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

FORM 11-K

FOR ANNUAL REPORTS OF EMPLOYEE STOCK PURCHASE, SAVINGS AND SIMILAR PLANS PURSUANT TO SECTION 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 (MARK ONE)

☑ ANNUAL REPORT PURSUANT TO SECTION 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 FOR THE FISCAL YEAR ENDED DECEMBER 31, 2022

OR

\Box Transition report pursuant to Section 15(d) of the Securities exchange act of 1934
FOR THE TRANSITION PERIOD FROM TO
COMMISSION FILE NUMBER 001-09974

Enzo Biochem, Inc.
Salary Reduction Profit Sharing Plan
(Full title of the plan and the address of the plan, if different from that of the issuer named below:)

Enzo Biochem, Inc. 81 Executive Blvd., Farmingdale, NY 11735 (Name of issuer of the securities held pursuant to the plan and the address of its principal executive office)

ENZO BIOCHEM, INC. SALARY REDUCTION PROFIT SHARING PLAN

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Plan Administrator, Participants and Beneficiaries of the Enzo Biochem, Inc. Salary Reduction Profit Sharing Plan

Opinion on the Financial Statements

We have audited the accompanying statements of net assets available for benefits of the Enzo Biochem, Inc. Salary Reduction Profit Sharing Plan (the "Plan") as of December 31, 2022 and 2021, and the related statement of changes in net assets available for benefits for the year ended December 31, 2022, and the related notes (collectively the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the net assets available for benefits of the Plan as of December 31, 2022 and 2021, and the changes in net assets available for benefits for the year ended December 31, 2022, in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These financial statements are the responsibility of the Plan's management. Our responsibility is to express an opinion on the Plan's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Plan in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Plan is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose

of expressing an opinion on the effectiveness of the Plan's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Report on Supplemental Information

The supplemental information in the accompanying schedule of assets (held at end of year) as of December 31, 2022 has been subjected to audit procedures performed in conjunction with the audit of the Plan's financial statements. The supplemental information is the responsibility of the Plan's management. Our audit procedures included determining whether the supplemental information reconciles to the financial statements or the underlying accounting and other records, as applicable, and performing procedures to test the completeness and accuracy of the information presented in the supplemental information. In forming our opinion on the supplemental information, we evaluated whether the supplemental information, including its form and content, is presented in conformity with the Department of Labor's Rules and Regulations for Reporting and Disclosure under the Employee Retirement Income Security Act of 1974. In our opinion, the supplemental information is fairly stated, in all material respects, in relation to the financial statements as a whole.

/s/ EisnerAmper LLP

We have served as the Plan's auditor since 2010.

EISNERAMPER LLP New York, New York June 29, 2023

ENZO BIOCHEM, INC. SALARY REDUCTION PROFIT SHARING PLAN

Statements of Net Assets Available for Benefits

December 31,

	2022	2021	
ASSETS			
Investments, at fair value:			
Mutual funds	\$ 29,711,665	\$ 43,378,9	31
Enzo Biochem, Inc. common stock	1,923,305	4,108,7	07
Collective trust – Stable Value Fund	1,977,028		_
	33,611,998	47,487,63	38
Receivables:			
Employer's contributions	1,079,168	814,2	20
Notes receivable – participants	599,884	633,9	86
	1,679,052	1,448,2	06
TOTAL ASSETS	35,291,050	48,935,8	44
NET ASSETS AVAILABLE FOR BENEFITS	\$ 35,291,050	\$ 48,935,8	44
See motes to financial statements			

See notes to financial statements.

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ENZO BIOCHEM, INC. SALARY REDUCTION PROFIT SHARING PLAN

Statement of Changes in Net Assets Available for Benefits

For the Year Ended December 31, 2022

Additions (deductions) from net assets attributed to:

investment income.	
Interest and dividends	\$ 2,175,100
Net realized/unrealized depreciation in value of investments	(12,428,221)
Interest on notes receivable - participants	28,891
Contributions:	
Participants' contributions	2,512,529
Employer's contributions	1,079,168
Benefits paid to participants	(6,969,380)
Administrative expenses	(42,881)
Net decrease in net assets available for benefits	(13,644,794)
	, , , , ,
Net assets available for benefits, beginning of year	48 935 844

See notes to financial statements.

