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 June 30, 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: 001-40344

Akoya Biosciences, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**47-5586242**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
100 Campus Drive, 6th Floor Marlborough, Massachusetts	**01752**
(Address of principal executive offices)	(Zip Code)

(855) 896-8401

Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.00001 per share	AKYA	The Nasdaq Stock Market LLC

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

Large accelerated filer ☐	Accelerated filer ☐
Non-accelerated filer ☒	Smaller reporting company ☒
Emerging growth company ☒	

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

Number of shares of the registrant's common shares outstanding at July 31, 2023: 48,940,867

AKOYA BIOSCIENCES, INC.

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Akoya Biosciences, Inc.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This report contains forward-looking statements that are based on management's beliefs and assumptions and on information currently available to management. All statements contained in this report other than statements of historical fact are forward-looking statements, including statements regarding our ability to develop, commercialize and achieve market acceptance of our current and planned products and services, our research and development efforts, and other matters regarding our business strategies, use of capital, results of operations and financial position, and plans and objectives for future operations. In some cases, you can identify forward-looking statements by the words "may," "will," "could," "would," "should," "expect," "intend," "plan," "anticipate," "believe," "estimate," "predict," "project," "potential," "continue," "ongoing" or the negative of these terms or other comparable terminology, although not all forward-looking statements contain these words. These statements involve risks, uncertainties and other factors that may cause actual results, levels of activity, performance or achievements to be materially different from the information expressed or implied by these forward-looking statements. These risks, uncertainties and other factors are described under "Risk Factors," "Management's Discussion and Analysis of Financial Condition and Results of Operations," and elsewhere in this report and in other documents we file with the Securities and Exchange Commission (the "SEC") from time to time. We caution you that forward-looking statements are based on a combination of facts and factors currently known by us and our projections of the future, about which we cannot be certain. As a result, the forward-looking statements may not prove to be accurate. The forward-looking statements in this report represent our views as of the date of this report. We undertake no obligation to update any forward-looking statements for any reason, except as required by law.

Unless otherwise stated or the context otherwise indicates, references to "we," "us," "our" and similar references refer to Akoya Biosciences, Inc. and its consolidated subsidiary.

AKOYA BIOSCIENCES, INC. AND SUBSIDIARY

CONSOLIDATED BALANCE SHEETS

(in thousands, except share and per share data)

	June 30, 2023 (unaudited)	December 31, 2022
Assets		
Current assets		
Cash and cash equivalents	$ 93,328	$ 74,229
Marketable securities	—	6,989
Accounts receivable, net	12,866	9,729
Inventories, net	16,131	14,486
Prepaid expenses and other current assets	3,845	6,764
Total current assets	126,170	112,197
Property and equipment, net	11,139	10,174
Restricted cash	323	303
Demo inventory, net	1,546	2,084
Intangible assets, net	19,125	20,048
Goodwill	18,262	18,262
Operating lease right of use assets, net	9,629	10,785
Financing lease right of use assets, net	1,990	1,490
Other assets	695	688
Total assets	$ 188,879	$ 176,031
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable	$ 11,732	$ 10,628
Accrued expenses and other current liabilities	14,728	16,519
Current portion of operating lease liabilities	2,894	3,009
Current portion of financing lease liabilities	822	620
Deferred revenue	7,214	6,279
Total current liabilities	37,390	37,055
Deferred revenue, net of current portion	2,495	2,114
Long-term debt, net of debt discount	63,636	63,277
Deferred tax liability, net	87	87
Operating lease liabilities, net of current portion	7,253	8,203
Financing lease liabilities, net of current portion	1,066	675
Contingent consideration liability (Note 4), net of current portion	5,051	6,039
Total liabilities	116,978	117,450
Stockholders' equity:		
Preferred Stock, $0.00001 par value; 10,000,000 shares authorized; 0 shares issued and outstanding at June 30, 2023 and December 31, 2022, respectively	—	—
Common Stock, $0.00001 par value; 500,000,000 shares authorized at June 30, 2023 and December 31, 2022; 48,821,941 and 38,288,188 shares issued and outstanding at June 30, 2023 and December 31, 2022, respectively	2	2
Additional paid in capital	278,252	225,333
Accumulated deficit	(206,353)	(166,748)
Accumulated other comprehensive loss	—	(6)
Total stockholders' equity	71,901	58,581
Total liabilities and stockholders' equity	$ 188,879	$ 176,031

See accompanying notes to consolidated financial statements.

AKOYA BIOSCIENCES, INC. AND SUBSIDIARY

CONSOLIDATED STATEMENTS OF OPERATIONS (Unaudited)
(in thousands except share & per share data)

	Three months ended		Six months ended	
	June 30, 2023	June 30, 2022	June 30, 2023	June 30, 2022
Revenue:				
Product revenue	$ 17,147	$ 14,161	$ 32,671	$ 27,504
Service and other revenue	6,374	3,733	12,260	7,284
Total revenue	23,521	17,894	44,931	34,788
Cost of goods sold:				
Cost of product revenue	7,788	5,198	13,539	9,278
Cost of service and other revenue	3,617	2,355	6,983	5,073
Total cost of goods sold	11,405	7,553	20,522	14,351
Gross profit	12,116	10,341	24,409	20,437
Operating expenses:				
Selling, general and administrative	22,708	20,590	44,466	38,783
Research and development	6,273	5,598	12,046	11,312
Change in fair value of contingent consideration	530	(1,156)	757	(956)
Depreciation and amortization	1,847	1,617	3,818	3,160
Total operating expenses	31,358	26,649	61,087	52,299
Loss from operations	(19,242)	(16,308)	(36,678)	(31,862)
Other income (expense):				
Interest expense	(2,175)	(849)	(4,229)	(1,598)
Interest income	737	54	1,502	76
Other expense, net	(105)	(286)	(153)	(382)
Loss before provision for income taxes	(20,785)	(17,389)	(39,558)	(33,766)
Provision for income taxes	(18)	(106)	(47)	(128)
Net loss	$ (20,803)	$ (17,495)	$ (39,605)	$ (33,894)
Net loss per share attributable to common stockholders, basic and diluted	$ (0.51)	$ (0.47)	$ (1.00)	$ (0.90)
Weighted-average shares outstanding, basic and diluted	40,639,714	37,612,331	39,489,261	37,538,821

See accompanying notes to consolidated financial statements.

AKOYA BIOSCIENCES, INC. AND SUBSIDIARY

CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS (Unaudited)
(in thousands)

	Three months ended		Six months ended	
	June 30, 2023	June 30, 2022	June 30, 2023	June 30, 2022
Net loss	$ (20,803)	$ (17,495)	$ (39,605)	$ (33,894)
Other comprehensive income (loss):				
Unrealized gain (loss) on marketable securities	—	(92)	6	(92)
Total other comprehensive income (loss)	—	(92)	6	(92)
Comprehensive loss	$ (20,803)	$ (17,587)	$ (39,599)	$ (33,986)

See accompanying notes to consolidated financial statements.

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AKOYA BIOSCIENCES, INC. AND SUBSIDIARY
CONSOLIDATED STATEMENTS OF
STOCKHOLDERS' EQUITY (Unaudited)
(in thousands, except share data)

	Common Stock		Additional Paid in Capital	Accumulated Deficit	Accumulated other comprehensive income (loss)	Total Stockholders' Equity
	Shares	Amount				
Balance at December 31, 2022	**38,288,188**	**$ 2**	**$ 225,333**	**$ (166,748)**	**$ (6)**	**$ 58,581**
Exercise of stock options	88,756	—	58	—	—	58
Vesting of restricted stock units	22,127	—	(94)	—	—	(94)
Other comprehensive income	—	—	—	—	6	6
Net loss	—	—	—	(18,802)	—	(18,802)
Stock-based compensation	—	—	2,375	—	—	2,375
Balance at March 31, 2023	**38,399,071**	**$ 2**	**$ 227,672**	**$ (185,550)**	**$ —**	**$ 42,124**
Exercise of stock options	379,418	—	143	—	—	143
Vesting of restricted stock units	38,452	—	—	—	—	—
Sale of common stock in underwritten offering, net of costs	10,005,000	—	47,817	—	—	47,817
Net loss	—	—	—	(20,803)	—	(20,803)
Stock-based compensation	—	—	2,620	—	—	2,620
Balance at June 30, 2023	**48,821,941**	**$ 2**	**$ 278,252**	**$ (206,353)**	**$ —**	**$ 71,901**

	Common Stock		Additional Paid in Capital	Accumulated Deficit	Accumulated other comprehensive income (loss)	Total Stockholders' Equity
	Shares	Amount				
Balance at December 31, 2021	**37,424,101**	**$ 2**	**$ 217,456**	**$ (96,107)**	**$ —**	**$ 121,351**
Exercise of stock options	78,257	—	55	—	—	55
Net loss	—	—	—	(16,399)	—	(16,399)
Stock-based compensation	—	—	1,545	—	—	1,545
Balance at March 31, 2022	**37,502,358**	**$ 2**	**$ 219,056**	**$ (112,506)**	**$ —**	**$ 106,552**
Exercise of stock options	264,297	—	164	—	—	164
Net loss	—	—	—	(17,495)	—	(17,495)
Other comprehensive income	—	—	—	—	(92)	(92)
Stock-based compensation	—	—	1,721	—	—	1,721
Balance at June 30, 2022	**37,766,655**	**$ 2**	**$ 220,941**	**$ (130,001)**	**$ (92)**	**$ 90,850**

See accompanying notes to consolidated financial statements.

AKOYA BIOSCIENCES, INC. AND SUBSIDIARY
CONSOLIDATED STATEMENTS OF CASH FLOWS (Unaudited)
(in thousands)

	Six months ended	
	June 30, 2023	June 30, 2022
Operating activities		
Net loss	$ (39,605)	$ (33,894)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	4,208	3,309
Non-cash interest expense	359	226
Stock-based compensation expense	4,995	3,266
Deferred taxes	—	99
Change in fair value of contingent consideration	757	(956)
Net accretion of marketable securities	(5)	(43)
Operating lease right of use assets	1,156	(1,278)
Change in inventory reserve	2,198	—
Changes in operating assets and liabilities:		
Accounts receivable, net	(3,137)	(1,028)
Prepaid expenses and other assets	2,342	(1,062)
Inventories, net	(4,045)	(4,131)
Accounts payable	1,104	3,937
Accrued expenses and other liabilities	(2,140)	(2,190)
Operating lease liabilities	(1,065)	1,372
Deferred revenue	1,316	1,055
Net cash used in operating activities	(31,562)	(31,318)
Investing activities		
Purchases of property and equipment	(2,227)	(2,702)
Maturities of marketable securities	7,000	(40,774)
Net cash provided by (used in) investing activities	4,773	(43,476)
Financing activities		
Sale of common stock in underwritten offering, net of costs	48,071	—
Proceeds from stock option exercises	201	219
Settlement of restricted stock units for tax withholding obligations	(94)	—
Proceeds from debt	—	10,000
Principal payments on financing leases	(321)	(316)
Payments of debt issuance costs	(33)	(100)
Payments of deferred at-the-market offering costs	(207)	—
Payments of contingent consideration	(1,709)	(1,207)
Net cash provided by financing activities	45,908	8,596
Net increase (decrease) in cash, cash equivalents, and restricted cash	19,119	(66,198)
Cash, cash equivalents, and restricted cash at beginning of year	74,532	113,381
Cash, cash equivalents, and restricted cash at end of year	$ 93,651	$ 47,183
Supplemental disclosures of cash flow information		
Cash paid for interest	$ 3,705	$ 1,290
Cash paid for income taxes	$ —	$ —
Supplemental disclosures of non-cash activities		
Right-of-use asset obtained in exchange for lease liabilities	$ 914	$ —
Unpaid offering costs related to sale of common stock in underwritten offering	$ 254	$ —
Purchases of property and equipment included in accounts payable and accrued expenses	$ 596	$ 1,815

See accompanying notes to consolidated financial statements.

AKOYA BIOSCIENCES, INC. AND SUBSIDIARY

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Amounts in thousands, except share and per share data)

(1) The company and basis of presentation

Description of business

Akoya Biosciences, Inc. ("Akoya" or the "Company") is a life sciences technology company, founded on November 13, 2015 as a Delaware corporation with operations based in Marlborough, Massachusetts and Menlo Park, California, delivering spatial biology solutions focused on transforming discovery and clinical research. Spatial biology refers to an evolving technology that enables academic and biopharma scientists to detect and map the distribution of cell types and biomarkers across whole tissue samples at single cell resolution, enabling advancements in their understanding of disease progression and patient response to therapy. Through Akoya's PhenoCycler™ (formerly CODEX®) and PhenoImager™ (formerly Phenoptics™) platforms, reagents, software and services, the Company offers end-to-end solutions to perform tissue analysis and spatial phenotyping across the full continuum, from discovery through translational and clinical research.

On September 28, 2018, the Company acquired the commercial Quantitative Pathology Solutions ("QPS") division of PerkinElmer, Inc. ("PKI") for multiplex immunofluorescence, with the aim of providing consumers with a full suite of end-to-end solutions for high parameter tissue analysis. The QPS technology offers pathology solutions for cancer immunology and immunotherapy research, including advanced multiplex immunochemistry staining kits, multispectral imaging and whole side scanning instruments, and image analysis software. The Company's combined portfolio of complementary technologies aims to fuel groundbreaking advancements in cancer immunology, immunotherapy, neurology and a wide range of other applications. The Company sells into three main regions across the world: North America, Asia-Pacific ("APAC"), and Europe-Middle East-Africa ("EMEA").

