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

FORM 10-Q

Mark one
☒ QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the quarterly period ended January 31, 2023
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	**13-2866202**
(State or Other Jurisdiction of Incorporation or Organization)	(IRS. Employer Identification No.)
81 Executive Blvd. Suite 3 Farmingdale, New York	**11735**
(Address of Principal Executive office)	(Zip Code)

212-583-0100
(Registrant's telephone number, including area code)

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 has 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 every Interactive Data File required to be submitted and posted pursuant to Rule 45 of Regulation S-T (§232.405 of that chapter) during the preceding 12 months (or such shorter period that the registrant was required to submit and post such files).

Yes ☒ No ☐

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 $0.01 par	ENZ	New York Stock Exchange

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 (as defined 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.

Yes ☐ No ☐

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

Yes ☐ No ☒

As of March 17, 2023, the Registrant had 49,662,821 shares of common stock outstanding.

ENZO BIOCHEM, INC.
FORM 10-Q
January 31, 2023

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PART I FINANCIAL INFORMATION
ITEM 1 FINANCIAL STATEMENTS

ENZO BIOCHEM, INC.
CONSOLIDATED BALANCE SHEETS (UNAUDITED)
(in thousands, except share and per share data)

	January 31, 2023	July 31, 2022
ASSETS		
Current assets:		
Cash and cash equivalents	$ 5,054	$ 21,603
Accounts receivable, net	10,866	11,516
Inventories, net	15,723	15,411
Prepaid expenses and other current assets	4,738	5,824
Total current assets	36,381	54,354
Property, plant, and equipment, net	17,425	17,259
Right-of-use assets, net	13,569	15,174
Goodwill	7,452	7,452
Other, including restricted cash of $1,000 at January 31, 2023 and July 21, 2022	1,625	1,618
Total assets	$ 76,452	$ 95,857
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable – trade	$ 13,189	$ 8,508
Accrued liabilities	11,590	12,300
Current portion of operating lease liabilities	3,425	3,432
Mortgage debt	3,684	—
Other current liabilities and finance leases short term	313	310
Total current liabilities	32,201	24,550
Other liabilities and finance leases long term	—	39
Operating lease liabilities, non-current, net	11,132	12,729
Long term debt, net	289	4,077
Total liabilities	$ 43,622	$ 41,395
Contingencies – see Note 12		
Stockholders' equity:		
Preferred Stock, $.01 par value; authorized 25,000,000 shares; no shares issued or outstanding	—	—
Common Stock, $.01 par value; authorized 75,000,000 shares; shares issued and outstanding: 48,733,054 at January 31, 2023 and 48,720,454 at July 31, 2022	487	487
Additional paid-in capital	340,407	339,462
Accumulated deficit	(310,593)	(288,638)
Accumulated other comprehensive income	2,529	3,151
Total stockholders' equity	32,830	54,462
Total liabilities and stockholders' equity	$ 76,452	$ 95,857

The accompanying notes are an integral part of these consolidated financial statements.

ENZO BIOCHEM, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(UNAUDITED)
(in thousands, except per share data)

	Three Months Ended January 31,		Six Months Ended January 31,	
	2023	2022	2023	2022
Revenues	$ 16,338	$ 34,046	$ 34,614	$ 60,565
Operating costs and expenses:				
Cost of revenues	15,079	17,838	29,750	33,111
Research and development	1,431	820	2,427	1,564
Selling, general and administrative	11,812	14,466	23,263	25,518
Legal and related expense, net	995	2,845	2,066	4,127
Total operating costs and expenses	29,317	35,969	57,506	64,320
Operating loss	(12,979)	(1,923)	(22,892)	(3,755)
Other income (expense):				
Interest, net	62	68	132	107
Other	125	(350)	130	(495)
Foreign exchange (loss) gain	1,472	(450)	675	(831)
Total other income (expense)	1,659	(732)	937	(1,219)
Loss before income taxes	(11,320)	(2,655)	(21,955)	(4,974)
Income taxes	—	—	—	—
Net loss	$ (11,320)	$ (2,655)	$ (21,955)	$ (4,974)
Net loss per common share:				
Basic and diluted	$ (0.23)	$ (0.05)	$ (0.45)	$ (0.10)
Weighted average common shares outstanding:				
Basic and diluted	48,729	48,472	48,725	48,472

The accompanying notes are an integral part of these consolidated financial statements.

ENZO BIOCHEM, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
(UNAUDITED)
(in thousands)

	Three Months Ended January 31,		Six Months Ended January 31,	
	2023	**2022**	**2023**	**2022**
Net loss	$ (11,320)	$ (2,655)	$ (21,955)	$ (4,974)
Other comprehensive (loss) income:				
Foreign currency translation adjustments	(1,355)	342	(622)	619
Comprehensive loss	$ (12,675)	$ (2,313)	$ (22,577)	$ (4,355)

The accompanying notes are an integral part of these consolidated financial statements.

ENZO BIOCHEM, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
Three Months Ended January 31, 2023 and 2022
(UNAUDITED)
(in thousands, except share data)

	Common Stock Shares Issued	Common Stock Amount	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income	Total Stockholders' Equity
Balance at October 31, 2022	*48,720,454*	$ 487	$ 339,892	$ (299,273)	$ 3,884	$ 44,990
Net loss for the period ended January 31, 2023	—	—	—	(11,320)	—	(11,320)
Share-based compensation charges	—	—	515	—	—	515
Vesting of performance stock units	*12,600*	—	—	—	—	—
Foreign currency translation adjustments	—	—	—	—	(1,355)	(1,355)
Balance at January 31, 2023	*48,733,054*	$ 487	$ 340,407	$ (310,593)	$ 2,529	$ 32,830

	Common Stock Shares Issued	Common Stock Amount	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income	Total Stockholders' Equity
Balance at October 31, 2021	*48,471,771*	$ 485	$ 337,342	$ (272,696)	$ 1,629	$ 66,760
Net loss for the period ended January 31, 2022	—	—	—	(2,655)	—	(2,655)
Share-based compensation charges	—	—	679	—	—	679
Foreign currency translation adjustments	—	—	—	—	342	342
Balance at January 31, 2022	*48,471,771*	$ 485	$ 338,021	$ (275,351)	$ 1,971	$ 65,126

The accompanying notes are an integral part of these consolidated financial statements.

ENZO BIOCHEM, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
Six Months Ended January 31, 2023 and 2022
(UNAUDITED)
(in thousands, except share data)

	Common Stock Shares Issued	Common Stock Amount	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income	Total Stockholders' Equity
Balance at July 31, 2022	*48,720,454*	$ 487	$ 339,462	$ (288,638)	$ 3,151	$ 54,462
Net loss for the period ended January 31, 2023	—	—	—	(21,955)	—	(21,955)
Share-based compensation charges	—	—	945	—	—	945
Vesting of performance stock units	*12,600*	—	—	—	—	—
Foreign currency translation adjustments	—	—	—	—	(622)	(622)
Balance at January 31, 2023	*48,733,054*	$ 487	$ 340,407	$ (310,593)	$ 2,529	$ 32,830

	Common Stock Shares Issued	Common Stock Amount	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income	Total Stockholders' Equity
Balance at July 31, 2021	*48,471,771*	$ 485	$ 337,126	$ (270,377)	$ 1,352	$ 68,586
Net loss for the period ended January 31, 2022	—	—	—	(4,974)	—	(4,974)
Share-based compensation charges	—	—	895	—	—	895
Foreign currency translation adjustments	—	—	—	—	619	619
Balance at January 31, 2022	*48,471,771*	$ 485	$ 338,021	$ (275,351)	$ 1,971	$ 65,126

The accompanying notes are an integral part of these consolidated financial statements.

ENZO BIOCHEM, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(UNAUDITED)
(in thousands)

	Six Months Ended January 31,	
	2023	**2022**
Cash flows from operating activities:		
Net loss	$ (21,955)	$ (4,974)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization of property, plant and equipment	1,428	1,253
Amortization of intangible assets	—	153
Share-based compensation charges	945	895
Share-based 401(k) employer match expense	396	358
Foreign exchange (gain) loss	(707)	773
Unrealized loss on marketable securities	—	553
Changes in operating assets and liabilities:		
Accounts receivable	653	(5,127)
Inventories	(310)	(1,211)
Prepaid expenses and other assets	1,080	743
Accounts payable – trade	4,678	(1,272)
Accrued liabilities, other current liabilities and other liabilities	(1,099)	1,183
Total adjustments	7,064	(1,699)
Net cash used in operating activities	(14,891)	(6,673)
Cash flows from investing activities:		
Purchases of marketable securities	—	(55)
Capital expenditures	(1,521)	(2,247)
Net cash used in investing activities	(1,521)	(2,302)
Cash flows from financing activities:		
Repayments under mortgage agreement and finance leases	(157)	(114)
Net cash used in financing activities	(157)	(114)
Effect of exchange rate changes on cash and cash equivalents	20	(26)
Decrease in cash and cash equivalents and restricted cash	(16,549)	(9,115)
Cash and cash equivalents and restricted cash - beginning of period	22,603	14,274
Total cash and cash equivalents and restricted cash - end of period	$ 6,054	$ 5,159
The composition of total cash and cash equivalents and restricted cash is as follows:		
Cash and cash equivalents	5,054	4,159
Restricted cash included in other assets	1,000	1,000
Total cash and cash equivalents and restricted cash	$ 6,054	$ 5,159

The accompanying notes are an integral part of these consolidated financial statements.

ENZO BIOCHEM, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
As of January 31, 2023
(UNAUDITED)
(Dollars in thousands, except share data)

Note 1 – Basis of Presentation

The accompanying consolidated financial statements include the accounts of Enzo Biochem, Inc. and its wholly-owned subsidiaries, Enzo Life Sciences, Enzo Clinical Labs, Enzo Therapeutics, Enzo Realty LLC and Enzo Realty II LLC, collectively or with one or more of its subsidiaries referred to as the "Company" or "Companies". The Company has two reportable segments: Clinical Services and Products. The consolidated balance sheet as of January 31, 2023, the consolidated statements of operations, comprehensive loss and stockholders' equity for the three and six months ended January 31, 2023 and 2022, and the consolidated statements of cash flows for the six months ended January 31, 2023 and 2022 (the "interim statements") are unaudited. In the opinion of management, all adjustments (which include normal recurring adjustments) necessary to present fairly the financial position and operating results for the interim periods have been made. Certain information and footnote disclosure, normally included in annual financial statements prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP"), have been condensed or omitted. The interim statements should be read in conjunction with the consolidated financial statements for the year ended July 31, 2022 and notes thereto contained in the Company's Annual Report on Form 10-K filed with the Securities and Exchange Commission. The consolidated balance sheet at July 31, 2022 has been derived from the audited financial statements at that date. The results of operations for the three and six months ended January 31, 2023 are not necessarily indicative of the results that may be expected for the fiscal year ending July 31, 2023.

Change in segment reporting

Historically, we engaged in the research and development of therapeutic candidates through Enzo Therapeutics, a biopharmaceutical venture that was developing multiple novel approaches in the areas of gastrointestinal, infectious, ophthalmic and metabolic diseases, many of which were derived from the researching work of Enzo Life Sciences. Enzo Therapeutics focused its efforts on researching treatment regimens for diseases and conditions for which treatment options were ineffective, costly, and/or caused unwanted side effects. This focus generated a clinical and preclinical pipeline, as well as numerous patents and patent applications with Enzo Therapeutics as the assignee. At the beginning of fiscal 2023, we determined we would redirect our research resources and efforts to our two operating segments, Enzo Life Sciences and Enzo Clinical Labs, and no longer consider Enzo Therapeutics a segment. The operating results of Enzo Therapeutics are now included in the "Other" segment. The prior period segment information for the three and six months ended January 31, 2022 reported in Note 11 has been restated to be included in the "Other" segment. The operating expenses of Enzo Therapeutics for the three and six months ended January 31, 2023 now included in the "Other" segment were $12 and $21, respectively. The operating expenses of Enzo Therapeutics for the three and six months ended January 31, 2022 now included in the "Other" segment were $20 and $25, respectively.

Liquidity and Going Concern

During the six months ended January 31, 2023, the Company incurred a net loss of $21,955 and used cash in operating activities of $14,891. The Company believes that based on its fiscal 2023 forecast, its current cash and cash equivalents level is not sufficient for its foreseeable liquidity and capital resource needs over at least the next twelve (12) months, which conditions raise substantial doubt about the Company's ability to continue as a going concern for one year after the date that the unaudited interim financial statements are issued.

In response to these conditions, the Company is evaluating various financing strategies to obtain sufficient additional liquidity to meet its operating and capital requirements for the next twelve months following the date of issuance of these unaudited interim consolidated financial statements. Specifically, on March 10, 2023, the Company signed a commitment letter providing for up to $8,000 of a revolving line of credit subject to closing, and as previously disclosed is exploring various strategic alternatives including the sale of segment operating assets. On March 16, 2023, the Company entered into an Asset Purchase Agreement with respect to the sale to Labcorp of substantially all the operating assets and assignment of certain liabilities which are necessary for Labcorp to operate the business of the Clinical Labs division. See Note 13 Subsequent Events. However, there can be no assurance that either of these capital raising strategies will be successful, and the Company may need to raise additional capital during the current fiscal year. The Company also believes it has the ability to raise additional funds, either through additional debt secured by real property owned, private debt, selling preferred stock, reactivating its Sales Agreement with Cantor, or through other sources, but there can be no assurances that the Company will be able to raise capital pursuant to the foregoing on favorable terms or at all. The Registration Statement on Form S-3 filed in connection with the Sales Agreement expired in October 2020 but a new Registration Statement could be filed at any time at the discretion of the Company, as disclosed in Note 10 in the Notes to the Consolidated Financial Statements. Our liquidity plans are subject to a number of risks and uncertainties, some of which are outside our control. Macroeconomic conditions could limit our ability to successfully execute our business plans and therefore adversely affect our liquidity plans. The unaudited interim financial statements do not include any adjustments to reflect the possible future effects on the recoverability and classification of assets or the amounts and classifications of liabilities that may result should the Company be unable to continue as a going concern.

Revolving Line of Credit commitment

On March 10, 2023, the Company entered into a commitment for a one-year credit facility with an asset based lender specializing in direct lending to middle-market companies in the healthcare sector. The facility is an $8 million revolving line of credit based on the Company's eligible accounts receivable. The annual interest rate is equal to the 90 day term SOFR rate plus 5.5%. The line of credit would terminate one year from closing and unused line fees and early prepayment penalties apply.

Closing and initial funding are conditioned on the absence of any material adverse change in the operations or financial condition of the Company prior to the closing date. The Company and the lender are using their best efforts to close on the line of credit as soon as possible. The expected closing time period is the end of March 2023.

