjusted EBITDA improvement, which are equally weighted and averaged for the final results. The measures used for fiscal 2019 for the Named Executive Officers and corresponding payouts are as follows:

Financial Performance Measures—Revenue	Threshold	Target	Maximum	Achieved
	(in millions)			
Corporate Revenues—trade and service	\$80.2	\$100.3	\$110.3	\$81.2
Payout—Revenue	50%	100%	150%	51%
Financial Performance Measures—Profit & Adjusted EBITDA				
Corporate operating loss improvement	\$ 2.3	\$ 2.9	\$ 3.2	\$14.6
Adjusted EBITDA improvement	\$ 1.4	\$ 1.8	\$ 2.0	\$13.6
Payout—Profits & Adjusted EBITDA	80%	100%	150%	116%

In connection with the Plan, Dr. Rabbani was eligible for a maximum bonus of 110% of his base salary for the fiscal year ended July 31, 2019. Dr. Rabbani was below target performance for his three financial goals and at target performance for his non-financial goals and was awarded a bonus of \$500,000 which represented 82% of his base pay. In reviewing the Chief Executive Officer’s performance, the Compensation Committee recognized Dr. Rabbani’s broad contributions in the achievements listed above in his role as Chairman of the Board, including oversight of and increases to our technology platform and scientific product development, recruitment of new members of executive and scientific management, setting strategy for business development, implementing process improvement directly impacting financial performance and integration and realignment of our operating sites and oversight and protection of intellectual property, including outstanding patent litigation matters.

In connection with the Plan, Mr. Weiner was eligible for a bonus of 110% of his base salary for the fiscal year ended July 31, 2019. Mr. Weiner was below target performance for his three financial goals and at target performance for his non-financial goals and was awarded a bonus of \$375,000 which represented 69% of his base pay. The Compensation Committee recognized Mr. Weiner’s contributions in strategic planning, financial management, including our Company’s financial position and liquidity, corporate governance, communication efforts with our shareholders, investors and outside analysts, managing relationships with investment bankers for equity raise opportunities, oversight of the finance group and compliance with the Company’s Section 404 Sarbanes-Oxley requirements, role in recruitment of new management personnel and divisional management and leadership role among the divisional executives.

In connection with the Plan, Mr. James M. O’Brien was eligible for a bonus of 35% of his base salary. The Compensation Committee reviewed the recommendation from our CEO with respect to Mr. O’Brien’s performance in meeting the non-financial objectives including, enhancing our financial reporting internally and to the Board and the Audit Committee, participation in and achievements in the project to reduce operating and corporate costs, including third-party contracts insurance program, benefit plans and professional fees, monitoring internal controls and Section 404 Sarbanes-Oxley requirements, recruiting staff to the finance group and leadership role among our

finance group and, specifically in 2019, directly managed financing and equity activities. Mr. James M. O'Brien was below target performance for his three financial goals and exceeded threshold performance for his three non-financial goals and was awarded a bonus of \$75,000 which represented 24% of his base pay. Mr. O'Brien's employment with the Company was terminated on November 3, 2019, however he will be providing consulting services to the Company on an as needed basis.

In connection with the Plan, Dieter Schapfel, M.D. was eligible for a bonus of 20% of his base salary under the Plan. The Compensation Committee reviewed the recommendation from our Chief Executive Officer with respect to Dr. Schapfel's performance in meeting the non-financial objectives listed above, in expanding our platform technologies through the approval of new assays, validating three new platform technologies, process improvements contributing to cost savings in clinical production and his contributions to operational excellence, as evidenced by the high degree of regulatory compliance in laboratory operations. Dr. Schapfel was below threshold performance for his four financial goals and exceeded target performance for his three non-financial goals and was awarded a bonus of \$60,000 which represented 18% of his base pay.

In connection with the Plan, Kara Cannon was eligible for a bonus of 30% of base salary under the Plan. The Compensation Committee reviewed the recommendation from our Chief Executive Officer with respect to Kara Cannon's performance in meeting the non-financial objectives including, realigning the operations to support the new streamlined company structure, recruitment of new commercial staff to more aggressively drive our revenue and commercialization efforts, participation in and achievements in the project to reduce operating costs and increase overall operational efficiencies, drive Enzo's strategy to transition development and commercialization efforts around clinically relevant assays and products, develop industry partners and launch new products and assays to broaden our offering in for industrial markets and was awarded a bonus of \$60,000 which represented 27% of her base pay.

Mr. Bruce A. Dey is not eligible for a bonus under the Plan given the commission structure he participates in as Vice President of Sales for Enzo Clinical Labs.

Stock Options and Stock Awards

The Compensation Committee awards either stock options or stock as the primary vehicle for long-term incentives to our executives, including our Named Executive Officers. We believe that equity awards provide our executives with a strong link to our long-term performance, create an ownership culture and help to align the interests of our Named Executive Officers and our shareholders. Equity awards are intended as both a reward for contributing to the long-term success of our Company and an incentive for future performance.

Equity awards, in the form of stock options, restricted stock and/or stock award units vest ratably over a two or three year period with 50% or 33%, respectively of the award vesting 12 months after the Named Executive Officer's start date or the annual anniversary of the award grant and the remainder of the awards vesting annually over the remaining period. The vesting feature of our equity awards is intended to further our goal of executive retention by providing an incentive to our Named Executive Officers to remain in our employ during the vesting period. Equity awards are awarded under the 2011 Incentive Plan approved by the shareholders.

In the most recent fiscal year, the Compensation Committee granted time-based stock options to the Named Executive Officers. The number of time-based awards granted was based on strategic, financial and individual performance.

Performance Stock Units

To better align the long-term interests of the Named Executive Officers with growing U.S. practices, beginning in fiscal 2018 and including 2019, the Compensation Committee granted long-term equity incentive awards in the form of time based stock options and performance-based restricted stock units ("Performance Stock Units" or "PSUs"). Time-based awards continue to be based on achievement of short-term growth objectives such as implementation of strategic business objectives, reporting of improved financial results and the attainment of individual goals. The PSUs earned will be determined over a three-year performance period. The primary performance metrics will be Revenue and Adjusted EBITDA growth, as determined by the Compensation

Committee. Payouts based on Revenue and Adjusted EBITDA goals will be modified based on TSR performance relative to Enzo's peer group.

The fiscal 2019 grant value is comprised of stock options and PSUs, with the goal over time being equally weighted between the two incentive awards. One PSU is convertible into one share of common stock.

The fiscal 2019 – 2021 PSU award provides for the conversion of the PSUs into shares of our Common Stock at the end of a three-year period based on the achievement of average Revenue growth and Adjusted EBITDA growth goals over that period, as follow:

Fiscal 2019-2021 PSUs	Threshold	Target	Maximum
Three-Year Average Revenue Growth	2%	5%	8%
Three-Year Average Adjusted EBITDA Growth	5%	15%	25%
Percent of Target Payout	50%	100%	150%

For results between these levels, the number of shares will be determined by interpolation. There will be no payout for results below the threshold level. Each performance measure is separately determined and equally weighted. The definition of Adjusted EBITDA provides for adjustments during the performance period for the impact of acquisitions or dispositions of businesses.

Payouts as determined by the growth performance of Revenue and Adjusted EBITDA will be adjusted based on the three-year relative TSR. The number of PSUs determined by the financial growth results will be multiplied by a modifier ranging from 80% to 120% (the "TSR Modifier"), depending on the Company's TSR percentile for the performance period relative to the TSR of the other companies in the Enzo peer group for the performance period. The number of shares that can be earned is capped at 150% of the target number of PSUs awarded.

Vesting of the PSUs, if any, will occur following the determination of performance subsequent to the conclusion of the three year performance period. Named Executive Officers must be employed with the Company at the completion of the three year performance period.

On January 3, 2019, the Named Executive Officers and Key Employees were issued performance stock units as a component of their total compensation package as follows:

Name	Performance Stock Units Granted
Elazar Rabbani, Ph. D	25,000
Barry W. Weiner	20,000
Dr. Dieter Schapfel	10,500
Kara Cannon	10,500
Bruce A. Dey	4,000

Determination of Named Executive Officers and Key Employees Equity Awards

The Compensation Committee believes this use of equity appropriately balances the competitive base salaries and annual performance-based cash bonus opportunities. The annual goals focuses management on the shorter-term objectives, while the time-vesting stock options (which only have value if the Company's share price increases) provides a longer term incentive and alignment with shareholder interest. Moreover, PSUs are aligned with long-term shareholder interest as these PSUs cliff vest based on the Company's financial performance following the conclusion of the three year performance period.

The Compensation Committee makes annual equity awards based on a target dollar amount. While this results in an uncertain share usage, it results in a predictable expense for the Company and allows the committee to tailor the value of the awards more precisely to reflect the Company's business direction, compensation philosophies, objectives and design. The Compensation Committee determines the target dollar amount for stock-based awards to the Named Executive Officers and Key Employees on a discretionary basis and takes into account, among other factors, the recommendations of the President, the Chief Executive Officer and Gallagher, together with our

compensation benchmarks, individual accomplishments, importance of retention, prior equity awards and current equity holdings, burn rates, seniority and internal pay equity considerations.

The actual number of shares of common stock subject to an option granted is determined by dividing the dollar amount allocated to the grant by the Black-Scholes value of the shares on the date of grant. The Compensation Committee has not applied a discount to the value of these shares to reflect the forfeiture restrictions associated with service-based vesting. The Base Stock and Performance Stock are exercisable into shares of the Company's Common Stock with an exercise price equal to the closing price of the Common Stock on the NYSE on the grant date and expire five (5) years from the date of grant.

In determining the size of equity awards to our Named Executive Officers and Key Employees, our Compensation Committee considers comparable equity awards of executives in our compensation peer group, our Company-level operating and stock performance, the applicable Named Executive Officer's and Key Employee's performance, the amount of equity previously awarded to the executive, the vesting schedule of such previous awards and the recommendations of management and Gallagher to the Compensation Committee. For the fiscal years ended July 31, 2019, 2018 and 2017, average equity compensation as a percentage of total compensation for all Named Executive Officers and Key Employees was 10%, 10% and 12%, respectively.

Equity awards are granted annually in conjunction with the review of a Named Executive Officer's and Key Employee's individual performance. The Compensation Committee reviews all components of the Named Executive Officer's and Key Employee's compensation when determining annual equity awards to ensure that a Named Executive Officer's and Key Employee's total compensation conforms to our overall philosophy and objectives.

