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 September 30, 2022

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: 001-34180

STANDARD BIOTOOLS INC.

(Exact name of registrant as specified in its charter)

Delaware	**77-0513190**
State or other jurisdiction of incorporation or organization	I.R.S. Employer Identification No.
2 Tower Place, Ste 2000 South San Francisco, CA	**94080**
Address of principal executive offices	Zip Code

Registrant's telephone number, including area code: **(650) 266-6000**

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, $0.001 par value per share	**LAB**	**The Nasdaq Global Select Market**

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, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

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

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

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

As of October 31, 2022 there were 79,296,443 shares of the registrant's common stock, $0.001 par value per share, outstanding.

STANDARD BIOTOOLS INC.

(formerly known as FLUIDIGM CORPORATION)

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PART I. FINANCIAL INFORMATION

Item 1. Financial Statements

STANDARD BIOTOOLS INC.
(formerly known as FLUIDIGM CORPORATION)
CONDENSED CONSOLIDATED BALANCE SHEETS
(In thousands, except per share amounts)
(Unaudited)

	September 30, 2022	December 31, 2021
ASSETS		
Current assets:		
Cash and cash equivalents	$ 60,200	$ 28,451
Short-term investments	124,968	—
Accounts receivable (net of allowances of $594 and $356 at September 30, 2022 and December 31, 2021, respectively)	17,294	18,320
Inventories, net	21,946	20,825
Prepaid expenses and other current assets	4,609	4,470
Total current assets	229,017	72,066
Property and equipment, net	26,584	28,034
Operating lease right-of-use asset, net	34,726	37,119
Other non-current assets	3,119	3,689
Developed technology, net	15,400	27,927
Goodwill	106,069	106,379
Total assets	$ 414,915	$ 275,214
LIABILITIES, MEZZANINE EQUITY AND STOCKHOLDERS' EQUITY (DEFICIT)		
Current liabilities:		
Accounts payable	$ 9,305	$ 10,602
Accrued compensation and related benefits	10,624	4,920
Operating lease liabilities, current	3,515	3,053
Deferred revenue, current	11,322	11,947
Deferred grant income, current	3,656	3,535
Other accrued liabilities	6,914	8,673
Advances under revolving credit agreement, current	—	6,838
Term loan, current	833	—
Total current liabilities	46,169	49,568
Convertible notes, net	54,499	54,160
Term loan, non-current	9,386	10,049
Deferred tax liability	620	4,329
Operating lease liabilities, non-current	34,869	37,548
Deferred revenue, non-current	4,430	5,966
Deferred grant income, non-current	15,265	18,116
Other non-current liabilities	1,171	882
Total liabilities	166,409	180,618
Commitments and contingencies (Note 16)		
Redeemable preferred stock: $0.001 par value; 256 and no shares issued and outstanding at September 30, 2022 and December 31, 2021, respectively; aggregate liquidation preference of $255,559 and $— as of September 30, 2022 and December 31, 2021, respectively	311,253	—
Stockholders' equity (deficit):		
Preferred stock: $0.001 par value, 9,744 and 10,000 shares authorized at September 30, 2022 and December 31, 2021, respectively; no shares issued and outstanding at either September 30, 2022 or December 31, 2021	—	—
Common stock: $0.001 par value, 400,000 and 200,000 shares authorized at September 30, 2022 and December 31, 2021, respectively; 79,246 and 76,919 shares issued and outstanding at September 30, 2022 and December 31, 2021, respectively	79	77
Additional paid-in capital	845,034	831,424
Accumulated other comprehensive loss	(2,609)	(907)

Accumulated deficit	(905,251)	(735,998)
Total stockholders’ equity (deficit)	(62,747)	94,596
Total liabilities, mezzanine equity and stockholders’ equity (deficit)	$ 414,915	$ 275,214