Impact of COVID-19

We made substantial investments to expand and maintain the amount of COVID-19 testing available in the communities we serve since the start of the pandemic in March 2020. We applied our technical expertise in molecular diagnostics to develop next generation COVID-19 diagnostic and antibody testing options which were approved under the FDA Emergency Use Authorization (EUA). During the fiscal year ended July 31, 2022, the Company generated substantial COVID-19 related services revenues, representing 44% of all services revenues. This testing had a significantly positive impact on the profitability and cash flow of our Clinical services segment for most of fiscal 2022. Revenues from COVID-19 testing during the three and six months ended January 31, 2022 represented 56% and 52%, respectively of all services revenues. The rate of transmission of COVID-19 and the severity of its variants have dramatically declined in the US. Revenues from COVID-19 testing during the three and six months ended January 31, 2023 represented approximately 4% and 6%, respectively, of all services revenues.

In March 2022, the U.S. Health Resources and Services Administration ("HRSA") informed providers that, after March 22, 2022, it would stop accepting claims for testing and treatment for uninsured individuals under the HRSA COVID-19 Uninsured Program and that claims submitted prior to that date would be subject to eligibility and availability of funds. Although we believe that our estimates for contractual allowances and patient price concessions are appropriate, actual results could differ from those estimates. If the HRSA receives additional funding, it might again accept claims under the Uninsured Program.

Federal, state and local governmental policies and initiatives designed to reduce the transmission of COVID-19 resulted in, among other things, a significant reduction in physician office visits, the cancellation of elective medical procedures, and the continuation of work-from-home policies. The COVID-19 impact on the Company's operations is consistent with the overall industry and our competitors, partners, and vendors. While we anticipate that COVID-19 will continue to impact our business into the future, increases in vaccination rates and booster shots, the development of new therapeutics and greater availability of rapid COVID-19 tests has resulted in a continued, significant decline in demand for our COVID-19 testing. As a result, volume, revenues, profitability, and cash flow from COVID-19 testing during the current periods were all substantially and materially lower than the prior year period levels. COVID-19 testing is no longer a material part of our Services business.

We expect volume and revenues from COVID-19 testing will remain less significant in the periods ahead as the percentage of Americans who are vaccinated increases, the severity of its variants declines, and the general increase in the use of "at home" testing. However, the emergence and spread of potentially more serious variants may cause our COVID-19 testing volume to increase again. With respect to our non-COVID-19 operations, even after the COVID-19 pandemic impact has greatly moderated, we may continue to experience similar adverse effects to our businesses, consolidated results of operations, financial position and cash flows resulting from a recessionary economic environment, including inflation and actions by the Federal Reserve to increase interest rates.

The Company assessed certain accounting matters that generally require consideration of forecasted financial information in context with the information reasonably available to the Company and the unknown future impacts of COVID-19 and the recessionary economic environment, including inflation and actions by the Federal Reserve to increase interest rates as of January 31, 2023 and through the date of this Quarterly Report. The accounting matters assessed included, but were not limited to, the Company's patient self-pay revenue concessions and credit losses in the Clinical Services segment, accounts receivable, inventories and the carrying value of goodwill and other long-lived assets. The Company's future assessment of the magnitude and duration of COVID-19, as well as other economic factors, could result in additional material adverse impacts to the Company's consolidated financial statements in future reporting periods.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting periods. Actual results could differ from those estimates.

Effect of New Accounting Pronouncements

Pronouncements Issued but Not Yet Adopted

In June 2016, FASB issued ASU No. 2016-13 Financial Instruments – Credit Losses (Topic 326). This standard changes the impairment model for most financial instruments, including trade receivables, from an incurred loss method to a new forward-looking approach, based on expected losses.

The estimate of expected credit losses will require entities to incorporate considerations of historical information, current information and reasonable and supportable forecasts. Adoption of this standard is required for our annual and interim periods beginning August 1, 2023, as we qualified as a smaller reporting company at the end of fiscal 2022 and must be adopted using a modified retrospective transition approach. We are currently assessing the impact of the adoption of this standard on our results of operations, financial position and cash flows.

We reviewed all other recently issued accounting pronouncements and have concluded they are not applicable or not expected to be significant to the accounting for our operations.

Concentration Risk

Other than the Medicare program, one provider whose programs are included in the "Third-party payers" and "Health Maintenance Organizations" ("HMO's") categories represents approximately 16% and 17% of Clinical Services net revenue for the three and six months ended January 31, 2023, respectively and 16% of the Clinical Services net accounts receivable as of January 31, 2023. Other than the Medicare program, two providers whose programs are included in the "Third-party payers" and "Health Maintenance Organizations" ("HMO's") categories represent approximately 36% and 35% of Clinical Services net revenue for the three and six months ended January 31, 2022, respectively.

Income Taxes

The Company accounts for income taxes under the liability method of accounting for income taxes. Under the liability method, deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. The liability method requires that any tax benefits recognized for net operating loss carry forwards and other items be reduced by a valuation allowance when it is more likely than not that the benefits may not be realized. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled.

Under the liability method, the effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date.

Note 2 – Net income (loss) per share

Basic net income (loss) per share represents net income (loss) divided by the weighted average number of common shares outstanding during the period. As a result of the net loss for the three and six months ended January 31, 2023 and 2022, diluted weighted average shares outstanding are the same as basic weighted average shares outstanding, and do not include the potential common shares from stock options, restricted stock units, or unearned performance stock units because to do so would be antidilutive.

For the three and six months ended January 31, 2023, approximately 60,000 and 83,000, respectively, of potential common shares from "in the money options" and unvested restricted stock and performance stock units were excluded from the calculation of diluted (loss) per share because their effect would be antidilutive.

For the three and six months ended January 31, 2022, approximately 499,000 and 527,000, respectively, of potential common shares from "in the money options" and unvested performance stock units were excluded from the calculation of diluted (loss) per share because their effect would be antidilutive.

For the three and six months ended January 31, 2023, the effect of approximately 4,189,000 and 3,392,000, respectively, of outstanding "out of the money" options to purchase common shares were excluded from the calculation of diluted net (loss) income per share because their effect would be anti-dilutive. For the three and six months ended January 31, 2022, the effect of 1,091,000 and 942,000, respectively, of outstanding "out of the money" options to purchase common shares were excluded from the calculation of diluted net (loss) income per share because their effect would be anti-dilutive.

Note 3 – Revenue Recognition

Clinical Services Revenue

The Company accounts for revenue pursuant to Accounting Standards Codification Topic 606. Service revenues in the Company's clinical services business accounted for 54% and 70% of the Company's total revenues for three months ended January 31, 2023 and 2022, respectively and 58% and 72% for the six months ended January 31, 2023 and 2022, respectively and are primarily comprised of a high volume of relatively low-dollar transactions. The services business, which provides clinical testing services, satisfies its performance obligation and recognizes revenues upon completion of the testing process for a specific patient and reporting to the ordering physician. The Company may also perform clinical testing services for other laboratories and will recognize revenue from those services when reported to the ordering laboratory. The Company estimates the amount of consideration it expects to receive from customer groups using the portfolio approach. These estimates of the expected consideration include the impact of contractual allowances and price concessions on our customer group portfolios consisting of healthcare insurers, government payers, client payers and patients as described below. Contracts with customers in our laboratory services business do not contain a financing component, based on the typically limited period of time between performance of services and collection of consideration. The transaction price includes variable consideration in the form of the contractual allowance and price concessions as well as the collectability of the transaction based on patient intent and ability to pay. The Company uses the expected value method in estimating the amount of the variability included in the transaction price.

The following are descriptions of our laboratory services business portfolios:

Third party payers and Health Maintenance Organizations (HMO's)

Reimbursements from third party payers, primarily healthcare insurers and HMO's are based on negotiated fee-for-service schedules and on capitated payment rates. Revenues consist of amounts billed net of contractual allowances for differences between amounts billed and the estimated consideration the Company expects to receive from such payers, which considers historical collection and denial experience and the terms of the Company's contractual arrangements. Adjustments to the allowances, based on actual receipts from the third-party payers, are recorded upon settlement.

Collection of the consideration the Company expects to receive is normally a function of providing complete and correct billing information to these third party payers within the various filing deadlines, and typically occurs within 30 to 90 days of billing. Provided the Company has billed healthcare insurers accurately with complete information prior to the established filing deadline, there has historically been little to no collection risk. If there has been a delay in billing, the Company determines if the amounts in question will likely go past the filing deadline, and if so, will reserve accordingly for the billing.

Third-party payers, including government programs, may decide to deny payment or recoup payments for testing that they contend was improperly billed or not medically necessary, against their coverage determinations, or for which they believe they have otherwise overpaid (including as a result of their own error), and we may be required to refund payments already received. Our revenues may be subject to adjustment as a result of these factors among others, including without limitation, differing interpretations of billing and coding guidance and changes by government agencies and payers in interpretations, requirements, and "conditions of participation" in various programs.

Government Payer - Medicare

Reimbursements from Medicare are based on fee-for-service schedules set by Medicare, which is funded by the government. Revenues consist of amounts billed net of contractual allowances for differences between amounts billed and the estimated consideration the Company expects to receive from Medicare, which considers historical collection and denial experience and other factors. Adjustments to the allowances, based on actual receipts from the government payers, are recorded upon settlement.

Collection of consideration the Company expects to receive is normally a function of providing the complete and correct billing information within the various filing deadlines and typically occurs within 60 days of billing. Provided the Company has billed the government payer accurately with complete information prior to the established filing deadline, there has historically been little to no collection risk. If there has been a delay in billing, the Company determines if the amounts in question will likely go past the filing deadline, and, if so, it will reserve accordingly for the billing.

Patient self-pay

Uninsured patients are billed based on established patient fee schedules or fees negotiated with physicians on behalf of their patients. Coinsurance and deductible responsibilities based on fees negotiated with healthcare insurers are also billed to insured patients and included in this portfolio. Collection of billings from patients is subject to credit risk and ability of the patients to pay. Revenues consist of amounts billed net of discounts provided to uninsured patients in accordance with the Company's policies and implicit price concessions. Implicit price concessions represent differences between amounts billed and the estimated consideration the Company expects to receive from patients, which considers historical collection experience and other factors including current market conditions. Adjustments to the estimated allowances, based on actual receipts from the patients, are recorded upon settlement. Patient responsibility is invoiced and if it reaches 91 days outstanding, the account is sent to a collection agency for further processing. After the account has been with the collection agency for at least 105 days, it is written off.

The following table represents clinical services net revenues and percentages by type of customer:

	Three months ended January 31, 2023		Three months ended January 31, 2022	
Revenue category				
Third-party payer	$ 5,163	58%	$ 14,256	60%
Medicare	1,374	16	2,784	12
Patient self-pay	974	11	2,605	11
HMOs	1,313	15	4,029	17
Total	$ 8,824	100%	$ 23,674	100%

	Six months ended January 31, 2023		Six months ended January 31, 2022	
Revenue category				
Third-party payer	$ 11,186	56%	$ 26,145	60%
Medicare	3,670	18	5,514	13
Patient self-pay	2,212	11	4,550	10
HMOs	2,929	15	7,206	17
Total	$ 19,997	100%	$ 43,415	100%

For three and six months ended January 31, 2023 and 2022, all of the Company's clinical services revenues were generated within the United States.

Products Revenue

In accordance with ASC 606, the Company generates product revenue from the sale of our single-use products used in the identification of genomic information. Revenue is recorded net of sales tax. The Company considers revenue to be earned when all of the following criteria are met: the Company has a contract with a customer that creates enforceable rights and obligations; promised products are identified; the transaction price is determinable; and the Company has transferred control of the promised items to the customer. A performance obligation is a promise in a contract to transfer a distinct good or service to the customer, and is the unit of account in the contract. The transaction price for the contract is measured as the amount of consideration the Company expects to receive in exchange for the goods expected to be transferred. A contract's transaction price is allocated to each distinct performance obligation and recognized as revenue when, or as, control of the distinct good or service is transferred. Transfer of control for the Company's products is generally at shipment or delivery, depending on contractual terms, but occurs when title and risk of loss transfers to the customer which represents the point in time when the customer obtains the use of and substantially all of the remaining benefit of the product. As such, the Company's performance obligation related to product sales is satisfied at a point in time. The Company recognizes a receivable when it has an unconditional right to payment, which represents the amount the Company expects to collect in a transaction and is most often equal to the transaction price in the contract. Payment terms for shipments to end-user and distributor customers may range from 30 to 90 days. Amounts billed to customers for shipping and handling are included in revenue, while the related shipping and handling costs are reflected in cost of products.

Products revenue by geography is as follows:

	Three Months Ended January 31		Six Months Ended January 31	
	2023	2022	2023	2022
United States	$ 4,144	$ 6,754	$ 8,239	$ 10,617
Europe	2,277	2,401	4,181	4,407
Asia Pacific	1,093	1,217	2,197	2,126
Products revenue	$ 7,514	$ 10,372	$ 14,617	$ 17,150

Note 4 - Supplemental disclosure for statement of cash flows

In the six months ended January 31, 2023 and 2022, interest paid by the Company was $106 and $112, respectively.

For the six months ended January 31, 2023 and 2022, the net reductions in the measurement of right of use assets and liabilities included in cash flows from operating activities was $2 and $20, respectively. The changes are included in changes in accrued liabilities, other current liabilities, and other liabilities in the statement of cash flows.

For the six months ended January 31, 2023 and 2022, tax on capital paid by the Company was $9 and $116, respectively.

Note 5 – Inventories

Inventories consist of the following:

	January 31, 2023	July 31, 2022
Raw materials	$ 1,962	$ 1,524
Work in process	2,748	2,459
Finished products	11,013	11,428
	$ 15,723	$ 15,411

Note 6 – Goodwill and Long-Lived Assets

The Company's carrying amount of goodwill is in the Clinical Laboratory Services segment and is $7,452 as of January 31, 2023 and July 31, 2022.

The Company tests goodwill annually as of the first day of the fourth quarter, or more frequently if indicators of potential impairment exist. In assessing goodwill for impairment, the Company has the option to first perform a qualitative assessment to determine whether the existence of events or circumstances leads to a determination that it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If the Company determines that it is not more likely than not that the fair value of a reporting unit is less than its carrying amount, the Company is not required to perform any additional tests in assessing goodwill for impairment. However, if the Company concludes otherwise or elects not to perform the qualitative assessment, then it will perform a quantitative assessment as it identifies the reporting units and compares the fair value of each of these reporting units to their respective carrying amount. If the carrying amount of the reporting unit is less than its fair value, no impairment exists. If the carrying amount of the reporting unit is higher than its fair value, the impairment charge is the amount by which the carrying amount exceeds its fair value, not to exceed the total amount of goodwill allocated to the reporting unit.