On January 3, 2019, the Named Executive Officers and Key Employees were issued stock options as a component of their total compensation package as follows:

Name	Stock Options Issued	Exercise Price	Market Value at Time of Issuance
Elazar Rabbani, Ph. D	128,000 ⁽¹⁾	\$2.80	\$135,296
Barry W. Weiner	115,000 ⁽¹⁾	\$2.80	\$121,555
Dr. Dieter Schapfel	52,000 ⁽²⁾	\$2.80	\$56,316
Kara Cannon	52,000 ⁽²⁾	\$2.80	\$56,316
Bruce A. Dey	18,000 ⁽²⁾	\$2.80	\$19,494

(1) Each option award vests in equal amounts on the first and second anniversaries of the award grant.

(2) Each option award vests in equal amounts on the first, second and third anniversaries of the award grant.

Dr. Schapfel's, Mr. Dey's and Ms. Cannon's stock option awards were based on their financial and non-financial performance to the Company. The market value at the time of issuance is determined based on the Black-Scholes model.

Tax and Accounting Considerations; Tax Deductibility

Federal tax laws impose requirements in order for compensation payable to the Chief Executive Officer and certain executive officers to be fully deductible. The Company believes it has taken appropriate actions to maximize its income tax deduction. Section 162(m) of the International Revenue Code (the "Code") generally precludes a public corporation from taking a deduction for compensation in excess of \$1,000,000 for its Chief Executive Officer, Chief Financial Officer or any of its three other highest-paid executive officers (besides the Chief Executive Officer or Chief Financial Officer).

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

compensation payments and benefits to the extent reasonably practicable, consistent with its compensation policies and as determined to be in the best interests of the Company and its shareholders.

Our annual base salary, a portion of cash incentive compensation and time-based restricted stock units are generally subject to the deduction limitations in Section 162(m) of the Code. For 2019 all direct compensation is expected to be tax deductible. To maintain flexibility in compensating executive officers in view of the overall objectives of our compensation program, the Compensation Committee has not adopted a policy requiring that all compensation be tax deductible.

Risk Considerations in Our Compensation Program

We do not believe our compensation policies and practices encourage or support excessive risk-taking by our executive officers or key managers. We establish compensation practices that we believe provide an appropriate level of incentive-based compensation, in combination with non-incentive-based compensation, to encourage our executive officers and key managers to act in the long-term best interests of the Company and our shareholders. These practices include:

- Awarding annual incentive bonuses based on an assessment of short-term performance against financial and non-financial measures;
- Benchmarking annual incentive bonuses against an appropriate peer group of companies;
- Providing the Compensation Committee with discretion in approving annual non-equity incentive awards, with respect to non-financial targets, which affords the committee the opportunity to reduce payments if it determines excessive risk was taken to achieve bonus targets;
- Granting time-vested equity that generally vests over a two or three year period which provides incentives for our executive officers to act in the long-term best interests of the Company; and
- The introduction of PSUs, which have a three-year performance period and provide added long-term focus.

Summary Compensation Table

The following table sets forth summary information concerning compensation awarded to, paid to or earned by each of the following persons: (i) our Chairman of the Board, Chief Executive Officer and Secretary, (ii) our President, Chief Financial Officer, Principal Accounting Officer and Treasurer, (iii) our other executive officers (the “Named Executive Officers”) and (iv) Key Employees for each of the fiscal years ended July 31, 2019, 2018 and 2017.

Name and Principal Position	Year	Base Pay Salary ⁽¹⁾	Option Awards ⁽²⁾	Performance Stock Units Award ⁽³⁾	Non-Equity Incentive Plan Compensation ⁽⁴⁾	All Other Compensation ⁽⁵⁾	Total
Elazar Rabbani, Ph.D. Chairman of the Board	2019	\$611,000	\$135,296	\$70,000	\$500,000	\$175,648	\$1,491,944
	2018	\$611,000	\$137,340	\$44,200	\$500,000	\$184,132	\$1,476,672
Chief Executive Officer and Secretary	2017	\$585,802	\$180,150	—	\$575,000	\$191,044	\$1,531,996
Barry W. Weiner President, Chief Financial Officer, Principal Accounting Officer, Treasurer and Director	2019	\$542,000	\$121,555	\$56,000	\$375,000	\$173,822	\$1,268,377
	2018	\$542,000	\$122,080	\$35,360	\$375,000	\$172,435	\$1,246,875
	2017	\$519,629	\$156,130	—	\$425,000	\$163,069	\$1,263,828
James M. O'Brien ⁽⁶⁾ Executive Vice President of Finance	2019	\$317,000	\$56,316	\$29,400	\$75,000	\$28,250	\$506,518
	2018	\$317,000	\$56,490	\$17,680	\$75,000	\$28,552	\$494,722
	2017	\$311,554	\$74,250	—	\$85,000	\$26,564	\$497,368
Dieter Schapfel, M.D. Chief Medical Director, Enzo Clinical Labs	2019	\$330,000	\$56,316	\$29,400	\$60,000	\$12,250	\$488,998
	2018	\$323,077	\$56,490	\$17,680	\$60,000	\$12,829	\$470,076
	2017	\$310,704	\$66,825	—	\$60,000	\$12,552	\$450,081
Kara Cannon Corporate Vice President Commercial Operations	2019	\$220,000	\$56,316	\$29,400	\$60,000	\$12,802	\$378,518
	2018	\$198,462	\$56,490	\$17,680	\$60,000	\$9,457	\$342,089
	2017	\$193,108	\$49,500	—	\$60,000	\$3,135	\$305,743
Bruce A. Dey Vice President of Sales, Enzo Clinical Labs	2019	\$324,765	\$19,494	\$11,200	—	\$21,850	\$496,496
	2018	\$448,565	\$16,140	\$8,840	—	\$22,951	\$496,496
	2017	\$519,435	\$24,750	—	—	\$22,632	\$566,817

(1) Base salaries set as of January 1 each year.

(2) Represent the fair market value of incentive stock option awards granted to Named Executive Officers and Key Employees on the date of grant, calculated in accordance with FASB ASC Topic 718 for all awards of stock options granted during the relevant fiscal year. Assumptions used in the calculation of these amounts are included in Note 11 to the Notes to Consolidated Financial Statements in our Annual Report on Form 10-K for the year ended July 31, 2019.

(3) Represents the grant date fair value of performance stock units granted in the applicable year, calculated in accordance with ASC 718. The amount included in 2019 for the performance stock unit awards are calculated based on the closing market price of the Company’s common stock and the probable satisfaction of the performance conditions for such awards as of the date of grant. Assuming the highest level of performance is achieved for the 2019 performance share unit awards, the maximum value of these awards at the grant date would be as follows: Dr. Rabbani-\$105,000; Mr. Weiner-\$84,000; Mr. O’Brien-\$44,100; Dr. Schapfel-\$44,100; Mr. Dey-\$10,800; and Ms. Cannon \$44,100. Assumptions used in the calculation of these amounts are included in Note 11 to the Notes to Consolidated Financial Statements in our Annual Report on Form 10-K for the year ended July 31, 2019.

(4) Represents awards accrued under the Pay for Performance Plan for the years ended July 31, 2019, 2018 and 2017.

(5) See the “All Other Compensation” chart for additional information.

(6) Mr. O’Brien’s employment with the Company was terminated on November 3, 2019.

All Other Compensation

The following table contains information regarding each component of “All Other Compensation” in the Summary Compensation Table to the Named Executive Officers and Key Employees for the fiscal years ended July 31, 2019, 2018 and 2017.

Name	Year	401(K) ⁽¹⁾	Life Insurance ⁽²⁾⁽³⁾	Medical and Disability Insurance ⁽⁴⁾	Personal Use of Auto ⁽⁵⁾	Total All Other Compensation
Elazar Rabbani, Ph.D.	2019	\$12,250	\$138,972	\$16,176	\$8,250	\$175,648
	2018	\$12,000	\$138,972	\$14,138	\$19,022	\$184,132
	2017	\$12,000	\$144,342	\$12,309	\$22,393	\$191,044
Barry W. Weiner	2019	\$12,250	\$128,723	\$8,049	\$24,800	\$173,822
	2018	\$12,000	\$128,723	\$7,012	\$24,800	\$172,435
	2017	\$12,000	\$133,859	\$6,157	\$11,053	\$163,069
Dieter Schapfel, M.D.	2019	\$12,250	\$1,032	—	—	\$13,282
	2018	\$12,000	\$829	—	—	\$12,829
	2017	\$12,000	\$552	—	—	\$12,552
Kara Cannon	2019	\$12,250	\$552	—	—	\$12,802
	2018	\$9,000	\$457	—	—	\$9,457
	2017	\$2,775	\$360	—	—	\$3,135
Bruce A. Dey	2019	\$12,250	\$1,584	—	\$9,600	\$23,434
	2018	\$12,000	\$1,351	—	\$9,600	\$22,951
	2017	\$12,000	\$1,032	—	\$9,600	\$22,632

(1) Represents Company matches under our 401(k) plan.

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

(3) Includes the contractual payment for life insurance reimbursement for Dr. Rabbani and Mr. Weiner of \$105,212 and \$100,623, respectively.

(4) Represents incremental medical and disability benefits costs.

(5) Represents the personal use of Company-provided auto or car allowance.

Outstanding Equity Awards at Fiscal Year End—July 31, 2019

The following table sets forth summary information regarding the outstanding equity awards made to the Named Executive Officers and Key Employees at July 31, 2019.