Principles of consolidation

The Company's financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America ("GAAP"). Any reference in these notes to applicable guidance is meant to refer to the authoritative United States generally accepted accounting principles as found in the Accounting Standards Codification ("ASC") and Accounting Standards Updates ("ASU") of the Financial Accounting Standards Board ("FASB"). The Company's consolidated financial statements include the accounts of the Company and its wholly-owned subsidiary, Akoya Biosciences UK Ltd. ("Akoya UK"). All intercompany balances and transactions have been eliminated in consolidation.

Unaudited interim financial information

The accompanying consolidated balance sheet as of June 30, 2023, the consolidated statements of operations, the consolidated statements of comprehensive loss and the consolidated statements of stockholders' equity for the three and six months ended June 30, 2023 and 2022, and the consolidated statements of cash flows for the six months ended June 30, 2023 and 2022 are unaudited. The unaudited interim consolidated financial statements have been prepared on the same basis as the audited annual consolidated financial statements and, in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary for the fair statement of the Company's financial position as of June 30, 2023, the results of its operations for the three and six months ended June 30, 2023 and 2022, and cash flows for the six months ended June 30, 2023 and 2022. The financial data and other information disclosed in these notes related to the three and six months ended June 30, 2023 and 2022 are also unaudited. The results for the three and six months ended June 30, 2023 are not necessarily indicative of results to be expected for the year ending December 31, 2023, any other interim periods, or any future year or period. The consolidated balance sheet as of December 31, 2022 included herein was derived from the audited consolidated financial statements as of that date. These unaudited consolidated financial statements should be read in conjunction with the Company's audited consolidated financial statements and the notes thereto for the year ended December 31, 2022 included in the Annual Report on Form 10-K filed with the SEC on March 6, 2023.

Liquidity and going concern

At June 30, 2023, the Company had cash and cash equivalents of $93,328 and an accumulated deficit of $206,353. The future success of the Company is dependent on its ability to successfully commercialize its products, successfully launch future products, obtain additional capital and ultimately attain profitable operations. The Company has funded its operations primarily through its preferred stock issuances, debt financing arrangements, and through the sale of shares of our common stock. The Company completed its initial public offering of the Company's common stock in April of 2021 (the "IPO") and completed a follow-on public offering of the Company's common stock in June of 2023, as further described in Note 10 below.

The Company is subject to a number of risks similar to other newly commercial life sciences companies, including, but not limited to, development and market acceptance of the Company's product candidates, development by its competitors of new technological innovations, protection of proprietary technology, and raising additional capital.

The Company has incurred losses since its inception and has used cash from operations of $31,562 during the six months ended June 30, 2023. However, the Company believes that its existing cash and cash equivalents will be adequate to satisfy its current operating plans for at least the next twelve months from the issuance of these financial statements.

The accompanying consolidated financial statements have been prepared on a going concern basis, which contemplates the realization of assets and satisfaction of liabilities in the ordinary course of business. The financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or the amounts and classification of liabilities that might result from the outcome of the uncertainties described above.

(2) Summary of significant accounting policies

Significant accounting policies

The Company's significant accounting policies are disclosed in its Annual Report on Form 10-K for the year ended December 31, 2022 filed with the SEC and have not materially changed during the six months ended June 30, 2023.

Reclassifications

Certain amounts in the prior years' consolidated financial statements have been reclassified to conform to the current year's presentation.

Revenue recognition

The Company follows ASC 606, *Revenue from Contracts with Customers* ("ASC 606").

The Company generates revenue from the sale and installation of instruments, related warranty services, reagents, software (both company-owned and with third parties), and laboratory services. Pursuant to ASC 606, revenue is recognized when a customer obtains control of promised goods or services. The amount of revenue recognized reflects the consideration the Company expects to be entitled to receive in exchange for these goods and services.

To determine the appropriate amount of revenue to be recognized for arrangements determined to be within the scope of Topic 606, the Company performs the following five steps: (i) identification of the customer contract; (ii) identification of the performance obligations; (iii) measurement of the transaction price, including the constraint on variable consideration; (iv) allocation of the transaction price to the performance obligations; and (v) recognition of revenue when (or as) the Company satisfies each performance obligation. The Company only applies the five-step model to contracts when it is probable that the Company will collect consideration it is entitled to in exchange for the goods or services it transfers to the customer.

The Company evaluates all promised goods and services within a customer contract and determines which of those are separate performance obligations. This evaluation includes an assessment of whether the good or service is capable of being distinct and whether the good or service is separable from other promises in the contract. Promised goods or services are considered distinct when (i) the customer can benefit from the good or service on its own or together with other readily available resources and (ii) the promised good or service is separately identifiable from other promises in the contract.

Most of the Company’s contracts with customers contain multiple performance obligations (i.e., sale of an instrument and warranty services). For these contracts, the Company accounts for individual performance obligations separately if they are distinct (i.e. capable of being distinct and separable from other promises in the contract). The transaction price is allocated to the separate performance obligations on a relative standalone selling price basis. Excluded from the transaction price are sales tax and other similar taxes which are presented on a net basis.

Product Revenue

Product revenue is generated by the sale of instruments and consumable reagents predominantly through the Company’s direct sales force in the United States and in geographic regions outside the United States. The Company generally does not offer product return or exchange rights (other than those relating to defective goods under warranty) or price protection allowances to its customers. When an instrument is purchased by a customer, the Company recognizes revenue when the related performance obligation is satisfied (i.e. when the control of an instrument has passed to the customer). Revenue from the sale of consumables is recognized upon shipment to the customer. The Company’s perpetual software licenses generally have significant stand-alone functionality to the customer upon delivery and are considered to be functional intellectual property. The Company’s perpetual software licenses are considered distinct performance obligations, and revenue allocated to the software license is typically recognized upon provision of the license/software code to the customer (i.e., when the software is available for access and download by the customer).

Service and Other Revenue

Product sales of instruments include a service-based warranty typically for one year following the installation of the purchased instrument, with an extended warranty for an additional year sold in many cases. These are separate performance obligations as they are service-based warranties and are recognized on a straight-line basis over the service delivery period. After completion of the service period, customers have an option to renew or extend the warranty services, typically for additional one-year periods in exchange for additional consideration. The extended warranties are also service-based warranties that represent separate purchasing decisions. The Company recognizes revenue allocated to the extended warranty performance obligation on a straight-line basis over the service delivery period. Revenue from separately charged installation services is recognized upon completion of the installation process. Additionally, the Company provides laboratory services, in which revenue is recognized as services are performed. For laboratory services, the Company generally uses the cost-to-cost approach to measure the extent of progress towards completion of the performance obligation because the Company believes it best depicts the transfer of assets to the customer. Under the cost-to-cost measure approach, the extent of progress towards completion is measured based on the ratio of costs incurred to date to the total estimated costs at completion of the performance obligation. Revenues are recorded proportionally as costs are incurred. The Company records shipping and handling billed to customers as service and other revenue and the related costs in cost of service and other revenue in the consolidated statements of operations.

In June 2022, the Company entered into a Companion Diagnostic Agreement with Acrivon Therapeutics, Inc. (the “Acrivon Agreement”) to co-develop, validate, and commercialize Acrivon’s OncoSignature® test. The Company will be paid through an upfront payment and at the achievement of certain developmental, commercial, and FDA milestones during the development, that could aggregate to $10,850.

The Acrivon Agreement is in the scope of ASC 606, *Revenue from Contracts with Customers* and includes one performance obligation since the underlying elements are inputs to a single development service and are not distinct within the context of the contract. Accordingly, the Company will recognize revenue over time for the transaction price in an amount proportional to the expenses incurred and the total estimated expenses to satisfy its performance obligation. Due to the uncertainty in the achievement of certain developmental, commercial, and FDA milestones, the variable consideration associated with certain future milestone payments has been fully constrained from the transaction price until such time that the Company concludes that it is probable that a significant reversal of previously recognized revenue will not occur.

The costs incurred by the Company under this arrangement are included as research and development expenses in the Company’s Consolidated Statements of Operations as these costs are related to the development of new services and technology to be owned and offered by the Company.

Disaggregation of Revenue

The Company disaggregates revenue from contracts with customers by type of products, and between service and other revenue, as it best depicts how the nature, amount, timing and uncertainty of revenue and cash flows are affected by economic factors. The following table disaggregates the Company’s revenue by major source:

	Three months ended		Six months ended	
	June 30, 2023	June 30, 2022	June 30, 2023	June 30, 2022
Revenue				
Product revenue				
Instruments	$ 11,276	$ 9,463	$ 20,883	$ 17,984
Consumables	5,819	4,495	11,531	9,123
Standalone software products	52	203	257	397
Total product revenue	$ 17,147	$ 14,161	$ 32,671	$ 27,504
Service and other revenue	$ 6,374	$ 3,733	$ 12,260	$ 7,284
Total revenue	$ 23,521	$ 17,894	$ 44,931	$ 34,788

Significant Judgments

The Company’s contracts with customers often include promises to transfer multiple products and services to a customer. Determining whether products and services are considered distinct performance obligations that should be accounted for separately versus together requires significant judgment. Once the Company determines the performance obligations, the Company determines the transaction price, which includes estimating the amount of variable consideration, based on the most likely amount, to be included in the transaction price, if any. The Company then allocates the transaction price to each performance obligation in the contract based on a relative standalone selling price method. The corresponding revenue is recognized as the related performance obligations are satisfied as discussed in the revenue categories above.

Judgment is required to determine the standalone selling price for each distinct performance obligation. The Company determines standalone selling price based on the price at which the performance obligation in the contract (i.e. instrument, service warranty, installation) would be sold separately. As the first-year warranty for each instrument is embedded in the instrument price, the amount allocated to the first-year warranty has been determined based on the separately identifiable price of the Company’s extended warranty offering when it is sold on a renewal basis.

If the standalone selling price is not observable through past transactions, the Company estimates the standalone selling price taking into account available information such as market conditions and the expected costs and margin related to the performance obligations. Contracts in which only one performance obligation is identified (i.e., consumables and standalone software products) do not require allocation of the transaction price.

Contract Assets and Liabilities

The Company did not record any contract assets at June 30, 2023 or December 31, 2022.

The Company's contract liabilities consist of upfront payments for service-based warranties on instrument sales, as well as lab services. The Company classifies contract liabilities associated with service based warranties in deferred revenue, and contract liabilities associated with lab services in accrued expenses. Contract liabilities are classified as current or noncurrent based on the timing of when the Company expects to service the warranty, or complete the lab services contract.

Cost to Obtain and Fulfill a Contract

Under ASC 606, the Company is required to capitalize certain costs to obtain customer contracts and costs to fulfill customer contracts. These costs are required to be amortized to expense on a systemic basis that is consistent with the transfer to the customer of the goods or services to which the asset relates, compared to previously being expensed as incurred. As a practical expedient, the Company recognizes any incremental costs to obtain a contract as an expense when incurred if the amortization period of the asset is one year or less. Capitalizable costs to obtain contracts, such as commissions, and costs to fulfill customer contracts were determined to be immaterial for the three and six months ended June 30, 2023 and 2022.

Stock-based compensation

The Company records stock-based compensation for awards granted to employees, non-employees, and to members of the Board of Directors of the Company (the "Board") for their services on the Board based on the grant date fair value of awards issued, and the expense is recorded on a straight-line basis over the requisite service period, which is generally four years.

The Company uses the Black-Scholes-Merton option pricing model to determine the fair value of stock options. The use of the Black-Scholes-Merton option-pricing model requires management to make assumptions with respect to the expected term of the option, the expected volatility of the common stock consistent with the expected life of the option, risk-free interest rates and expected dividend yields of the common stock. The expected term was determined according to the simplified method, which is the average of the vesting tranche dates and the contractual term. Due to the lack of company-specific historical and implied volatility, the Company bases its estimate of expected volatility on the historical volatility of a group of similar companies that are publicly traded. For these analyses, companies with comparable characteristics are selected, including enterprise value and position within the industry, and with historical price information sufficient to meet the expected life of the stock-based awards. The Company computes the historical volatility data using the daily closing prices for the selected companies' shares during the equivalent period of the calculated expected term of its stock-based awards. The Company will continue to apply this process until a sufficient amount of historical information regarding volatility of its own stock price becomes available. The risk-free interest rate is determined by reference to the U.S. Treasury zero-coupon issues with remaining maturities similar to the expected term of the options. The Company has not paid, and does not anticipate paying, cash dividends on shares of common stock; therefore, the expected dividend yield is assumed to be zero.

For restricted stock units ("RSUs") issued under the Company's stock-based compensation plans, the fair value of each grant is calculated based on the Company's stock price on the date of grant.

The Company has elected to account for forfeitures as they occur; any compensation cost previously recognized for an award that is forfeited because of a failure to satisfy a service or performance condition will be reversed in the period of the forfeiture.

Refer to Note 11 for further details on the Company's stock-based compensation plans.