The Company reviews the recoverability of the carrying value of long-lived assets (including its intangible assets, all of which have finite lives) of an asset or asset group for impairment annually as of the end of the fiscal year, or more frequently if indicators of potential impairment exist. Should indicators of impairment exist, the carrying values of the assets are evaluated in relation to the operating performance and future undiscounted cash flows of an asset or asset group. The net book value of the long-lived asset is adjusted to fair value if its expected future undiscounted cash flow is less than its book value. The Company has determined that there is no impairment of goodwill or long-lived assets at January 31, 2023.

Note 7 – Mortgage debt and Long term debt, net

In connection with the purchase of a building in Farmingdale, NY in November 2018, a wholly-owned subsidiary (the "mortgagor subsidiary") of the Company entered into a Fee Mortgage and Security Agreement (the "mortgage agreement") with Citibank, N.A. (the "mortgagee"). The mortgage agreement provides for a loan of $4,500 for a term of 10 years, bears a fixed interest rate of 5.09% per annum and requires monthly mortgage payments of principal and interest of $30. Debt issuance costs of $72 are being amortized over the life of the mortgage agreement. The balance of unamortized debt issuance cost was $42 at January 31, 2023. At January 31, 2023, the balance owed by the subsidiary under the mortgage agreement was $3,902. The Company's obligations under the mortgage agreement are secured by the building and by a $1,000 cash collateral deposit with the mortgagee as additional security. This restricted cash is included in other assets as of January 31, 2023.

The mortgage agreement includes affirmative and negative covenants and events of default, as defined. Events of default include non-payment of principal and interest on debt outstanding, non-performance of covenants, material changes in business, breach of representations, bankruptcy or insolvency, and changes in control. The mortgage includes certain financial covenants. Effective October 2020, the Company and the mortgagee agreed to a covenant restructure whereby the mortgagee waived the Company's financial ratio covenant for the fiscal period ended July 31, 2020 and modified the mortgage to replace that covenant with a liquidity covenant. The liquidity covenant requires that we own and maintain at all times and throughout the remaining term of the loan at least $25,000 of liquid assets, defined as time deposits, money market accounts and obligations issued by the U.S. government or any of its agencies. The cash collateral agreement was also modified to require compliance with the liquidity covenant for two consecutive fiscal years before the collateral is released back to us. Effective September 29, 2021, the Company and the mortgagee agreed to further covenant restructuring whereby (a) the liquidity covenant was reduced to 150% of the loan principal (or approximately $5,911 as of January 31, 2023) from $25,000 previously, and (b) the collateral requirement was increased from $750 to $1,000. As of January 31, 2023, the Company was not in compliance with the liquidity covenant, but was in compliance with the other financial covenants related to this mortgage. Effective March 20, 2023, the Company and the mortgagee agreed to a waiver of the liquidity covenant default as of January 31, 2023. While the Company believes it will be able to either achieve compliance or obtain further waivers going forward, as there can be no assurances, all of the mortgage debt has been classified as current in the consolidated balance sheet as of January 31, 2023.

In April 2020, our subsidiary in Switzerland received a loan of CHF 400 (or $400, based on the foreign exchange rate at that time) from the Swiss government under the "Corona Krise" emergency loan program in response to the pandemic. This loan is uncollateralized and bears 0% interest. In January 2022, the bank agent of the Swiss government informed our subsidiary that the loan had to be fully amortized within a maximum of eight years and that the first of semi-annual amortization payments of CHF 33 would begin in March 2022. In September 2022, the subsidiary made its second semi-annual principal repayment of CHF 33 (or $35 based on exchange rates). Based on this amortization schedule, the loan will be repaid by September 2027. The current portion of this loan is included in other current liabilities and the long term portion in long term debt – net as of January 31, 2023.

The CARES Act expanded the U.S. Small Business Administration's (SBA) business loan program to create the Paycheck Protection Program (PPP), which provided employers with uncollateralized loans whose primary purpose was to retain or maintain workforce and salaries for a twenty-four week period ("covered period") following receipt of the loan. We applied for the PPP loan based on the eligibility and need requirements established when the program was announced and in April 2020 received $7,000 through Citibank N.A., the Company's existing lender, pursuant to the PPP (the "PPP Loan"). In June 2021, the SBA approved in full our request for loan forgiveness and in the fiscal year 2021 the Company recognized the forgiveness of the $7,000 loan in Other income. The SBA announced its intention to audit loans in excess of $2,000 and in June 2022 requested through Citibank N.A. the production of documents and information related to our loan and our request for forgiveness. We provided that information to the SBA via Citibank N.A. In October 2022 the SBA requested through Citibank N.A. that we complete a new version of their loan necessity questionnaire with respect our forgiven loan, which we provided. The SBA subsequently requested additional information with respect to wages paid which has been provided.

Minimum future annual principal payments under these agreements as of January 31, 2023 are as follows:

July 31,	**Total**
2023	$ 118
2024	239
2025	249
2026	259
2027	269
Thereafter	3,117
Total principal payments	4,251
Less: current portion, included in other current liabilities and finance leases short term	(236)
unamortized mortgage cost	(42)
Mortgage debt - current and long term debt – net	$ 3,973

Note 8 - Leases

The Company determines if an arrangement is or contains a lease at contract inception. The Company leases buildings, office space, patient service centers, and equipment primarily through operating leases, and equipment through a limited number of finance leases. Generally, a right-of-use asset, representing the right to use the underlying asset during the lease term, and a lease liability, representing the payment obligation arising from the lease, are recognized on the balance sheet at lease commencement based on the present value of the payment obligation. For operating leases, expense is recognized on a straight-line basis over the lease term. For finance leases, interest expense on the lease liability is recognized using the effective interest method and amortization of the right-of-use asset is recognized on a straight-line basis over the lease term. Short-term leases with an initial term of 12 months or less are not recorded on the balance sheet; the Company recognizes lease expense for these leases on a straight-line basis over the lease term. The Company primarily uses its incremental borrowing rate in determining the present value of lease payments as the Company's leases generally do not provide an implicit rate.

The Company has lease agreements with (i) right-of-use asset payments and (ii) non-lease components (i.e. payments related to maintenance fees, utilities, etc.,) which have generally been combined and accounted for as a single lease component. The Company's leases have remaining terms of less than 1 year to 6 years, some of which include options to extend the leases for up to 5 years. The Company's lease terms may include renewal options that are reasonably certain to be exercised and early termination options that are reasonably certain not to be exercised.

Certain of the Company's lease agreements include rental payments adjusted periodically for inflation or a market rate which are included in the lease liabilities.

Leases	Balance Sheet Classification	January 31, 2023	July 31, 2022
Assets			
Operating	Right-of-use assets	$ 13,569	$ 15,174
Finance	Property, plant and equipment, net (a)	134	172
Total lease assets		$ 13,703	$ 15,346
Liabilities			
Current:			
Operating	Current portion of operating lease liabilities	$ 3,425	$ 3,432
Finance	Finance leases short term	78	81
Non-current:			
Operating	Operating lease liabilities, non-current	11,132	12,729
Finance	Other liabilities and finance leases long term	—	39
Total lease liabilities		$ 14,635	$ 16,281

(a) Accumulated amortization of finance lease assets was approximately $248 and $210 as of January 31, 2023 and July 31, 2022, respectively.

Components of lease cost were as follows:

	Three months ended January 31,		Six months ended January 31,	
	2023	2022	2023	2022
Operating lease cost – net (a)	$ 912	$ 1,129	$ 1,960	$ 2,287
Finance lease cost:				
Amortization of leased assets	19	19	38	38
Interest on lease liabilities	1	2	3	5
Total lease cost	$ 932	$ 1,150	$ 2,001	$ 2,330

(a) Net of $114 sublease income for the three and six months ended January 31, 2023.

The maturity of the Company's lease liabilities as of January 31, 2023 is as follows:

Maturity of lease liabilities, years ending July 31,	Operating leases	Finance leases	Total
2023	$ 2,080	$ 44	$ 2,124
2024	3,874	36	3,910
2025	3,541	—	3,541
2026	3,351	—	3,351
2027	2,507	—	2,507
Thereafter	808	—	808
Total lease payments	16,161	80	16,241
Less: Interest (a)	(1,604)	(2)	(1,576)
Present value of lease liabilities	$ 14,557	$ 78	$ 14,665

(a) Primarily calculated using the Company's incremental borrowing rate.

Lease term and discount rate for the six months ended January 31 were as follows:

Lease term and discount rate	2023	2022
Weighted-average remaining lease term (years):		
Operating leases	4.3 years	5.2 years
Finance leases	0.9 years	2.0 years
Weighted-average discount rate:		
Operating leases	4.96%	4.98%
Finance leases	2.95%	5.96%

See Note 4 for cash flow information on cash paid for amounts included in the measurement of lease liabilities for the three and six months ended January 31, 2023 and 2022.

Note 9 – Accrued Liabilities

Accrued liabilities consist of:	January 31, 2023	July 31, 2022
Payroll, benefits, and commissions	$ 5,312	$ 4,912
Professional fees	1,090	801
Legal	3,099	4,523
Other	2,089	2,064
	$ 11,590	$ 12,300

Self-Insured Medical Plan

The Company self-funds medical insurance coverage for certain of its U.S. based employees. The risk to the Company is believed to be limited through the use of individual and aggregate stop loss insurance. As of January 31, 2023 and July 31, 2022, the Company has established a reserve of $340 and $260, respectively which is included in accrued liabilities for payroll, benefits and commissions, for claims that have been reported but not paid and for claims that have been incurred but not reported. The reserve is based upon the Company's historical payment trends, claim history and current estimates.

Note 10 - Stockholders' equity

Controlled Equity Offering

The Company has a Controlled Equity Offering[SM] Sales Agreement (the "Sales Agreement") with Cantor Fitzgerald & Co., as sales agent ("Cantor"). Under the Sales Agreement, the Company may offer and sell, from time to time, through Cantor, shares of the Company's common stock, par value $0.01 per share (the "Common Stock"). The Company pays Cantor a commission of 3.0% of the aggregate gross proceeds received under the Sale Agreement. The Company is not obligated to make any sales of the Shares under the Sales Agreement. The offering of Shares pursuant to the Sales Agreement will terminate upon the earlier of (a) the sale of all of the Shares subject to the Sales Agreement or (b) the termination of the Sales Agreement by Cantor or the Company, as permitted therein.

In September 2017, the Company filed with the SEC a Form S-3 "shelf" registration statement and sales agreement prospectus (the "Registration Statement") covering the offering, issuance and sale of our Common Stock that could have been issued and sold under the existing Sales Agreement in an aggregate amount of up to $19.2 million. The Registration Statement on Form S-3 filed in connection with the Sales Agreement expired in October 2020 but a new Registration Statement could be refiled at any time at the discretion of the Company.

Share based awards and share based compensation

In January 2011, the Company's stockholders approved the adoption of the 2011 Incentive Plan (the "2011 Plan") for the issuance of equity awards, including, among others, options, restricted stock, restricted stock units and performance stock units for up to 3,000,000 shares of common stock. In January 2018, the Company's stockholders approved the amendment and restatement of the 2011 Plan (the "Amended and Restated 2011 Plan") to increase the number of shares of common stock available for grant under the 2011 Plan by 2,000,000 shares of common stock bringing the total number of shares available for grant to 5,000,000 shares of common stock. On October 7, 2020, the Company's Board of Directors approved the amendment and restatement of the Amended and Restated 2011 Plan, with an effective date of October 7, 2020 and subject to approval by the Company's stockholders at the 2020 annual meeting of stockholders of the Company. The amendment and restatement of the Amended and Restated 2011 Plan was for purposes of, among other things, (i) increasing the shares of common stock available for grant under the Amended and Restated 2011 Plan by an additional 4,000,000 shares of common stock bringing the total number of shares available for grant to 9,000,000 shares of common stock and (ii) extending the term of the Amended and Restated 2011 Plan until October 7, 2030. In January 2021, the Company's stockholders approved the amendment and restatement of the Amended and Restated 2011 Plan.

The exercise price of options granted under the Amended and Restated 2011 Plan, as amended and restated, is equal to or greater than fair market value of the common stock on the date of grant. The Amended and Restated 2011 Plan, as amended and restated, will terminate at the earliest of (a) such time as no shares of common stock remain available for issuance under the plan, (b) termination of the plan by the Company's Board of Directors, or (c) October 7, 2030. Awards outstanding upon expiration of the Amended and Restated 2011 Plan, as amended and restated, will remain in effect until they have been exercised or terminated, or have expired. As of January 31, 2023, there were approximately 3,874,000 shares of common stock available for grant under the Amended and Restated 2011 Plan, as amended and restated.

The Company estimates the fair value of each stock option award on the measurement date using a Black-Scholes option pricing model. The fair value of awards is amortized to expense on a straight-line basis over the requisite service period. The Company expenses restricted stock awards based on vesting requirements, primarily time elapsed. Performance stock awards are not recognized until it is probable they will be earned. At such time, their expense is then recognized over the requisite service period, including that portion of the service period already elapsed.

Options granted pursuant to the plans may be either incentive stock options or non-statutory options. The 2011 Plan provides for the issuance of stock options, restricted stock and restricted stock unit awards which generally vest over a two or three year period.

The amounts of share-based compensation expense recognized in the periods presented are as follows:

	Three months ended January 31,		Six months ended January 31,	
	2023	2022	2023	2022
Stock options and performance stock units	$ 313	$ 606	$ 557	$ 822
Restricted stock units	202	73	388	73
	$ 515	$ 679	$ 945	$ 895

The following table sets forth the amount of expense related to share-based payment arrangements included in specific line items in the accompanying statements of operations:

	Three months ended January 31,		Six months ended January 31,	
	2023	2022	2023	2022
Selling, general and administrative	$ 494	$ 667	$ 904	$ 879
Cost of revenues	21	12	41	16
	$ 515	$ 679	$ 945	$ 895

No excess tax benefits were recognized during the three and six month periods ended January 31, 2023 and 2022.

Stock Option Plans

The following table summarizes stock option activity during the three month period ended January 31, 2023:

	Options	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value (000s)
Outstanding at July 31, 2022	3,941,783	$ 3.00		
Awarded	615,000	$ 2.00		
Exercised	—			$
Cancelled or expired	(368,216)	$ 4.33		
Outstanding at end of period	4,188,567	$ 2.73	2.6 years	$ —
Exercisable at end of period	1,734,109	$	0.4 years	$

As of January 31, 2023, the total future compensation cost related to non-vested options, not yet recognized in the statements of operations, was $2,344 and the weighted average period over which the remaining expense of these awards is expected to be recognized is approximately two years.

The intrinsic value of in the money stock option awards at the end of the period represents the Company's closing stock price on the last trading day of the period in excess of the exercise price multiplied by the number of outstanding options.

Performance Stock Units

Beginning in fiscal 2018, the Company granted long-term incentive awards in the form of time based stock options and performance-based restricted stock units ("Performance Stock Units" or "PSUs"). The PSUs earned is determined over a three-year performance period. The primary performance metrics will be revenue and Adjusted EBITDA growth, as defined. Payouts are based on revenue and adjusted EBITDA goals met at threshold, target or maximum levels and are modified based on Total Shareholder Return ("TSR") performance relative to Enzo's peer group. The PSUs awarded to executive officers in fiscal 2018, net of forfeitures, expired in fiscal 2021 as the 3 year growth goals were not achieved.