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ENZO BIOCHEM, INC. SALARY REDUCTION PROFIT SHARING PLAN Notes to Financial Statements

NOTE 1: PLAN DESCRIPTION

The following description of the Enzo Biochem, Inc. Salary Reduction Profit Sharing Plan (the "Plan") provides only general information. Participants should refer to the Plan Agreement, as amended, for a more complete description of the Plan's provisions.

General

The Plan is a defined contribution plan covering all eligible United States based full-time employees of Enzo Biochem, Inc., (the "Plan Sponsor"), and its wholly owned subsidiaries, Enzo Clinical Labs, Inc., Enzo Therapeutics, Inc., and Enzo Life Sciences, Inc. (collectively, the "Company") who have completed one month of service and have attained age twenty-one. The Plan is subject to the provisions of the Employee Retirement Income Security Act of 1974 ("ERISA").

Contributions

Eligible employee participants can elect to defer up to 70% of compensation to the maximum amount permitted by the Internal Revenue Code (the "Code") for each year (\$20,500 in 2022 and \$19,500 in 2021). Catch-up contributions are also permitted for participants who have attained age 50 by December 31st, in accordance with Section 414(v) of the Code, in an amount up to a maximum of \$6,500 in 2022 and \$6,500 in 2021, bringing those participants' statutory maximum limitation to \$27,000 in 2022 and \$26,000 in 2021. In 2022, participant contributions totaled \$2,512,529 which includes \$73,062 in rollover contributions.

The Company may contribute to the Plan annually, a discretionary matching contribution and a non-elective employer contribution. For 2022, the discretionary matching contribution was equal to 50% of the participant's 401(k) contribution. For 2021 the discretionary matching contribution was equal to 50% of the participant's 401(k) contribution, not to exceed 5% of the participant's annual compensation, as defined. Participants who have completed 1,000 hours of service during the plan year and are actively employed as of the last day of the plan year shall be deemed eligible to share in the matching contribution or the non-elective employer contribution for the year. In 2022, the total matching contributions were \$1,079,168 in the form of Enzo Biochem Inc. common stock. There were no non-elective employer contributions made in 2022 or 2021.

The Plan provides that unless the participant affirmatively elects otherwise, the participant's compensation will automatically be reduced by 3%, which will be considered to be the Participant's salary reduction election.

Participant Accounts

Participants direct both their contributions and employer contributions into various investment options offered by the Plan which include a choice of mutual funds and the common stock of Enzo Biochem, Inc. Each participant's account is credited with the participant's contribution and allocations of (a) the Company's matching contribution and non-elective employer contribution, (b) Plan earnings (losses) and c) charged with an allocation of administrative expenses. Allocations are based on participant compensation, account balances or specific participant transactions, as defined. The benefit to which a participant is entitled is the benefit that can be provided from the participant's vested account. The Plan allows a participant to elect to classify all or part of his or her elective deferrals as a Roth 401(k) deferral.

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ENZO BIOCHEM, INC. SALARY REDUCTION PROFIT SHARING PLAN Notes to Financial Statements

Vesting

Participants' contributed funds arising from salary reductions and the earnings thereon, are fully vested at all times. Vesting in the Company's discretionary matching contribution and non-elective employer contribution and earnings thereon, is ratable over four years of service. Once four years of service are achieved, all subsequent matching contributions are fully vested when the match is made.

Forfeitures

Forfeited non-vested amounts may be used to pay Plan expenses or reduce the Company's future contributions to the Plan. During the year ended December 31, 2022, forfeitures were used to pay \$25,879 of Plan expenses. Forfeited non-vested amounts available at December 31, 2022 and 2021 were \$10,364 and \$13,297, respectively.

Notes Receivable from Participants

Notes receivable from participants are measured at their unpaid principal balance plus any accrued but unpaid interest. Participants may borrow from their accounts a minimum of \$1,000 up to a maximum of 50% of their vested account balance or \$50,000. Participants are entitled to borrow from their account for a maximum loan term of five years unless the proceeds are used to acquire a principal residence in which case it may exceed five years. The loans, classified as Notes Receivable from Participants, are secured by the participant's vested account balance and bear a reasonable rate of interest, ranging from 4.5% to 5.0% at December 31, 2022. Principal and interest are paid ratably through payroll deductions. Delinquent notes receivable from participants are reclassified as distributions based upon the terms of the Plan document. Related fees are recorded as administrative expenses and are expensed when they are incurred.

Payment of Benefits

On termination of service due to death, disability or retirement, participants may elect to receive an amount equal to the value of the vested interest in their account in a lump sum amount. For termination of service due to other reasons, a participant may receive the value of the vested interest in their account as a lump sum distribution. Benefits are payable in the form of cash or Company common stock.