Net loss per share attributable to common stockholders

Basic and diluted net loss per common share outstanding is determined by dividing net loss by the weighted average common shares outstanding during the period. For purposes of the diluted net loss per share calculations, stock options, unvested restricted stock units, and the outstanding warrant, are considered to be potentially dilutive securities, but are excluded from the diluted net loss per share because their effect would be anti-dilutive and therefore basic and diluted net loss per share were the same for all periods presented.

Comprehensive income (loss)

Components of comprehensive income (loss), including net loss, are reported in the financial statements in the period in which they are recognized. Other comprehensive income (loss) is defined as the change in equity during a period from transactions and other events and circumstances from non-owner sources. Net loss and other comprehensive income (loss) are reported net of any related tax effect to arrive at comprehensive income (loss). Comprehensive income (loss) includes net loss as well as other changes in stockholders' equity that result from transactions and economic events other than those with stockholders which for the three and six months ended June 30, 2023 consist of unrealized gain (loss) on marketable securities.

Marketable securities

Marketable securities represent holdings of available-for-sale marketable debt securities in accordance with the Company's investment policy. Short-term marketable securities mature within one year from the balance sheet date while long-term marketable securities mature after one year. Investments in marketable securities are recorded at fair value, with any unrealized gains and losses reported within accumulated other comprehensive income as a separate component of stockholders' equity until realized or until a determination is made that an other-than-temporary decline in market value has occurred. The amortized cost of debt securities is adjusted for amortization of premiums and accretion of discounts to maturity. Such amortization and accretion are reflected as a component of other expense. Interest on securities sold is determined based on the specific identification method and reflected as interest income. Any realized gains or losses on the sale of investment are reflected as realized (loss) gain on investments.

Recent accounting standards

From time to time, new accounting pronouncements are issued by the FASB or other standard setting bodies and adopted by the Company as of the specified effective date. The Company is considered to be an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012, as amended (Jobs Act). The Jobs Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. Thus, an emerging growth company can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. The Company has elected to avail itself of this extended transition period and, as a result, the Company will not be required to adopt new or revised accounting standards on the relevant dates on which adoption of such standards is required for other public companies.

Recently adopted accounting standards

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments — Credit Losses (Topic 326) — Measurement of Credit Losses on Financial Instruments*, which has been subsequently amended by ASU No. 2018-19, ASU No. 2019-04, ASU No. 2019-05, ASU No. 2019-10, ASU No. 2019-11 and ASU No. 2020-03 ("ASU 2016-13"). The provisions of ASU 2016-13 modify the impairment model to utilize an expected loss methodology in place of the currently used incurred loss methodology and require a consideration of a broader range of reasonable and supportable information to inform credit loss estimates. The Company adopted ASU 2016-13 on January 1, 2023 using the modified retrospective approach. The Company's consolidated financial statements for prior-year periods have not been revised and are reflective of the credit loss requirements which were in effect for that period. The adoption of ASU 2016-13 did not have a material impact on the Company's consolidated financial statements and related disclosures.

In January 2017, the FASB issued ASU No. 2017-04, *Intangibles-Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment*, which simplifies the subsequent measurement of goodwill by eliminating Step 2 from the goodwill impairment test. Instead of determining a hypothetical purchase price allocation to measure goodwill impairment, the Company will compare the fair value of a reporting unit with its carrying amount. The update also includes a new requirement to disclose the amount of goodwill allocated to reporting units with zero or negative carrying amounts. The Company adopted ASU 2017-04 on January 1, 2023. The adoption of ASU 2017-04 did not have a material impact on the Company's consolidated financial statements and related disclosures.

(3) Significant risks and uncertainties including business and credit concentrations

Financial instruments that potentially subject the Company to concentrations of credit risk consist primarily of cash equivalents, marketable securities, and receivables. The Company's cash equivalents are held by large, credit worthy financial institutions. Marketable securities consist of short-term investments. The Company has established guidelines relative to credit ratings, diversification and maturities that seek to maintain safety and liquidity. Deposits in these banks generally exceed federally insured limits. To date, the Company has not experienced any losses on its deposits of cash and cash equivalents.

The Company controls credit risk through credit approvals, credit limits, and monitoring procedures. The Company performs periodic credit evaluations of its customers and generally does not require collateral. Accounts receivable are recorded net of an allowance for credit losses. The allowance for credit loss is based on management's assessment of the collectability of specific customer accounts and the aging of the related invoices and represents the Company's best estimate of probable credit losses in its existing accounts receivable. The Company had an allowance for credit loss of $45 and $45 at June 30, 2023 and December 31, 2022, respectively.

For the three and six months ended June 30, 2023, no single customer accounted for more than 10% of revenue. For the three months ended June 30, 2022, one customer accounted for 13% of revenue. For the six months ended June 30, 2022, no customers accounted for more than 10% of revenue. As of June 30, 2023 and December 31, 2022, no single customer accounted for more than 10% of accounts receivable.

(4) Fair value of financial instruments

The Company measures the following financial liabilities at fair value on a recurring basis. There were no transfers between levels of the fair value hierarchy during any of the periods presented.

The following tables set forth the Company's financial assets and liabilities carried at fair value categorized using the lowest level of input applicable to each financial instrument as of June 30, 2023 and December 31, 2022:

	Balance at June 30, 2023	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Cash and cash equivalents	$ 93,328	$ 93,328	$ —	$ —
Total Assets	$ 93,328	$ 93,328	$ —	$ —
Liabilities:				
Contingent consideration – Short term portion	$ 1,745	$ —	$ —	$ 1,745
Contingent consideration – Long term portion	5,051	—	—	5,051
Total Liabilities	$ 6,796	$ —	$ —	$ 6,796

	Balance at December 31, 2022	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Cash and cash equivalents	$ 74,229	$ 73,973	$ 256	$ —
U.S. Treasury securities	6,989	—	6,989	—
Total Assets	$ 81,218	$ 73,973	$ 7,245	$ —
Liabilities:				
Contingent consideration – Short term portion	$ 1,709	$ —	$ —	$ 1,709
Contingent consideration – Long term portion	6,039	—	—	6,039
Total Liabilities	$ 7,748	$ —	$ —	$ 7,748

The following is a summary of cash, cash equivalents, and marketable securities as of June 30, 2023 and December 31, 2022:

	June 30, 2023			
	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Cash and cash equivalents	$ 93,328	$ —	$ —	$ 93,328
Total cash and cash equivalents	$ 93,328	$ —	$ —	$ 93,328

	December 31, 2022			
	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Cash and cash equivalents	$ 74,229	$ —	$ —	$ 74,229
Marketable securities:				
U.S. Treasury securities due in one year or less	6,995	—	(6)	6,989
Total marketable securities	6,995	—	(6)	6,989
Total cash, cash equivalents, and marketable securities	$ 81,224	$ —	$ (6)	$ 81,218

The Company had no material realized gains or losses on its available-for-sale securities for the three and six months ended June 30, 2023 and 2022.

The Company's recurring fair value measurements using Level 3 inputs relate to the Company's contingent consideration liability. In those circumstances where an acquisition involves a contingent consideration arrangement, the Company recognizes a liability equal to the fair value of the contingent payments the Company expects to make as of the acquisition date. The Company re-measures this liability each reporting period and records changes in the fair value through changes in fair value of contingent consideration on the Company's consolidated statements of operations. Increases or decreases in the fair value of the contingent consideration liability can result from changes in discount rates, periods, timing and amount of projected revenue.

The recurring Level 3 fair value measurements of the Company's contingent consideration liability include the following significant unobservable inputs:

Contingent Consideration Liability	Fair Value as of June 30, 2023	Valuation Technique	Unobservable Inputs
Revenue-based Payments	$ 6,796	Discounted Cash Flow Analysis under the Income Approach	Revenue discount factor, discount rate

(5) Property and equipment, net

Property and equipment consists of the following:

	Estimated Useful Life (Years)	June 30, 2023	December 31, 2022
Furniture and fixtures	7	$ 1,201	$ 452
Computers, laptop and peripherals	5	5,283	4,762
Laboratory equipment	5	8,629	7,302
Leasehold improvements	Shorter of the lease life or 7	3,961	3,983
Total property and equipment		19,074	16,499
Less: Accumulated depreciation		(7,935)	(6,325)
Property and equipment, net		$ 11,139	$ 10,174

Depreciation expense of $721 and $1,419 relating to property and equipment was charged to operations for the three and six months ended June 30, 2023, respectively. Depreciation expense of $548 and $982 relating to property and equipment was charged to operations for the three and six months ended June 30, 2022, respectively. Depreciation expense of $151 and $230 relating to property and equipment was charged to cost of sales for the three and six months ended June 30, 2023, respectively. Depreciation expense of $39 and $115 relating to property and equipment was charged to cost of sales for the three and six months ended June 30, 2022, respectively.

Demo inventory consists of the following:

	Estimated Life (Years)	June 30, 2023	December 31, 2022
Demo inventory – gross	3	$ 4,466	$ 4,453
Less: Accumulated depreciation		(2,920)	(2,369)
Demo inventory, net		$ 1,546	$ 2,084

Depreciation expense of $326 and $652 relating to demo equipment was charged to operations for the three and six months ended June 30, 2023, respectively. Depreciation expense of $293 and $645 relating to demo equipment was charged to operations for the three and six months ended June 30, 2022, respectively.

(6) Allowance for credit losses

The Company is exposed to credit losses primarily through sales of products and services. The Company's expected loss allowance methodology for accounts receivable is developed using historical collection experience, current and future economic and market conditions, and a review of the current status of customers' trade accounts receivable. Due to the short-term nature of such receivables, the estimated accounts receivable that may not be collected is based on aging of the accounts receivable balances.

The Company evaluates contract terms and conditions, country, and political risk, and may require prepayment to mitigate risk of loss. Specific allowance amounts are established to record the appropriate provision for customers that have a higher probability of default. The Company monitors changes to the receivables balance on a timely basis, and balances are written off as they are determined to be uncollectable after all collection efforts have been exhausted.

As of June 30, 2023, the Company's accounts receivable balance was $12,866, net of $45 of allowance for credit losses. The following table provides a roll-forward of the allowance for credit losses for the six months ended June 30, 2023 that is deducted from the amortized cost basis of accounts receivable to present the net amount expected to be collected.

Balance at January 1, 2023	$ 45
Change in provision	—
Balance at June 30, 2023	$ 45

(7) Intangible assets

Intangible assets as of June 30, 2023 are summarized as follows:

	Cost	Accumulated Amortization	Net	Useful Life (in years)
Customer relationships	$ 11,800	$ (3,742)	$ 8,058	15
Developed technology	8,300	(3,289)	5,011	12
Licenses	213	(181)	32	15
Trade names and trademarks	6,300	(2,964)	3,336	12
Capitalized software	3,200	(512)	2,688	5
Non-compete agreements	300	(300)	—	4
Total intangible assets	$ 30,113	$ (10,988)	$ 19,125	

Intangible assets as of December 31, 2022 are summarized as follows:

	Cost	Accumulated Amortization	Net	Useful Life (in years)
Customer relationships	$ 11,800	$ (3,348)	$ 8,452	15
Developed technology	8,300	(2,943)	5,357	12
Licenses	213	(36)	177	15
Trade names and trademarks	6,300	(2,550)	3,750	12
Capitalized software	2,631	(319)	2,312	5
Non-compete agreements	300	(300)	—	4
Total intangible assets	$ 29,544	$ (9,496)	$ 20,048	

Total amortization expense for the three and six months ended June 30, 2023 was $675 and $1,492, respectively. Total amortization expense for the three and six months ended June 30, 2022 was $649 and $1,267, respectively.

As of June 30, 2023 the amortization expense related to identifiable intangible assets in future periods is expected to be as follows:

2023 remaining	$ 1,475
2024	2,903
2025	2,903
2026	2,872
2027	1,885
Thereafter	7,087
Total	$ 19,125

(8) Accrued expenses and other current liabilities

Accrued expenses and other current liabilities consist of the following:

	June 30, 2023	December 31, 2022
Payroll and compensation	$ 6,853	$ 8,288
Current portion of contingent consideration	1,745	1,709
Inventory purchases	1,554	488
Customer deposits	1,965	3,652
Other accrued expenses	2,611	2,382
Total accrued expenses and other current liabilities	$ 14,728	$ 16,519

(9) Debt

Term Loan Agreements

In October 2020, the Company entered into a debt financing arrangement with Midcap Financial Trust (the "Midcap Trust Term Loan"), for a $37,500 credit facility, consisting of a senior, secured term loan. The Company received $32,500 in aggregate proceeds as a result of the debt financing. The term of the Midcap Trust Term Loan is interest only for 36 months followed by 24 months of straight-line amortization. Interest on the outstanding balance of the Midcap Trust Term Loan shall be payable monthly in arrears at an annual rate of one-month LIBOR plus 6.35%, subject to a LIBOR floor of 1.50%. At the time of final payment under the Midcap Trust Term Loan, the Company is required to pay Midcap Financial Trust a final payment fee of 5.00% of the amount borrowed under the Midcap Trust Term Loan. If the Midcap Trust Term Loan is prepaid prior to the end of the term, the Company shall pay to Midcap Financial Trust a fee as compensation for the costs of being prepared to make funds available in an amount determined by multiplying the amount being prepaid by (i) three percent (3.00%) in the first year, two percent, (2.00%) in the second year and one percent (1.00%) in the third year and thereafter.