During the fiscal years ended 2020 and 2019, the Company awarded additional PSUs to its executive officers. These awards provide for the grant of shares of our common stock at the end of a three-year period based on the achievement of revenue growth and adjusted EBITDA growth goals met at threshold, target or maximum levels over the respective period. The PSUs awarded to executive officers in fiscal 2019, net of forfeitures, were earned as of the three-year period ending July 31, 2022 as the growth goals at the maximum level were achieved. After TSR modification, a total of 25,200 PSUs were earned equally by two officers. As of January 31, 2023, 12,600 shares had been issued and the balance of the shares are expected to be issued in the third quarter of fiscal 2023.

During the six months ended January 31, 2023 a former officer forfeited 15,000 PSUs awarded in fiscal 2020. The Company recorded PSU compensation expense of $7 during the three months ended January 31, 2023 and ($48) during the six months ended January 31, 2023. For the three and six months ended January 31, 2022, the Company recorded PSU compensation expense of $96 and $162, respectively.

The following table summarizes PSU's granted and outstanding through January 31, 2023:

Grant Date	Total Grant	Forfeitures	Outstanding	Fair Market Value At Grant Date (000s)
10/19/2020	98,600	(40,300)	58,300	$ 122

Restricted Stock Units

The following table summarizes Restricted Stock Unit ("RSU") activity for the six month period ended January 31, 2023:

	Number of RSUs outstanding	Weighted Average Fair Value per Unit at Date of Grant or Vesting	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value (000s)
Outstanding at July 31, 2022	502,187	$ 2.95		
Granted	100,000	1.97		
Vested	(86,667)	3.39		
Cancelled	—	$		
Outstanding at end of period	515,520	$ 2.69	1.5 years	$ 807
Expected to vest at end of period	515,520	$	1.5 years	$

During the three and six months ended January 31, 2023, the Company recognized shared based compensation expense for these RSUs of $202 and $388, respectively for these RSUs. During the three and six months ended January 31, 2022, the Company recognized shared-based compensation expense for these RSUs of $73.

As of January 31, 2023, the total future compensation cost related to non-vested RSUs, not yet recognized in the statements of operations, was $995 and the weighted average period over which the remaining expense of these awards is expected to be recognized is approximately one and a half years.

Note 11 - Segment reporting

The Company has two reportable segments: Clinical Services and Products. The Clinical Services segment provides diagnostic services to the health care community. The Company's Products segment develops, manufactures, and markets products to research and pharmaceutical customers. The Company evaluates segment performance based on segment income (loss) before taxes. Costs excluded from segment income (loss) before taxes and reported as "Other" consist of corporate general and administrative costs which are not allocable to the two reportable segments.

Legal and related expenses incurred to defend the Company's intellectual property, which may result in settlements recognized in another segment and other general corporate matters are considered a component of the Other segment. Legal and related expenses specific to other segments' activities are allocated to those segments. The accounting policies of the reportable segments are the same as those described in the summary of significant accounting policies.

At the beginning of fiscal 2023, we determined we would redirect our research resources and efforts to our two operating segments, Enzo Life Sciences and Enzo Clinical Labs, and as a result, Enzo Therapeutics no longer meets the criteria for being a reportable segment. The operating expenses of Enzo Therapeutics are included in the "Other" segment for all periods presented.

The following financial information represents the operating results of the reportable segments of the Company:

Three months ended January 31, 2023	Clinical Services	Products	Other	Consolidated
Revenues	$ 8,824	$ 7,514	—	$ 16,338
Operating costs and expenses:				
Cost of revenues	10,463	4,616	—	15,079
Research and development	306	1,113	12	1,431
Selling, general and administrative	6,943	2,556	2,313	11,812
Legal fee expense	107	11	877	995
Total operating costs and expenses	17,819	8,296	3,202	29,317
Operating loss	(8,995)	(782)	(3,202)	(12,979)
Other income (expense):				
Interest, net	(1)	29	34	62
Other	7	2	116	125
Foreign exchange loss	—	1,472	—	1,472
(Loss) income before income taxes	$ (8,989)	$ 721	$ (3,052)	$ (11,320)
Depreciation and amortization included above	$ 386	171	91	648
Share-based compensation included in above:				
Selling, general and administrative	65	20	409	494
Cost of revenues	15	6	—	21
Total	$ 80	26	409	515
Capital expenditures	$ 196	632	41	869

Three months ended January 31, 2022	Clinical Services	Products	Other	Consolidated
Revenues	$ 23,674	$ 10,372	—	$ 34,046
Operating costs and expenses:				
Cost of revenues	12,586	5,252	—	17,838
Research and development	89	711	20	820
Selling, general and administrative	6,811	3,039	4,616	14,466
Legal fee expense	148	—	2,697	2,845
Total operating costs and expenses	19,634	9,002	7,333	35,969
Operating income (loss)	4,040	1,370	(7,333)	(1,923)
Other income (expense):				
Interest, net	(3)	9	62	68
Other	5	3	(358)	(350)
Foreign exchange loss	—	(450)	—	(450)
Income (loss) before income taxes	$ 4,042	$ 932	$ (7,629)	$ (2,655)
Depreciation and amortization included above	$ 438	190	77	705
Share-based compensation included in above:				
Selling, general and administrative	16	1	650	667
Cost of revenues	12	—	—	12
Total	$ 28	1	650	679
Capital expenditures	$ 283	730	201	1,214

Six months ended January 31, 2023	Clinical Services	Products	Other	Consolidated
Revenues	$ 19,997	$ 14,617	—	$ 34,614
Operating costs and expenses:				
Cost of revenues	20,545	9,205	—	29,750
Research and development	603	1,803	21	2,427
Selling, general and administrative	13,493	4,986	4,784	23,263
Legal fee expense	171	36	1,859	2,066
Total operating costs and expenses	34,812	16,030	6,664	57,506
Operating loss	(14,815)	(1,413)	(6,664)	(22,892)
Other income (expense):				
Interest, net	(3)	54	81	132
Other	12	4	114	130
Foreign exchange loss	—	675	—	675
Loss before income taxes	$ (14,806)	$ (680)	$ (6,469)	$ (21,955)
Depreciation and amortization included above	$ 918	336	174	1,428
Share-based compensation included in above:				
Selling, general and administrative	114	40	749	903
Cost of revenues	31	11	—	42
Total	$ 145	51	749	945
Capital expenditures	$ 359	938	224	1,521

Six months ended January 31, 2022	Clinical Services	Products	Other	Consolidated
Revenues	$ 43,415	$ 17,150	—	$ 60,565
Operating costs and expenses:				
Cost of revenues	23,789	9,322	—	33,111
Research and development	96	1,443	25	1,564
Selling, general and administrative	12,812	6,134	6,572	25,518
Legal fee expense	205	13	3,909	4,127
Total operating costs and expenses	36,902	16,912	10,506	64,320
Operating income (loss)	6,513	238	(10,506)	(3,755)
Other income (expense):				
Interest, net	(5)	18	94	107
Other	54	5	(554)	(495)
Foreign exchange loss		(831)	—	(831)
Income (loss) before income taxes	$ 6,562	$ (570)	$ (10,966)	$ (4,974)
Depreciation and amortization included above	$ 856	402	148	1,406
Share-based compensation included in above:				
Selling, general and administrative	36	1	842	879
Cost of revenues	16	—	—	16
Total	$ 52	1	842	895
Capital expenditures	$ 593	1,216	438	2,247

Note 12 – Contingencies

On or about March 2, 2023, a verified complaint was filed in the Supreme Court of the State of New York, New York County captioned Elazar Rabbani v. Mary Tagliaferri, et al., Index No. 651120/2023. The verified complaint purports to assert causes of action for breach of fiduciary duty and corporate waste under N.Y.B.C.L. § 720, and also seeks an accounting and certain injunctive relief. Plaintiff served a copy of the verified complaint on Enzo's agent for service in New York on or about March 13, 2023. The Company cannot predict the outcome of this matter; however, no inference whatsoever should be drawn from the absence of such prediction that the Company will not prevail.

The Company has brought cases in the United States District Court for the District of Delaware ("the Court"), alleging patent infringement against various companies. In 2017, the Court ruled that the asserted claims of the '180 and '405 Patents are invalid for nonenablement in cases involving Abbott, Becton Dickinson, Gen-Probe, Hologic, and Roche. That ruling was affirmed by the United States Court of Appeals for the Federal Circuit ("Federal Circuit") in June 2019. Enzo subsequently filed a petition for certiorari regarding the invalidity ruling for the '180 and '405 Patents in February 2020; the Supreme Court denied Enzo's petition on March 30, 2020.

The Company, along with its subsidiary Enzo Life Sciences, Inc., resolved its claims against Roche regarding the '197 Patent before the Court (civil action No. 12 cv-00106) in July 2022. There is currently one case that was originally brought by the Company that is still pending in the Court. In that case, Enzo alleges patent infringement of the '197 patent against Becton Dickinson Defendants. The claims in that case are stayed.

In separate inter partes review proceedings before the U.S. Patent and Trademark Office (PTO) involving, among others, Becton Dickinson, certain claims of the '197 Patent were found unpatentable as anticipated or obvious and cancelled by the Patent Trial and Appeals Board ("Board"). Enzo appealed that decision to the Federal Circuit. On August 16, 2019, the Federal Circuit affirmed the Board's decision, finding that each of the challenged claims is unpatentable. The Company filed a petition for rehearing and rehearing en banc on October 30, 2019, which the Federal Circuit denied on December 4, 2019. The Company filed a petition for certiorari with the Supreme Court on March 3, 2020, which was denied.

In April 2019, the Company entered into an agreement with Hologic and Grifols, resolving litigation resulting from four cases originally brought by the Company in the Court. As a result, Enzo dismissed (1) a stayed patent litigation regarding the '180 and '197 Patent against Hologic in the Court; (2) the Consolidated Appeals against Gen-Probe and Hologic resulting from two cases filed in the Court, and (3) the Company's appeal in the litigation involving the '581 Patent that involved both Hologic and Grifols. As a result of the agreement with Hologic, Hologic withdrew from Enzo's Federal Circuit appeal of the Board's adverse rulings in the *inter partes* review proceedings regarding the '197 Patent filed by Hologic and joined by Becton Dickinson mentioned above.

On September 2, 2021, the PTO issued a non-final office action in an *ex parte* reexamination concerning the '197 Patent. In the office action, the PTO rejected certain claims of the '197 Patent under 35 U.S.C. §§ 102 and 103, and for nonstatutory double-patenting. Enzo responded to the office action on January 3, 2022, and the proceeding remains pending. Becton Dickinson requested another *ex parte* reexamination concerning the '197 patent on July 26, 2022. On September 16, 2022, the PTO ordered that *ex parte* reexamination as to certain claims of the '197 patent and has not yet issued an office action. Enzo filed a petition to terminate that second reexamination proceeding on November 16, 2022.

On February 5, 2020, Harbert Discovery Fund, LP and Harbert Discovery Co-Investment Fund I, LP ("HDF") brought an action in the United States District Court for the Southern District of New York against the Company and five of its present or former Directors, Dr. Elazar Rabbani, Barry W. Weiner, Dr. Bruce A. Hanna, Dov Perlysky and Rebecca Fischer. On March 26, 2020, HDF filed an amended complaint against the same defendants. Count I asserted the Company violated Section 14(a) of the Securities and Exchange Act of 1934 and Rule 14a-9 thereunder by disseminating proxy materials that made purportedly false statements. Count II asserted a claim against the individual defendants under Section 20(a) of the Exchange Act premised on Enzo's purported violation of Section 14(a) and Rule 14a-9. Count III asserted the individual defendants breached their fiduciary duty, based on the same conduct and by seeking to entrench themselves. Finally, Count IV purported to assert a derivative claim for a declaration that any amendment to Article II, Section 2 requires the approval of 80% of Enzo's shareholders. On July 16, 2020, the day before the defendants' motion to dismiss was due, HDF asked the Court to dismiss their claims without prejudice. Defendants asked HDF to dismiss the claims with prejudice, but they refused. On July 17, 2020, the Court dismissed the claims without prejudice.

On November 27, 2020, the Company brought an action in the United States District Court for the Southern District of New York against Harbert Discovery Fund, LP, Harbert Discovery Co-Investment Fund I, LP, Harbert Fund Advisors, Inc., Harbert Management Corp. and Kenan Lucas (together, "Harbert"). The Company alleged Harbert made false and misleading representations, or omitted to state material facts necessary to make their statements not misleading, in proxy materials they disseminated seeking the election to the Company's Board of Directors at its 2019 Annual Meeting of two candidates they nominated, in violation of Section 14(a) of the 1934 Exchange Act and Rule 14a-9 thereunder. The Company sought damages and injunctive relief. On October 12, 2021, HDF filed five counterclaims against the Company and present and former directors Dr. Elazar Rabbani, Barry W. Weiner, Dr. Bruce A. Hanna, Dov Perlysky, Rebeca Fischer, Dr. Mary Tagliaferri and Dr. Ian B. Walters. HDF claimed the Company made false and misleading representations in proxy materials it disseminated in connection with its 2019 Annual Meeting, in violation of Section 14(a) of the 1934 Exchange Act and Rule 14a-9 thereunder, and that the Company's directors at that time were liable under Section 20(a) of the Exchange Act for the Company's purported misstatements. HDF also claimed that current and former Company directors breached their fiduciary duties by taking four corporate actions: (a) adjourning the 2019 meeting for 25 days; (b) purportedly causing the two Harbert candidates for director, who were elected at the 2019 Meeting, to resign in November 2020; (c) authorizing the November 27, 2020 Lawsuit; and (d) not accepting Dr. Rabbani's resignation as a director in March 2021. On November 10, 2021, the Company and the other counterclaim defendants moved to dismiss HDF's counterclaims. On December 9, 2021, the court granted the motion to dismiss HDF's counterclaims except HDF's Section 14(a) claim against the Company concerning its statement that it intended to "delay" the 2019 Annual Meeting, and HDF's Section 20(a) and breach of fiduciary duty counterclaims against Dr. Elazar Rabbani, Barry W. Weiner, Dr. Bruce Hanna, Dov Perlysky and Rebecca Fischer with respect to that statement. The Court allowed HDF to move for leave to replead with respect to its dismissed counterclaims. On June 7, 2022, the Court "so ordered" a stipulation of dismissal with prejudice of the Company's claims against Harbert Discovery Fund, LP, Harbert Discovery Co-Investment Fund I, LP, Harbert Fund Advisors, Inc., Harbert Management Corp., and Kenan Lucas, and HDF's counterclaims against the Company, Dr. Bruce Hanna, Dov Perlysky, Rebecca Fischer, Dr. Ian B. Walters and Dr. Mary Tagliaferri. The only remaining claims were HDF's counterclaims against Dr. Rabbani and Mr. Weiner. HDF asked the Court to dismiss those claims without prejudice. Dr. Rabbani and Mr. Weiner asked the Court to dismiss those counterclaims with prejudice and to allow them to take discovery from HDF, the Company, and possibly others. On December 1, 2022, the court granted HDF's motion for voluntary dismissal without prejudice, denied Dr. Rabbani and Mr. Weiner's motion to compel discovery, and directed the Clerk of the Court to close this case.