See accompanying notes

STANDARD BIOTOOLS INC.
(formerly known as FLUIDIGM CORPORATION)
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(In thousands, except per share amounts)
(Unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2021	2022	2021
Revenue				
Product revenue	$ 19,312	$ 21,937	$ 51,535	$ 69,292
Service revenue	5,857	6,016	17,807	18,929
Other revenue	477	551	1,585	4,095
Total revenue	25,646	28,504	70,927	92,316
Costs and expenses				
Cost of product revenue	14,091	13,327	39,168	37,720
Cost of service revenue	2,335	1,508	5,875	5,465
Research and development	8,650	9,209	30,121	29,403
Selling, general and administrative	29,597	24,072	90,856	75,928
Total costs and expenses	54,673	48,116	166,020	148,516
Loss from operations	(29,027)	(19,612)	(95,093)	(56,200)
Interest expense	(1,049)	(968)	(3,141)	(2,751)
Loss on forward sale of Series B Preferred Stock	—	—	(60,081)	—
Loss on bridge loans	—	—	(13,719)	—
Surplus funding from NIH Contract	153	5,000	153	5,000
Other income (expense), net	(216)	315	(272)	534
Loss before income taxes	(30,139)	(15,265)	(172,153)	(53,417)
Income tax benefit	713	1,422	2,900	3,609
Net loss	$ (29,426)	$ (13,843)	$ (169,253)	$ (49,808)
Net loss per share, basic and diluted	$ (0.37)	$ (0.18)	$ (2.17)	$ (0.66)
Shares used in computing net loss per share, basic and diluted	78,897	76,301	77,924	75,494

See accompanying notes

STANDARD BIOTOOLS INC.
(formerly known as FLUIDIGM CORPORATION)
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
(In thousands)
(Unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2021	2022	2021
Net loss	$ (29,426)	$ (13,843)	$ (169,253)	$ (49,808)
Other comprehensive loss, net of tax:				
Foreign currency translation adjustment	(118)	(446)	(753)	(842)
Net change in unrealized loss on investments	(238)	—	(949)	—
Other comprehensive loss, net of tax	(356)	(446)	(1,702)	(842)
Comprehensive loss	$ (29,782)	$ (14,289)	$ (170,955)	$ (50,650)

See accompanying notes

STANDARD BIOTOOLS INC.
(formerly known as FLUIDIGM CORPORATION)
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (DEFICIT)
(In thousands)
(Unaudited)

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity (Deficit)
	Shares	Amount				
Balance as of December 31, 2021	76,919	$ 77	$ 831,424	$ (907)	$ (735,998)	$ 94,596
Issuance of restricted stock, net of shares withheld for taxes, and other	278	—	(89)	—	—	(89)
Issuance of common stock from option exercises	2	—	2	—	—	2
Stock-based compensation expense	—	—	4,042	—	—	4,042
Net loss	—	—	—	—	(76,288)	(76,288)
Other comprehensive loss, net of tax	—	—	—	(150)	—	(150)
Balance as of March 31, 2022	77,199	$ 77	$ 835,379	$ (1,057)	$ (812,286)	$ 22,113
Issuance of restricted stock, net of shares withheld for taxes, and other	1,119	1	(89)	—	—	(88)
Issuance of common stock under ESPP	309	1	496	—	—	497
Issuance of common stock from option exercises	27	—	96	—	—	96
Stock-based compensation expense	—	—	4,663	—	—	4,663
Net loss	—	—	—	—	(63,539)	(63,539)
Other comprehensive loss, net of tax	—	—	—	(1,196)	—	(1,196)
Balance as of June 30, 2022	78,654	$ 79	$ 840,545	$ (2,253)	$ (875,825)	$ (37,454)
Issuance of restricted stock, net of shares withheld for taxes, and other	592	—	(5)	—	—	(5)
Stock-based compensation expense	—	—	4,494	—	—	4,494
Net loss	—	—	—	—	(29,426)	(29,426)
Other comprehensive loss, net of tax	—	—	—	(356)	—	(356)
Balance as of September 30, 2022	79,246	$ 79	$ 845,034	$ (2,609)	$ (905,251)	$ (62,747)