On March 21, 2022, the Company entered into Amendment No. 1 to the Midcap Trust Term Loan, which amended certain provisions to permit certain additional debt and capital leases.

On June 1, 2022, the Company entered into Amendment No. 2 ("Amendment No. 2") to the Midcap Trust Term Loan, which permitted the draw of a second tranche of $10,000, which was drawn on June 1, 2022. Additionally, the amendment provides the Company with a new third tranche pursuant to which the Company may draw $10,000 any time after September 30, 2022 until September 30, 2023. The amendment also delayed the amortization start dates for the outstanding loan amounts from November 1, 2023 until April 1, 2025, at which point the Company will repay the principal amounts in seven equal monthly installments until the maturity date. Finally, Amendment No. 2 amended the interest rate payable on the term loan to apply an interest rate equal to the Secured Overnight Financing Rate ("SOFR") rate (with a floor of 1.61448%) plus 6.35%. Substantially all other terms and conditions, and covenants of the credit agreement remain unchanged. In connection with Amendment No. 2, the Company agreed to pay a $75 commitment fee as well as a 0.25% fee upon the funding of each of the second tranche and third tranche amounts. The Company accounted for Amendment No. 2 as a modification pursuant to ASC 470-50. On September 30, 2022, the Company drew the third tranche of $10,000 related to Amendment No. 2.

On November 7, 2022, the Company entered into Amendment No. 3 ("Amendment No. 3") to the Midcap Trust Term Loan, which permitted the draw of two additional tranches, each totaling $11,250, the first of which was drawn on November 7, 2022. The remaining tranche will become available for draw after June 30, 2023 but before December 31, 2023, and is subject to the Company achieving certain trailing twelve month revenue targets. Amendment No. 3 also delayed the amortization start dates for the outstanding loan amounts from April 1, 2025 until December 1, 2025 (subject to further extension upon certain conditions), at which point the Company will repay the principal amounts in equal monthly installments until the new maturity date of November 1, 2027, which was extended pursuant to Amendment No. 3. In addition, Amendment No. 3 amended the interest rate payable on the term loan to apply an interest rate equal to the SOFR rate (with a floor of 2.50%) plus 6.80%, and reset the call protection to begin as of November 7, 2025. Finally, Amendment No. 3 provides for a commitment fee of $74 payable on November 7, 2022 on the new tranche amounts and an exit fee of 4.75%. As part of Amendment No. 3, the Company paid $779 for the accrued amount of the final payment fee. Substantially all other terms and conditions, and covenants of the credit agreement remain unchanged. The Company accounted for Amendment No. 3 as a modification pursuant to ASC 470-50.

The interest rate was 12.07% at June 30, 2023. A final payment fee of $3,028 is due upon the earlier to occur of the maturity date or prepayment of such borrowings. For the three and six months ended June 30, 2023, the Company recorded $151 and $301, respectively, related to the amortization of the final payment fee associated with the Midcap Trust Term Loan. For the three and six months ended June 30, 2022, the Company recorded $80 and $173, respectively, related to the amortization of the final payment fee associated with the Midcap Trust Term Loan.

Debt consists of the following:

	June 30, 2023	December 31, 2022
Midcap Trust Term Loan	$ 63,750	$ 63,750
Unamortized debt discount	(507)	(565)
Accretion of final fee	393	92
Total long-term debt, net	$ 63,636	$ 63,277

As of June 30, 2023, future principal payments due under the Midcap Trust Term Loan, excluding the $3,028 final payment fee, are as follows:

Year ended:	Midcap Trust Term Loan
December 31, 2023	$ —
December 31, 2024	—
December 31, 2025	2,656
December 31, 2026	31,875
December 31, 2027	29,219
Total minimum principal payments	$ 63,750

(10) Stockholder's equity

The Company's Amended and Restated Certificate of Incorporation authorizes it to issue 500,000,000 shares of common stock, $0.00001 par value per share, and 10,000,000 shares of preferred stock, par value $0.00001 per share. Each share of Class A common stock is entitled to one vote. The holders of common stock are also entitled to receive dividends whenever funds are legally available and when declared by the Board, subject to the prior rights of holders of all classes of stock outstanding. As of June 30, 2023 and December 31, 2022, a total of 48,821,941 and 38,288,188 shares of common stock were issued and outstanding, respectively, and 9,207,840 and 7,834,432 shares of common stock were reserved for issuance upon the exercise of stock options and vesting of restricted stock, respectively.

In September 2019, the Company entered into a Loan and Security Agreement with Innovatus Life Sciences Lending Fund I, LP ("Innovatus"), under which Innovatus agreed to make a term loan to the Company in an aggregate principal amount of $25,000 (the "Innovatus Term Loan"), which was repaid in October 2020. In connection with the Loan and Security Agreement, the Company also issued the lender a warrant to purchase 368,779 additional shares of Series D Preferred Stock, at a purchase price of $1.53 per share. The expiration date of the warrant is September 27, 2029. The holder may at any time and from time to time exercise this warrant, in whole or in part, and on any exercise of the warrant, the holder may elect to receive shares equal to the full value of the warrant or a portion of its full value. Prior to the IPO, since the underlying Series D redeemable convertible preferred stock was classified outside of permanent equity, the preferred stock warrant was classified as other long-term liabilities in the accompanying balance sheet. In connection with the IPO, the preferred stock warrant was converted to a warrant to purchase shares of the Company's common stock, pursuant to its preexisting terms. As such, the Company assessed the classification of the common stock warrant and determined it met the criteria to be classified within stockholders' equity. Accordingly, the fair value of the warrant liability was reclassified to stockholders' equity. In the third quarter of 2022, Innovatus exercised its warrant to purchase the Company's common stock.

On November 7, 2022, the Company entered into an Equity Distribution Agreement (the "Equity Distribution Agreement") with Piper Sandler & Co. ("Piper Sandler") with respect to an at-the-market offering program under which the Company may offer and sell, from time to time at its sole discretion, shares of its common stock, par value $0.00001 per share (the "Common Stock"), having an aggregate offering price of up to $50.0 million (the "Placement Shares") through Piper Sandler as its sales agent. Subject to the terms and conditions of the Equity Distribution Agreement, Piper Sandler may sell the shares by methods deemed to be an "at the market offering" as defined in Rule 415 promulgated under the Securities Act of 1933, as amended (the "Securities Act"), including sales made through The Nasdaq Global Select Market, on any other existing trading market for the Common Stock, to or through a market maker, or, if expressly authorized by the Company, in privately negotiated transactions. The Company or Piper Sandler may terminate the Equity Distribution Agreement upon notice to the other party and subject to other conditions. The Company will pay Piper Sandler a commission equal to 3.0% of the gross proceeds of any Common Stock sold through Piper Sandler under the Equity Distribution Agreement and has provided Piper Sandler with customary indemnification rights. As of June 30, 2023, we have not sold any shares of common stock under the ATM program.

Issuance costs incurred related to the Equity Distribution Agreement are classified as long-term assets on the balance sheet at June 30, 2023 and December 31, 2022.

On June 7, 2023, the Company entered into an underwriting agreement (the "Underwriting Agreement") with Morgan Stanley & Co. LLC and Piper Sandler & Co. (collectively, the "Underwriters"), pursuant to which the Company agreed to issue and sell up to 10,005,000 shares of common stock (the "Shares"), which included 1,305,000 shares (the "Optional Shares") subject to a 30-day option to purchase additional shares granted to the Underwriters (the "Offering"). The Shares were offered and sold in the Offering at the public offering price of $5.00 per share and were purchased by the Underwriters from the Company at a price of $4.70 per share, except for 3,509,718 shares purchased by entities affiliated with Telegraph Hill Partners, entities affiliated with PSC Capital Partners LLC and certain of our directors, executive officers and other insiders, all considered related parties, which were purchased by the Underwriters at the public offering price.

On June 8, 2023, the Underwriters exercised their option to purchase the Optional Shares in full.

The Company received approximately $47.8 million in net proceeds from the Offering, after deducting the underwriting discounts and commissions and offering expenses payable by the Company. The Offering closed on June 12, 2023.

(11) Stock compensation plans

2021 Equity Incentive Plan

On March 24, 2021, the Board, and on April 8, 2021, the Company's stockholders, approved and adopted the 2021 Equity Incentive Award Plan (the "2021 Plan"). The 2021 Plan became effective immediately prior to the closing of the IPO. Under the 2021 Plan, the Company may grant stock options, stock appreciation rights, restricted stock, restricted stock units, and other stock or cash-based awards to individuals who are then employees, officers, directors or consultants of the Company. A total of 1,727,953 shares of common stock were approved to be initially reserved for issuance under the 2021 Plan. The number of shares under the Company's 2015 Equity Incentive Plan (the "2015 Plan") subject to outstanding awards as of the effective date of the 2021 Plan that are subsequently canceled, forfeited or repurchased by the Company were added to the shares reserved under the 2021 Plan. In addition, the number of shares of common stock available for issuance under the 2021 Plan will be automatically increased on the first day of each calendar year during the term of the 2021 Plan, beginning with January 1, 2022 and ending with January 1, 2030, by an amount equal to 5% of the outstanding number of shares of the Company's common stock on December 31st of the preceding calendar year or such lesser amount as determined by the Board.

2015 Equity Incentive Plan

The 2015 Plan was established for granting stock incentive awards to directors, officers, employees and consultants to the Company. The 2015 Plan provided for the grant of incentive and non-qualified stock options, stock appreciation rights, restricted stock and restricted stock units as determined by the Board. Under the 2015 Plan, stock options were generally granted with exercise prices equal to or greater than the fair value of the common stock as determined by the Board, expired no later than 10 years from the date of grant, and vested over various periods not exceeding four years. While no shares are available for future issuance under the 2015 Plan, it continues to govern outstanding equity awards granted thereunder.

Stock Options

During the six months ended June 30, 2023 and 2022, the Company granted options with an aggregate fair value of $7,325 and $8,798, respectively, which are being recorded as compensation expense over the requisite service period. The Company uses the Black-Scholes option pricing model to determine the fair value of stock options. The valuation model for stock compensation expense requires the Company to make assumptions and judgments about the variables used in the calculation including the expected term (weighted-average period of time that the options granted are expected to be outstanding), volatility of the Company's common stock and an assumed-risk-free interest rate.

During the six months ended June 30, 2023, the Company granted options to purchase 1,467,154 shares of common stock at a weighted average fair value of $4.99 per share and a weighted average exercise price of $9.17 per share.

During the six months ended June 30, 2022, the Company granted options to purchase 1,672,328 shares of common stock at a weighted average fair value of $5.29 per share and a weighted average exercise price of $10.53 per share. For the three and six months ended June 30, 2023 and 2022, the fair values were estimated using the Black-Scholes valuation model using the following weighted-average assumptions:

	Three months ended June 30, 2023	Three months ended June 30, 2022	Six months ended June 30, 2023	Six months ended June 30, 2022
Weighted-average risk-free interest rate	3.7 %	2.9 %	3.8 %	2.5 %
Expected dividend yield	0 %	0 %	0 %	0 %
Expected volatility	54.3 %	50.5 %	53.5 %	50.2 %
Expected term	5.6 years	5.9 years	5.9 years	6.0 years

Restricted Stock Units

During the six months ended June 30, 2023 and 2022, the Company granted RSUs with an aggregate fair value of $11,924 and $3,263, respectively, which are being recorded as compensation expense over the requisite service period. The fair value of each grant is calculated based on the Company's stock price on the date of grant. During the six months ended June 30, 2023, the Company granted 1,090,890 RSUs at a weighted average fair value of $10.93 per share. During the six months ended June 30, 2022, the Company granted 309,525 RSUs at a weighted average fair value of $10.68 per share.

Stock-Based Compensation

Stock-based compensation related to the Company's stock-based awards was recorded as an expense and allocated as follows:

	Three months ended June 30,		Six months ended June 30,	
	2023	2022	2023	2022
Cost of goods sold	$ 83	$ 60	$ 169	$ 107
Selling, general and administrative	2,186	1,378	4,108	2,603
Research and development	351	283	718	556
Total stock-based compensation	$ 2,620	$ 1,721	$ 4,995	$ 3,266

As of June 30, 2023 and 2022, there was $15,752 and $20,295, respectively, of total unrecognized compensation cost related to non-vested stock options. The Company expects to recognize that cost over a remaining weighted-average period of 2.6 years and 3.0 years as of June 30, 2023 and 2022, respectively.

As of June 30, 2023 and 2022 there was $11,692 and $3,033 of total unrecognized compensation cost related to non-vested RSUs. The Company expects to recognize that cost over a remaining weighted-average period of 3.5 and 3.8 years as of June 30, 2023 and 2022, respectively.

(12) Employee stock purchase plan

On March 24, 2021, the Board, and on April 8, 2021, the Company's stockholders, approved and adopted the 2021 Employee Stock Purchase Plan (the "ESPP"). The ESPP became effective in connection with the closing of the Company's IPO. The ESPP permits participants to purchase common stock through payroll deductions of up to 15% of their eligible compensation. A total of 172,795 shares of common stock were approved to be initially reserved for issuance under the ESPP. In addition, the number of shares of common stock available for issuance under the ESPP will be automatically increased on the first day of each calendar year during the first ten-years of the term of the ESPP, beginning with January 1, 2022 and ending with January 1, 2030, by an amount equal to 0.5% of the outstanding number of shares of the Company's common stock on December 31st of the preceding calendar year or such lesser amount as determined by the Board. No shares have been issued under the ESPP at June 30, 2023 and December 31, 2022, respectively.