There can be no assurance that the Company will be successful in any of these litigations. Even if the Company is not successful, management does not believe that there will be a significant adverse monetary impact on the Company. The Company is party to other claims, legal actions, complaints, and contractual disputes that arise in the ordinary course of business. The Company believes that any liability that may ultimately result from the resolution of these matters will not, individually or in the aggregate, have a material adverse effect on its financial position or results of operations.

As described in Note 3, third-party payers, including government programs, may decide to deny payment or recoup payments for testing that they contend was improperly billed or not medically necessary, against their coverage determinations, or for which they believe they have otherwise overpaid (including as a result of their own error), and we may be required to refund payments already received.

Former executives arbitration

The Company terminated the employment of Elazar Rabbani, Ph.D., the Company's former Chief Executive Officer, effective April 21, 2022. Dr. Rabbani remains a board director of the Company. Dr. Rabbani is a party to an employment agreement with the Company, which entitles him to certain termination benefits, including severance pay, acceleration of vesting of share-based compensation, and continuation of benefits. Based on the terms of his employment agreement, the Company estimated and accrued a charge of $2,600 in fiscal 2022 which is included in Selling, general and administrative expenses. The charge was partially offset by the reversal of bonus accruals. In May 2022, the Company paid Dr. Rabbani $2,123 in severance (the payment constituted taxable income but the Company did not withhold taxes from the payment). In July 2022, the Company paid Dr. Rabbani's income and other withholding taxes of $1,024 related to that payment on Dr. Rabbani's behalf, which is included in "prepaid expense and other current assets" as of July 31, 2022, as the payment is reimbursable from Dr. Rabbani. Dr. Rabbani disputed, among other things, the Company's decision to not award him a bonus for fiscal year 2021 and the amount of severance that was owed to him under his employment agreement. On July 8, 2022, the Company filed a demand for arbitration with the American Arbitration Association (the "AAA") seeking, among other things, a declaration that the Company has fully satisfied its contractual obligations to Dr. Rabbani and seeking the tax withholding reimbursement referenced above. On August 4, 2022, Dr. Rabbani filed counterclaims in the arbitration seeking, among other things, a bonus for fiscal year 2021 and additional severance that he asserts is owed to him. The parties have chosen an arbitrator from the AAA's panel and a hearing is scheduled for June 8-16, 2023.

On February 25, 2022, Barry Weiner, the Company's co-founder and President, notified the Company that he was terminating his employment as President of the Company for "Good Reason" as defined in his employment agreement. The Company accepted Mr. Weiner's termination, effective April 19, 2022, but disagreed with Mr. Weiner's assertion regarding "Good Reason." On July 20, 2022, Mr. Weiner filed a demand for arbitration with the AAA asserting, among other things, that his annual bonus for fiscal year 2021 was too low and that his resignation (effective April 19, 2022) was for "Good Reason" under the terms of his employment agreement. He seeks, among other things, payment of a higher 2021 bonus, and severance payments and benefits. The parties have chosen an arbitrator from the AAA's panel and a hearing is scheduled for July 18-21, and 24, 2023. As of January 31, 2023, the Company has not accrued any charges related to Mr. Weiner's termination.

Note 13 – Subsequent Events – Agreement to sell assets of Clinical Labs division to Labcorp

On March 16, 2023, the Company filed a Form 8-K indicating that it and Enzo Clinical Labs, Inc. (the "Subsidiary" and, together with the Company, the "Seller") entered into an Asset Purchase Agreement (the "Purchase Agreement") with Laboratory Corporation of America Holdings, a Delaware corporation (the "Buyer"). Pursuant to the Purchase Agreement, the Seller has agreed to sell substantially all operating assets and assign certain liabilities of its clinical labs business (the "Business") to the Buyer which are necessary to operate the Business in exchange for approximately $146,000,000 in cash (subject to certain adjustments), on and subject to the terms and conditions set forth therein (such transaction, the "Transaction").

The Purchase Agreement contains customary representations, warranties, covenants and termination rights for a transaction of this nature, including, among other things, customary covenants: (i) relating to the conduct of the Business between the signing of the Purchase Agreement and the closing of the Transaction and (ii) regarding the efforts of the parties to cause the Transaction to be consummated, including obtaining certain consents and approvals. The consummation of the Transaction is subject to the satisfaction or waiver of customary closing conditions, including the expiration or termination of any required waiting periods under the Hart-Scott-Rodino Antitrust Improvements Act of 1976. In addition, closing under the Purchase Agreement is contingent on the Company obtaining approval of the Transaction by shareholders of the Company holding a majority of the shares of its common stock outstanding. Certain officers and directors of the Company have agreed with Buyer to vote the shares they beneficially own, totaling up to approximately 11% of the shares outstanding, in favor of the Transaction.

The Purchase Agreement also includes customary termination provisions for both the Company and Buyer and provides that, in connection with the termination of the Purchase Agreement under specified circumstances, including termination by the Company to accept and enter into a definitive agreement with respect to an unsolicited Superior Proposal, the Company will be required to pay Buyer a termination fee of $5,000,000 or reimbursement of Buyer's expenses of up to $5,000,000.

Subject to the terms and conditions stated in the Purchase Agreement, after shareholder approval of the Transaction, Buyer will be obligated to pay a fee to the Company for each day after the date of such approval until the closing of the Transaction. At the closing of the Transaction, such fee will be wholly or partially credited against the purchase price.

There can be no assurances that the Purchase Agreement will close and if it does close, the exact proceeds to be received by the Company.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion of our financial condition and results of operations should be read in conjunction with our consolidated financial statements and related notes and other information included elsewhere in this Quarterly Report on Form 10-Q.

Forward-Looking Statements

Our disclosure and analysis in this report, including but not limited to the information discussed in this Item 2, contain forward-looking information about our Company's financial results and estimates, business prospects and products in research and development that involve substantial risks and uncertainties. From time to time, we also may provide oral or written forward-looking statements in other materials we release to the public. Forward-looking statements give our current expectations or forecasts of future events. You can identify these statements by the fact that they do not relate strictly to historic or current facts. They use words such as "anticipate", "estimate", "expect", "project", "intend", "plan", "believe", "will", and other words and terms of similar meaning in connection with any discussion of future operations or financial performance.

In particular, these include statements relating to future actions, including the Asset Purchase Agreement with respect to the sale of substantially all assets and assignment of certain liabilities of the Clinical Labs division and the timing of its closing, prospective products or product approvals, future performance or results of current and anticipated products, sales efforts, expenses, interest rates, foreign currency rates, intellectual property matters, the outcome of contingencies, such as legal proceedings, impacts of the COVID-19 pandemic and measures we have taken in response, and financial results. We cannot guarantee that any forward-looking statement will be realized, although we believe we have been prudent in our plans and assumptions. Achievement of future results is subject to risks, uncertainties and inaccurate assumptions. Should known or unknown risks or uncertainties materialize, or should underlying assumptions prove inaccurate, actual results could vary materially from past results and those anticipated, estimated or projected. As a result, investors are cautioned not to place undue reliance on any of our forward-looking statements. Investors should bear this in mind as they consider forward-looking statements. We do not assume any obligation to update or revise any forward-looking statement that we make, even if new information becomes available or other events occur in the future. We are also affected by other factors that may be identified from time to time in our filings with the Securities and Exchange Commission, some of which are set forth in Item 1A - Risk Factors in our Form 10-K filing for the July 31, 2022 fiscal year. You are advised to consult any further disclosures we make on related subjects in our Forms 10-Q, 8-K and 10-K reports to the Securities and Exchange Commission. Although we have attempted to provide a list of important factors which may affect our business, investors are cautioned that other factors may prove to be important in the future and could affect our operating results.

You should understand that it is not possible to predict or identify all such factors or to assess the impact of each factor or combination of factors on our business. Consequently, you should not consider any such list to be a complete set of all potential risks or uncertainties.

Impact of COVID-19

We made substantial investments to expand and maintain the amount of COVID-19 testing available in the communities we serve since the start of the pandemic in March 2020. We applied our technical expertise in molecular diagnostics to develop next generation COVID-19 diagnostic and antibody testing options which were approved under the FDA Emergency Use Authorization (EUA). During the fiscal year ended July 31, 2022, the Company generated substantial COVID-19 related services revenues, representing 44% of all services revenues. This testing had a significantly positive impact on the profitability and cash flow of our Clinical services segment for most of fiscal 2022. Revenues from COVID-19 testing during the three and six months ended January 31, 2022 represented 56% and 52%, respectively of all services revenues. The rate of transmission of COVID-19 and the severity of its variants have dramatically declined in the US. Revenues from COVID-19 testing during the three and six months ended January 31, 2023 represented approximately 4% and 6%, respectively of all services revenues.

In March 2022, the U.S. Health Resources and Services Administration ("HRSA") informed providers that, after March 22, 2022, it would stop accepting claims for testing and treatment for uninsured individuals under the HRSA COVID-19 Uninsured Program and that claims submitted prior to that date would be subject to eligibility and availability of funds. Although we believe that our estimates for contractual allowances and patient price concessions are appropriate, actual results could differ from those estimates. If the HRSA receives additional funding, it might again accept claims under the Uninsured Program.

Federal, state and local governmental policies and initiatives designed to reduce the transmission of COVID-19 resulted in, among other things, a significant reduction in physician office visits, the cancellation of elective medical procedures, and the continuation of work-from-home policies. The COVID-19 impact on the Company's operations is consistent with the overall industry and our competitors, partners, and vendors. While we anticipate that COVID-19 will continue to impact our business into the future, increases in vaccination rates and booster shots, the development of new therapeutics and greater availability of rapid COVID-19 tests has resulted in a continued, significant decline in demand for our COVID-19 testing. As a result, volume, revenues, profitability, and cash flow from COVID-19 testing during the current periods were all substantially and materially lower than the prior year period levels. COVID-19 testing is no longer a material part of our Services business.

We expect volume and revenues from COVID-19 testing will remain less significant in the periods ahead as the percentage of Americans who are vaccinated increases, the severity of its variants declines, and the general increase in the use of "at home" testing. However, the emergence and spread of potentially more serious variants may cause our COVID-19 testing volume to increase again. With respect to our non-COVID-19 operations, even after the COVID-19 pandemic impact has greatly moderated, we may continue to experience similar adverse effects to our businesses, consolidated results of operations, financial position and cash flows resulting from a recessionary economic environment, including inflation and actions by the Federal Reserve to increase interest rates.

The Company assessed certain accounting matters that generally require consideration of forecasted financial information in context with the information reasonably available to the Company and the unknown future impacts of COVID-19 and the recessionary economic environment, including inflation and actions by the Federal Reserve to increase interest rates as of January 31, 2023 and through the date of this Quarterly Report. The accounting matters assessed included, but were not limited to, the Company's patient self-pay revenue concessions and credit losses in the Clinical Services segment, accounts receivable, inventories and the carrying value of goodwill and other long-lived assets. The Company's future assessment of the magnitude and duration of COVID-19, as well as other economic factors, could result in additional material adverse impacts to the Company's consolidated financial statements in future reporting periods.

Overview

Enzo Biochem, Inc. (the "Company", "we", "our", or "Enzo") is an integrated diagnostics, clinical lab, and life sciences company focused on delivering and applying advanced technology capabilities to produce affordable reliable products and services that enable our customers to meet their clinical needs. Through a connection with the market, we provide advanced biotechnology solutions to the global community as affordable and flexible quality products and services. We develop, manufacture and sell our proprietary technology solutions and platforms to clinical laboratories, specialty clinics, researchers and physicians globally. Enzo's structure and business strategy represent the culmination of years of extensive planning and work. The Company has the ability to offer low cost, high performance products and services for diagnostic testing, which ideally positions us to capitalize on the reimbursement pressures facing diagnostic labs. Our pioneering work in genomic analysis coupled with our extensive patent estate and enabling platforms have positioned the Company to continue to play an important role in the rapidly growing molecular medicine marketplaces.

Enzo develops low cost diagnostic platform products and related services. Our platform development includes automation-compatible reagent systems and associated products for sample collection and processing through analysis. We develop affordable products and services to improve healthcare, one of the greatest challenges today. Enzo combines over 40 years of expertise in technology development with assay development capabilities and diagnostic testing services to create high performance, cost-effective, and open assay solutions. The ability to combine these assets in one company is unique. With our strong intellectual property portfolio integrated with assay development know-how, production, distribution, validation and services capabilities, we have enabled sustainable products and services for a market that is facing increasing pressure in costs and reimbursement.

Enzo technology solutions and platforms and unique operational structure are designed to reduce overall healthcare costs for both government and private insurers. Our proprietary technology platforms reduce our customers' need for multiple, specialized instruments, and offer a variety of high throughput capabilities together with a demonstrated high level of accuracy and reproducibility. Our genetic test panels are focused on large and growing markets primarily in the areas of personalized medicine, women's health, infectious diseases and genetic disorders.

In the course of our research and development activities, we have built a substantial portfolio of intellectual property assets, comprised of approximately 472 issued patents worldwide and over 64 pending patent applications, along with extensive enabling technologies and platforms.

Below are brief descriptions of each of our two operating segments (See Note 11 in the Notes to Consolidated Financial Statements):

Enzo Clinical Services is a clinical reference laboratory providing a wide range of clinical services to physicians, medical centers, other clinical labs and pharmaceutical companies. The Company believes having a Clinical Laboratory Improvement Amendments of 1988 ("CLIA") certified and College of American Pathologists ("CAP") accredited medical laboratory located in New York provides us the opportunity to more rapidly introduce cutting edge products and services to the clinical marketplace. Enzo Clinical Labs offers an extensive menu of molecular and other clinical laboratory tests and procedures used in patient care by physicians to establish or support a diagnosis, monitor treatment or medication, and search for an otherwise undiagnosed condition. Our laboratory is equipped with state-of-the-art communication and connectivity solutions enabling the rapid transmission, analysis and interpretation of generated data. We operate a full service clinical laboratory in Farmingdale, New York, a network of over 30 patient service centers throughout New York, New Jersey and Connecticut, two free standing "STAT" or rapid response laboratories in New York City and Connecticut, an in-house logistics department, and an information technology department. Under our license in New York State, we are able to offer testing services to clinical laboratories and physicians nationwide.