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ENZO BIOCHEM, INC. SALARY REDUCTION PROFIT SHARING PLAN Notes to Financial Statements

Plan Expenses

Generally, substantially all expenses incurred in connection with the administration of the Plan are paid by the Plan with forfeitures, if available. The Plan Sponsor pays certain expenses of the Plan if the balance of forfeitures is not adequate. Costs associated with participant loans and distribution fees are paid by participants

NOTE 2: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES:

Basis of Accounting

The Plan's financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America and under the accrual basis method of accounting.

Payment of Benefits

Benefits are recorded when paid.

Use of Estimates

The preparation of the financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect reported amounts of net assets available for benefits at the date of the financial statements and the accompanying footnotes and the changes in net assets available for benefits during the reporting period and when applicable disclosures of contingent assets and liabilities at the date of the financial statements. Actual results could differ from those estimates.

Investment Valuation and Income Recognition

The Plan's investments are stated at fair value. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. See Note 3 for discussion of fair value measurements.

Interest income is recorded on the accrual basis. Dividends are recorded on the ex-dividend date. Investment earnings are reinvested in the respective funds. Net realized/unrealized appreciation in value of investments includes the Plan's realized gains and losses on the disposal of investments, and appreciation or depreciation in the fair value of the underlying investments. All purchases and sales are recorded on a trade date basis.

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ENZO BIOCHEM, INC. SALARY REDUCTION PROFIT SHARING PLAN Notes to Financial Statements

NOTE 3: FAIR VALUE MEASUREMENTS

The Financial Accounting Standards Board's ("FASB"), Accounting Standards Codification ("ASC" 820), Fair Value Measurements and Disclosures, provides a framework for measuring fair value. That framework provides a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (level 1 measurement) and the lowest priority to unobservable inputs (level 3 measurement). The three levels of the fair value hierarchy under ASC 820 are described as follows:

Level 1 - Inputs to the valuation methodology are unadjusted quoted prices for identical assets or liabilities in active markets that the Plan has the ability to access.

Level 2 - Inputs to the valuation methodology include: quoted prices for similar assets or liabilities in active markets; quoted prices for identical or similar assets or liabilities in inactive markets; inputs other than quoted prices that are observable for the assets or liability; inputs that are derived principally from or corroborated by observable market data by correlation or other means.

If the asset or liability has a specified (contractual) term, the level 2 Input must be observable for substantially the full term of the asset or liability.

Level 3 - Inputs to the valuation methodology are unobservable and significant to the fair value measurements.

The asset or liability's fair value measurement level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. Valuation techniques used need to maximize the use of observable inputs and minimize the use of unobservable inputs.

Following is a description of the valuation methodologies used for assets measured at fair value. There have been no changes in the methodologies used at December 31, 2022 and 2021.

Mutual funds – Valued at the daily closing price as reported by the fund. Mutual funds held by the Plan are open-ended mutual funds that are registered with the Securities and Exchange Commission. These funds are required to publish their daily net asset value ("NAV") and to transact at that price. The mutual funds held by the Plan are deemed to be actively traded.

Common stocks (Enzo Biochem, Inc.) - Valued at the closing price reported on the active market on which the individual securities are traded.

Stable value collective trust fund - A stable value fund that is composed primarily of fully benefit-responsive investment contracts and that is valued at the net asset value of units of the bank collective trust. The net asset value is used as a practical expedient to estimate fair value. This practical expedient would not be used if it is determined to be probable that the fund will sell the investment for an amount different from the reported net asset value. Participant transactions (purchases and sales) may occur daily. Advance written notice of 5 business days shall be required for any Plan Sponsor directed withdrawal that will exceed \$1,000,000. Plan Sponsor directed withdrawals of \$75,000,000 or more require advance written notice of 60 days and may be subject to a 12 month deferral. In addition, the Trustee may at any time, in its sole discretion, withhold payment on any distribution or withdrawal to the extent necessary. Additionally, there are no unfunded commitments in the fund as of December 31, 2022.