(13) Income taxes

During the three and six months ended June 30, 2023, the Company recorded a tax provision of $18 and $47, respectively. During the three and six months ended June 30, 2022, the Company recorded a tax provision of $106 and $128, respectively. The tax provision consist primarily of foreign income taxes and state taxes in the United States. The provision differs from the U.S. federal statutory rate of 21% primarily due to the full valuation allowance recorded against the U.S. deferred tax assets, including the current year to date losses. The Company maintains a valuation allowance against its U.S. deferred tax assets as the Company believes it is more likely than not the deferred tax assets will not be realized.

(14) Commitments and contingencies

License Agreements

In September 2018, in connection with the acquisition of the QPS division of PKI, the Company entered into a License Agreement with PKI, pursuant to which PKI granted the Company an exclusive, nontransferable, sublicensable license under certain patent rights to make, use, import and commercialize QPS products and services. The Company is required to pay royalties on net sales of products and services that are covered by patent rights under the agreement at a rate ranging from 1.0% to 7.0%. This contingent consideration is subject to remeasurement. The Company recorded approximately $1,745 and $1,709 of accrued royalties for projected net sales in 2023, and actual net sales in 2022, as of June 30, 2023 and December 31, 2022, respectively. Such amounts are payable in the first quarter of 2024 and 2023, respectively.

Changes in the fair value of the Company’s long-term portion of the contingent consideration liability during the six months ended June 30, 2023 and 2022 were as follows:

Balance as of December 31, 2022	$ 6,039
Reclassification of FY 2023 payment to accrued expenses	(1,745)
Change in contingent consideration value	757
Balance as of June 30, 2023	$ 5,051
Balance as of December 31, 2021	$ 7,850
Reclassification of FY 2022 payment to accrued expenses	(1,295)
Change in contingent consideration value	(956)
Balance as of June 30, 2022	$ 5,599

(15) Net loss per share attributable to common stockholders

Potentially issuable shares of common stock include shares issuable upon the exercise of outstanding employee stock option awards. Awards granted with performance conditions are excluded from the shares used to compute diluted earnings per share until the performance conditions associated with the awards are met.

The following table sets forth the computation of basic and diluted earnings per common share:

	Three months ended June 30,		Six months ended June 30,	
	2023	2022	2023	2022
Net loss	$ (20,803)	$ (17,495)	$ (39,605)	$ (33,894)
Weighted average common shares used in net loss per share attributable to common stockholders, basic and diluted	40,639,714	37,612,331	39,489,261	37,538,821
Basic and diluted net loss per common share outstanding	$ (0.51)	$ (0.47)	$ (1.00)	$ (0.90)

The Company's potential dilutive securities, which include stock options, unvested restricted stock units, and the outstanding warrant, have been excluded from the computation of diluted net loss per share attributable to common stockholders whenever the effect of including them would be to reduce the net loss per share. In periods where there is a net loss, the weighted average number of common shares outstanding used to calculate both basic and diluted net loss per share attributable to common stockholders is the same. The following potential common shares, presented based on amounts outstanding at each period end, were excluded from the calculation of diluted net loss per share attributable to common stockholders for the periods indicated because including them would have had an anti-dilutive effect:

	June 30,	
	2023	2022
Outstanding stock options	6,381,561	6,696,436
Unvested restricted stock units	1,181,327	301,575
Warrant to purchase common stock	—	158,274
Total	7,562,888	7,156,285

(16) Segments

Operating segments are defined as components of an enterprise about which separate financial information is available that is evaluated regularly by the chief operating decision maker, or decision-making group, in deciding how to allocate resources and in assessing performance. The Company's chief operating decision maker is its Chief Executive Officer. The Company has one business activity and there are no segment managers who are held accountable for operations. Accordingly, the Company has a single reportable segment structure. The Company's principal operations and decision-making functions are located in the United States.

The following table provides the Company's revenues by geographical market based on the location where the services were provided or to which product was shipped:

	Three months ended June 30,		Six months ended June 30,	
	2023	2022	2023	2022
North America	$ 13,810	$ 9,478	$ 25,661	$ 18,802
APAC	4,110	4,271	8,497	7,780
EMEA	5,601	4,145	10,773	8,206
Total Revenue	$ 23,521	$ 17,894	$ 44,931	$ 34,788

	Three months ended June 30,		Six months ended June 30,	
	2023	2022	2023	2022
North America	59 %	53 %	57 %	54 %
APAC	17 %	24 %	19 %	22 %
EMEA	24 %	23 %	24 %	24 %
Total Revenue	100 %	100 %	100 %	100 %

North America includes the United States and related territories, as well as Canada. APAC also includes Australia. For the three and six months ended June 30, 2023, the Company had no countries outside of the United States with more than 10% of total revenue. For the three and six months ended June 30, 2022, the Company had one country outside of the United States with 19% and 14% of total revenue, respectively.

As of June 30, 2023 and December 31, 2022, substantially all of the Company's long-lived assets are located in the United States.

(17) Related party transactions

Argonaut Manufacturing Services Inc. ("AMS") is a portfolio company of Telegraph Hill Partners, which holds greater than 5% of the Company's total outstanding shares. During the three and six months ended June 30, 2023, the Company incurred costs of goods sold of approximately $1,814 and $3,761, respectively, related to sales of consumables manufactured by AMS. During the three and six months ended June 30, 2022, the Company incurred costs of goods sold of approximately $1,443 and $2,413, respectively, related to sales of consumables manufactured by AMS. As of June 30, 2023 and December 31, 2022, $3,890 and $7,545, respectively, is included in inventory related to consumables manufactured by AMS. As of June 30, 2023 and December 31, 2022, the Company had $1,550 and $1,271 in accounts payable, respectively, due to AMS.

(18) Leases

The Company is a lessee under operating leases of offices, warehouse space, laboratory space, and auto leases, and financing leases of computer equipment, staining equipment, and furniture.

Some leases include an option to renew, with renewal terms that can extend the lease term by five years. The exercise of lease renewal options is at the Company's sole discretion. None of these options to renew are recognized as part of the Company's right-to-use asset or lease liability as of June 30, 2023, as renewal was determined to not be reasonably assured.

The table below summarizes the Company's lease costs for the three and six months ended June 30, 2023:

Lease Costs	Classification	Three months ended June 30, 2023	Three months ended June 30, 2022	Six months ended June 30, 2023	Six months ended June 30, 2022
Finance lease cost:					
Amortization of right-of-use assets	Cost of service and other revenue	$ 89	$ 18	$ 160	$ 34
Amortization of right-of-use assets	Depreciation and amortization	125	127	255	266
Interest on lease liabilities	Interest expense, net	44	14	64	20
Operating lease cost:					
Rent expense	Cost of product revenue	28	—	56	—
Rent expense	Selling, general and administrative	783	806	1,567	1,516
Total lease cost		$ 1,069	$ 965	$ 2,102	$ 1,836

As of June 30, 2023, future minimum commitments under ASC 842 under the Company's operating leases were as follows:

Maturity of operating lease liabilities	As of June 30, 2023
2023 remaining	$ 1,597
2024	2,777
2025	2,839
2026	2,636
2027	1,104
Thereafter	998
Total lease payments	$ 11,951
Less: discount to lease payments	(1,804)
Total operating lease liabilities	$ 10,147

As of June 30, 2023, future minimum commitments under ASC 842 under the Company's financing leases were as follows:

Maturity of financing lease liabilities	As of June 30, 2023
2023 remaining	$ 433
2024	798
2025	444
2026	239
2027	239
Thereafter	60
Total lease payments	$ 2,213
Less: discount to lease payments	(325)
Total financing lease liabilities	$ 1,888

The table below summarizes the weighted-average remaining lease term (in years), the weighted-average incremental borrowing rate (in percentages), as well as supplemental cash flow information related to leases for the six months ended June 30, 2023 and 2022:

	Six months ended June 30,	
Lease Term, Discount Rates, and Other	**2023**	**2022**
Weighted average remaining lease term		
Operating leases	4.2 years	5.0 years
Financing leases	3.2 years	2.5 years
Weighted average incremental borrowing rate		
Operating leases	7.85 %	7.85 %
Financing leases	9.11% %	6.24 %
Cash payments of amounts included in lease liabilities		
Operating cash flows from operating leases	$ 1,533	$ 1,405
Operating cash flows from finance leases	64	20
Financing cash flows from finance leases	321	316

(19) Reduction in force

On June 7, 2023, the Company executed a reduction in force in connection with certain operating expense cost savings initiatives. In connection with the reduction in force, each of the Company's Chief Medical Officer ("CMO") and the Company's Chief People Officer ("CPO") were terminated.

On June 27, 2023, the Company entered into a Separation Agreement and Release with its former CMO in connection with his termination of employment on June 7, 2023. Under such agreement, in consideration for his release of claims relating thereto, the former executive is entitled to the severance payments and benefits set forth in the Company's Executive Severance Plan, dated March 23, 2022, and described in the Company's definitive proxy statement, filed with the Securities and Exchange Commission on April 20, 2023.

On July 3, 2023, the Company entered into a Separation Agreement and Release with its former CPO, in connection with her termination of employment on June 7, 2023. Under such agreement, in consideration for her release of claims relating thereto and in lieu of any severance payments and benefits set forth in the Company's Executive Severance Plan to which she may otherwise be entitled, the former executive is entitled to (i) an award of 53,652 RSU's under the Company's 2021 Equity Incentive Plan, each representing a right to receive an issuance of one share of the Company's common stock and (ii) payment by the Company of the applicable premiums for continuing health care coverage for the former executive and her eligible dependents for a period of nine months commencing July 2023. Such RSUs vested fully on the eighth day following the date of execution of her Separation Agreement.

During the quarter ended June 30, 2023, the Company recorded $2,056 for charges related to the reduction in force, of which $650 was related to the Company's former CMO and the Company's former CPO.

(20) Subsequent events

The Company has evaluated subsequent events from the consolidated balance sheet date through August 7, 2023, which is the date the consolidated financial statements were issued.

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

You should read the following discussion and analysis of financial condition and results of operations together with our consolidated financial statements and related notes included elsewhere in this Quarterly Report on Form 10-Q and our audited consolidated financial statements and notes thereto and management’s discussion and analysis of financial condition and results of operations for the fiscal year ended December 31, 2022 included in the Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 6, 2023. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of various factors, including those in our Annual Report on Form 10-K for the year ended December 31, 2022, as referred to in the section titled “Risk Factors” under Part II, Item 1A below. Please also see the section titled “Special note regarding forward looking statements.”

Overview

We are an innovative life sciences technology company delivering spatial biology solutions focused on transforming discovery and clinical research. Our mission is to deliver a revolutionary new class of spatially derived biomarkers that empower life sciences researchers to better understand disease and clinicians to improve patient outcomes. Spatial biology refers to a rapidly evolving technology that enables academic and biopharma scientists to detect and map the distribution of cell types and biomarkers across whole tissue samples at single cell resolution, enabling advancements in their understanding of disease progression and patient response to therapy. Through our PhenoCycler™ (formerly CODEX®) and PhenoImager™ (formerly Phenoptics™) platforms, reagents, software and services, we offer end-to-end solutions to perform tissue analysis and spatial phenotyping across the full continuum from discovery through translational and clinical research.

Our spatial biology solutions measure cells and proteins by providing biomarker data in its spatial context while preserving tissue integrity. Biomarkers are objective measures that capture what is happening in a cell or tissue at a given moment. Current genomic and proteomic methods, such as next-generation sequencing (NGS), single-cell analysis, flow cytometry and mass spectrometry, are providing meaningful data but require the destruction of the tissue sample for analysis. While valuable and broadly adopted, these approaches allow scientists to analyze the biomarkers and cells that comprise the tissue but do not provide the fundamental information about tissue structure, cellular interactions and the localized measurements of key biomarkers. Furthermore, current non-destructive tissue analysis and histological methods provide some limited spatial information, but they only measure a minimal number of biomarkers at a time and require expert pathologist interpretation. Our platforms address these limitations by providing end-to-end solutions that enable researchers to quantitatively interrogate a large number of biomarkers and cell types across a tissue section at single cell resolution. The result is a detailed and computable map of the tissue sample that thoroughly captures the underlying tissue dynamics and interactions between key cell types and biomarkers, a process now referred to as spatial phenotyping. We believe that we are the only business with the breadth of platform capabilities that enable researchers to do a deep exploratory and discovery study, and then further advance and scale their research through the translational and clinical phases, leading to a better understanding of human biology, disease progression and response to therapy.