The Clinical Laboratory Services reporting unit is impacted by various risk factors, including among others, loss of a substantial portion of revenues from COVID-19 testing, reduced reimbursements from third party payers for testing performed and from recent health care legislation.

On March 16, 2023, the Company entered into an Asset Purchase Agreement with respect to the sale of assets and assignment of certain liabilities of the Clinical Labs division. See Note 13 Subsequent Events.

Enzo Products manufactures, develops and markets products and tools for clinical research, drug development and bioscience research customers worldwide. Underpinned by broad technological capabilities, Enzo Life Sciences has developed proprietary products used in the identification of genomic information by laboratories around the world. Information regarding our technologies can be found in the "Core Technologies" section of our most recently filed Form 10-K. We are internationally recognized and acknowledged as a leader in the development, manufacturing validation and commercialization of numerous products serving not only the clinical research market, but also the life sciences markets in the fields of cellular analysis and drug discovery, among others. Our operations are supported by global operations allowing for the efficient marketing and delivery of our products around the world.

Results of Operations
Three months ended January 31, 2023 compared to January 31, 2022
(in 000s)

Comparative Financial Data for the Three Months Ended January 31,

	2023	2022	Favorable (Unfavorable)	% Change
Revenues	$ 16,338	$ 34,046	$ (17,708)	(52)
Operating costs and expenses:				
Cost of revenues	15,079	17,838	2,759	15
Research and development	1,431	820	(611)	(75)
Selling, general and administrative	11,812	14,466	2,654	18
Legal and related expenses	995	2,845	1,850	65
Total operating costs and expenses	29,317	35,969	6,652	18
Operating loss	(12,979)	(1,923)	(11,056)	**
Other income (expense):				
Interest	62	68	(6)	(9)
Other	125	(350)	475	**
Foreign exchange gain (loss)	1,472	(450)	1,922	**
Loss before income taxes	$ (11,320)	$ (2,655)	$ (8,665)	**

**** not meaningful**

Consolidated Results:

The “2023 period” and the “2022 period” refer to the three months ended January 31, 2023 of fiscal year 2023 and January 31, 2022 of the fiscal year 2022, respectively.

Impacts of COVID-19

We made substantial investments to expand and maintain the amount of COVID-19 testing available in the communities we serve since the start of the pandemic in March 2020. We applied our technical expertise in molecular diagnostics to develop next generation COVID-19 diagnostic and antibody testing options which were approved under the FDA Emergency Use Authorization (EUA). During the fiscal year ended July 31, 2022, the Company generated substantial COVID-19 related services revenues, representing 44% of all services revenues. This testing had a significantly positive impact on the profitability and cash flow of our Clinical services segment for most of fiscal 2022. Revenues from COVID-19 testing during the three and six months ended January 31, 2022 represented 56% and 52%, respectively of all services revenues. The rate of transmission of COVID-19 and the severity of its variants have dramatically declined in the US. Revenues from COVID-19 testing during the three and six months ended January 31, 2023 represented approximately 4% and 6%, respectively of all services revenues.

In March 2022, the U.S. Health Resources and Services Administration (“HRSA”) informed providers that, after March 22, 2022, it would stop accepting claims for testing and treatment for uninsured individuals under the HRSA COVID-19 Uninsured Program and that claims submitted prior to that date would be subject to eligibility and availability of funds. Although we believe that our estimates for contractual allowances and patient price concessions are appropriate, actual results could differ from those estimates. If the HRSA receives additional funding, it might again accept claims under the Uninsured Program.

Federal, state and local governmental policies and initiatives designed to reduce the transmission of COVID-19 resulted in, among other things, a significant reduction in physician office visits, the cancellation of elective medical procedures, and the continuation of work-from-home policies. The COVID-19 impact on the Company's operations is consistent with the overall industry and our competitors, partners, and vendors. While we anticipate that COVID-19 will continue to impact our business into the future, increases in vaccination rates and booster shots, the development of new therapeutics and greater availability of rapid COVID-19 tests has resulted in a continued, significant decline in demand for our COVID-19 testing. As a result, volume, revenues, profitability, and cash flow from COVID-19 testing during the current periods were all substantially and materially lower than the prior year period levels. COVID-19 testing is no longer a material part of our Services business.

We expect volume and revenues from COVID-19 testing will remain less significant in the periods ahead as the percentage of Americans who are vaccinated increases, the severity of its variants declines, and the general increase in the use of "at home" testing. However, the emergence and spread of potentially more serious variants may cause our COVID-19 testing volume to increase again. With respect to our non-COVID-19 operations, even after the COVID-19 pandemic impact has greatly moderated, we may continue to experience similar adverse effects to our businesses, consolidated results of operations, financial position and cash flows resulting from a recessionary economic environment, including inflation and actions by the Federal Reserve to increase interest rates.

The Company assessed certain accounting matters that generally require consideration of forecasted financial information in context with the information reasonably available to the Company and the unknown future impacts of COVID-19 and the recessionary economic environment, including inflation and actions by the Federal Reserve to increase interest rates as of January 31, 2023 and through the date of this Quarterly Report. The accounting matters assessed included, but were not limited to, the Company's patient self-pay revenue concessions and credit losses in the Clinical Services segment, accounts receivable, inventories and the carrying value of goodwill and other long-lived assets. The Company's future assessment of the magnitude and duration of COVID-19, as well as other economic factors, could result in additional material adverse impacts to the Company's consolidated financial statements in future reporting periods.

Clinical services revenues for the 2023 period were $8.8 million compared to $23.7 million in the 2022 period, a decrease of $14.9 million or 63%. Revenues from COVID-19 testing decreased approximately $12.9 million and represented 4% and 56% of Clinical revenues in the 2023 and 2022 periods, respectively as COVID-19 accessions declined 96% in the 2023 period versus the 2022 period. Accessions from all other testing increased 7% versus the 2022 period but revenues from this testing was down approximately $2.0 million period over period due to payer and test mix and liquidation rate adjustments. Due to a Medicaid audit, we recorded a $1.0 million charge as a reduction of revenue.

Estimated collection amounts are subject to the complexities and ambiguities of third party payer billing, reimbursement regulations and claims processing, as well as issues unique to Medicare and Medicaid programs, and require us to consider the potential for adjustments when estimating variable consideration in the recognition of revenue in the period that the related services are rendered. Furthermore, the current recessionary environment, including inflation and actions by the Federal Reserve to increase interest rates, have, in part, resulted in longer lag periods between the time when we perform and report on our clinical services and when we are ultimately paid. Changes in our estimates of collections could have a material adverse impact on our consolidated financial statements.

In 2014, Congress passed the U.S. Protecting Access to Medicare Act of 2014 (PAMA), which included substantial changes to the way in which clinical laboratory services are paid under Medicare. Beginning in 2018, Medicare payments for clinical laboratory services are paid based upon the volume-weighted median of private payer rates as reported by certain clinical laboratories across the US, replacing the previous system which was based upon fee schedules derived from historical charges for clinical laboratory tests. We estimate that the effect of PAMA directly negatively impacted reimbursements from Medicare and Medicaid in both the 2023 and 2022 periods by $0.3 million.

Product revenues were $7.5 million in the 2023 period and $10.4 million in the 2022 period, a decrease of $2.9 million or 28%. The 2022 period includes a $2.8 million bulk sale of a GMP reagent to a large industrial customer in the US. Excluding the bulk sale, in the 2023 period, small decreases in revenues from European and Asia Pacific markets were almost offset by a small increase in revenues in the US market.

The cost of Clinical Services was $10.5 million in the 2023 period and $12.6 million in the 2022 period, a decrease of $2.1 million or 17%. Due to the decline in revenues in the 2023 period versus 2022, our reagent costs decreased by $1.0 million and salaries by $1.1 million. During the 2022 period, we significantly reduced our outside reference testing costs for COVID-19 by utilizing our internal manufacturing capabilities, thereby reducing some of our reliance on testing and reagents sourced from third parties. The gross profit (loss) margin on Clinical Services revenues in the 2023 period was approximately (19%) versus 47% in the 2022 period, due to the magnitude of the decline in high margin COVID-19 testing, the Medicaid audit charge, and market changes resulting in liquidation rate adjustments.

The cost of Product revenues was $4.6 million in the 2023 period and $5.3 million in the 2022 period, a decrease of approximately $0.6 million or 12%, driven by lower revenues. The gross profit margin on Products was 39% in the 2023 period and 49% in the 2022 period. During the 2022 period we made a large bulk sale of a GMP reagent which had a significantly positive impact on the period's profit margin.

Research and development expenses were $1.4 million in the 2023 period and $0.8 million in the 2022 period, an increase of $0.6 million or 75%, due to headcount increases and materials consumed.

Selling, general and administrative expenses were $11.8 million during the 2023 period versus $14.5 million during the 2022 period, a decrease of $2.6 million or 18%. The Other segment expense decreased $2.3 million during the 2023 period compared to 2022. In the 2022 period we recorded $2.6 million for severance and other discrete employment matters related to the termination of our former chief executive officer. During the 2023 period, increases in salaries, bonuses and benefits of $0.5 million were partially offset by decreases in share based compensation, professional fees and insurance totaling $0.2 million. The Life Sciences Products expense decreased $0.5 million during the 2023 period, of which $0.4 million was due to a decrease in marketing expenses and a $0.1 million decrease in administrative costs. The Clinical Services expense increased $0.1 million due to increased marketing, information technology and insurance costs partially offset by a decrease in outside services for administrative functions.

Legal and related expenses were $1.0 million during the 2023 period compared to $2.8 million in the 2022 period, a decrease of $1.8 million or 65%. During the 2022 period, we incurred higher legal activities associated with strategic initiatives which include the sale of assets, and other corporate matters related to two former executives' arbitration, which are ongoing. The 2023 period expense is net of a reimbursement of $0.8 million under the Company's directors and officers insurance policy.

Interest income, net was less than $0.1 million in both the 2023 and 2022 periods. The 2023 period's income was higher due to higher interest earned on cash in a money market fund. In the 2022 period, we also earned some interest on marketable securities in bond funds. In both periods we had interest expense primarily on a mortgage.

Other income (expense) in the 2023 and 2022 period was $0.1 million and ($0.4) million respectively, a favorable variance of approximately $0.5 million. During the 2022 period, the primary component of the expense was unrealized losses on marketable securities in bond funds held at that time as trading securities.

The foreign exchange gain (loss) recognized by the Life Sciences Products segment during the 2023 period was $1.4 million compared to ($0.5) million in the 2022 period, a favorable variance of $1.9 million. The 2023 period revaluation gain was due to the significant appreciation of the British pound and Swiss franc versus the U.S. dollar as of the end of the 2023 period compared to its start. The revaluation loss in the 2022 period was due to the depreciation of the British pound and Swiss franc versus the U.S. dollar as of the end of that period compared to its start.

Results of Operations
Six months ended January 31, 2023 compared to January 31, 2022
(in 000s)

Comparative Financial Data for the Six Months Ended January 31,

	2023	2022	Favorable (Unfavorable)	% Change
Revenues	$ 34,614	$ 60,565	$ (25,951)	(43)
Operating costs and expenses:				
Cost of revenues	29,750	33,111	3,361	10
Research and development	2,427	1,564	(863)	(55)
Selling, general and administrative	23,263	25,518	2,255	9
Legal and related expenses	2,066	4,127	2,061	50
Total operating costs and expenses	57,506	64,320	6,814	11
Operating loss	(22,892)	(3,755)	(19,137)	**
Other income (expense):				
Interest	132	107	25	23
Other	130	(495)	625	**
Foreign exchange gain (loss)	675	(831)	1,506	**
Loss before income taxes	$ (21,955)	$ (4,974)	$ (16,981)	**

**** not meaningful**

Consolidated Results:

The “2023 period” and the “2022 period” refer to the six months ended January 31, 2023 and January 31, 2022, respectively, which represent the first two quarters of the Company’s fiscal year ending July 31.

Clinical services revenues for the 2023 period were $20.0 million compared to $43.4 million in the 2022 period, a decrease of $23.4 million or 54%. Revenues from COVID-19 testing decreased approximately $21.3 million and represented 6% and 52% of Clinical revenues in the 2023 and 2022 periods, respectively as COVID-19 accessions declined 95% in the 2023 period versus the 2022 period. Accessions from all other testing increased approximately 3% period but revenues from this testing was down approximately $2.1 million period over period due to payer and test mix and liquidation rate adjustments. Due to a Medicaid audit, we recorded a $1.0 million charge as a reduction of revenue.

Estimated collection amounts are subject to the complexities and ambiguities of third party payer billing, reimbursement regulations and claims processing, as well as issues unique to Medicare and Medicaid programs, and require us to consider the potential for adjustments when estimating variable consideration in the recognition of revenue in the period that the related services are rendered. Furthermore, the current recessionary environment, including inflation and actions by the Federal Reserve to increase interest rates, have, in part, resulted in longer lag periods between the time when we perform and report on our clinical services and when we are ultimately paid. While we believe this to be a timing issue, any changes in our estimates of collections could have a material adverse impact on our consolidated financial statements.

In 2014, Congress passed the U.S. Protecting Access to Medicare Act of 2014 (PAMA), which included substantial changes to the way in which clinical laboratory services are paid under Medicare. Beginning in 2018, Medicare payments for clinical laboratory services are paid based upon the volume-weighted median of private payer rates as reported by certain clinical laboratories across the US, replacing the previous system which was based upon fee schedules derived from historical charges for clinical laboratory tests. We estimate that the effect of PAMA directly negatively impacted reimbursements from Medicare and Medicaid in the 2023 and 2022 periods by $0.5 and $0.6 million, respectively.

Product revenues were $14.6 million in the 2023 period and $17.2 million in the 2022 period, a decrease of approximately $2.5 million or 15%. The 2022 period includes a $2.8 million bulk sale of a GMP reagent to a large industrial customer in the US. Excluding the bulk sale, in the 2023 period, there was an approximate $0.4 million increase in revenues in the US market, partially offset by a small decrease in revenues in the European market.

The cost of Clinical Services was $20.5 million in the 2023 period and $23.8 million in the 2022 period, a decrease of $3.2 million or 14%. Due to the decline in Services revenues in the 2023 period versus 2022, our reagent costs decreased by $1.8 million and salaries by $1.4 million. The gross profit (loss) margin on Clinical Services revenues in the 2023 period was approximately (3%) versus 45% in the 2022 period, due to the magnitude of the decline in high margin COVID-19 testing, the Medicaid charge, and market changes resulting in liquidation rate adjustments. During the 2022 period, we significantly reduced our outside reference testing costs for COVID-19 by utilizing our internal manufacturing capabilities, thereby reducing some of our reliance on testing and reagents sourced from third parties, which improved the period's profit margin.