Name	Options Awards				Performance Stock Awards	
	Number of Securities Underlying Unexercised Options Exercisable	Number of Securities Underlying Unexercised Options Unexercisable ⁽¹⁾	Option Exercise Price	Options Expiration Date	Equity Incentive Plan; Number of Unearned Shares, Units or Other Rights That Have Not Vested ⁽²⁾	Equity Incentive Plan Awards; Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested ⁽³⁾
Elazar Rabbani, Ph.D.	45,615	—	\$3.40	1/21/2020	25,000 ⁽⁴⁾	\$97,750
	60,000	—	\$4.35	3/14/2021	10,000 ⁽⁵⁾	\$39,100
	75,000	—	\$7.07	1/5/2022		
	45,000	45,000	\$4.42	7/31/2023		
	—	128,000	\$2.80	1/3/2024		
Barry W. Weiner	36,489	—	\$3.40	1/21/2020	20,000 ⁽⁴⁾	\$78,200
	50,000	—	\$4.35	3/14/2021	8,000 ⁽⁵⁾	\$31,280
	65,000	—	\$7.07	1/5/2022		
	40,000	40,000	\$4.42	7/31/2023		
	—	115,000	\$2.80	1/3/2024		
James M. O'Brien	5,000	—	\$3.40	1/21/2020	10,500 ⁽⁴⁾⁽⁶⁾	\$41,055
	17,333	—	\$4.35	3/14/2021	4,000 ⁽⁵⁾⁽⁶⁾	\$15,640
	20,000	10,000	\$7.07	1/5/2022		
	11,667	23,333	\$4.42	7/31/2023		
	—	52,000	\$2.80	1/3/2024		
Dieter Schapfel, M.D.	10,000	—	\$3.40	1/21/2020	10,500 ⁽⁴⁾	\$41,055
	27,000	—	\$4.35	3/14/2021	4,000 ⁽⁵⁾	\$15,640
	18,000	9,000	\$7.07	1/5/2022		
	11,667	23,333	\$4.42	7/31/2023		
	—	52,000	\$2.80	1/3/2024		
Kara Cannon	3,333	—	\$3.40	1/20/2020	10,500 ⁽⁴⁾	\$41,055
	10,000	—	\$4.35	3/13/2021	4,000 ⁽⁵⁾	\$15,640
	13,333	6,667	\$7.07	1/5/2022		
	11,667	23,333	\$4.42	7/31/2023		
	—	52,000	\$2.80	1/3/2024		
Bruce A. Dey	10,000	—	\$4.35	3/14/2021	4,000 ⁽⁴⁾	\$15,640
	6,667	3,333	\$7.07	1/5/2022	2,000 ⁽⁵⁾	\$7,820
	3,333	6,667	\$4.42	7/31/2023		
	—	18,000	\$2.80	1/3/2024		

(1) Each option award vests in equal amounts on the first, second and third anniversaries of the award which was January 21, 2015 for the options granted at \$3.40 per share, March 14, 2016 for the options granted at \$4.35 per share, January 5, 2017 for the options granted at \$7.07 per share, July 31, 2018 for the options granted at \$4.42 per share and January 3, 2019 for the options granted at \$2.80 per share. For Dr. Elazar Rabbani and Barry Weiner, options vest in equal amounts on the first and second anniversary dates.

(2) The number of unearned PSUs in this column is based on the Company's performance during the 2019 and 2018 fiscal year and equals the target number of PSUs that may be earned based on the Company's Revenue and Adjusted EBITDA during the 2018 through 2020 and 2019 through 2021 fiscal year period after applying the maximum relative TSR Modifier.

(3) Calculated using the closing market price of the Company's common stock on July 31, 2019, \$3.91.

(4) Represents PSUs granted on January 3, 2019 that will vest, subject to the achievement of threshold performance goals for the 2019-2022 performance period, on January 3, 2022.

(5) Represents PSUs granted on July 31, 2018 that will vest, subject to the achievement of threshold performance goals for the 2018-2021 performance period, on July 31, 2021.

(6) Mr. O'Brien's employment with the Company was terminated on November 3, 2019.

Options Exercised and Stock Vested

The following table sets forth the options exercised by the Named Executive Officers and Key Employees during the fiscal year ended July 31, 2019. No restricted stock vested for any Named Executive Officers or Key Employees during the fiscal year ending July 31, 2019.

Name	Number of Shares Acquired/Exercised on Vesting	Stock Awards Value Realized On Vesting/Exercised ⁽¹⁾	
Elazar Rabbani Ph.D.	41,634	\$	18,735
Barry W. Weiner	33,305	\$	14,987
James M. O'Brien	—		—
Dieter Schapfel, M.D.	—		—
Kara Cannon	—		—
Bruce A. Dey	10,000	\$	15,329

(1) The value realized is the difference between the closing market price on the exercise date and the exercise price of the option, multiplied by the total number of shares exercised.

Employment Agreements

Mr. Barry Weiner and Dr. Elazar Rabbani (each, an "Executive") are parties to employment agreements with the Company, effective May 4, 1994, as subsequently amended (the "Employment Agreements"). Each Executive also receives a non-equity incentive plan bonus - the amount of which shall be determined by the Compensation Committee and/or the Board based on approved financial and non-financial objectives. Each Employment Agreement provides that, in the event of termination of employment by the Executive for "good reason," or a termination of employment by the Company without "cause", change in control or nonrenewal, as such terms are defined in the Employment Agreement, each Executive shall be entitled to receive: (i) a lump sum in an amount equal to three years of the Executive's base annual salary; (ii) a lump sum in an amount equal to the annual bonus paid by the Company to the Executive for the last fiscal year of the Company ending prior to the date of termination multiplied by three; (iii) insurance coverage for the Executive and his dependents, at the same level and at the same charges to the Executive as immediately prior to his termination, for a period of three (3) years following his termination from the Company; (iv) all accrued obligations, as defined therein; and (v) with respect to each incentive pay plan (other than stock option or other equity plans) of the Company in which the Executive participated at the time of termination, an amount equal to the amount the Executive would have earned if he had continued employment for three additional years. If the Executive is terminated by reason of his disability, he shall be entitled to receive, for three years after such termination, his base annual salary less any amounts received under a long-term disability plan. If the Executive's employment with the Company is terminated by reason of his death, his legal representatives shall receive the balance of any remuneration due him under the terms of his Employment Agreement. The Employment Agreements were amended on January 5, 2017 and automatically renew for successive two-year periods unless notice is given to the Company within 180 days of the end of such successive term.

Mr. Bruce A. Dey, Dr. Dieter Schapfel and Ms. Kara Cannon are "at will" employees and are parties to certain change in control provisions with the Company which is deemed customary practice for their respective positions, as more fully discussed below. Prior to his departure in November 2019, Mr. James M. O'Brien was also an "at will" employee. Mr. O'Brien was a party to a severance arrangement from his initial employment arrangement, but did not receive any payments pursuant to such arrangement in connection with his departure.

Benefits and All Other Compensation

We maintain broad-based benefits that are provided to all employees, including health and dental insurance, group life insurance and a 401(k) plan. Named Executive Officers and Key Employees are eligible to participate in our employee benefit plans. The annual Company match for our Named Executive Officers and other employees is up to \$12,250, if over 50 years old, or limited to 50% of the maximum contribution made.

Certain of our Named Executive Officers may be entitled to benefits that are not otherwise available to all of our employees, including supplemental health, life insurance and disability benefits. We do not provide post-retirement health coverage to our Named Executive Officers or our employees. Our health and insurance plans are substantially the same among all management levels at the Company. Dr. Rabbani and Mr. Weiner are provided life insurance benefits in connection with their total compensation arrangements.

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

Severance and Change in Control Benefits

Pursuant to Employment Agreements entered into with Dr. Rabbani and Mr. Barry Weiner, these executives are entitled to specified benefits in the event of the termination of their employment under specified circumstances, including termination for good reason, termination for cause, and termination following a change of control of our Company (as defined in each executive's Employment Agreement). Mr. James O'Brien was also entitled to specified benefits in the event of certain terminations of his employment, but the payment of such benefits was not triggered in connection with his departure in November 2019. We have provided more information about these benefits, along with estimates of their value under various circumstances, within the below table.

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

Our practice in the case of change in control benefits has been structured to trigger only in the event of a termination of the executive without cause or by the executive for good reason during a specified period before or after the change in control.

Potential Payments upon Termination or Change in Control

The following table contains information regarding each component of potential payments upon termination or change in control for the Named Executive Officers and Key Employees as of July 31, 2019. See the above section captioned "Employment Agreements" for a summary of the termination and change in control terms.

Name and Principal Position	Acceleration of Vesting	Severance Pay ⁽¹⁾	Continuation of Benefits	Tax Gross-Up	Total
Elazar Rabbani, Ph.D.					
Termination without cause or by Executive for "good reason"	\$142,080	\$3,648,636	\$734,315	—	\$4,525,031
Change in control transaction without termination	—	—	—	—	—
Change in control transaction with termination	\$142,080	\$3,648,636	\$734,315	\$1,805,320	\$6,330,352
Barry W. Weiner					
Termination without cause or by Executive for "good reason"	\$127,650	\$3,052,869	\$703,568	—	\$3,884,087
Change in control transaction without termination	—	—	—	—	—
Change in control transaction with termination	\$127,650	\$3,052,869	\$703,568	\$1,586,513	\$5,470,600
Dieter Schapfel, M.D.					
Termination without cause or by Executive for "good reason"	—	—	—	—	—
Change in control transaction without termination	—	—	—	—	—
Change in control transaction with termination	\$57,720	—	—	—	\$57,720
Kara Cannon					
Termination without cause or by Executive for "good reason"	—	—	—	—	—
Change in control transaction without termination	—	—	—	—	—
Change in control transaction with termination	\$57,720	—	—	—	\$57,720
Bruce A. Dey					
Termination without cause or by Executive for "good reason"	—	—	—	—	—
Change in control transaction without termination	—	—	—	—	—
Change in control transaction with termination	\$19,980	—	—	—	\$19,980

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

Chief Executive Officer Pay Ratio –

As required by Section 953(b) of the Dodd-Frank Wall Street Reform and Consumer Protection Act, and Item 402(u) of Regulation S-K, we are providing the following information regarding the annual total compensation of our median employee and the annual total compensation of Dr. Rabbani, our Chairman, President and Chief Executive Officer.

For fiscal 2019, the annual total compensation of the employee identified as our median employee (excluding Dr. Elazar Rabbani) was \$45,014. The annual total compensation of Dr. Rabbani was \$1,491,944. Based on this information, for fiscal 2019, the ratio of the annual total compensation of Dr. Rabbani to the median of the annual total compensation of all employees is 33 to 1.

This pay ratio is a reasonable estimate calculated in a manner consistent with SEC rules based on our payroll and employment records and the methodology described below. The SEC rules for identifying the median compensated employee and calculating the pay ratio based on that employee's annual total compensation allow companies to adopt a variety of methodologies, to apply certain exclusions and to make reasonable estimates and assumptions that reflect their compensation practices. As such, the pay ratio reported by other companies may not be comparable to the pay ratio reported above, as other companies may have different employment and compensation practices and may utilize different methodologies, exclusions, estimates and assumptions in calculating their own pay ratios.

To identify the median of all our employees, as well as to determine the annual total compensation of the median employee, the methodology and the material assumptions, adjustments and estimates that we used were as follows: we determined that, as of July 31, 2019, our employee population consisted of approximately 460 individuals worldwide (432 U.S. and 28 non-U.S.), including full-time and part-time employees but not any individuals paid by a third party. We selected July 31, 2019, which is within the last three months of our fiscal 2019, as the date upon which we would identify the median employee to allow sufficient time to identify the median employee given the global scope of our operations.