We offer complete end-to-end solutions for spatial phenotyping, designed to serve the unique needs of our customers in the discovery, translational and clinical markets. The PhenoCycler (formerly CODEX), is an ultra-high parameter and cost-effective platform ideally suited for discovery high-plex research. The PhenoImager platforms (formerly Phenoptics), which includes the newly introduced Fusion instrument and HT instrument (formerly Vectra Polaris), provide high-throughput with the automation and robustness needed for translational and clinical applications. Furthermore, the PhenoCycler and the PhenoImager Fusion can be integrated into a combined system, the PhenoCycler-Fusion System, to enable spatial discovery at scale by providing significant improvements in the speed of the workflow. Together, the systems offer seamless and integrated workflow solutions for our customers, including important benefits such as flexible sample types, automated sample processing, scalability, comprehensive data analysis and software solutions and dedicated field and applications support. With these platforms, our customers are performing spatial phenotyping to further advance their understanding of diseases such as cancer, neurological and autoimmune disorders, and many other therapeutic areas.

For the three and six months ended June 30, 2023, revenue from North America accounted for approximately 59% and 57% of our revenue, respectively. For the three and six months ended June 30, 2022, revenue from North America accounted for approximately 53% and 54% of our revenue, respectively.

We focus a substantial portion of our resources on research and development, as well as on business development and sales and marketing. Our research and development efforts are geared towards developing new instruments and assay capabilities, as well as new reagent kits, to meet both our customers' needs and to address new markets. We intend to continue making investments in this area for the foreseeable future. We also intend to continue to make incremental investments in building our sales team and marketing our products and services to potential customers.

We generally outsource our production manufacturing. Design work, prototyping and pilot manufacturing are performed in-house before outsourcing to third party contract manufacturers. Our initial outsourced production strategy is intended to drive cost leverage and scale while avoiding the capital outlays and fixed costs related to constructing and operating a full scale manufacturing facility. The contract manufacturers of our systems and reagent kits are located in the United States and Asia. Certain of our suppliers of components and materials are single source suppliers. We manufacture and assemble certain instrument components in-house. Additionally, we have begun to make investments in our infrastructure to support future strategic in house manufacturing as it relates to our critical and high-complexity proprietary reagents.

As of the date of this Quarterly Report on Form 10-Q, we have financed our operations primarily from the issuance and sale of our equity securities, borrowings under our long-term debt agreement, and revenue from our commercial operations. We have incurred net losses in each year since our inception in 2015. Our net losses were $20.8 million $39.6 million for the three and six months ended June 30, 2023, respectively. Our net losses were $17.5 million and $33.9 million for the three and six months ended June 30, 2022, respectively. We expect to continue to incur significant expenses and operating losses for the foreseeable future. We expect our expenses will increase incrementally in connection with our ongoing activities, as we:

- attract, hire and retain qualified personnel, including the expansion of our commercial capabilities and organizations;
- market and sell new and existing solutions and services;
- invest in processes and infrastructure to scale our business;
- support research and development to introduce new solutions;
- expand, protect and defend our intellectual property; and
- acquire complementary businesses or technologies to support the growth of our business.

Key factors affecting our results of operations and future performance

There are a number of factors that have impacted, and we believe will continue to impact, our business, results of operations and growth. Our ability to successfully address these factors is subject to various risks and uncertainties, including those described under the heading "*Risk Factors.*"

Expansion of our installed base

We are focused on increasing sales of our PhenoCycler and PhenoImager platforms (Fusion and HT) to new and existing customers. Our financial performance has historically been driven by, and will continue to be impacted by, the volume of instrument sales. Additionally, instrument sales are a leading indicator of future recurring revenue from consumables and services. Our operating results and growth prospects will be dependent in part on our ability to increase our instrument installed base as we further penetrate existing markets and expand into, or offer new features and solutions that appeal to, new markets.

We believe our market is still evolving and relatively underpenetrated. As spatial biology is further validated through rapid acceleration of peer-reviewed publications and growing adoption by the life sciences research market, we believe we have an opportunity to significantly increase our installed base. We regularly solicit feedback from our customers in order to enhance our solutions and their applications for life sciences research, which we believe will drive increased adoption of our platforms as they better serve our customers' needs.

Drive incremental pull through

We believe that expansion of our installed base to new and existing customers will drive an increase in our recurring reagent and instrument service revenue. In addition, as our research and development team identifies and launches new applications and biomarker targets, we expect to increase incremental pull through on our existing and new instrument installed base. Recurring revenue was 35% and 36% of total revenue for the three and six months ended June 30, 2023, respectively. Recurring revenue was 36% and 37% of total revenue for the three and six months ended June 30, 2022, respectively. Our recurring revenue as a percentage of total product and service revenue will vary based upon new device placements in the period. As our installed base expands, we expect recurring revenue on an absolute basis to increase and become an increasingly important contributor to our revenue.

Improve revenue mix and gross margin

Our revenue is primarily derived from sales of our platforms, consumables, software, and services. Our revenue mix will fluctuate from period-to-period, particularly revenue generated from instrument sales. As our installed base grows, we expect consumables and instrument service revenue to constitute a larger percentage of total revenue.

Our margins are higher for those instruments and consumables that we sell directly to customers compared to those sold through distributors.

Future instrument and consumable selling prices and gross margins may fluctuate due to a variety of factors, including the introduction by others of competing products and solutions. We aim to mitigate downward pressure on our average selling prices by increasing the value proposition offered by our instruments and consumables, primarily by expanding the applications for our devices and increasing the quantity and quality of data that can be obtained using our consumables.

Key Business Metrics

We regularly review the number of instrument placements and cumulative instrument placement as key metrics to evaluate our business, measure our performance, identify trends affecting our business, develop financial projections, and make strategic decisions. We believe that these metrics are representative of our current business; however, we anticipate these will change or may be substituted for additional or different metrics as our business grows.

During the three and six months ended June 30, 2023 and 2022, our instrument placements were as follows:

	Three months ended June 30,		Six months ended June 30,	
	2023	2022	2023	2022
Instrument Placements:	72	60	130	111

Our instruments are sold globally to leading biopharma companies and top research institutions and medical centers. Our quarterly instrument placements fluctuate from period-to-period due to the type and size of our customers and their procurement and budgeting cycles. We expect continued fluctuations in our quarterly period-to-period number of instrument placements.

We believe our instrument placements is an important metric to measure our business because the number of new placements is driven by our ability to secure new customers and to increase adoption of our PhenoCycler and PhenoImager platforms and because it provides insights into anticipated recurring revenue for consumables and instrument services.

Components of results of operations

Revenue

Product Revenue

We generate product revenue from the sale of our instruments, consumables and software products. Instrument sales accounted for 66%, 64%, 67%, and 65% of our product revenue for the three and six months ended June 30, 2023 and 2022, respectively. Consumables revenue accounted for 34%, 35%, 32%, and 33% of our product revenue for the three and six months ended June 30, 2023 and 2022, respectively.

Our current instrument offerings include our PhenoCycler and PhenoImager platforms. Our sales process with customers is often long and involves multiple levels of approvals. As a result, the revenue for our platforms can vary significantly from period-to-period and has been, and may continue to be, concentrated in a small number of customers in any given period.

We sell our instruments directly to customers and through distributors. Each of our instrument sales drives various streams of recurring revenue comprised of consumable product sales and instrument services.

Service and Other Revenue

We primarily generate service and other revenue from instrument service, which generally consists of sales of extended service contracts, in addition to installation and training, as well as from our laboratory services operations, where we provide sample testing services to customers utilizing our in-house lab operation, and revenue generated from companion diagnostic development.

We offer our customers extended warranty and service plans for our platforms. Our extended warranty and service plans are offered for periods beyond the standard one-year warranty that all customers receive. These extended warranty and service plans generally have fixed fees and terms ranging from one to four additional years. We recognize revenue from the sale of extended warranty and service plans over the respective coverage period, which approximates the service effort provided by us.

We record shipping and handling billed to customers as service and other revenue and the related costs in cost of service and other revenue in the consolidated statement of operations.

We sell our products globally. We sell directly to end customers in North America and EMEA and we sell through third party distributors and dealers in the APAC region.

Cost of Goods Sold, Gross Profit and Gross Margin

Product cost of revenue primarily consists of costs for finished goods (both instruments and reagents) produced by our contract manufacturers, and associated freight, shipping and handling costs for products shipped to customers, salaries and other personnel costs, and other direct costs related to those sales recognized as product revenue in the period. Cost of goods sold for services and other revenue primarily consists of salaries and other personnel costs, travel related to services provided, costs of servicing equipment at customer sites, and all personnel and related costs for our laboratory services operation.

We expect that our cost of goods sold will increase or decrease to the extent that our revenue increases and decreases and depending on the mix of revenue in any specific period.

Gross profit is calculated as revenue less cost of goods sold. Gross margin is gross profit expressed as a percentage of revenue. Our gross profit in future periods will depend on a variety of factors, including market conditions that may impact our pricing, sales mix among instruments, sales mix changes among consumables, excess and obsolete inventories, costs we pay our contract manufacturers for their services, our cost structure for lab service operations relative to volume, product warranty obligations, and inflationary cost pressures. Our gross profit in future periods will also vary based upon our channel mix and may decrease based upon our distribution channels.

Gross profit was $12.1 million and $10.3 million for the three months ended June 30, 2023 and 2022, respectively, and $24.4 million and 20.4 million for the six months ended June 30, 2023 and 2022, respectively.

Operating expenses

Research and development. Research and development costs primarily consist of salaries, benefits, engineering/design costs, laboratory supplies, and materials expenses for employees and third parties engaged in research and product development. We expense all research and development costs in the period in which they are incurred.

We plan to continue to invest in our research and development efforts, including hiring additional employees, to enhance existing products and develop new products. As a result, we expect that our research and development expenses will increase incrementally in absolute dollars in future periods. We expect these expenses to vary from period to period as a percentage of revenue.

Selling, general and administrative. Our selling, general and administrative expenses primarily consist of salaries and benefits for employees in our executive, accounting and finance, sales and marketing, operations, and human resource functions as well as professional services fees, such as consulting, audit, tax and legal fees, legal expenses related to intellectual property, general corporate costs, commercial sales functions, marketing, travel expenses, facilities, and IT. We expect that our sales, general and administrative expenses will continue to incrementally increase in absolute dollars, primarily due to increased headcount to support anticipated growth in the business and due to incremental costs associated with operating as a public company. Additionally, we expect increases in absolute dollars as we expand our commercial sales, marketing and business development teams, increase our presence globally and increase marketing activities to drive awareness and adoption of our platform. We expect these expenses to vary from period to period as a percentage of revenue.

Change in fair value of contingent consideration. On September 28, 2018, the Company acquired substantially all the assets of the QPS division of PKI. As part of the acquisition, on September 28, 2018, the Company entered into a License Agreement with PKI. Under the terms of the License Agreement, the Company agreed to pay PKI certain royalties as a percentage of future sales of products from the QPS division, in exchange for a perpetual license of the right to produce and sell QPS products. This contingent consideration is subject to remeasurement.

Depreciation and amortization. Depreciation and amortization expenses primarily consist of depreciation of property and equipment and amortization of acquired intangibles.

Other income (expense)

Interest expense. Interest expense consists primarily of interest related to borrowings under our debt obligations.

Interest income. Interest income consists of interest earned on cash and cash equivalents.

Other expense, net. Other expense, net consists primarily of franchise tax and foreign currency exchange gains and losses.

Provision for income taxes

Our provision for income taxes consists primarily of foreign taxes and minimal state taxes in the United States. As we expand the scale and scope of our international business activities, any changes in the United States and foreign taxation of such activities may increase our overall provision for income taxes in the future.

Results of operations

The results of operations presented below should be reviewed in conjunction with the consolidated financial statements and notes included elsewhere in the Quarterly Report on Form 10-Q. The following tables set forth our results of operations for the periods presented:

($ in thousands)	Three months ended June 30, 2023	Three months ended June 30, 2022	Six months ended June 30, 2023	Six months ended June 30, 2022
Product revenue	$ 17,147	$ 14,161	$ 32,671	$ 27,504
Service and other revenue	6,374	3,733	12,260	7,284
Total revenue	23,521	17,894	44,931	34,788
Cost of goods sold:				
Cost of product revenue	$ 7,788	$ 5,198	13,539	9,278
Cost of service and other revenue	3,617	2,355	6,983	5,073
Total cost of goods sold	11,405	7,553	20,522	14,351
Gross profit	12,116	10,341	24,409	20,437
Operating expenses:				
Selling, general and administrative	22,708	20,590	44,466	38,783
Research and development	6,273	5,598	12,046	11,312
Change in fair value of contingent consideration	530	(1,156)	757	(956)
Depreciation and amortization	1,847	1,617	3,818	3,160
Total operating expenses	31,358	26,649	61,087	52,299
Loss from operations	(19,242)	(16,308)	(36,678)	(31,862)
Other income (expense):				
Interest expense	(2,175)	(849)	(4,229)	(1,598)
Interest income	737	54	1,502	76
Other expense, net	(105)	(286)	(153)	(382)
Loss before provision for income taxes	(20,785)	(17,389)	(39,558)	(33,766)
Provision for income taxes	(18)	(106)	(47)	(128)
Net loss	$ (20,803)	$ (17,495)	$ (39,605)	$ (33,894)

Comparison of the three months ended June 30, 2023 and 2022

Revenue

($ in thousands, except percentages)	Three months ended June 30, 2023	Three months ended June 30, 2022	Change Amount	Change %
Product revenue	$ 17,147	$ 14,161	$ 2,986	21 %
Service and other revenue	6,374	3,733	2,641	71 %
Total revenue	$ 23,521	$ 17,894	$ 5,627	31 %

Product revenue increased by $3.0 million, or 21%, for the three months ended June 30, 2023, compared to the three months ended June 30, 2022. The increase was primarily driven by a $1.8 million increase in instrument revenue resulting from 72 new system placements during the three months ended June 30, 2023, compared to 60 new system placements for the three months ended June 30, 2022, and a $1.3 million increase in consumable revenue resulting from a larger installed base of 1,064 systems as of June 30, 2023, as compared to 785 systems as of June 30, 2022.