The cost of Product revenues was $9.2 million in the 2023 period and $9.3 million in the 2022 period, a decrease of $0.1 million or 1%. The gross profit margin on Products was approximately 37% in the 2023 period and 46% in the 2022 period. During the 2022 period we made a large bulk sale of a GMP reagent which had a significantly positive impact on that period's profit margin. The 2023 period gross profit was also impacted by an increase in production headcount compared to the 2022 period.

Research and development expenses were $2.4 million in the 2023 period and $1.6 million in the 2022 period, an increase of $0.8 million or 55%, due to headcount increases and materials consumed.

Selling, general and administrative expenses were $23.3 million during the 2023 period versus $25.5 million during the 2022 period, a decrease of $2.2 million or 9%. The Other segment expense decreased $1.8 million during the 2023 period. In the 2022 period we recorded $2.6 million for severance and other discrete employment matters related to the termination of our former chief executive officer. During the 2023 period, salaries, bonuses and benefits also decreased $0.1 million. These decreases were partially offset by an increase of $0.9 million for professional fees relating to advisory services including the evaluation of strategic alternatives for the Company. The Life Sciences Products expense in the 2023 period decreased $1.1 million compared to 2022, of which $0.6 million was due to a decrease in marketing and selling expenses and a $0.1 million decrease in administrative costs. Additionally, the 2022 period includes $0.4 million for employee severance and winding down costs associated with the closure of the Ann Arbor MI manufacturing and distribution center. The Clinical Services expense increased $0.7 million due to increased salaries, marketing and facility costs totaling $1.6 million, partially offset by lower commissions and outside administrative support services totaling $0.9 million.

Legal and related expenses were $2.1 million during the 2023 period compared to $4.1 million in the 2022 period, a decrease of $2.0 million or 49%. During the 2022 period, we incurred higher legal activities associated with strategic initiatives which include the sale of assets, and other corporate matters related to two former executives' arbitration, which are ongoing. The 2023 period expense is net of a reimbursement of $0.8 million under the Company's directors and officers insurance policy.

Interest income, net was $0.1 million in both the 2023 and 2022 periods. The 2023 period's interest income was earned on cash in a money market fund. In the 2022 period, we earned interest on marketable securities in bond funds. In both periods we had interest expense primarily on a mortgage.

Other income (expense) in the 2023 period was $0.1 million versus ($0.5) million in the 2022 period, a favorable variance of approximately $0.6 million. During the 2022 period, the primary component of the expense was unrealized losses on marketable securities in bond funds held at that time as trading securities.

The foreign exchange gain (loss) recognized by the Life Sciences Products segment during the 2023 period was $0.7 million compared to ($0.8) million in the 2022 period, a favorable variance of $1.5 million. The 2023 period revaluation gain was due to the significant appreciation of the British pound and Swiss franc versus the U.S. dollar as of the end of the 2023 period compared to its start. The revaluation loss in the 2022 period was due to the depreciation of the British pound and Swiss franc versus the U.S. dollar as of the end of that period compared to its start.

Liquidity and Capital Resources

During the six months ended January 31, 2023, the Company incurred a net loss of $21,955 and used cash in operating activities of $14,891. The Company believes that based on its fiscal 2023 forecast, its current cash and cash equivalents level is not sufficient for its foreseeable liquidity and capital resource needs over at least the next twelve (12) months, which conditions raise substantial doubt about the Company's ability to continue as a going concern for one year after the date that the unaudited interim financial statements are issued.

In response to these conditions, the Company is evaluating various financing strategies to obtain sufficient additional liquidity to meet its operating, and capital requirements for the next twelve months following the date of issuance of the unaudited interim consolidated financial statements. Specifically, on March 10, 2023, the Company signed a commitment letter providing for up to $8,000 of a revolving line of credit subject to closing, and as previously disclosed has been exploring various strategic alternatives including the sale of segment operating assets. However, there can be no assurance that either of these capital raising strategies will be successful, and the Company may need to raise additional capital during the current fiscal year. On March 16, 2023, the Company entered into an Asset Purchase Agreement with respect to substantially all assets and assignment of certain liabilities of the Clinical Labs division. See Note 13 Subsequent Events. Although there can be no assurances, in the event additional capital is required, the Company believes it has the ability to raise additional funds, either through additional debt secured by real property owned, private debt, selling preferred stock, reactivating and utilizing the Controlled Equity Offering Program, or through other sources. That Program's Form S-3 expired in October 2020 but may be refiled at any time at the discretion of the Company, as disclosed in Note 10 in the Notes to the Consolidated Financial Statements. Our liquidity plans are subject to a number of risks and uncertainties, some of which are outside our control. Macroeconomic conditions could limit our ability to successfully execute our business plans and therefore adversely affect our liquidity plans. The unaudited interim financial statements do not include any adjustments to reflect the possible future effects on the recoverability and classification of assets or the amounts and classifications of liabilities that may result should the Company be unable to continue as a going concern.

At January 31, 2023, the Company had cash and cash equivalents totaling $5.1 million of which $0.5 million was in foreign accounts, as compared to cash and cash equivalents of $21.6 million, of which $0.6 million was in foreign accounts at July 31, 2022. It is the Company's current intent to permanently reinvest these foreign funds outside of the United States, and its current plans do not demonstrate a need to repatriate them to fund its United States operations.

The Company had working capital of $4.29 million at January 31, 2023, compared to $29.8 million at July 31, 2022, a decrease of $25.6 million. The decrease in working capital was due to the use of cash and cash equivalents to fund operations, capital expenditures, and the reclassification of mortgage debt from long term to current.

Net cash used in operating activities during the 2023 period was $14.9 million, compared to $6.7 million during the 2022 period, an unfavorable variance of approximately $8.3 million. The net cash used in the 2023 period was due to the net loss of $22.0 million, which was partially offset by a net increase of $3.6 million in operating liabilities, primarily accounts payable, an increase in non-cash expense adjustments of $2.1 million, and a decrease in operating assets of $1.4 million, primarily prepaid assets and accounts receivable. In order to conserve cash and maintain overall liquidity, the Company has been working with some vendors and professional services providers to delay payments, which has resulted in a large increase in its accounts payable-trade balance at January 31, 2023 as compared to July 31, 2022.

Net cash used in investing activities during the 2023 period was approximately $1.5 million as compared to $2.3 million in the 2022 period and primarily represent capital expenditures to support and grow our existing operations, including investments in laboratory equipment, information technology, and the buildout of our Farmingdale campus.

Cash used in financing activities in both the 2023 and 2022 periods approximated $0.1 million for payments related to a mortgage and finance leases.

As of January 31, 2023 we had a mortgage principal balance of $3.9 million entered into for the purchase of a building facility at our Farmingdale campus, which bears a fixed interest rate of 5.09% per annum. It requires monthly mortgage payments totaling $0.4 million annually. Our obligations under the mortgage agreement are secured by the facility, assets of the Company, and by a $1.0 million cash collateral deposit with the mortgagee as additional security, which is included in other assets as of January 31, 2023.

Effective October 19, 2020, the Company and the mortgagee agreed to a covenant restructure whereby the mortgagee waived the Company's financial ratio covenant for the fiscal period ended July 31, 2020 and modified the mortgage to replace a financial ratio covenant with a liquidity covenant. The liquidity covenant required that we own and maintain at all times, and throughout the remaining term of the loan, at least $25 million of liquid assets, defined as time deposits, money market accounts and commercial paper, and obligations issued by the U.S. government or any of its agencies. The cash collateral agreement was also modified to require compliance with the liquidity covenant for two consecutive fiscal years before the collateral is released back to us. As of July 31, 2021, the Company was in compliance with the financial and liquidity covenants in effect at that time related to this mortgage. Effective September 29, 2021, the Company and the mortgagee agreed to further covenant restructuring whereby (a) the liquidity covenant was reduced to 150% of the loan principal (or approximately $5.8 million at October 31, 2022) from $25 million previously, and (b) the collateral requirement would be increased from $0.75 million to $1.0 million. The Company increased the collateral deposit to $1.0 million in November 2021 and was in compliance with the liquidity covenant as of October 31, 2022 and July 31, 2022. As of January 31, 2023, the Company was not in compliance with the liquidity covenant, but was in compliance with the other financial covenants related to this mortgage. Effective March 20, 2023, the Company and the mortgagee agreed to a waiver of the liquidity covenant default as of January 31, 2023. While the Company believes it will be able to either achieve compliance or obtain further waivers going forward, as there can be no assurances, all of the mortgage debt has been classified as current in the consolidated balance sheet as of January 31, 2023.

Revolving Line of Credit commitment

On March 10, 2023, the Company entered into a commitment for a one-year credit facility with an asset based lender specializing in direct lending to middle-market companies in the healthcare sector. The facility is an $8 million revolving line of credit based on the Company's eligible accounts receivable. The annual interest rate is equal to the 90 day term SOFR rate plus 5.5%. The line of credit would terminate one year from closing and unused line fees and early prepayment penalties apply. The Company and the lender are using their best efforts to close on the line of credit as soon as possible. The expected closing time period is the end of March 2023.

Other conditions to closing are

- satisfactory completion of the Company's collateral field exam confirming, among other things, a borrowing base reasonably consistent with the results of lender's underwriting,
- the execution of loan and security agreements with terms, representations, covenants, defaults, clauses, conditions, and closing requirements satisfactory to lender,
- Deposit account control agreements and lockbox agreements with depository banks in form and substance acceptable to the lender,
- A signed Asset Purchase Agreement (APA) for the sale of the Company's Clinical Services segment in an amount and on terms and conditions satisfactory to lender,
- Borrowers shall provide all collateral and financial reports as lender may reasonably request, and
- Borrowers shall have satisfactory insurance coverage with lender loss payee and additional insured endorsements in favor of lender on all collateral.

Off-Balance Sheet Arrangements

Asset Purchase Agreement

On March 16, 2023, the Company filed a Form 8-K, indicating that along with Enzo Clinical Labs, Inc. (the "Subsidiary" and, together with the Company, the "Seller") entered into an Asset Purchase Agreement (the "Purchase Agreement") with Laboratory Corporation of America Holdings, a Delaware corporation (the "Buyer"). Pursuant to the Purchase Agreement, the Seller has agreed to sell substantially all of the operating assets and assign certain liabilities of its clinical labs business (the "Business") to the Buyer which are necessary for the Buyer to operate the Business in exchange for approximately $146,000,000 in cash (subject to certain adjustments), on and subject to the terms and conditions set forth therein (such transaction, the "Transaction").

The Purchase Agreement contains customary representations, warranties, covenants and termination rights for a transaction of this nature, including, among other things, customary covenants: (i) relating to the conduct of the Business between the signing of the Purchase Agreement and the closing of the Transaction and (ii) regarding the efforts of the parties to cause the Transaction to be consummated, including obtaining certain consents and approvals. The consummation of the Transaction is subject to the satisfaction or waiver of customary closing conditions, including the expiration or termination of any required waiting periods under the Hart-Scott-Rodino Antitrust Improvements Act of 1976. In addition, closing under the Purchase Agreement is contingent on the Company obtaining approval of the Transaction by shareholders of the Company holding a majority of the shares of its and directors of the Company have agreed with Buyer to vote the shares they beneficially own, totaling up to approximately 11% of the shares outstanding, in favor of the Transaction.

The Purchase Agreement also includes customary termination provisions for both the Company and Buyer and provides that, in connection with the termination of the Purchase Agreement under specified circumstances, including termination by the Company to accept and enter into a definitive agreement with respect to an unsolicited Superior Proposal, the Company will be required to pay Buyer a termination fee of $5,000,000, or reimbursement of Buyer's expenses of up to $5,000,000.

Subject to the terms and conditions stated in the Purchase Agreement, after shareholder approval of the Transaction, Buyer will be obligated to pay a fee to the Company for each day after the date of such approval until the closing of the Transaction. At the closing of the Transaction, such fee will be wholly or partially credited against the purchase price.

There can be no assurances that the Purchase Agreement will close and if it does close, the exact proceeds to be received by the Company.

General and estimates

The Company's discussion and analysis of its financial condition and results of operations are based upon Enzo Biochem, Inc.'s interim consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires the Company to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses. These estimates and judgments also affect related disclosure of contingent assets and liabilities.

On an on-going basis, we evaluate our estimates, including those related to contractual expense, allowance for uncollectible accounts, inventory, intangible assets, goodwill and income taxes. The Company bases its estimates on experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

Revenues – Clinical Services

Contractual Adjustment

The Company's estimate of contractual adjustment is based on significant assumptions and judgments, such as its interpretation of payer reimbursement policies, and bears the risk of change. The estimation process is based on the experience of amounts approved as reimbursable and ultimately settled by payers, versus the corresponding gross amount billed to the respective payers. The contractual adjustment is an estimate that reduces gross revenue, based on gross billing rates, to amounts expected to be approved and reimbursed.

Gross billings are based on a standard fee schedule we set for all third party payers, including Medicare, HMO's and managed care. The Company adjusts the contractual adjustment estimate quarterly, based on its evaluation of current and historical settlement experience with payers, industry reimbursement trends, and other relevant factors. The other relevant factors that affect our contractual adjustment include the monthly and quarterly review of: 1) current gross billings and receivables and reimbursement by payer, 2) current changes in third party arrangements and 3) the growth of in-network provider arrangements and managed care plans specific to our Company.

Our clinical business is primarily dependent upon reimbursement from third-party payers, such as Medicare (which principally serves patients 65 and older) and insurers. We are subject to variances in reimbursement rates among different third-party payers, as well as constant changes of reimbursement rates. Changes that decrease reimbursement rates or coverage would negatively impact our revenues. The number of individuals covered under managed care contracts or other similar arrangements has grown over the past several years and may continue to grow in the future. In addition, Medicare and other government healthcare programs continue to shift to managed care. These trends will continue to reduce our revenues from these programs.

During the three months ended January 31, 2023 and 2022, the contractual adjustment percentages, determined using current and historical reimbursement statistics, was 90.6% and 80.5% respectively, of gross billings. During the six months ended January 31, 2023 and 2022, the contractual adjustment percentages, determined using current and historical reimbursement statistics, was 89.1% and 82.1% respectively, of gross billings. The Company estimates (by using a sensitivity analysis) that each 1% point change in the contractual adjustment percentage could result in a change in clinical services revenues of approximately $1.8 million and $2.4 million for the six months periods ended January 31, 2023 and 2022 respectively, and a change in the net accounts receivable of approximately $0.4 million as of January 31, 2023.

Our clinical services financial billing system records gross billings using a standard fee schedule for all payers and does not record contractual adjustment by payer at the time of billing. Therefore, we are unable to quantify the effect contractual adjustments recorded during the current period have on revenue recorded in a previous period. However, we can reasonably estimate our monthly contractual adjustment to revenue on a timely basis based on our quarterly review process, which includes:

- an analysis of industry reimbursement trends;
- an evaluation of third-party reimbursement rates changes and changes in reimbursement arrangements with third-party payers;
- a rolling monthly analysis of current and historical claim settlement and reimbursement experience statistics with payers; and
- an analysis of current gross billings and receivables by payer.