To identify the median employee from our employee population, we collected actual base salary, bonus or commission paid and any overtime paid during the 12-month period ending July 31, 2019.

Compensation Committee Report

The Compensation Committee has reviewed and discussed the Compensation Discussion and Analysis in this Annual Report on Form 10-K/A for the fiscal year ended July 31, 2019 with management. Based on its review and discussion with management, the Compensation Committee recommended to our Board that the Compensation Discussion and Analysis be included in this Annual Report on Form 10-K/A for the fiscal year ended July 31, 2019.

Dov Perlysky, Chairman
Gregory M. Bortz
Bruce A. Hanna, Ph.D.

Compensation Committee Interlocks and Insider Participation

No member of the Compensation Committee has a relationship that would constitute an interlocking relationship with the Company's executive officers or other directors.

Insurance for Indemnification of Directors and Officers

The Company has in effect with AIG Insurance and others, under a policy effective February 26, 2019 and expiring on February 26, 2020, insurance covering all of its Directors and officers and certain other employees of the Company against certain liabilities and reimbursing the Company for obligations which it incurs as a result of its indemnification of such directors, officers and employees. Such insurance has been obtained in accordance with the provisions of Section 726 of the Business Corporation Law of the State of New York. The annual premium is \$323,890.

ITEM 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

Equity Compensation Plan Information

The following table sets forth information regarding our existing equity compensation plans as of July 31, 2019:

Plan Category	(A) Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights ⁽¹⁾	(B) Weighted Average Exercise Price of Outstanding Options	(C) Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (A)) ⁽²⁾
Equity compensation plans approved by security holders	2,352,667	\$4.53	1,223,000
Equity compensation plans not approved by security holders	—	—	—
Total	2,352,667	\$4.53	1,223,000

(1) Shares to be issued upon exercise of options or restricted stock awards under the 2011 Incentive Plan.

(2) Shares available for grant under the 2011 Incentive Plan.

Beneficial Ownership of Principal Shareholders and Management

Set forth below is information, as of November 19, 2019 concerning stock ownership of all persons known by the Company to own beneficially 5% or more of the shares of Common Stock of the Company, the executive officers named in the “Summary Compensation Table” as “Named Executive Officers,” all current directors and the Board’s Class II Director-nominees, and all current directors, executive officers and key employees of the Company as a group, based upon the number of outstanding shares of Common Stock as of the close of business on November 19, 2019.

The percentages in the “Percent of Class” column are calculated in accordance with the rules of the SEC, under which a person may be deemed to be the beneficial owner of shares if that person has or shares the power to vote or dispose of those shares or has the right to acquire beneficial ownership of those shares within 60 days (for example, through the exercise of an option or warrant). 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.

Title of Class	Name and Address of Beneficial Owner	Amount and Nature of Beneficial Ownership ⁽¹⁾	Percent of Class ⁽²⁾
Common Stock	Elazar Rabbani, Ph.D.	1,954,679 ⁽³⁾	4.0%
Common Stock	Barry W. Weiner	1,390,472 ⁽⁴⁾	2.8%
Common Stock	Dieter Schapfel, M.D.	107,836 ⁽⁵⁾	*
Common Stock	Kara Cannon	72,971 ⁽⁶⁾	*
Common Stock	Bruce A. Dey	65,364 ⁽⁷⁾	*
Common Stock	Gregory M. Bortz	353,209 ⁽⁸⁾	*
Common Stock	Dov Perlysky	840,018 ⁽⁹⁾	1.7%
Common Stock	Bruce A. Hanna, Ph.D.	142,796 ⁽¹⁰⁾	*
Common Stock	Harbert Management Corp	5,620,681 ⁽¹¹⁾	11.8%
Common Stock	Evermore Global Advisors LLC	4,007,851 ⁽¹²⁾	8.4%
Common Stock	Wellington Management Group LLP	3,576,530 ⁽¹³⁾	7.5%
Common Stock	Renaissance Technologies, LLC	3,299,563 ⁽¹⁴⁾	6.9%
Common Stock	BlackRock Fund Advisors	3,241,497 ⁽¹⁵⁾	6.8%
Common Stock	All directors, executive officers and key employees as a group (8 persons)	4,927,344 ⁽¹⁶⁾	10.1%

- * 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) For directors, executive officers and key employees, based upon 48,926,892 shares of Common Stock of the Company considered 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 when determining the amount and percentage of Common Stock owned by directors and executive officers individually and as a group.
 - (3) Includes (i) 289,615 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) 38,208 shares of Common Stock held in the Company's 401(k) plan.
 - (4) Includes (i) 248,989 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) 38,215 shares of Common Stock held in the Company's 401(k) plan. (5) Includes 46,000 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof, and (ii) 9,010 shares of Common Stock held in the Company's 401(k) plan. This individual is considered a key employee.
 - (5) Includes 93,000 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof, and (ii) 13,668 shares of Common Stock held in the Company's 401(k) plan. This individual is considered a key employee.
 - (6) Includes 62,333 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof, and (ii) 10,638 shares of Common Stock held in the Company's 401(k) plan. This individual is considered a key employee.
 - (7) Includes (i) 29,333 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof, and (ii) 36,031 shares of Common Stock held in the Company's 401(k) plan. This individual is considered a key employee.
 - (8) Includes 259,510 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof.
 - (9) Includes (i) 259,510 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) 109,237 shares owned directly by RSD 2012 GRAT, of which Mr. Perlysky is the trustee of which Mr. Perlysky disclaims beneficial ownership; (v) 45,000 shares owned by Sky Ventures LLC, of which Mr. Perlysky is the manager, (vi) 38,353 shares owned directly by Mr. Perlysky, (vii) 325,875 shares owned by Kinder Investments LLP, (viii) 6,981 shares owned by Krovim LLC, (ix) 3,225 shares owned by MidAtlantic Capital LLC, (x) 3,139 shares owned directly by Laya Perlysky of which Mr. Perlysky disclaims beneficial ownership, and (xi) 448 shares owned by LDP Family Partnership LP of which Mr. Perlysky disclaims beneficial ownership.
 - (10) Includes 127,796 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof Includes 43,632 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof.
 - (11) The address of Harbert Management Corp. is 2100 Third Avenue North, Suite 600, Birmingham, AL 35203. This information is based solely on a Schedule 13F filed on September 30, 2019 .
 - (12) The address of Evermore Global Advisors, LLC is 89 Summit Ave., Summit NJ 07901 . This information is based solely on a Schedule 13F filed on September 30, 2019.
 - (13) 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 September 30, 2019 .
 - (14) The address of Renaissance Technologies, LLC is 800 Third Avenue, New York, NY 10022 . This information is based solely on a Schedule 13F filed on September 30, 2019.
 - (15) The address of BlackRock Fund Advisors is 400 Howard St., San Francisco, CA 94105. This information is based solely on a Schedule 13F filed on September 30, 2019.
 - (16) Includes 1,370,085 shares of Common Stock issuable upon the exercise of options which are exercisable within 60 days from the date hereof.

ITEM 13. Certain Relationships and Related Transactions, and Director Independence.

It is the responsibility of the Nominating/Governance Committee to consider questions of possible conflicts of interest of directors and of the Company's senior executives, which includes the consideration of all transactions required to be disclosed pursuant to the SEC's related person disclosure requirements. In addition, the Board has a Related Persons Policy which states that all related person transactions shall be in the best interests of the Company and, unless different terms are specifically approved or ratified by disinterested members of the Board, must be on terms that are (i) no less favorable to the Company than would be obtained in a similar transaction with an unaffiliated third party under the same or similar circumstances, or (ii) generally available to substantially all employees of the Company. In addition, if any non-material or material related person transaction relates to any executive officer or director, it must be reviewed by the Nominating/Governance Committee who shall determine whether the transaction is in compliance with the Company's Related Person Policy.

Enzo Clinical Labs, Inc., a subsidiary of the Company ("Enzo Lab"), leases a facility located in Farmingdale, New York from Pari Management Corporation ("Pari"). Pari is owned equally by Elazar Rabbani, Ph.D., the Chairman and Chief Executive Officer of the Company; Shahram K. Rabbani, a former officer and former director of the Company; and Barry Weiner, the President, Chief Financial Officer and a director of the Company, and his wife. The lease originally commenced on December 20, 1989, was amended and extended in October 2015 and now terminates on March 31, 2027. During the fiscal year ended July 31, 2019, Enzo Lab paid approximately \$1,849,000 to Pari with respect to such facility and future payments are subject to cost of living adjustments.

The non-interested members of the Board, at the time of the execution of the lease and each extension, reviewed and approved the transaction in accordance with the Company's procedures for reviewing related party transactions. The Nominating/Governance Committee obtained a third-party appraisal to determine the value of the lease. Based on that appraisal, the Company, which has guaranteed Enzo Lab's obligations to Pari under the lease, believes that the existing lease terms are as favorable to the Company as it would be to an unaffiliated party.

Director Independence

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

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

- The director was an employee of the Company;
- An immediate family member of the director was an executive officer of the Company;
- A director was affiliated with or employed by a present or former internal or external auditor of the Company;
- An immediate family member of a director was affiliated with or employed in a professional capacity by a present or former internal or external auditor of the Company;
- A director, or an immediate family member of the director, received more than \$120,000 per year in direct compensation from the Company, other than director and committee fees and pension or other forms of deferred compensation for prior services (provided such compensation is not contingent in any way on continued service);
- The director, or an immediate family member of the director, was employed as an executive officer of another company where any of the Company's executives served on that company's compensation committee of the board of directors;

- The director was an executive officer or employee, or an immediate family member of the director was an executive officer, of another company that made payments to, or received payments from, the Company for property or services in an amount which, in any single fiscal year, exceeded the greater of \$1 million or two percent (2%) of such other company's consolidated gross revenues;
- The director, or an immediate family member of the director, was an executive officer of another company that was indebted to the Company, or to which the Company was indebted, where the total amount of either company's indebtedness to the other was five percent (5%) or more of the total consolidated assets of the Company he or she served as an executive officer; or
- The director, or an immediate family member of the director, was an officer, director or trustee of a charitable organization where the Company's annual discretionary charitable contributions to the charitable organization exceeded the greater of \$1 million or two percent (2%) of that organization's consolidated gross revenues.