ENZO BIOCHEM, INC. SALARY REDUCTION PROFIT SHARING PLAN **Notes to Financial Statements**

The methods described may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. Furthermore, although the Plan believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

The following tables sets forth by level, within the fair value hierarchy, the Plan's investments fair value:

	Assets at Fair Value as of December 31,		
	2022		2021
Mutual funds – Level 1	\$ 29,711,665	\$	43,378,931
Common stock-Enzo Biochem, Inc. – Level 1	 1,923,305		4,108,707
Total Level 1	\$ 31,634,970	\$	47,487,638
Collective trust - Fidelity Stable Value Fund – measured at NAV (a)	 1,977,028		
Total	\$ 33,611,998	\$	47,487,707

(a) Certain investments that are measured at fair value using the NAV per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the amounts presented in the statement of net assets available for benefits."

Changes in Fair Value Levels

The availability of observable market data is monitored to assess the appropriate classification of financial instruments within the fair value hierarchy. Changes in economic conditions or model-based valuation techniques may require the transfer of financial instruments from one fair value level to another.

NOTE 4: RIGHT TO TERMINATE PLAN

Although it has not expressed any intent to do so, the Company has the right under the Plan to discontinue its contributions at any time and to terminate the Plan subject to the provisions of ERISA. In the event of Plan termination participants would become 100% vested in their Company contributions.

NOTE 5: TAX STATUS

The Plan has adopted the Fidelity Management and Research Company Volume Submitter plan. On March 31, 2014 and June 30, 2020 the Internal Revenue Service stated in advisory letters that the Volume Submitter adopted by the Plan, as then assigned, was in compliance with the applicable requirements of the Internal Revenue Code and therefore, the related trust is exempt from taxation. The Plan has been amended since receiving the letter. However, the Plan administrator believes that the Plan is currently designed and being operated in compliance with the applicable requirements of the Internal Revenue Code. Therefore, the Plan administrator believes that the Plan is qualified and the related trust is tax-exempt.

ENZO BIOCHEM, INC. SALARY REDUCTION PROFIT SHARING PLAN

Notes to Financial Statements

Accounting principles generally accepted in the United States of America require plan management to evaluate tax positions taken by the Plan and recognize a tax liability if the plan has taken an uncertain position that more likely than not would not be sustained upon examination by a government authority. The plan administrator has analyzed the tax positions taken by the Plan, and has concluded that as of December 31, 2022, there are no uncertain positions taken or expected to be taken that would require recognition of a liability or disclosure in the financial statements. The Plan is subject to routine examination by taxing jurisdictions; however, there are currently no examinations for any tax periods in progress.

NOTE 6: RELATED PARTY AND PARTY IN INTEREST TRANSACTIONS

During 2022, the Plan purchased 253,365 shares of common stock of the Plan sponsor, at market prices totaling \$854,341 and sold 189,120 shares of common stock at market prices totaling approximately \$450,104. At December 31, 2022 and 2021, the Plan held Enzo Biochem, Inc. common stock with a fair value of \$1,922,229 and shares owned of 1,344,216, and a fair value of \$4,108,707 and shares owned of 1,279,970, respectively.

Fidelity Investments Institutional Operations Company LLC ("FIIOC") is the trustee and record keeper of the Plan. Certain Plan investments are shares of mutual funds managed by affiliates of FIIOC. Therefore, these transactions qualify as Party-in-interest transactions. Fees paid by the Plan for the investment management services are included in net appreciation in fair value of investments.

Fees paid by the Plan to FIIOC amounted to \$13,855 for the year ended December 31, 2022. In addition the Plan paid for advisory and auditing fees amounting to \$29,026 for the year ended December 31, 2022.

NOTE 7: RISKS AND UNCERTAINTIES

The Plan invests in various investment securities. Investment securities are exposed to various risk such as interest rate, market, and credit risks. Due to the level of risk associated with certain investment securities, it is at least reasonably possible that changes in the values of investment securities will occur in the near term and that such changes could materially affect participants' account balances and the amounts reported in the statements of net assets available for benefits.

Volatility in the financial markets may significantly impact the subsequent valuation of the Plan's investments. Accordingly, the valuation of investments at December 31, 2022 may not necessarily be indicative of amounts that could be realized in a current market exchange.

NOTE 8: MUTUAL FUND FEES

Investments in mutual funds are subject to sales charges in the form of front-end loads, back-end loads or 12b-l fees. 12b-l fees, which are ongoing fees allowable under Section 12b-l of the Investment Company Act of 1940, are annual fees deducted to pay for marketing and distribution costs of the funds. These fees are deducted prior to the allocation of the Plan's investment earnings activity, and thus not separately identifiable as an expense.