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balance as of December 31, 2020	74,543	$ 75	$ 815,624	$ 112	$ (676,761)	$ 139,050
Issuance of restricted stock, net of shares withheld for taxes, and other	420	—	(525)	—	—	(525)
Stock-based compensation expense	—	—	3,677	—	—	3,677
Net loss	—	—	—	—	(18,821)	(18,821)
Other comprehensive loss, net of tax	—	—	—	(443)	—	(443)
Balance as of March 31, 2021	74,963	$ 75	$ 818,776	$ (331)	$ (695,582)	$ 122,938
Issuance of restricted stock, net of shares withheld for taxes, and other	1,028	1	(1,028)	—	—	(1,027)
Issuance of common stock under ESPP	139	—	685	—	—	685
Issuance of common stock from option exercises	36	—	209	—	—	209
Stock-based compensation expense	—	—	3,741	—	—	3,741
Net loss	—	—	—	—	(17,143)	(17,143)
Other comprehensive loss, net of tax	—	—	—	47	—	47

Balance as of June 30, 2021	76,166	$	76	$	822,383	$	(284)	$	(712,725)	$	109,450
Issuance of restricted stock, net of shares withheld for taxes, and other	318		—		(143)		—		—		(143)
Issuance of common stock from option exercises	1		—		(1)		—		—		(1)
Stock-based compensation expense	—		—		4,320		—		—		4,320
Net loss	—		—		—		—		(13,843)		(13,843)
Other comprehensive loss, net of tax	—		—		—		(446)		—		(446)
Balance as of September 30, 2021	76,485	$	76	$	826,559	$	(730)	$	(726,568)	$	99,337

See accompanying notes

STANDARD BIOTOOLS INC.
(formerly known as FLUIDIGM CORPORATION)
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)
(Unaudited)

	Nine Months Ended September 30,	
	2022	**2021**
Operating activities		
Net loss	$ (169,253)	$ (49,808)
Adjustments to reconcile net loss to net cash used in operating activities:		
Loss on forward sale of Series B Preferred Stock	60,081	—
Loss on bridge loans	13,719	—
Stock-based compensation expense	13,199	11,738
Amortization of developed technology	8,728	8,944
Depreciation and amortization	2,680	2,744
Provision for excess and obsolete inventory	7,239	1,539
Impairment of InstruNor developed technology intangible	3,526	—
Amortization of debt discounts, premiums and issuance costs	628	427
Other non-cash items	165	397
Changes in assets and liabilities:		
Accounts receivable, net	1,123	11,438
Inventories	(7,810)	(7,467)
Prepaid expenses and other assets	(83)	(2,720)
Accounts payable	(1,501)	1,412
Accrued compensation and related benefits	5,561	(5,394)
Deferred revenue	(2,408)	(2,290)
Other liabilities	(5,783)	(8,019)
Net cash used in operating activities	(70,189)	(37,059)
Investing activities		
Purchases of investments	(137,302)	—
Proceeds from NIH Contract	—	2,000
Proceeds from maturities of investments	12,000	—
Purchases of property and equipment	(3,070)	(12,801)
Net cash used in investing activities	(128,372)	(10,801)
Financing activities		
Proceeds from bridge loans	25,000	—
Proceeds from issuance of Series B Preferred Stock	225,000	—
Proceeds from term loan	—	10,000
Repayment of advances under revolving credit agreement	(6,838)	—
Repayment of long-term debt	—	(501)
Payment of debt and equity issuance costs	(12,547)	(35)
Proceeds from exercise of stock options	97	208
Proceeds from ESPP stock issuance	497	685
Payments for taxes related to net share settlement of equity awards and other	(181)	(1,695)
Net cash provided by financing activities	231,028	8,662
Effect of foreign exchange rate fluctuations on cash and cash equivalents	(719)	(13)
Net increase (decrease) in cash, cash equivalents and restricted cash	31,748	(39,211)
Cash, cash equivalents and restricted cash at beginning of period	29,467	69,536
Cash, cash equivalents and restricted cash at end of period	$ 61,215	$ 30,325
Supplemental disclosures of cash flow information		
Cash paid for interest	$ 1,847	$ 1,565
Cash paid for income taxes, net of refunds	$ 248	$ 1,113
Non-cash right-of-use assets and lease liabilities	$ 503	$ 2,241
Asset retirement obligations	$ 703	$ 702

See accompanying notes

STANDARD BIOTOOLS INC.
(formerly known as FLUIDIGM CORPORATION)
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
September 30, 2022