The Board has reviewed all material transactions and relationships among each director, and any member of his or her immediate family, and the Company, its senior management and its independent auditors. Based on this review and in accordance with its independence standards outlined above, the Board has affirmatively determined that all of the non-employee directors are independent as such term is defined by the NYSE.

Messrs. Gregory M. Bortz, Dov Perlysky and Dr. Bruce A. Hanna, Ph.D. qualify as "independent directors" under the criteria established by the NYSE. The Board has determined that each member of the Compensation and Nominating Committees is independent, as defined in the NYSE listing standards. The Board has determined that each of the Audit Committee members is independent, as defined in the NYSE's listing standards and applicable SEC Rules. The Board has further determined that Mr. Bortz is an "audit committee financial expert" as such term is defined under Item 407(d)(5)(ii) of Regulation S-K promulgated under the Exchange Act, and that each director is financially literate as required under the NYSE listing standards.

ITEM 14. Principal Accounting Fees and Services.

Principal Accountant Fees and Services

EisnerAmper billed the Company for services for fiscal 2019 and 2018, as set forth in the table below. The fees listed are aggregate fees for services performed for the year—regardless of when the fee was actually billed.

	FY 2019	FY 2018
Audit Fees	\$548,318	\$550,900
Audit-related Fees	38,681	38,752
Tax Fees	—	—
All Other Fees.	—	—
Total	\$586,999	\$589,652

Audit Fees—Consists of fees for professional services necessary to perform an audit or review in accordance with the Public Company Accounting Oversight Board, including services rendered for the audit of our annual financial statements (including services incurred with rendering an opinion under Section 404 of the Sarbanes-Oxley Act of 2002) and quarterly reviews of the Company's interim financial statements.

Audit-Related Fees—EisnerAmper performed certain Audit services for an employee benefit plan for the years ended December 31, 2019 and 2018, for which the Company is the plan sponsor; these fees were \$38,681 and \$38,752, respectively.

Tax Fees—There were no tax fees for fiscal years 2019 and 2018.

All Other Fees—There were no other fees for fiscal years 2019 and 2018.

Pre-Approval Policies and Procedures—The Audit Committee has adopted a policy that requires advance approval of all audit, audit-related, tax services and other services performed by the independent registered public accounting firm. The policy provides for pre-approval by the Audit Committee of specifically defined audit and non-audit services.

Unless the specific service has been previously pre-approved with respect to that year, the Audit Committee must approve the permitted service before the independent auditor is engaged to perform it. The Audit Committee has delegated to the Chair of the Audit Committee authority to approve permitted services, provided that the Chair reports any decisions to the Audit Committee at its next scheduled meeting.

Part IV

Exhibit 15. Exhibit, Financial Statement Schedules

(a) The following documents are filed as part of this report:

3. Exhibits:

The exhibits listed in the exhibit index of the original Form 10-K filing which was filed with the SEC on October 15, 2019, and the exhibits listed in the exhibit index of this Amendment are filed with, or incorporated by reference in, this report.

EXHIBIT INDEX

Exhibit Number	Description
4.1*	Description of Enzo Biochem, Inc.'s Securities
31.3*	Certificate of Chief Executive Officer Pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, dated November 26, 2019.
31.4*	Certificate of Chief Financial Officer Pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, dated November 26, 2019.

* Filed herewith.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

ENZO BIOCHEM, INC.

Date: November 26, 2019

/s/ Barry Weiner
President, Chief Financial Officer, Principal Accounting
Officer, and Treasurer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

By: /s/ Elazar Rabbani November 26, 2019
Elazar Rabbani, Ph.D.
Chairman of Board of Directors and Secretary
(Principal Executive Officer)

By: /s/ Barry W. Weiner November 26, 2019
Barry W. Weiner,
President, Chief Financial Officer, Principal Accounting Officer, Treasurer and Director

By: /s/ Bruce A. Hanna November 26, 2019
Bruce A. Hanna, Ph.D., Director

By: /s/ Gregory M. Bortz November 26, 2019
Gregory M. Bortz, Director

By: /s/ Dov Perlysky November 26, 2019
Dov Perlysky, Director

DESCRIPTION OF ENZO BIOCHEM, INC.'S SECURITIES

DESCRIPTION OF CAPITAL STOCK

The following is a brief description of the common stock, par value \$0.01 per share, of Enzo Biochem, Inc. (the “Company,” “we,” or “our”), which is the only security of the Company registered pursuant to Section 12 of the Securities Exchange Act of 1934, as amended.

Pursuant to our Certificate of Incorporation, as amended, the total amount of our authorized capital stock is 100,000,000 shares, which consists of 75,000,000 shares of authorized common stock, par value \$0.01 per share, and 25,000,000 shares of authorized preferred stock, par value \$0.01 per share. As of November 19, 2019, we had outstanding 47,556,807 shares of common stock and no shares of preferred stock. As of November 19, 2019, we had approximately 902 holders of record of our common stock.

The following summary of our capital stock does not purport to be complete and is subject to and qualified in its entirety by, our Certificate of Incorporation, as amended, and our Amended and Restated By-laws.

Common Stock

The holders of shares of common stock are entitled to one vote for each share held of record on all matters submitted to a vote of the stockholders. All shares of our common stock are entitled to share equally in any dividends our board of directors may declare from legally available sources. Our common stock is traded on the New York Stock Exchange under the symbol “ENZ”. The section below entitled “Certain Provisions of New York Law and of the Company’s Certificate of Incorporation and Amended and Restated By-laws” contains additional information regarding the rights and preferences of our common stock. The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company.

Preferred Stock

Our board of directors has the authority, without further action by the stockholders, to issue shares of preferred stock in one or more series and to fix and determine the following terms of the preferred stock by resolution: variations in the designations, preferences, and relative, participating, optional or other special rights (including, without limitation, special voting rights, of conversion in common stock or other securities, redemption provisions or sinking fund provisions) as between series and between the preferred stock and any series thereof and the common stock, and the qualifications, limitations or restrictions of such rights, all as shall be stated in a resolution of the board of directors. Shares of preferred stock or any series thereof may have full or limited voting powers, or be without voting powers, all as shall be stated in a resolution of the board of directors.

Any or all of these rights may be greater than the rights of our common stock. We currently have no issued and outstanding preferred stock.

Our board of directors, without stockholder approval, can issue preferred stock with voting, conversion or other rights that could negatively affect the voting power and other rights of the holders of our common stock. Preferred stock could thus be issued quickly with terms calculated to delay or prevent a change in control of the Company or to make it more difficult to remove the Company’s management. Additionally, the issuance of preferred stock may have the effect of decreasing the market price of our common stock.

Certain Provisions of New York Law and of the Company’s Certificate of Incorporation and Amended and Restated By-laws

The following paragraphs summarize certain provisions of the New York Business Corporation Law, or NYBCL, and our Certificate of Incorporation, as amended, and our Amended and Restated By-laws. The summary does not purport to be complete and is subject to and qualified in its entirety by reference to the NYBCL, our Certificate of Incorporation, as amended, and our Amended and Restated By-laws, copies of which are on file with the SEC as exhibits to our annual report filed on Form 10-K on October 15, 2019.

General. Certain provisions of our Certificate of Incorporation, as amended, and our Amended and Restated By-laws and New York law could make our acquisition by a third party, a change in our incumbent management, or a similar change of control more difficult, including:

- an acquisition of us by means of a tender or exchange offer;
- an acquisition of us by means of a proxy contest or otherwise; or
- the removal of a majority or all of our incumbent officers and directors.

These provisions, which are summarized below, are likely to discourage certain types of coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe that these provisions help to protect our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us, and that this benefit outweighs the potential disadvantages of discouraging such a proposal because our ability to negotiate with the proponent could result in an improvement of the terms of the proposal.

Election and removal of directors. Our bylaws provide that the size of the board of directors shall be fixed at five (5) directors and shall be classified into three classes, as nearly equal as possible as determined by the board of directors. The directors are to be elected at the annual meeting of the stockholders, with a term expiring at the annual meeting of shareholders held in the third year following the year of their election or until his successor is elected and qualified. Any director or the entire board of directors may be removed, with cause, by a the affirmative vote of (i) the holders of 80% of the combined voting power of the then outstanding shares of stock entitled to vote generally in the election of directors, voting together as a single class and (ii) a majority of such shares beneficially owned by the persons not affiliated with an interested shareholder.

Stockholder meetings. Our bylaws provide that the stockholders may not call a special meeting of the stockholders of our company. Instead, special meetings of the stockholders may be called by the Board of Directors pursuant to a resolution approved by a majority of the entire board of directors.

Requirements for advance notification of stockholder nominations and proposals. Our bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as directors, other than nominations made by or at the direction of the board of directors or a committee of the board.

New York anti-takeover law. We are subject to certain “business combination” provisions of Section 912 of the NYBCL and expect to continue to be so subject if and for so long as we have a class of securities registered under Section 12 of the Securities Exchange Act of 1934. Section 912 provides, with certain exceptions (which include, among others, transactions with shareholders who became interested prior to the effective date of an amendment to our Certificate of Incorporation providing that we would be subject to Section 912 if such corporation did not then have a class of stock registered pursuant to Section 12 of the Exchange Act), that a New York corporation may not engage in a “business combination” (e.g., merger, consolidation, recapitalization or disposition of stock) with any “interested shareholder” for a period of five years from the date that such person first became an interested shareholder unless:

- (i) the transaction resulting in a person becoming an interested shareholder was approved by the board of directors of the corporation prior to that person becoming an interested shareholder; or
- (ii) the business combination is approved by the holders of a majority of the outstanding voting stock not beneficially owned by such interested shareholder; or
- (iii) the business combination is approved by the disinterested shareholders at a meeting called no earlier than five years after the interested shareholder’s stock acquisition date; or
- (iv) the business combination meets certain valuation requirements for the stock of a New York corporation.

An “interested shareholder” is defined as any person who (a) is the beneficial owner of 20% or more of the outstanding voting stock of a New York corporation or (b) is an affiliate or associate of a corporation that at any time during the prior five years was the beneficial owner, directly or indirectly, of 20% or more of the then outstanding voting stock.

A “business combination” includes mergers, asset sales and other transactions resulting in a financial benefit to the interested shareholder.

The “stock acquisition date”, with respect to any person and any New York corporation, means the date that such person first becomes an interested shareholder of such corporation.

No cumulative voting. Our Certificate of Incorporation, as amended, and our Amended and Restated By-laws do not provide for cumulative voting in the election of directors.