Service and other revenue increased by $2.6 million, or 71%, for the three months ended June 30, 2023, compared to the three months ended June 30, 2022. The increase was primarily due to an increase relating to lab services operations, revenue generated from companion diagnostic development, and other immaterial changes.

Costs of Goods Sold, Gross Profit and Gross Margin

($ in thousands, except percentages)	Three months ended June 30, 2023	Three months ended June 30, 2022	Change Amount	Change %
Cost of product revenue	$ 7,788	$ 5,198	$ 2,590	50 %
Cost of service and other revenue	3,617	2,355	1,262	54 %
Total cost of goods sold	$ 11,405	$ 7,553	$ 3,852	51 %
Gross profit	$ 12,116	$ 10,341	$ 1,775	17 %
Gross margin	52 %	58 %		

Cost of product revenue increased by $2.6 million, or 50%, for the three months ended June 30, 2023, compared to the three months ended June 30, 2022. The increase in cost of product revenue was primarily driven by a $2.0 million charge for expired inventory and inventory expected to expire before use, as well as costs associated with increased instrument and consumable sales. Cost of service and other revenue increased by $1.3 million, or 54%, for the three months ended June 30, 2023, compared to the three months ended June 30, 2022. The increase was primarily due to increases in costs for lab services driven by an increase in activity, as well as an increase in extended warranty costs as there were higher customer renewals due to the maturity of the installed base.

Gross profit increased by $1.8 million, or 17%, and gross margin decreased by 6% for the three months ended June 30, 2023 as compared to the three months ended June 30, 2022. The increase in gross profit was primarily due to an overall increase in revenue. The decline in gross margin was primarily due to the charge for expired inventory and inventory expected to expire before use noted above.

Operating Expenses

Selling, General and Administrative

($ in thousands, except percentages)	Three months ended June 30, 2023	Three months ended June 30, 2022	Change Amount	Change %
Selling, general and administrative	$ 22,708	$ 20,590	$ 2,118	10 %

Selling, general and administrative expense increased by $2.1 million, or 10%, for the three months ended June 30, 2023, compared to the three months ended June 30, 2022. The increase was primarily due to a $3.8 million increase in personnel-related expenses, inclusive of $1.7 million related to our reduction in force, offset by a $1.4 million decrease in professional fees, and other related fees such as legal, consulting, and IT, and other immaterial decreases.

Research and development

($ in thousands, except percentages)	Three months ended June 30, 2023	Three months ended June 30, 2022	Change Amount	Change %
Research and development	$ 6,273	$ 5,598	$ 675	12 %

Research and development expense increased by $0.7 million, or 12%, for the three months ended June 30, 2023, compared to the three months ended June 30, 2022. The increase was primarily due to a $0.7 million increase in personnel-related expenses, inclusive of $0.3 million related to our reduction in force.

Change in fair value of contingent consideration

($ in thousands, except percentages)	Three months ended June 30, 2023	2022	Change Amount	%
Change in fair value of contingent consideration	$ 530	$ (1,156)	$ 1,686	(146)%

Change in fair value of contingent consideration increased by $1.7 million, or 146%, for the three months ended June 30, 2023, compared to the three months ended June 30, 2022, due to current period remeasurement.

Depreciation and amortization

($ in thousands, except percentages)	Three months ended June 30, 2023	2022	Change Amount	%
Depreciation and amortization	$ 1,847	$ 1,617	$ 230	14 %

The $0.2 million increase in depreciation and amortization expense was primarily related to an increase in property and equipment as of June 30, 2023 as compared to June 30, 2022.

Interest expense

($ in thousands, except percentages)	Three months ended June 30, 2023	2022	Change Amount	%
Interest expense	$ 2,175	$ 849	$ 1,326	156 %

Interest expense increased by $1.3 million for the three months ended June 30, 2023, compared to the three months ended June 30, 2022. The increase was primarily due to increased debt levels as of June 30, 2023 as compared to June 30, 2022, as well as an increase in interest rates.

Interest income

($ in thousands, except percentages)	Three months ended June 30, 2023	2022	Change Amount	%
Interest income	$ 737	$ 54	$ 683	1,265 %

Interest income increased by $0.7 million for the three months ended June 30, 2023, compared to the three months ended June 30, 2022. The increase was due to higher interest rates earned on cash, cash equivalents, and marketable securities.

Other expense, net

($ in thousands, except percentages)	Three months ended June 30, 2023	2022	Change Amount	%
Other expense, net	$ (105)	$ (286)	$ 181	(63)%

Other expense, net increased by $181 thousand for the three months ended June 30, 2023 compared to the three months ended June 30, 2022.

Comparison of the six months ended June 30, 2023 and 2022

Revenue

($ in thousands, except percentages)	Six months ended June 30, 2023	Six months ended June 30, 2022	Change Amount	Change %
Product revenue	$ 32,671	$ 27,504	$ 5,167	19 %
Service and other revenue	12,260	7,284	4,976	68 %
Total revenue	$ 44,931	$ 34,788	$ 10,143	29 %

Product revenue increased by $5.2 million, or 19%, for the six months ended June 30, 2023, compared to the six months ended June 30, 2022. The increase was primarily driven by a $2.9 million increase in instrument revenue resulting from 130 new system placements during the six months ended June 30, 2023, compared to 111 new system placements for the six months ended June 30, 2022, and a $2.4 million increase in consumable revenue resulting from a larger installed base of 1,064 systems as of June 30, 2023, as compared to 785 systems as of June 30, 2022.

Service and other revenue increased by $5.0 million, or 68%, for the six months ended June 30, 2023, compared to the six months ended June 30, 2022. The increase was primarily due to an increase relating to lab services operations, revenue generated from companion diagnostic development, and other immaterial changes.

Cost of Goods Sold, Gross Profit and Gross Margin

($ in thousands, except percentages)	Six months ended June 30, 2023	Six months ended June 30, 2022	Change Amount	Change %
Cost of product revenue	$ 13,539	$ 9,278	$ 4,261	46 %
Cost of service and other revenue	6,983	5,073	1,910	38 %
Total cost of goods sold	$ 20,522	$ 14,351	$ 6,171	43 %
Gross profit	$ 24,409	$ 20,437	$ 3,972	19 %
Gross margin	54 %	59 %		

Cost of product revenue increased by $4.3 million, or 46%, for the six months ended June 30, 2023, compared to the six months ended June 30, 2022. The increase in cost of product revenue was primarily driven by a $2.0 million charge in the second quarter of 2023 for expired inventory and inventory expected to expire before use, and costs associated with increased instrument and consumable sales. Cost of service and other revenue increased by $1.9 million, or 38%, for the six months ended June 30, 2023, compared to the six months ended June 30, 2022. The increase was primarily due to increases in costs for lab services driven by an increase in activity, as well as an increase in extended warranty costs as there were higher customer renewals due to the maturity of the installed base.

Gross profit increased by $4.0 million, or 19%, and gross margin decreased by 4% for the six months ended June 30, 2023 as compared to the six months ended June 30, 2022. The increase in gross profit was primarily due to an overall increase in revenue. The decline in gross margin was primarily due to the charge for expired inventory and inventory expected to expire before use noted above.

Operating Expenses

Selling, General and Administrative

($ in thousands, except percentages)	Six months ended June 30, 2023	Six months ended June 30, 2022	Change Amount	Change %
Selling, general and administrative	$ 44,466	$ 38,783	$ 5,683	15 %

Selling, general and administrative expense increased by $5.7 million, or 15%, for the six months ended June 30, 2023, compared to the six months ended June 30, 2022. The increase was primarily due to a $6.5 million increase in personnel-related expenses, inclusive of $1.7 million related to our reduction in force, offset by a $1.8 million decrease in professional fees, and other related fees such as legal, consulting, and IT, and other immaterial decreases..

Research and development

($ in thousands, except percentages)	Six months ended June 30, 2023	Six months ended June 30, 2022	Change Amount	Change %
Research and development	$ 12,046	$ 11,312	$ 734	6 %

Research and development expense increased by $0.7 million, or 6%, for the six months ended June 30, 2023, compared to the six months ended June 30, 2022. The increase was primarily due to a $1.7 million increase in personnel-related expenses, inclusive of $0.3 million related to our reduction in force, offset by a $0.5 million decrease in third-party consulting and research costs, and $0.3 million decrease in supplies.

Change in fair value of contingent consideration

($ in thousands, except percentages)	Six months ended June 30, 2023	Six months ended June 30, 2022	Change Amount	Change %
Change in fair value of contingent consideration	$ 757	$ (956)	$ 1,713	(179)%

Change in fair value of contingent consideration increased by $1.7 million, or 179%, for the six months ended June 30, 2023, compared to the six months ended June 30, 2022, due to current period remeasurement.

Depreciation and amortization

($ in thousands, except percentages)	Six months ended June 30, 2023	Six months ended June 30, 2022	Change Amount	Change %
Depreciation and amortization	$ 3,818	$ 3,160	$ 658	21 %

The $0.7 million increase in depreciation and amortization expense was primarily related to an increase in property and equipment as of June 30, 2023 as compared to June 30, 2022.

Interest expense

($ in thousands, except percentages)	Six months ended June 30, 2023	Six months ended June 30, 2022	Change Amount	Change %
Interest expense	$ 4,229	$ 1,598	$ 2,631	165 %

Interest expense increased by $2.6 million for the six months ended June 30, 2023, compared to the six months ended June 30, 2022. The increase was primarily due to increased debt levels as of June 30, 2023 as compared to June 30, 2022, as well as an increase in interest rates.

Interest income

($ in thousands, except percentages)	Six months ended June 30, 2023	Six months ended June 30, 2022	Change Amount	Change %
Interest income	$ 1,502	$ 76	$ 1,426	1,876 %

Interest income increased by $1.4 million for the six months ended June 30, 2023, compared to the six months ended June 30, 2022. The increase was due to higher interest rates earned on cash, cash equivalents, and marketable securities.

Other expense, net

	Six months ended June 30,		Change	
($ in thousands, except percentages)	**2023**	**2022**	**Amount**	**%**
Other expense, net	$ 153	$ 382	$ (229)	(60)%

Other expense, net decreased by $229 thousand for the six months ended June 30, 2023 compared to the six months ended June 30, 2022.

Liquidity and Capital Resources

As of June 30, 2023, we had approximately $93.3 million in cash and cash equivalents.

Since our inception, we have experienced losses and negative cash flows from operations, and we incurred a consolidated net loss of $39.6 million for the six months ended June 30, 2023 and had an accumulated deficit of $206.4 million as of June 30, 2023. We have historically relied on equity and debt financings to fund our operations to date. We may in the future sell shares of our common stock, including pursuant to the Equity Distribution Agreement, or draw the remaining tranche pursuant to Amendment No. 3 to the Midcap Trust Term Loan to help fund our operations.

We expect to incur additional operating losses in the foreseeable future as we continue to invest in the research and development of our product offerings, commercialize and launch platforms, and expand into new markets. Based on our current business plan, we believe our existing cash and cash equivalents and anticipated cash flows from operations will be sufficient to meet our working capital and capital expenditure needs over at least the next 12 months following the date of the filing of this Quarterly Report on Form 10-Q.

Our future capital requirements will depend on many factors, including, but not limited to our ability to successfully commercialize and launch products, and to achieve a level of sales adequate to support our cost structure. If we are unable to execute on our business plan and adequately fund operations, or if the business plan requires a level of spending in excess of cash resources, we will have to seek additional equity or debt financing. If additional financings are required from outside sources, we may not be able to raise it on terms acceptable to us or at all. If we are unable to raise additional capital when desired, our business, financial condition, results of operations and prospects could be adversely affected.

Sources of Liquidity

Since our inception, we have financed our operations primarily from the issuance and sale of our equity securities, borrowings under long-term debt agreements, and revenue from our commercial operations. In April 2021, we raised $138.6 million in net proceeds through the sale of common stock from our IPO, after deducting the underwriter discounts and commissions and offering expenses of $12.8 million. As described further in Note 10 to our consolidated financial statements in this Quarterly Report on Form 10-Q, in June 2023, we raised approximately $47.8 million in net proceeds through the sale of common stock from our Offering, after deducting the underwriting discounts and commissions and offering expenses payable by the Company.