1. Description of Business

Standard BioTools Inc. (Standard BioTools, the Company, we, our or us) is driven by a bold vision – unleashing tools to accelerate breakthroughs in human health. We have an established portfolio of essential, standardized next-generation technologies that help biomedical researchers develop medicines faster and better. As a leading solutions provider, we provide reliable and repeatable insights in health and disease using our proprietary mass cytometry and microfluidics technologies that help transform scientific discoveries into better patient outcomes. Standard BioTools works with leading academic, government, pharmaceutical, biotechnology, plant and animal research, and clinical laboratories worldwide, focusing on the most pressing needs in translational and clinical research, including oncology, immunology, and immunotherapy.

The Company, formerly known as Fluidigm Corporation, changed its name to Standard BioTools Inc. in April 2022, in connection with the completion of the Private Placement Issuance (as defined and discussed in Note 3). The Company was founded in 1999 and is headquartered in South San Francisco, California.

2. Summary of Significant Accounting Policies

Basis of Presentation and Consolidation

The accompanying unaudited condensed consolidated financial statements have been prepared in conformity with U.S. generally accepted accounting principles (U.S. GAAP) and include the accounts of our wholly owned subsidiaries. As of September 30, 2022, we had wholly owned subsidiaries in Singapore, Canada, the Netherlands, Japan, France, Italy, the United Kingdom, China, Germany and Norway. All subsidiaries, except for Singapore, use their local currency as their functional currency. The Singapore subsidiary uses the U.S. dollar as its functional currency. All intercompany transactions and balances have been eliminated upon consolidation.

In the audited financial statements and the related notes for the year ended December 31, 2021 included in our annual report on Form 10-K, filed with the U.S. Securities and Exchange Commission (SEC) on March 8, 2022, we disclosed that we had performed an assessment to determine whether there were conditions or events, considered in the aggregate, that raised substantial doubt about our ability to continue as a going concern for at least the twelve-month period following the date the financial statements were issued. We believed that our then-current level of cash and cash equivalents, together with committed financing facilities, were not sufficient to fund ongoing operations for at least the twelve-month period after the financial statements were issued. We subsequently closed the $225 million Preferred Equity Financing (as defined in Note 3). The completion of this financing eliminated the doubt about the Company’s ability to continue as a going concern. We believe our current levels of cash, cash equivalents, and short-term investments along with the funding available under the Revolving Credit Facility will be sufficient to support the operations of our business for at least the next 12 months. See Note 3 for further discussion.

Certain prior period amounts in the condensed consolidated financial statements were reclassified to conform with the current period presentation. These reclassifications were immaterial and did not affect prior period total assets, total liabilities, stockholders’ equity, total revenue, total costs and expenses, loss from operations or net loss.

Unaudited Interim Financial Information

The accompanying unaudited interim condensed consolidated financial statements and related disclosures are unaudited, have been prepared on the same basis as the annual financial statements and, in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary for a fair statement of the results of operations for the periods presented.

The year-end condensed consolidated balance sheet was derived from audited financial statements, but does not include all disclosures required by U.S. GAAP. The condensed consolidated results of operations for the three and nine months ended September 30, 2022 are not necessarily indicative of results to be expected for the full year or for any other year or interim period. The accompanying condensed consolidated financial statements should be read in conjunction with the audited financial statements and the related notes for the year ended December 31, 2021 included in our annual report on Form 10-K, filed with the SEC on March 8, 2022.

Use of Estimates

The preparation of financial statements in accordance with U.S. GAAP requires management to make estimates and judgments that affect the amounts reported in the condensed consolidated financial statements and accompanying notes. We base these estimates on historical experience, the current economic environment and on various other assumptions believed to be reasonable, which together form the basis for making judgments about the carrying values of assets and liabilities. The full extent to which the COVID-19 pandemic impacts our business, results of operations and financial condition will depend on numerous evolving factors including, but not limited to, the magnitude and duration of the pandemic, the extent to which it will impact worldwide macroeconomic conditions, including the speed of recovery, and governmental and business reactions to the pandemic. We assessed certain accounting matters that generally require consideration of forecasted financial information, including the impact of COVID-19-related supply chain shortages, the war in Ukraine, and inflation. Assets and liabilities that rely on forecasted financial information to determine their carrying value include, but are not limited to, inventory, its related reserves, goodwill and other long-lived assets and liabilities. Actual results could differ materially from these estimates and could have a material adverse effect on our condensed consolidated financial statements. We also use significant judgment in determining the fair value of financial instruments, including debt and equity instruments.