Limitation of liability. As permitted by the NYBCL, our Certificate of Incorporation, as amended provides that a director will not be personally liable to us or our stockholders for damages for any breach of duty in his or her capacity as a director unless a judgment or other final adjudication adverse to such director establishes that (i) his or her acts or omissions were in bad faith or involved intentional misconduct or a knowing violation of law, (ii) such director personally gained in fact a financial profit or other advantage to which he or she was not legally entitled or (iii) his or her acts violated Section 719 of the NYBCL. As a result of this provision, we and our stockholders may be unable to obtain monetary damages from a director for breach of his or her duty of care.

Our Certificate of Incorporation, as amended, and our Amended and Restated By-laws also provide for the indemnification of our directors and officers to the fullest extent authorized by the NYBCL. Insofar as indemnification for liabilities under the Securities Act may be permitted to directors, officers or controlling persons of our company pursuant to our Certificate of Incorporation, as amended, our Amended and Restated By-laws and the NYBCL, we have been informed that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

We have the power to purchase and maintain insurance on behalf of any person who is or was one of our directors or officers, or is or was serving at our request as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other business against any liability asserted against the person or incurred by the person in any of these capacities, or arising out of the person’s fulfilling one of these capacities, and related expenses, whether or not we would have the power to indemnify the person against the claim under the provisions of the NYBCL. We intend to maintain director and officer liability insurance on behalf of our directors and officers.

DESCRIPTION OF DEPOSITARY SHARES

The following description, together with the additional information we include in any applicable prospectus supplement, summarizes the material terms and provisions of the depositary shares that we may offer. The following statements with respect to the depositary shares and depositary receipts are summaries of, and subject to, the detailed provisions of a deposit agreement to be entered into by Enzo Biochem and a depositary to be selected at the time of issue (the “depositary”) and the form of depositary receipt. The form of deposit agreement and the form of depositary receipt will be filed with the SEC.

General

We may, at our option, elect to issue fractional shares of preferred stock, rather than full shares of preferred stock. In the event such option is exercised, we may elect to have a depositary issue receipts for depositary shares, each receipt representing a fraction, to be set forth in the prospectus supplement relating to a particular series of preferred stock, of a share of a particular series of preferred stock as described below.

The shares of any series of preferred stock represented by depositary shares will be deposited under a deposit agreement between us and a bank or trust company that we select. Subject to the terms of the deposit agreement, each owner of a depositary share will be entitled, in proportion to the applicable fraction of a share of preferred stock represented by such depositary share, to all the rights and preferences of the preferred stock represented by the depositary share, including dividend, voting, redemption and liquidation rights.

Depositary Receipts

The depositary shares will be evidenced by depositary receipts issued pursuant to the deposit agreement. Depositary receipts will be distributed to those persons purchasing the fractional shares of preferred stock in accordance with the terms of an offering of the preferred stock.

Withdrawal of Preferred Stock

Upon surrender of depositary receipts at the office of the depositary and upon payment of the charges provided in the deposit agreement, a holder of depositary receipts may have the depositary deliver to the holder the whole shares of preferred stock relating to the surrendered depositary receipts. Holders of depositary shares may receive whole shares of the related series of preferred stock on the basis set forth in the related prospectus supplement for such series of preferred stock, but holders of such whole shares will not after the exchange be entitled to receive depositary shares for their whole shares. If the depositary receipts delivered by the holder evidence a number of depositary shares in excess of the number of depositary shares representing the number of whole shares of the related series of preferred stock to be withdrawn, the depositary will deliver to the holder at the same time a new depositary receipt evidencing such excess number of depositary shares.

Dividends and Other Distributions

The depositary will distribute all cash dividends or other cash distributions received for the preferred stock to the record holders of depositary shares relating to the preferred stock in proportion to the numbers of such depositary shares owned by such holders.

In the event of a distribution other than in cash, the depositary will distribute property received by it to the record holders of depositary shares entitled thereto, unless the depositary determines that it is not feasible to make distribution of the property. In that case the depositary may, with our approval, sell such property and distribute the net proceeds from the sale to such holders.

Redemption of Depositary Shares

If a series of preferred stock represented by depositary shares is subject to redemption, the depositary shares will be redeemed from the proceeds received by the depositary resulting from the redemption, in whole or in part, of the series of preferred stock held by the depositary. The redemption price per depositary share will be equal to the applicable fraction of the redemption price per share payable with respect to the series of the preferred stock. Whenever we redeem shares of preferred stock held by the depositary, the depositary will redeem as of the same redemption date the number of depositary shares representing shares of preferred stock redeemed by us. If less than all the depositary shares are to be redeemed, the depositary shares to be redeemed will be selected by lot or pro rata as may be determined by the depositary.

Voting the Preferred Stock

Upon receipt of notice of any meeting at which the holders of the preferred stock are entitled to vote, the depositary will mail the information contained in such notice of meeting to the record holders of the depositary shares relating to such preferred stock. Each record holder of such depositary shares on the record date, which will be the same date as the record date for the preferred stock, will be entitled to instruct the depositary as to the exercise of the voting rights pertaining to the amount of the preferred stock represented by such holder's depositary shares. The depositary will endeavor, insofar as practicable, to vote the amount of the preferred stock represented by such depositary shares in accordance with such instructions, and we will agree to take all action which may be deemed necessary by the depositary in order to enable the depositary to do so. The depositary will not vote the preferred stock to the extent it does not receive specific instructions from the holders of depositary shares representing such preferred stock.

Amendment and Termination of the Deposit Agreement

We and the depositary at any time may amend the form of depositary receipt evidencing the depositary shares and any provision of the deposit agreement. However, any amendment which materially and adversely alters the rights of the holders of depositary shares will not be effective unless such amendment has been approved by the holders of at least a majority of the depositary shares then outstanding. We or the depositary may terminate the deposit agreement only if all outstanding depositary shares have been redeemed, or there has been a final distribution in respect of the preferred stock in connection with any liquidation, dissolution or winding up of Enzo Biochem and such distribution has been distributed to the holders of depositary receipts.

Charges of Depositary

We will pay all transfer and other taxes and governmental charges arising solely from the existence of the depositary arrangements. We will pay charges of the depositary in connection with the initial deposit of the preferred stock and any redemption of the preferred stock. Holders of depositary receipts will pay other transfer and other taxes and governmental charges and such other charges as are expressly provided in the deposit agreement to be for their accounts.

Miscellaneous

The depositary will forward to the record holders of the depositary shares relating to such preferred stock all reports and communications from us which are delivered to the depositary.

Neither we nor the depositary will be liable if either one is prevented or delayed by law or any circumstance beyond their control in performing the obligations under the deposit agreement. The obligations of Enzo Biochem and the depositary under the deposit agreement will be limited to performance in good faith of their duties thereunder, and they will not be obligated to prosecute or defend any legal proceeding in respect of any depositary shares or preferred stock unless satisfactory indemnity is furnished. The depositary may rely upon written advice of counsel or

accountants, or information provided by persons presenting preferred stock for deposit, holders of depositary receipts or other persons believed to be competent and on documents believed to be genuine.

Resignation and Removal of Depositary

The depositary may resign at any time by delivering to us notice of its election to do so, and we may at any time remove the depositary, any such resignation or removal to take effect upon the appointment of a successor depositary and its acceptance of such appointment. Such successor depositary must be appointed within sixty (60) days after delivery of the notice of resignation or removal.

DESCRIPTION OF DEBT SECURITIES

The following description, together with the additional information we include in any applicable prospectus supplement, summarizes the material terms and provisions of the debt securities that we may offer and the related indenture. While the terms we have summarized below will apply generally to any future debt securities we may offer, we will describe the particular terms of any debt securities that we may offer in more detail in the applicable prospectus supplement. If we indicate in a prospectus supplement, the terms of any debt securities we offer under that prospectus supplement may differ from the terms we describe below.

We may offer debt securities from time to time in one or more offerings. We will issue any such debt securities under an indenture that we will enter into with a trustee to be named in the indenture. We have filed a form of indenture as an exhibit to our registration statement registration statement filed on Form S-3 on September 1, 2017. The indenture will be qualified under the Trust Indenture Act of 1939, as in effect on the date of the indenture. We use the term “debenture trustee” to refer to the trustee under the indenture.

The following summaries of material provisions of the debt securities and the indenture are subject to, and qualified in their entirety by reference to, all the provisions of the indenture applicable to a particular series of debt securities.

General

The indenture provides that debt securities may be issued from time to time in one or more series. The indenture does not limit the amount of debt securities that may be issued thereunder, and the indenture provides that the specific terms of any series of debt securities shall be set forth in, or determined pursuant to, an authorizing resolution, an officers’ certificate and/or a supplemental indenture, if any, relating to such series.

We will describe in each prospectus supplement the following terms relating to a series of debt securities:

- the title or designation of the debt securities;
 - whether the debt securities will be secured or unsecured, and the terms of any secured debt;
 - the terms of the subordination of any series of subordinated debt securities;
 - any limit upon the aggregate principal amount of the debt securities;
 - the date or dates on which the debt securities may be issued and on which we will pay the principal on the debt securities;
 - the interest rate, which may be fixed or variable, or the method for determining the rate and the date interest will begin to accrue, the date or dates interest will be payable and the record dates for interest payment dates or the method for determining such dates;
 - the manner in which the amounts of payment of principal of, premium or interest on the debt securities will be determined, if these amounts may be determined by reference to an index based on a currency or currencies other than that in which the debt securities are denominated or designated to be payable or by reference to a commodity, commodity index, stock exchange index or financial index;
 - the currency of denomination of the debt securities;
 - if payments of principal of, premium or interest on the debt securities will be made in one or more currencies or currency units other than that or those in which the debt securities are denominated, the manner in which the exchange rate with respect to these payments will be determined;
 - the place or places where the principal of, premium, and interest on the debt securities will be payable, where debt securities of any series may be presented for registration of transfer, exchange or conversion, and where notices and demands to or upon the Company in respect of the debt securities may be made;
 - the form of consideration in which principal of, premium or interest on the debt securities will be paid;
 - the terms and conditions upon which we may redeem the debt securities;
 - any obligation we have to redeem or purchase the debt securities pursuant to any sinking fund, amortization or analogous provisions or at the option of a holder of debt securities;
 - the dates on which and the price or prices at which we will repurchase the debt securities at the option of the holders of debt securities and other detailed terms and provisions of these repurchase obligations;
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- the denominations in which the debt securities will be issued, if other than denominations of \$1,000 and any integral multiple thereof;
- the portion of principal amount of the debt securities payable upon declaration of acceleration of the maturity date, if other than the principal amount;
- whether the debt securities are to be issued at any original issuance discount and the amount of discount with which such debt securities may be issued;
- whether the debt securities will be issued in the form of certificated debt securities or global debt securities and, in such case, the depository for such global security or securities and the terms and conditions, if any, upon which interests in such global security or securities may be exchanged in whole or in part for the individual securities represented thereby;
- provisions, if any, for the defeasance of the debt securities of a series in whole or in part and any addition or change in the provisions related to satisfaction and discharge;
- the form of the debt securities;
- the terms and conditions upon which the debt securities will be so convertible or exchangeable into securities or property of another person, if at all, and any additions or changes, if any, to permit or facilitate such conversion or exchange;
- whether the debt securities will be subject to subordination and the terms of such subordination;
- provisions, if any, granting special rights to holders of the debt securities upon the occurrence of specified events;
- any restriction or condition on the transferability of the debt securities;
- any addition or change in the provisions related to compensation and reimbursement of the trustee which applies to securities of such series;
- any addition to or change in the events of default described herein or in the indenture with respect to the debt securities and any change in the acceleration provisions described herein or in the indenture with respect to the debt securities;
- any addition to or change in the covenants described herein or in the indenture with respect to the debt securities; and
- any other terms of the debt securities, which may modify or delete any provision of the indenture.