Midcap Trust Term Loan

In October 2020, we entered into the Midcap Trust Term Loan for a $37.5 million credit facility, consisting of a senior, secured term loan. We received $32.5 million in aggregate proceeds as a result of the debt financing. On June 1, 2022, we entered into Amendment No. 2, which permitted the draw of a second tranche of $10.0 million, which was drawn on June 1, 2022. Additionally, Amendment No. 2 provides us with a new third tranche pursuant to which we may draw $10.0 million any time after September 30, 2022 until September 30, 2023. Amendment No. 2 also delayed the amortization start dates for the outstanding loan amounts from November 1, 2023 until April 1, 2025, at which point we would be required to repay the principal amounts in seven equal monthly installments until the maturity date. Finally, Amendment No. 2 amended the interest rate payable on the term loan to apply an interest rate equal to the SOFR rate (with a floor of 1.61448%) plus 6.35%. On September 30, 2022, we drew the third tranche of $10,000 related to Amendment No. 2. On November 7, 2022, we entered into Amendment No. 3 to the Midcap Trust Term Loan, which permitted the draw of two additional tranches, each totaling $11,250, the first of which was drawn on November 7, 2022. The remaining tranche will become available for draw after June 30, 2023 but before December 31, 2023, and is subject to us achieving certain trailing twelve month revenue targets. Amendment No. 3 also delayed the amortization start dates for the outstanding loan amounts from April 1, 2025 until December 1, 2025 (subject to further extension upon certain conditions), at which point we will repay the principal amounts in equal monthly installments until the new maturity date of November 1, 2027. In addition, Amendment No. 3 amended the interest rate payable on the term loan to apply an interest rate equal to the SOFR rate (with a floor of 2.50%) plus 6.80%, and reset the call protection to begin as of November 7, 2025. Finally, Amendment No. 3 provides for a commitment fee of $74 payable on November 7, 2022 on the new tranche amounts and an exit fee of 4.75%. Substantially all other terms and conditions, and covenants of the credit agreement remain unchanged.

The Midcap Trust Term Loan is subject to a minimum revenue financial covenant measuring our last twelve months trailing revenue, tested on a monthly basis.

The Midcap Trust Term Loan is collateralized by substantially all of our assets. The agreement contains customary negative covenants that limit our ability to, among other things, incur additional indebtedness, grant liens, make investments, repurchase stock, pay dividends, transfer assets and merge or consolidate with any other entity or to acquire all or substantially all the capital stock or property of another entity. The agreement also contains customary affirmative covenants, including requirements to, among other things, deliver audited financial statements. If we default under the Midcap Trust Term Loan and if the default is not cured or waived, the lender could cause any amounts outstanding to be payable immediately. Under certain circumstances, the lender could also exercise its rights with respect to the collateral securing such loans. Moreover, any such default would limit our ability to obtain additional financing, which may have an adverse effect on our cash flow and liquidity.

We were in compliance with all covenants under the Midcap Trust Term Loan as of June 30, 2023.

At-the-Market Offering

On November 7, 2022, we entered into the Equity Distribution Agreement with Piper Sandler with respect to an ATM offering program under which we may offer and sell, from time to time at our sole discretion, shares of our common stock having an aggregate offering price of up to $50.0 million through Piper Sandler as our sales agent. As of June 30, 2023, we have not sold any shares of common stock under the ATM program.

Cash flows

The following table summarizes our cash flows for the periods presented:

	Six months ended June 30,	
($ in thousands)	**2023**	**2022**
Net cash provided by (used in):		
Operating activities	$ (31,562)	$ (31,318)
Investing activities	4,773	(43,476)
Financing activities	45,908	8,596
Net increase (decrease) in cash, cash equivalents, and restricted cash	$ 19,119	$ (66,198)

Operating activities

Net cash used in operating activities increased by $0.2 million to $31.6 million in the six months ended June 30, 2023 compared to $31.3 million in the six months ended June 30, 2022.

Net cash used in operating activities during the six months ended June 30, 2023 consisted of a net loss of $39.6 million and a change in our net operating assets and liabilities of $5.6 million, offset by non-cash charges of $13.7 million. The change in our net operating assets and liabilities was due to increases in accounts receivable of $3.1 million, increased inventory levels of $4.0 million, decreases in operating lease liabilities of $1.1 million, and decreases in accounts payable, accrued expenses and other liabilities of $1.0 million, offset by decreases in prepaid expenses and other assets of $2.3 million, and increases in deferred revenue of $1.3 million. Non-cash charges primarily consisted of $5.0 million of stock-based compensation expense, $4.2 million of depreciation and amortization, $2.2 million due to the change in our inventory reserve, decreases in operating lease right of use assets of $1.2 million, a $0.8 million change in fair value of contingent consideration, and $0.4 million of non-cash interest expense.

Net cash used in operating activities during the six months ended June 30, 2022 consisted of a net loss of $33.9 million and a change in our net operating assets and liabilities of $2.0 million, offset by non-cash charges of $4.6 million. The change in our net operating assets and liabilities was primarily due to increased inventory levels of $4.1 million, increased accounts receivable of $1.0 million, and increased prepaid expenses and other assets of $1.0 million, offset by increases in accounts payable, accrued expenses and other liabilities of $1.7 million, increases in operating lease liabilities of $1.4 million, and increases in deferred revenue of $1.1 million. Non-cash charges primarily consisted of $3.3 million of depreciation and amortization, $3.3 million of stock-based compensation, and $0.2 million of non-cash interest expense, offset by increases in operating lease right of use assets of $1.3 million, and a $1.0 million in change in fair value of contingent consideration.

Investing activities

Net cash provided by investing activities was $4.8 million for the six months ended June 30, 2023 compared to net cash used in investing activities of $43.5 million during the six months ended June 30, 2022.

Net cash provided by investing activities for the six months ended June 30, 2023 was driven by maturities of marketable securities of $7.0 million, offset by purchases of property and equipment of $2.2 million.

Net cash used in investing activities for the six months ended June 30, 2022 was driven by purchases of marketable securities of $40.8 million and purchases of property and equipment of $2.7 million.

Financing activities

Net cash provided by financing activities was $45.9 million for the six months ended June 30, 2023 compared to $8.6 million for the six months ended June 30, 2022.

Net cash provided by financing activities for the six months ended June 30, 2023 was primarily driven by $48.1 million in net proceeds received from our Offering, after deducting the underwriting discounts and commissions and offering expenses paid by the Company, and $0.2 million in proceeds from stock option exercises, offset by $1.7 million in payments of contingent consideration, $0.2 million in payments of deferred offering costs, and $0.1 million in settlement of restricted stock units for tax withholding obligations.

Net cash provided by financing activities for the six months ended June 30, 2022 was driven by $10.0 million in debt proceeds and $0.2 million in proceeds from stock option exercises, offset by $1.2 million in payments of contingent consideration, $0.3 million in principal payments on financing leases, and $0.1 million in payments of debt issuance costs.

Critical accounting policies and estimates

We have prepared our consolidated financial statements in accordance with GAAP. Our preparation of these consolidated financial statements requires us to make estimates, assumptions and judgments that affect the reported amounts of assets, liabilities, revenue, expenses and related disclosures. We evaluate our estimates and judgments on an ongoing basis. We base our estimates on historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results could therefore differ materially from these estimates under different assumptions or conditions.

There have been no significant changes in our critical accounting policies and estimates as compared to the critical accounting policies and estimates disclosed in the section titled “Management’s Discussion and Analysis of Financial Condition and Operations” included in our Annual Report on Form 10-K for the year ended December 31, 2022 filed with the SEC on March 6, 2023.

Recent accounting pronouncements

For information on recently issued accounting pronouncements, see Note 2 to our consolidated financial statements in this Quarterly Report on Form 10-Q.

JOBS Act accounting election

We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012 (the “JOBS Act”). Under the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards issued subsequent to the enactment of the JOBS Act until such time as those standards apply to private companies. We have elected to avail ourselves of this extended transition period, and, as a result, we will not be required to adopt new or revised accounting standards on the relevant dates on which adoption of such standards is required for other public companies. We intend to rely on other exemptions provided by the JOBS Act, including without limitation, not being required to comply with the auditor attestation requirements of Section 404(b) of the Sarbanes-Oxley Act of 2002.

Smaller reporting company status

We are also a “smaller reporting company,” meaning that the market value of our stock held by non-affiliates is less than $700 million as of the last trading day of our second quarter and our annual revenue is less than $100 million during the most recently completed fiscal year. We may continue to be a smaller reporting company if either (i) the market value of our stock held by non-affiliates is less than $250 million as of the last trading day of our second quarter or (ii) our annual revenue is less than $100 million during the most recently completed fiscal year and the market value of our stock held by non-affiliates is less than $700 million as of the last trading day of our second quarter. If we are a smaller reporting company at the time we cease to be an emerging growth company, we may continue to rely on exemptions from certain disclosure requirements that are available to smaller reporting companies. For example, as a smaller reporting company we may choose to present only the two most recent fiscal years of audited financial statements in our Annual Report on Form 10-K and, similar to emerging growth companies, smaller reporting companies have reduced disclosure obligations regarding executive compensation.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

We are a smaller reporting company, as defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended, for this reporting period and are not required to provide the information required under this item.

Item 4. Controls and Procedures

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we evaluated the effectiveness of the design and operation of our disclosure controls and procedures pursuant to Rule 13a-15 under the Exchange Act as of the end of the period covered by this report. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures were effective as of June 30, 2023. There was not any change in our internal control over financial reporting (as such term is defined in Rules 13a-15(f) under the Exchange Act) during the quarter ended June 30, 2023 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

Item 1. Legal Proceedings

From time to time, we may be subject to legal proceedings. We are not currently a party to or aware of any proceedings that we believe will have, individually or in the aggregate, a material adverse effect on our business, financial condition or results of operations. Regardless of outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors.

Item 1A. Risk Factors

Investing in our common stock involves a high degree of risk. We operate in a rapidly changing environment that involves a number of risks that could materially affect our business, financial condition or future results, some of which are beyond our control. In addition to the other information set forth in this report, the risks and uncertainties that we believe are most important for you to consider are discussed in Part I, Item 1A under the caption “Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2022 filed with the SEC on March 6, 2023. The risk factors may be important to understanding other statements in this report and should be read in conjunction with the unaudited financial statements and related notes in this report. The occurrence of any single risk or any combination of risks could materially and adversely affect our business, operations, product pipeline, operating results, financial condition or liquidity, and consequently, the value of our securities. Further, additional risks that we currently do not know about or that we currently believe to be immaterial may also impair our business, financial condition, operating results and prospects.

There have been no material changes to the risk factors described in the Annual Report on Form 10-K for the year ended December 31, 2022 filed with the SEC on March 6, 2023.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

Not applicable.

Item 3. Defaults Upon Senior Securities

Not applicable.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

Not applicable.

Item 6. Exhibits

Exhibit Number	Exhibit Title	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
3.1	Amended and Restated Certificate of Incorporation	S-1	333-254760	3.3	3/26/2021	
3.2	Amended and Restated Bylaws	S-1	333-254760	3.4	3/26/2021	
4.1	Amended and Restated Investors' Rights Agreement, dated September 27, 2019, by and among the Registrant and certain of its stockholders	S-1	333-254760	10.15	3/26/2021	
10.1+	Separation Agreement and Release, dated June 27, 2023, by and between the Company and Dr. Ehab El-Gabry	8-K	001-40344	10.1	6/27/2023	
10.2+	Separation Agreement and Release, dated July 3, 2023, by and between the Company and Ms. Moy	8-K	001-40344	10.1	7/5/2023	
31.1	Certification of Principal Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
31.2	Certification of Principal Financial and Accounting Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
32.1 *	Certification of Principal Executive Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002					X
32.2 *	Certification of Principal Financial and Accounting Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002					X
101.INS	Inline XBRL Instance Document (the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document)					X
101.SCH	Inline XBRL Taxonomy Extension Schema Document					X
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document					X
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document					X
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document					X
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document					X
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)					X

\+ Management contract or compensatory plan or arrangement.

* This certification is deemed not filed for purposes of Section 18 of the Exchange Act, or otherwise subject to the liability of that section, nor shall it be deemed incorporated by reference into any filing under the Securities Act or the Exchange Act.

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.

	Akoya Biosciences, Inc.
Date: August 7, 2023	By: /s/ Brian McKelligon Brian McKelligon President and Chief Executive Officer (Principal Executive Officer)
Date: August 7, 2023	By: /s/ Johnny Ek Johnny Ek Chief Financial Officer (Principal Financial and Accounting Officer)

Exhibit 31.1

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

I, Brian McKelligon, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Akoya Biosciences, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) 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)) 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) 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

    c) 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 fiscal 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(s) 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: August 7, 2023

By: /s/ Brian McKelligon
Brian McKelligon
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

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

I, Johnny Ek, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Akoya Biosciences, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) 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)) 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) 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

    c) 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 fiscal 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(s) 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: August 7, 2023

By: /s/ Johnny Ek
Johnny Ek
Chief Financial Officer
(Principal Financial Officer and
Principal Accounting Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO
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 Akoya Biosciences, Inc. (the "Company") on Form 10-Q for the quarterly period ended June 30, 2023 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

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

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

Date: August 7, 2023

By: /s/ Brian McKelligon
Brian McKelligon
Chief Executive Officer
(Principal Executive Officer)

Exhibit 32.2

CERTIFICATION PURSUANT TO
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 Akoya Biosciences, Inc. (the “Company”) on Form 10-Q for the quarterly period ended June 30, 2023 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

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

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

Date: August 7, 2023

By: /s/ Johnny Ek
Johnny Ek
Chief Financial Officer
(Principal Financial Officer and
Principal Accounting Officer)