Foreign Currency

Assets and liabilities of non-U.S. subsidiaries that use their local currency as their functional currency are translated into U.S. dollars at exchange rates in effect on the balance sheet date. Income and expense accounts are translated at monthly average exchange rates during the year. The adjustments resulting from the foreign currency translations are recorded in accumulated other comprehensive loss, a separate component of stockholders' equity.

Bridge Loans

The $25 million Bridge Loans (as defined in Note 3) were recorded at fair value in January 2022 when the loans were issued. The Company elected to use the fair value option as of the issuance date that was available under Accounting Standards Codification (ASC) 825 Financial Instruments. The change in fair value of the Bridge Loans from inception to the April 4, 2022 closing date of the Private Placement Issuance is recorded as a non-operating loss on Bridge Loans in the condensed consolidated statement of operations. The Bridge Loans were reported as a non-current liability on the condensed consolidated balance sheet until their conversion. Upon conversion, the carrying value of the Bridge Loans was reclassified to Series B Redeemable Preferred Stock (as defined in Note 3). We had accrued interest daily on the outstanding principal amount of the Bridge Loans until they were converted, which was capitalized while the debt issuance costs were expensed when incurred.

Private Placement Issuance

See Note 3 for a detailed discussion of the transactions, including the accounting treatment, and additional information.

Restructuring

We record liabilities for costs associated with exit or disposal activities in the period in which the liability is incurred. Severance and other employee termination costs are primarily recorded when the actions become probable and estimable. Costs for one-time termination benefits in which the employee is required to render service until termination in order to receive the benefits are recognized ratably over the future service period. We record costs to implement business improvement programs, including external consulting and legal expenses, as they are incurred.

Segment Reporting

We have historically operated as a single reportable segment and managed our business operations and evaluated our financial performance on a consolidated basis. During the third quarter of 2022, our Chief Executive Officer (CEO), who is our Chief Operating Decision Maker (CODM), instituted the practice of evaluating operating performance and making resource allocation decisions using two reportable segments: mass cytometry and microfluidics. In the fourth quarter of 2022, we will begin referring to these two segments as proteomics and genomics, respectively. Each segment is identified by its unique portfolio of products

We determine each segment's loss from operations by subtracting direct expenses, including cost of product and service revenues, research and development (R&D) expense and sales and marketing expense, from revenues. Amortization, depreciation, and restructuring expense are included in each segment's operating expenses. Corporate costs, including general and administrative expenses for functions shared by both operating segments such as executive management, human resources and finance, along with interest and taxes, are excluded from each segment's results, which is consistent with how our CODM measures segment performance. See Note 14 for additional information.

Series B Redeemable Preferred Stock

The Purchase Agreements (as defined in Note 3) for the issuance of shares of Series B Preferred Stock were accounted for as forward sales contracts at fair value in accordance with ASC 480 Distinguishing Liabilities from Equities. The Series B Preferred Stock was treated as mezzanine equity and recorded at its fair value upon issuance, net of issuance costs due to its redemption features, such as change of control and liquidation preference, which are outside of the Company's control. Subsequent remeasurement of the Series B Redeemable Preferred Stock amount presented within mezzanine equity to its redemption amount is not required since it is not probable that the instrument will become redeemable. Mezzanine equity which has characteristics of both liabilities and shareholders' equity (deficit) is presented separately on the condensed consolidated balance sheets between these items because it has some characteristics of both. See Note 3 for additional information.

Comprehensive Loss

Comprehensive loss is comprised of net loss and other comprehensive loss. Other comprehensive loss generally consists of unrealized gains and losses on our investments and foreign currency translation adjustments. Total comprehensive loss for all periods presented has been disclosed in the condensed consolidated statements of comprehensive loss.