Accounts Receivable

Accounts receivable are reported at realizable value, net of allowances for doubtful accounts, which is estimated and recorded in the period of the related revenue.

The following is a table of the Company's net accounts receivable by segment. The Clinical Laboratory Services segment's net receivables are detailed by billing category and as a percent to its total net receivables. As of January 31, 2023 and July 31, 2022, approximately 57% and 59%, respectively of the Company's net accounts receivable relates to its Clinical Laboratory Services business, which operates in the New York, New Jersey and Connecticut medical communities. The Life Sciences products segment's accounts receivable includes foreign receivables of approximately $1.3 million or 29% and $1.1 million or 24% of total segment receivables as of January 31, 2023 and July 31, 2022, respectively.

Net accounts receivable (in thousands)

	January 31, 2023		July 31, 2022	
Net accounts receivable by segment	**Amount**	**%**	**Amount**	**%**
Clinical Labs (by billing category)				
Third party payers	$ 2,512	41	$ 2,647	40
Patient self-pay	2,407	39	2,779	41
Medicare	885	14	768	11
HMO's	395	6	560	8
Total Clinical Labs	6,199	100%	6,754	100%
Total Life Sciences	4,667		4,762	
Total accounts receivable – net	$ 10,866		$ 11,516	

The Company's ability to collect outstanding receivables from third party payers is critical to its operating performance and cash flows. The primary collection risk lies with uninsured patients or patients for whom primary insurance has paid but a patient portion remains outstanding. The Company assesses the current state of its billing functions in order to identify any known collection or reimbursement issues. The Company assesses the impact, if any, on the allowance estimates, which involves Company's management judgment. It is important to note that the collection of these receivables is not guaranteed from Third Party Payers. The Company believes that the collectability of its receivables is directly linked to the quality of its billing processes, most notably, those related to obtaining the accurate patient information to effectively bill for the services provided. Should circumstances change (e.g. shift in payer mix, decline in economic conditions or deterioration in aging of receivables), our estimates of net realizable value of receivables could be reduced by a material amount. As of January 31, 2023, approximately 16% of Clinical Labs receivables are from one payer other than Medicare and as of July 31, 2022, approximately 23%, of Clinical Labs receivables are from two payers other than Medicare.

Billing for laboratory services is complicated due to several factors, including, but not limited to, the differences between our standard gross fee schedule for all payers and the reimbursement rates of the various payers we deal with, disparity of coverage and information requirements among the various payers, and disputes with payers as to which party is responsible for reimbursement.

Income Taxes

The Company accounts for income taxes under the liability method of accounting for income taxes. Under the liability method, deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. The liability method requires that any tax benefits recognized for net operating loss carry forwards and other items be reduced by a valuation allowance where it is not more likely than not the benefits will be realized in the foreseeable future. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. Under the liability method, the effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. It is the Company's policy to provide for uncertain tax positions, if any, and the related interest and penalties based upon management's assessment of whether a tax benefit is more likely than not to be sustained upon examination by tax authorities. To the extent the Company prevails in matters for which a liability for an unrecognized tax benefit is established or is required to pay amounts in excess of the liability, the Company's effective tax rate in a given financial statement period may be affected.

Inventory

The Company values inventory at the lower of cost (first-in, first-out) or net realizable value. Work-in-process and finished goods inventories consist of material, labor, and manufacturing overhead. Write downs of inventories to net realizable value are based on a review of inventory quantities on hand and estimated sales forecasts based on sales history and anticipated future demand. Unanticipated changes in demand could have a significant impact on the value of our inventory and require additional write downs of inventory which would impact our results of operations.

Goodwill and Long-Lived Assets

Goodwill represents the excess of the cost of an acquisition over the fair value of the net assets acquired.

The Company tests goodwill annually as of the first day of the fourth quarter, or more frequently if indicators of potential impairment exist. In assessing goodwill for impairment, the Company has the option to first perform a qualitative assessment to determine whether the existence of events or circumstances leads to a determination that it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If the Company determines that it is not more likely than not that the fair value of a reporting unit is less than its carrying amount, the Company is not required to perform any additional tests in assessing goodwill for impairment. However, if the Company concludes otherwise or elects not to perform the qualitative assessment, then it identifies the reporting units and compares the fair value of each of these reporting units to their respective carrying amount. If the carrying amount of the reporting unit is less than its fair value, no impairment exists. If the carrying amount of the reporting unit is higher than its fair value, the impairment charge is the amount by which the carrying amount exceeds its fair value, not to exceed the total amount of goodwill allocated to the reporting unit.

The Company reviews the recoverability of the carrying value of long-lived assets of an asset or asset group for impairment annually as of the end of the fiscal year, or more frequently if indicators of potential impairment exist. Should indicators of impairment exist, the carrying values of the assets are evaluated in relation to the operating performance and future undiscounted cash flows of an asset or asset group. The net book value of the long-lived asset is adjusted to fair value if its expected future undiscounted cash flow is less than its book value. The Company has determined that there is no impairment of goodwill or long-lived assets at January 31, 2023.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to market risk from changes in foreign currency exchange rates resulting from acquisitions with foreign locations (See Item 1A. Risk Factors section of the Form 10-K for the fiscal year ended July 31, 2022) that could impact our results of operations and financial position. We do not currently engage in any hedging or market risk management tools.

Foreign Currency Exchange Rate Risk

The financial reporting of our non-U.S. subsidiaries is denominated in currencies other than the U.S. dollar. Since the functional currency of our non-U.S. subsidiaries is the local currency, foreign currency translation adjustments are accumulated as a component of accumulated other comprehensive income in stockholders' equity. Assuming a hypothetical increase of 10% in the value of the U.S. dollar versus foreign currencies at January 31, 2023, our assets and liabilities would decrease by $0.4 million and $0.1 million, respectively, and our net revenues and net income (loss) would decrease by $0.8 million and $0.1 million, respectively, on an annual basis.

We also maintain intercompany balances and loans with subsidiaries in different local currencies. These amounts are at risk of foreign exchange losses if exchange rates fluctuate. Assuming a hypothetical increase of 10% in the value of the U.S. dollar versus foreign currencies, our pre-tax earnings (loss) would be unfavorably impacted by approximately $2.1 million on an annual basis.

Interest Rate Risk

As of January 31, 2023, we have fixed interest rate financing on a building mortgage and equipment finance leases.

Item 4. Controls and Procedures

(a) Evaluation of Disclosure Controls and Procedures

As of the end of the period covered by this report, the Company's management conducted an evaluation (as required under Rules 13a-15(b) and 15d-15(b) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")) of the Company's "disclosure controls and procedures" (as such term is defined under the Exchange Act), under the supervision and with the participation of the principal executive officer and the principal financial officer. Based on this evaluation, the principal executive officer and the principal financial officer concluded that the Company's disclosure controls and procedures are effective as of the end of the period covered by this report. Notwithstanding the foregoing, a control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that it will detect or uncover failures within the Company to disclose material information otherwise required to be set forth in the Company's periodic reports.

(b) Changes in Internal Controls over Financial Reporting

There were no changes in our internal control over financial reporting that occurred during the quarter ended January 31, 2023 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II - OTHER INFORMATION

Item 1. Legal Proceedings

There have been no other material developments with respect to previously reported legal proceedings discussed in the annual report on Form 10-K, as amended for the fiscal year ended July 31, 2022 filed with the Securities and Exchange Commission, other than as noted in Note 12 to the Consolidated Financial Statements as of January 31, 2023.

Item 1A. Risk Factors

There have been no material changes from the risk factors disclosed in Part 1, Item 1A of the Company's Annual Report on Form 10-K for the fiscal year ended July 31, 2022, except as follows:

Liquidity and Going Concern

During the six months ended January 31, 2023, the Company incurred a net loss of $21,955 and used cash in operating activities of $14,891. The Company believes that based on its fiscal 2023 forecast, its current cash and cash equivalents level is not sufficient for its foreseeable liquidity and capital resource needs over at least the next twelve (12) months, which conditions raise substantial doubt about the Company's ability to continue as a going concern for one year after the date that the unaudited interim financial statements are issued.

In response to these conditions, the Company is evaluating various financing strategies to obtain sufficient additional liquidity to meet its operating and capital requirements for the next twelve months following the date of issuance of these unaudited interim consolidated financial statements. Specifically, on March 10, 2023, the Company signed a commitment letter providing for up to $8,000 of a revolving line of credit subject to closing, and as previously disclosed is exploring various strategic alternatives including the sale of segment operating assets. On March 16, 2023, the Company entered into an Asset Purchase Agreement with respect to the sale to Labcorp of substantially all the operating assets and assignment of certain liabilities which are necessary for Labcorp to operate the business of the Clinical Labs division. See Note 13 Subsequent Events. However, there can be no assurance that either of these capital raising strategies will be successful, and the Company may need to raise additional capital during the current fiscal year. The Company also believes it has the ability to raise additional funds, either through additional debt secured by real property owned, private debt, selling preferred stock, reactivating its Sales Agreement with Cantor, or through other sources, but there can be no assurances that the Company will be able to raise capital pursuant to the foregoing on favorable terms or at all. The Registration Statement on Form S-3 filed in connection with the Sales Agreement expired in October 2020 but a new Registration Statement could be filed at any time at the discretion of the Company, as disclosed in Note 10 in the Notes to the Consolidated Financial Statements. Our liquidity plans are subject to a number of risks and uncertainties, some of which are outside our control. Macroeconomic conditions could limit our ability to successfully execute our business plans and therefore adversely affect our liquidity plans. The unaudited interim financial statements do not include any adjustments to reflect the possible future effects on the recoverability and classification of assets or the amounts and classifications of liabilities that may result should the Company be unable to continue as a going concern.

There can be no guarantee that the Asset Sale will be completed and, if not completed, we may have to file for bankruptcy and liquidation.

The consummation of the Asset Sale is subject to the satisfaction or waiver of various conditions, including the approval of the Asset Sale by our stockholders. We cannot guarantee that the closing conditions set forth in the Asset Purchase Agreement will be satisfied. If we are unable to satisfy the closing conditions in Buyer's favor or if other mutual closing conditions are not satisfied, Buyer will not be obligated to complete the Asset Sale. If the Asset Sale is not completed, our board of directors, in discharging its fiduciary obligations to our stockholders, will evaluate other strategic alternatives that may be available, which alternatives may not be as favorable to our stockholders as the Asset Sale and may include a bankruptcy and liquidation of the Company.

The Company has incurred and will continue to incur substantial expenses, including transaction-related costs, pending the Asset Sale.

Claims, liabilities and expenses from operations, such as operating costs, salaries, directors' and officers' insurance, payroll and local taxes, legal, accounting and consulting fees and office expenses will continue to be incurred by us during the pendency of the Asset Sale. Further, Enzo has incurred, and expects to continue to incur, a number of non-recurring transaction-related costs in initiating and completing the Asset Sale. Non-recurring transaction costs include, but are not limited to, fees paid to Enzo's financial, legal and accounting advisors, filing fees and printing costs. These fees and costs have been, and will continue to be, substantial. We cannot estimate what the aggregate of these expenses will be and these costs may be higher than expected. There can be no assurance of the exact amount of net cash proceeds Enzo will receive from the Asset Sale or the exact timing at which it will receive such proceeds. Therefore, it is uncertain the extent to which our financial condition and operations will benefit from or improve as a result of or after the Asset Sale.

The Purchase Agreement also includes customary termination provisions for both the Company and Buyer and provides that, in connection with the termination of the Purchase Agreement under specified circumstances, including termination by the Company to accept and enter into a definitive agreement with respect to an unsolicited Superior Proposal, the Company will be required to pay Buyer a termination fee of $5,000,000, or reimbursement of Buyer's expenses of up to $5,000,000.

Subject to the terms and conditions stated in the Purchase Agreement, after shareholder approval of the Transaction, Buyer will be obligated to pay a fee to the Company for each day after the date of such approval until the closing of the Transaction. At the closing of the Transaction, such fee will be wholly or partially credited against the purchase price.

There can be no assurance that the Purchase Agreement will close and that if it does close, the exact proceeds to be received by the Company.

Item 6. Exhibits

Exhibit No.	Exhibit
10.1	Amended and Restated Employment Agreement with Kara Cannon (a)
10.2	Amended and Restated Employment Agreement with Hamid Erfanian (b)
31.1	Certification of Hamid Erfanian pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of Patricia Eckert pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1	Certification of Hamid Erfanian pursuant to 18 U.S.C. §1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2	Certification of Patricia Eckert pursuant to 18 U.S.C. §1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101. INS*	Inline XBRL Instance Document.
101. SCH*	Inline XBRL Taxonomy Extension Schema Document.
101. CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase Document.
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101).

* XBRL (Extensible Business Reporting Language) information is being furnished and not filed for purposes of Sections 11 and 12 of the Securities Act of 1933 and Section 18 of the Securities Exchange Act of 1934.

(a) Filed as Exhibit 10.1 of Form 8-K filed November 4, 2022.
(b) Filed as Exhibit 10.2 of Form 8-K filed November 4, 2022.

SIGNATURES

Pursuant to the requirements 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.
(Registrant)

Date: March 20, 2023

by: /s/ Patricia Eckert
Interim Chief Financial Officer and
Principal Accounting Officer

EXHIBIT 31.1

CERTIFICATION PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Hamid Erfanian, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Enzo Biochem, Inc. (the "registrant").

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 registrant as of, and for, the periods presented in this report;

4. The registrant'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 registrant 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 registrant, 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 registrant'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 registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant'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 registrant'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 registrant's internal control over financial reporting.

Date: March 20, 2023

By: /s/ Hamid Erfanian
Hamid Erfanian
Chief Executive Officer

EXHIBIT 31.2

CERTIFICATION PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Patricia Eckert, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Enzo Biochem, Inc. (the "registrant").

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 registrant as of, and for, the periods presented in this report;

4. The registrant'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 registrant 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 registrant, 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 registrant'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 registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant'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 registrant'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 registrant's internal control over financial reporting.

Date: March 20, 2023

By: /s/ Patricia Eckert

Patricia Eckert
Interim Chief Financial Officer and Principal Accounting Officer

EXHIBIT 32.1

CERTIFICATION PURSUANT TO
TITLE 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report of Enzo Biochem, Inc., and Subsidiaries ("the Company") on Form 10-Q for the period ended January 31, 2023 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Hamid Erfanian, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 20, 2023

By: /s/ Hamid Erfanian
Hamid Erfanian
Chief Executive Officer

EXHIBIT 32.2

CERTIFICATION PURSUANT TO
TITLE 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report of Enzo Biochem, Inc., and Subsidiaries ("the Company") on Form 10-Q for the period ended January 31, 2023 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Patricia Eckert, Interim Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 20, 2023

By: /s/ Patricia Eckert
Patricia Eckert
Interim Chief Financial Officer and Principal Accounting Officer