We may issue debt securities that provide for an amount less than their stated principal amount to be due and payable upon declaration of acceleration of their maturity pursuant to the terms of the indenture. We will provide you with information on the federal income tax considerations and other special considerations applicable to any of these debt securities in the applicable prospectus supplement.

Conversion or Exchange Rights

We will set forth in the prospectus supplement the terms, if any, on which a series of debt securities may be convertible into or exchangeable for our common stock or our other securities. We will include provisions as to whether conversion or exchange is mandatory, at the option of the holder or at our option. We may include provisions pursuant to which the number of shares of our common stock or our other securities that the holders of the series of debt securities receive would be subject to adjustment.

Consolidation, Merger or Sale; No Protection in Event of a Change of Control or Highly Leveraged Transaction

The indenture provides that we may not merge or consolidate with or into another entity, or sell other than for cash or lease all or substantially all our assets to another entity, or purchase all or substantially all the assets of another entity unless we are the surviving entity or, if we are not the surviving entity, the successor, transferee or lessee entity expressly assumes all of our obligations under the indenture or the debt securities, as appropriate.

Unless we state otherwise in the applicable prospectus supplement, the debt securities will not contain any provisions that may afford holders of the debt securities additional protection in the event we have a change of control or in the event of a highly leveraged transaction (whether or not such transaction results in a change of control), which could adversely affect holders of debt securities.

Events of Default Under the Indenture

The following are events of default under the indenture with respect to any series of debt securities that we may issue:

- if we fail to pay interest when due and our failure continues for 90 days and the time for payment has not been extended or deferred;
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- if we fail to pay the principal, or premium, if any for 30 days, when due whether by maturity or called for redemption;
- if we fail to pay a sinking fund installment, if any, when due and our failure continues for 30 days;
- if we fail to observe or perform any other covenant relating to such series contained in the debt securities of such series or the indenture, other than a covenant specifically relating to and for the benefit of holders of another series of debt securities, and our failure continues for 90 days after we receive written notice from the debenture trustee or holders of not less than a majority in aggregate principal amount of the outstanding debt securities of the applicable series; and
- if specified events of bankruptcy, insolvency or reorganization occur as to us.

No event of default with respect to a particular series of debt securities (except as to certain events of bankruptcy, insolvency or reorganization) necessarily constitutes an event of default with respect to any other series of debt securities. The occurrence of an event of default may constitute an event of default under any bank credit agreements we may have in existence from time to time. In addition, the occurrence of certain events of default or an acceleration under the indenture may constitute an event of default under certain of our other indebtedness outstanding from time to time.

If an event of default with respect to debt securities of any series at the time outstanding occurs and is continuing, then the trustee or the holders of not less than a majority in principal amount of the outstanding debt securities of that series may, by a notice in writing to us (and to the debenture trustee if given by the holders), declare to be due and payable immediately the principal (or, if the debt securities of that series are discount securities, that portion of the principal amount as may be specified in the terms of that series) of and premium and accrued and unpaid interest, if any, on all debt securities of that series. Before a judgment or decree for payment of the money due has been obtained with respect to debt securities of any series, the holders of a majority in principal amount of the outstanding debt securities of that series (or, at a meeting of holders of such series at which a quorum is present, the holders of a majority in principal amount of the debt securities of such series represented at such meeting) the acceleration shall be deemed to have been waived, rescinded and annulled if all events of default, other than the non-payment of accelerated principal, premium, if any, and interest, if any, with respect to debt securities of that series, have been cured or waived as provided in the applicable indenture (including payments or deposits in respect of principal, premium or interest that had become due other than as a result of such acceleration) and the Company has deposited with the indenture trustee or paying agent a sum sufficient to pay all amounts owed to the indenture trustee under the indenture, all arrears of interest, if any, on the debt securities, and the principal and premium, if any, on the debt securities that have become due other than by such acceleration. We refer you to the prospectus supplement relating to any series of debt securities that are discount securities for the particular provisions relating to acceleration of a portion of the principal amount of such discount securities upon the occurrence of an event of default.

Subject to the terms of the indenture, if an event of default under the indenture shall occur and be continuing, the debenture trustee will be under no obligation to exercise any of its rights or powers under such indenture at the request or direction of any of the holders of the applicable series of debt securities, unless such holders have offered the debenture trustee reasonable indemnity. The holders of a majority in principal amount of the outstanding debt securities of any series will have the right to direct the time, method and place of conducting any proceeding for any remedy available to the debenture trustee, or exercising any trust or power conferred on the debenture trustee, with respect to the debt securities of that series, provided that, subject to the terms of the indenture, the debenture trustee need not take any action that it believes, upon the advice of counsel, might involve it in personal liability or might be unduly prejudicial to the holders not involved in the proceeding.

A holder of the debt securities of any series will only have the right to institute a proceeding under the indenture or to appoint a receiver or trustee, or to seek other remedies if:

- the holder previously has given written notice to the debenture trustee of a continuing event of default with respect to that series;
- the holders of at least a majority in aggregate principal amount of the outstanding debt securities of that series have made written request, and such holders have offered reasonable indemnity to the debenture trustee to institute the proceeding as trustee; and
- the debenture trustee does not institute the proceeding, and does not receive from the holders of a majority in aggregate principal amount of the outstanding debt securities of that series (or at a meeting of holders of such series at which a quorum is present, the holders of a majority in principal amount of the debt securities of such series represented at such meeting) other conflicting directions within 60 days after the notice, request and offer.

These limitations do not apply to a suit instituted by a holder of debt securities if we default in the payment of the principal, premium, if any, or interest on, the debt securities.

We will periodically file statements with the applicable debenture trustee regarding our compliance with specified covenants in the applicable indenture.

Modification of Indenture; Waiver

The debenture trustee and we may, without the consent of any holders, execute a supplemental indenture to change the applicable indenture with respect to specific matters, including, among other things:

- to surrender any right or power conferred upon the Company;
 - to provide, change or eliminate any restrictions on the payment of principal of or premium, if any, on the debt securities; provided that any such action shall not adversely affect the interests of the holders of debt securities of any series in any material respect;
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- to change or eliminate any of the provisions of the indenture; provided that any such change or elimination shall become effective only when there is no outstanding debt security of any series created prior to the execution of such supplemental indenture that is entitled to the benefit of such provision and as to which such supplemental indenture would apply;
- to evidence the succession of another corporation to the Company;
- to evidence and provide for the acceptance of appointment by a successor trustee with respect to one or more series of debt securities and to add or change provisions of the indenture to facilitate the administration of the trusts thereunder by more than one trustee;
- to cure any ambiguity, mistake, manifest error, omission, defect or inconsistency in the indenture or to conform the text of any provision in the indenture or in any supplemental indenture to any description thereof in the applicable section of a prospectus, prospectus supplement or other offering document that was intended to be a verbatim recitation of a provision of the indenture or of any supplemental indenture;
- to add to or change or eliminate any provision of the indenture as shall be necessary or desirable in accordance with any amendments to the Trust Indenture Act;
- to make any change in any series of debt securities that does not adversely affect in any material respect the interests of the holders of such debt securities; and
- to supplement any of the provisions of the indenture to such extent as shall be necessary to permit or facilitate the defeasance and discharge of any series of debt securities; provided that any such action shall not adversely affect the interests of the holders of debt securities of such series or any other series of debt securities.

In addition, under the indenture, the rights of holders of a series of debt securities may be changed by us and the debenture trustee with the written consent of the holders of at least a majority in aggregate principal amount of the outstanding debt securities of each series (or, at a meeting of holders of such series at which a quorum is present, the holders of a majority in principal amount of the debt securities of such series represented at such meeting) that is affected. However, the debenture trustee and we may make the following changes only with the consent of each holder of any outstanding debt securities affected:

- extending the fixed maturity of the series of debt securities;
- reducing the principal amount, reducing the rate of or extending the time of payment of interest, or any premium payable upon the redemption of any debt securities;
- reducing the principal amount of discount securities payable upon acceleration of maturity;
- making the principal of or premium or interest on any debt security payable in currency other than that stated in the debt security;
- impairing the right to institute suit for the enforcement of any payment on or after the fixed maturity date of any series of debt securities;
- materially adversely affecting the economic terms of any right to convert or exchange any debt securities; and
- reducing the percentage of debt securities, the holders of which are required to consent to any amendment or waiver; or modifying, without the written consent of the trustee, the rights, duties or immunities of the trustee.

Except for certain specified provisions, the holders of at least a majority in principal amount of the outstanding debt securities of any series (or, at a meeting of holders of such series at which a quorum is present, the holders of a majority in principal amount of the debt securities of such series represented at such meeting) may, on behalf of the holders of all debt securities of that series, waive our compliance with provisions of the indenture. The holders of a majority in principal amount of the outstanding debt securities of any series may, on behalf of the holders of all the debt securities of such series, waive any past default under the indenture with respect to that series and its consequences, other than a default in the payment of the principal of, premium or any interest on any debt security of that series; provided, however, that the holders of a majority in principal amount of the outstanding debt securities of any series may rescind an acceleration and its consequences, including any related payment default that resulted from the acceleration.