The components of accumulated other comprehensive loss, net of tax, for the three and nine months ended September 30, 2022 are as follows (in thousands):

	Foreign Currency Translation Adjustment	Unrealized Loss on Investments	Accumulated Other Comprehensive Loss
Ending balance at December 31, 2021	$ (907)	$ —	$ (907)
Other comprehensive loss	(150)	—	(150)
Ending balance at March 31, 2022	$ (1,057)	$ —	$ (1,057)
Other comprehensive loss	(485)	(711)	(1,196)
Ending balance at June 30, 2022	$ (1,542)	$ (711)	$ (2,253)
Other comprehensive loss	(118)	(238)	(356)
Ending balance at September 30, 2022	$ (1,660)	$ (949)	$ (2,609)

Net Loss per Share

Our basic and diluted net loss per share is calculated by dividing net loss by the weighted-average number of shares of common stock outstanding for the period.

The following potentially dilutive common shares were excluded from the computation (in thousands):

	Nine Months Ended September 30,	
	2022	2021
Stock options, restricted stock units and performance awards	14,253	8,234
Series B Preferred Stock	75,164	—
2019 Convertible Notes	18,966	18,966
2019 Convertible Notes potential make-whole shares	4,741	735
2014 Convertible Notes	10	10
Total	113,134	27,945

Potentially dilutive securities in the above table include the impact of the Series B Preferred Stock defined and discussed in Note 3.

Recent Accounting Changes and Accounting Pronouncements

Adoption of New Accounting Guidance

In August 2020, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2020-06 Debt-Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging-Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity. The amendment to this ASU reduces the number of accounting models for convertible instruments and allows more contracts to qualify for equity classification, which is expected to result in more convertible instruments being accounted for as a single unit, rather than being bifurcated between debt and equity. The new guidance is effective for fiscal years beginning after December 15, 2021. We adopted ASU 2020-06 effective January 1, 2022. The adoption of ASU 2020-06 did not have an impact on our 2014 Notes and 2019 Notes (each as defined in Note 8).

In November 2021, the FASB issued ASU 2021-10 Government Assistance (Topic 832): Disclosures by Business Entities about Government Assistance. The amendment is effective for annual periods beginning after December 15, 2021. The amendment establishes financial disclosure requirements for business entities that receive government assistance that the entities account for by analogizing to a grant or contribution model because there is no specific authoritative guidance under U.S. GAAP that applies to the transaction. Entities that receive this type of assistance should include the following information in their annual report: (1) the nature of the transaction, (2) the significant terms and conditions, (3) the accounting treatment, (4) the line items on the balance sheet and income statement that are affected along with (5) the respective amounts that have been recorded. We adopted ASU 2021-10 effective January 1, 2022. The adoption of ASU 2021-10 did not have a material impact on our financial statements.

Recent Accounting Pronouncements

None.

3. Private Placement Issuance

Overview of Transactions

On January 23, 2022, we entered into (i) a Loan Agreement (the Casdin Bridge Loan Agreement) with Casdin Private Growth Equity Fund II, L.P. and Casdin Partners Master Fund, L.P. (collectively, Casdin) and (ii) a Loan Agreement (the Viking Bridge Loan Agreement, and together with the Casdin Bridge Loan Agreement, the Bridge Loan Agreements) with Viking Global Opportunities Illiquid Investments Sub-Master LP and Viking Global Opportunities Drawdown (Aggregator) LP (collectively, Viking and, together with Casdin, the Purchasers and each, a Purchaser). Each Bridge Loan Agreement provided for a $12.5 million term loan (the Bridge Loans) to the Company. The Bridge Loans were fully drawn on January 24, 2022. The Bridge Loans automatically converted into Series B Preferred Stock, defined below, upon the completion of the Preferred Equity Financing, defined below.