NOTE 10: SUBSEQUENT EVENTS

In March 2023, the Sponsor announced an agreement to sell substantially all of the assets of its clinical laboratory segment to Labcorp (the "Asset Sale"). Most Enzo Clinical Labs, Inc. employees will be terminated in July 2023, the scheduled closing date of the sale and a WARN report was filed with the New York State Department of Labor. As a result, the Plan will be considered partially terminated. All participants who terminate during the plan year 2023, the period in which the partial termination occurs, will be fully vested in their Plan accounts.

Also because of the Asset Sale, the Plan was amended in April 2023 to enable loans to not be due at termination of employment so that upon employment termination, the full balance of the loan does not have to be repaid. Participants must contact Fidelity, the trustee and record keeper of the Plan and put in place the process to continue loan repayments directly from their personal bank accounts on a monthly basis until the termination date of the loan.

Description of Investment

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ENZO BIOCHEM, INC. SALARY REDUCTION PROFIT SHARING PLAN Schedule H, Line 4i Schedule of Assets (Held at End of Year) E.I.N. # 13-2866202 Plan # 001 December 31, 2022

Including Maturity Date, Rate of Interest, Collateral, Par or Current **Maturity Value** Identity of Issue, Borrower, Lessor or Similar Party Value Enzo Biochem, Inc. Common Stock 1,923,305 306,137 Pimco Total Return Mutual Fund INVS DIVRS DIVD R5 Mutual Fund 341,176 **NB** Genesis Mutual Fund 784,537 JPM Mid Cap Growth A Mutual Fund 344,910 Allspring Special Sm Cap Val A Mutual Fund 237,468 Columbia Acorn International Select Mutual Fund 161,628 TRP Div Growth Adv Mutual Fund 413,067 Parnassus Mid Cap Mutual Fund 165,624 Fidelity Capital & Income Mutual Fund 246,325 Fidelity Government Income Mutual Fund 380,092 Fidelity International Discovery Mutual Fund 110,570 Fidelity Emerging Markets Mutual Fund 167,855 Fidelity Growth Discovery Mutual Fund 4,281,817 Fidelity Freedom Income Mutual Fund 580 Fidelity Freedom Inc Mutual Fund 35,457 Fidelity Freedom 2010 Mutual Fund 625,020 Fidelity Freedom 2020 Mutual Fund 2,762,704 Fidelity Freedom 2030 Mutual Fund 2,848,915 Fidelity Ext Market Inx Mutual Fund 657,413 Fidelity International Index Mutual Fund 406,367 Fidelity 500 Index Mutual Fund 2,293,846 Fidelity Freedom 2040 Mutual Fund 1,899,251 103,780 Fidelity Freedom 2005 Mutual Fund Fidelity Freedom 2015 Mutual Fund 2,626,398 Fidelity Freedom 2025 Mutual Fund 2,061,475 Fidelity Freedom 2035 Mutual Fund 2,319,768 Fidelity Freedom 2045 Mutual Fund 1,316,527 Fidelity Freedom 2050 Mutual Fund 679,650 Fidelity US Bond IDX Adv Mutual Fund 467,439 Fidelity Freedom 2055 Mutual Fund 410,480 Fidelity Freedom 2060 Mutual Fund 209,805 Fidelity Freedom 2065 Mutual Fund 45,584 Fidelity Stable Value Fund Collective trust 1,977,028 Notes receivable - participants(a) 4.5% - 5.0% 599,884

		.882

* Party-in-inter	est, as defined by ERISA
(a) Participant no	otes receivable mature from January 2023 through November 2027.
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	EXHIBIT INDEX
Exhibit No.	Description
23.1	Consent of Independent Registered Public Accounting Firm
	11
	SIGNATURE
	quirements of the Securities Exchange Act of 1934, a trustee of the below named employee benefit plan has duly caused this annual report to be signed on its ersigned hereunto duly authorized.
Enzo Biochem, In-	c. Salary Reduction Profit Sharing Plan
Date: June 29, 202	23
/s/ Patricia Eckert By: Patricia Ecker Trustee	

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statement of Enzo Biochem, Inc. on Form S-8 (No. 333-197028 and 333-236958) of our report dated June 29, 2023 on our audits of the financial statements of the Enzo Biochem, Inc. Salary Reduction Profit Sharing Plan as of December 31, 2022 and 2021 and for the year ended December 31, 2022 and supplemental schedule as of December 31, 2022, which report is included in this Annual Report on Form 11-K to be filed on or about June 29, 2023.

/s/ EisnerAmper LLP

EISNERAMPER LLP New York, New York June 29, 2023