Discharge

The indenture provides that we can elect to be discharged from our obligations with respect to one or more series of debt securities. In order to exercise our rights to be discharged with respect to a series, we must deposit with the trustee money or government obligations sufficient to pay all the principal of, the premium, if any, and interest on, the debt securities of the series on the dates payments are due.

Form, Exchange and Transfer

We will issue the debt securities of each series only in fully registered form without coupons and, unless we otherwise specify in the applicable prospectus supplement, in denominations of \$1,000 and any integral multiple thereof. The indenture provides that we may issue debt securities of a series in temporary or permanent global form and as book-entry securities that will be deposited with a depository named by us and identified in a prospectus supplement with respect to that series.

At the option of the holder, subject to the terms of the indenture and the limitations applicable to global securities described in the applicable prospectus supplement, the holder of the debt securities of any series can exchange the debt securities for other debt securities of the same series, in any authorized denomination and of like tenor and aggregate principal amount.

Subject to the terms of the indenture and the limitations applicable to global securities set forth in the applicable prospectus supplement, holders of the debt securities may present the debt securities for exchange or for registration of transfer, duly endorsed or with the form of transfer endorsed thereon duly executed if so required by us or the security registrar, at the office of the security registrar or at the office of any transfer agent designated by us for this purpose. Unless otherwise provided in the debt securities that the holder presents for transfer or exchange or in the indenture, we will make no service charge for any registration of transfer or exchange, but we may require payment of any taxes or other governmental charges.

We will name in the applicable prospectus supplement the security registrar, and any transfer agent in addition to the security registrar, that we initially designate for any debt securities. We may at any time designate additional transfer agents or rescind the designation of any transfer agent or approve a change in the office through which any transfer agent acts, except that we will be required to maintain a transfer agent in each place of payment for the debt securities of each series.

If we elect to redeem the debt securities of any series, we will not be required to:

- issue, register the transfer of, or exchange any debt securities of that series during a period beginning at the opening of business 15 days before the day of mailing of a notice of redemption of any debt securities that may be selected for redemption and ending at the close of business on the day of the mailing; or
- register the transfer of or exchange any debt securities so selected for redemption, in whole or in part, except the unredeemed portion of any debt securities we are redeeming in part.

Information Concerning the Debenture Trustee

The debenture trustee, other than during the occurrence and continuance of an event of default under the indenture, undertakes to perform only those duties as are specifically set forth in the indenture. Upon an event of default under the indenture, the debenture trustee must use the same degree of care as a prudent person would exercise or use in the conduct of his or her own affairs. Subject to this provision, the debenture trustee is under no obligation to exercise any of the powers given it by the indenture at the request of any holder of debt securities unless it is offered reasonable security and indemnity against the costs, expenses and liabilities that it might incur.

Payment and Paying Agents

Unless we otherwise indicate in the applicable prospectus supplement, we will make payment of the interest on any debt securities on any interest payment date to the person in whose name the debt securities, or one or more predecessor securities, are registered at the close of business on the regular record date for the interest.

Unless we otherwise indicate in the applicable prospectus supplement, we will pay principal of and any premium and interest on the debt securities of a particular series at the office of the indenture trustee or, at the option of the Company, by wire or check payable to the holder. Unless we otherwise indicate in a prospectus supplement, we will designate the corporate trust office of the debenture trustee our sole paying agent for payments with respect to debt securities of each series. We will name in the applicable prospectus supplement any other paying agents that we initially designate for the debt securities of a particular series. We will maintain a paying agent in each place of payment for the debt securities of a particular series. All money we pay to a paying agent or the debenture trustee for the payment of the principal of or any premium or interest on any debt securities which remains unclaimed at the end of two years after such principal, premium or interest has become due and payable will be repaid to us, and the holder of the security thereafter may look only to us for payment thereof.

Governing Law

The indenture and the debt securities will be governed and construed in accordance with the laws of the State of New York.

DESCRIPTION OF WARRANTS

The following description, together with the additional information we may include in any applicable prospectus supplements, summarizes the material terms and provisions of the warrants that we may offer and the related warrant agreements and warrant certificates. While the terms summarized below will apply generally to any warrants that we may offer, we will describe the particular terms of any series of warrants in more detail in the applicable prospectus supplement. If we indicate in the prospectus supplement, the terms of any warrants offered under that prospectus supplement may differ from the terms described below. Specific warrant agreements will contain additional important terms and provisions and will be incorporated by reference as an exhibit to our registration statement registration statement filed on Form S-3 on September 1, 2017.

General

We may issue warrants for the purchase of common stock, preferred stock or debt securities in one or more series. We may issue warrants independently or together with common stock, preferred stock and debt securities, and the warrants may be attached to or separate from these securities.

We will evidence each series of warrants by warrant certificates that we will issue under a separate agreement. We may enter into a warrant agreement with a warrant agent. If we engage a warrant agent, each warrant agent will be a bank that we select which has its principal office in the United States. We will indicate the name and address of the warrant agent in the applicable prospectus supplement relating to a particular series of warrants.

Before exercising their warrants, holders of warrants will not have any of the rights of holders of the securities purchasable upon such exercise, including:

- in the case of warrants to purchase debt securities, the right to receive payments of principal of, or premium, if any, or interest on, the debt securities purchasable upon exercise or to enforce covenants in the applicable indenture; or
- in the case of warrants to purchase common stock or preferred stock, the right to receive dividends, if any, or, payments upon our liquidation, dissolution or winding up or to exercise voting rights, if any.

Additional Information

We will describe in the applicable prospectus supplement the terms of the series of warrants, including:

- the offering price and aggregate number of warrants offered;
 - the currency for which the warrants may be purchased;
 - if applicable, the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each such security or each principal amount of such security;
 - if applicable, the date on and after which the warrants and the related securities will be separately transferable;
 - in the case of warrants to purchase debt securities, the principal amount of debt securities purchasable upon exercise of one warrant and the price at, and currency in which, this principal amount of debt securities may be purchased upon such exercise;
 - in the case of warrants to purchase common stock or preferred stock, the number of shares of common stock or preferred stock, as the case may be, purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;
 - the effect of any merger, consolidation, sale or other disposition of our business on the warrant agreement and the warrants;
 - the terms of any rights to redeem or call the warrants;
 - any provisions for changes to or adjustments in the exercise price or number of securities issuable upon exercise of the warrants;
 - the dates on which the right to exercise the warrants will commence and expire;
 - the manner in which the warrant agreement and warrants may be modified;
 - a discussion on any material or special United States federal income tax consequences of holding or exercising the warrants;
 - the terms of the securities issuable upon exercise of the warrants; and
-

- any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

Exercise of Warrants

Each warrant will entitle the holder to purchase the securities that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up to 5 p.m., Eastern time, on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

Holders of the warrants may exercise the warrants by delivering the warrant certificate representing the warrants to be exercised together with specified information, and paying the required amount to the warrant agent in immediately available funds, as provided in the applicable prospectus supplement. We will set forth on the reverse side of the warrant certificate and in the applicable prospectus supplement the information that the holder of the warrant will be required to deliver to the warrant agent.

Upon receipt of the required payment and the warrant certificate properly completed and duly executed at the corporate trust office of the warrant agent or any other office indicated in the applicable prospectus supplement, we will issue and deliver the securities purchasable upon such exercise. If fewer than all of the warrants represented by the warrant certificate are exercised, then we will issue a new warrant certificate for the remaining amount of warrants. If we so indicate in the applicable prospectus supplement, holders of the warrants may surrender securities as all or part of the exercise price for warrants.

Enforceability of Rights by Holders of Warrants

Each warrant agent will act solely as our agent under the applicable warrant agreement and will not assume any obligation or relationship of agency or trust with any holder of any warrant. A single bank or trust company may act as warrant agent for more than one issue of warrants. A warrant agent will have no duty or responsibility in case of any default by us under the applicable warrant agreement or warrant, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a warrant may, without the consent of the related warrant agent or the holder of any other warrant, enforce by appropriate legal action its right to exercise, and receive the securities purchasable upon exercise of, its warrants.

DESCRIPTION OF UNITS

We may issue units comprised of one or more of the other securities described above in any combination. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date. The applicable prospectus supplement may describe:

- the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;
- any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units;
- the terms of the unit agreement governing the units;
- United States federal income tax considerations relevant to the units; and
- whether the units will be issued in fully registered global form.

This summary of certain general terms of units and any summary description of units in the applicable prospectus supplement do not purport to be complete and are qualified in their entirety by reference to all provisions of the applicable unit agreement and, if applicable, collateral arrangements and depositary arrangements relating to such units. The forms of the unit agreements and other documents relating to a particular issue of units will be filed with the SEC each time we issue units, and you should read those documents for provisions that may be important to you.

CERTIFICATIONS

In connection with the Annual Report on Form 10-K/A of Enzo Biochem, Inc. ("the Company") for the fiscal year ended July 31, 2019 as filed with the Securities and Exchange Commission on the date hereof, I, Elazar Rabbani, Ph.D., Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 302 of the Sarbanes-Oxley Act of 2002, that:

1. I have reviewed this Annual Report on Form 10-K/A of Enzo Biochem, Inc.
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the Company as of, and for, the periods presented in this report;
4. The Company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the Company and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the Company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the Company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the Company's internal control over financial reporting that occurred during the Company's most recent fiscal quarter (the Company's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting; and
5. The Company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the Company's auditors and the audit committee of the Company's board of directors (or persons performing the equivalent functions):

- (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the Company's ability to record, process, summarize and report financial information; and
- (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal control over financial reporting.

Date: November 26, 2019

By: /s/ Elazar Rabbani, Ph.D.
Elazar Rabbani, Ph.D.
Chairman of the Board, Chief Executive Officer and Director

CERTIFICATIONS

In connection with the Annual Report on Form 10-K/A of Enzo Biochem, Inc. ("the Company") for the fiscal year ended July 31, 2019 as filed with the Securities and Exchange Commission on the date hereof, I, Barry Weiner, Chief Financial Officer and Principal Accounting Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 302 of the Sarbanes-Oxley Act of 2002, that:

1. I have reviewed this Annual Report on Form 10-K/A of Enzo Biochem, Inc.
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the Company as of, and for, the periods presented in this report;
4. The Company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the Company and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the Company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the Company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the Company's internal control over financial reporting that occurred during the Company's most recent fiscal quarter (the Company's fourth quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting; and
5. The Company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the Company's auditors and the audit committee of the Company's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the Company's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal control over financial reporting.

Date: November 26, 2019

By: /s/ Barry Weiner
Barry Weiner
President, Chief Financial Officer, Principal Accounting Officer,
Treasurer and Director