Also on January 23, 2022, we entered into separate Series B Convertible Preferred Stock Purchase Agreements (the Purchase Agreements) with each of Casdin and Viking pursuant to which at the closing of the transactions contemplated thereby, and on the terms and subject to the conditions set forth therein, including the approval of our stockholders, we issued and sold an aggregate of $225 million of convertible preferred stock on April 4, 2022, consisting of: (i) 112,500 shares of the Company's Series B-1 Convertible Preferred Stock, par value $0.001 per share (the Series B-1 Preferred Stock), at a purchase price of $1,000 per share to Casdin; and (ii) 112,500 shares of the Company's Series B-2 Convertible Preferred Stock, par value

$0.001 per share (the Series B-2 Preferred Stock, and together with the Series B-1 Preferred Stock, the Series B Preferred Stock or the Series B Redeemable Preferred Stock) at a purchase price of $1,000 per share to Viking (the Preferred Equity Financing, and together with the issuance of shares of Series B Preferred Stock in connection with the conversion of the Bridge Loans, the Private Placement Issuance).

The rights, preferences and privileges of the Series B Preferred Stock are set forth in the Series B-1 Certificate of Designations and Series B-2 Certificate of Designations (collectively, the Series B Certificates of Designations). The Series B Preferred Stock ranks senior to our common stock with respect to dividend rights, redemption rights and rights on the distribution of assets on any voluntary or involuntary liquidation, dissolution or winding up of the affairs of the Company. The holders of Series B Preferred Stock are entitled to participate in all dividends declared on our common stock on an as-converted basis, on the terms and subject to the conditions set forth in the Series B Certificates of Designations.

Our board of directors called a meeting (Special Meeting) to ask our stockholders to consider, vote upon and approve (i) a proposal to amend our Eighth Amended and Restated Certificate of Incorporation (the Charter) to, among other things, increase the number of shares of common stock, par value $0.001 per share, that we are authorized to issue from two hundred million (200,000,000) shares to four hundred million (400,000,000) shares and to change the Company’s name to Standard BioTools Inc. (the Charter Amendment Proposal); (ii) a proposal to approve, in accordance with Nasdaq Listing Rule 5635, the issuance of (A) the Series B-1 Preferred Stock and the Series B-2 Preferred Stock pursuant to the Purchase Agreements, (B) the Series B-1 Preferred Stock and the Series B-2 Preferred Stock issuable pursuant to the terms of the Bridge Loan Agreements and (C) the common stock issuable upon the conversion of the Series B Preferred Stock (the Private Placement Issuance Proposal); and (iii) a proposal to adjourn the Special Meeting if the Special Meeting were convened and a quorum were present, but there were not sufficient votes to approve the Charter Amendment Proposal and the Private Placement Issuance Proposal (the Adjournment Proposal, and, together with the Private Placement Issuance Proposal and the Charter Amendment Proposal, the Stockholder Proposals). Each of the Private Placement Issuance Proposal and Charter Amendment Proposal were conditioned on the approval of the other proposal, and neither proposal would take effect unless both were approved by our stockholders.

Our stockholders approved the Charter Amendment Proposal and Private Placement Issuance Proposal on April 1, 2022. The Private Placement Issuance closed on April 4, 2022. Upon closing, 225,000 shares of Series B Preferred Stock were issued in accordance with the Purchase Agreements and the Bridge Loans converted into 30,559 shares of Series B Preferred Stock, for a total of 255,559 shares of Series B Preferred Stock. The proceeds of the Private Placement Issuance have been and will be used to fund expenses related to the Private Placement Issuance, as well as working capital, general corporate purposes and potential future merger and acquisition opportunities that we may identify from time to time.

Series B Redeemable Preferred Stock

Preferred stock is classified as debt, equity or mezzanine equity based on its redemption features. Preferred stock with redemption features outside of the control of the issuer, such as contingent redemption features, is classified as mezzanine equity. We recorded the Series B Preferred Stock as mezzanine equity at its fair value upon issuance, net of any issuance costs, on the condensed consolidated balance sheet as of September 30, 2022 because it had features, such as change of control and liquidation preference, which are outside of the Company’s control. Subsequent adjustment of the amount presented within mezzanine equity to its redemption amount is unnecessary as it is not probable that the instrument will become redeemable.

Upon closing, the value of the Bridge Loans and the Purchase Agreements, discussed in detail below, were reclassified and included in the carrying value of the Series B Redeemable Preferred Stock. The carrying value of the Series B Redeemable Preferred Stock as of April 4, 2022 was $311.3 million and was unchanged as of September 30, 2022.

The components of the carrying value of the Series B Redeemable Preferred Stock are as follows (in thousands):

	September 30, 2022
Proceeds from Purchase Agreements	$ 225,000
Proceeds from Bridge Loans	25,000
Loss on Forward Purchase Agreements	60,081
Loss on Bridge Loans	13,719
Less equity issuance costs	(12,547)
Total Series B Redeemable Preferred Stock	$ 311,253

The Series B Preferred Stock Certificates of Designations contain several conversion rights, redemption features and other key provisions described below.

Holder Voluntary Conversion Rights

The Series B Preferred Stock is convertible at the option of the holders thereof at any time into a number of shares of common stock equal to the Conversion Rate (as defined in the Series B Certificates of Designations), which is initially 294.1176 shares of common stock per share of Series B Preferred Stock, in each case subject to certain adjustments and certain limitations on conversion.

Issuer Call Provision

At any time after the fifth anniversary of the closing of the Private Placement Issuance, if the last reported sale price of the common stock is greater than 250% of the Conversion Price (as defined in the Series B Certificates of Designations) as of such time for at least 20 consecutive trading days, we may elect to convert all of the outstanding shares of Series B Preferred Stock into shares of common stock.

Issuer Redemption Provision

After the seventh anniversary of the closing of the Private Placement Issuance, subject to certain conditions, we may, at our option, redeem all of the outstanding shares of Series B Preferred Stock at a redemption price per share of Series B Preferred Stock, payable in cash, equal to the Liquidation Preference (as defined in the Series B Certificates of Designations).

Change of Control Provisions

If we undergo certain change of control transactions, each holder of outstanding shares of Series B Preferred Stock will have the option, subject to the holder's right to convert all or a portion of the shares of Series B Preferred Stock held by such holder into common stock, to require us to purchase all or a portion of such holder's outstanding shares of Series B Preferred Stock that have not been converted into common stock at a purchase price per share of Series B Preferred Stock, payable in cash, equal to the greater of (A) the Liquidation Preference of such share of Series B Preferred Stock, and (B) the amount of cash and/or other assets that such holder would have been entitled to receive if such holder had converted such share of Series B Preferred Stock into common stock immediately prior to the change of control transaction (Change of Control Put).

In the event of a change of control in which we are not expected to be the surviving corporation or our common stock will no longer be listed on a U.S. national securities exchange, we will have a right to redeem, subject to the holder's right to convert into common stock prior to such redemption, all of such holder's shares of Series B Preferred Stock, or if a holder exercises the Change of Control Put in part, the remainder of such holder's shares of Series B Preferred Stock, at a redemption price per share payable in cash, equal to the greater of (A) the Liquidation Preference of such share of Series B Preferred Stock, and (B) the amount of cash and/or other assets that the holder would have received if such holder had converted such share of Series B Preferred Stock into common stock immediately prior to the change of control transaction.

Liquidation Rights

In the event of any voluntary or involuntary liquidation, dissolution or winding up of the affairs of the Company, the Series B Preferred Stock has a liquidation preference equal to the greater of (i) the Liquidation Preference (as defined in the Series B Certificates of Designations, currently $3.40) and (ii) the amount per share of Series B Preferred Stock that such holder would have received had all holders of Series B Preferred Stock, immediately prior to such voluntary or involuntary liquidation, dissolution or winding up of the affairs of the Company, converted all shares of Series B Preferred Stock into common stock pursuant to the terms of the Series B Certificates of Designations (without regard to any limitations on conversion contained therein).

Series B Convertible Preferred Stock Purchase Agreements

The Purchase Agreements for the issuance of 225,000 shares of Series B Preferred Stock for $225 million were accounted for as forward sales contracts at fair value in accordance with ASC 480 Distinguishing Liabilities from Equities because the Series B Preferred Stock included certain contingent redemption features which created an obligation for the Company to repurchase its shares. The fair value of the Series B Preferred Stock payable portion of the forward sales contracts was determined using a Monte Carlo Simulation (MCS). The MCS analysis used a random-walk process to simulate the value of our common stock and the resulting impact on the value of our Series B Preferred Stock, given the convertibility of the Series B Preferred Stock into cash or our common stock under several scenarios, as well as various provisions discussed above.

The fair value of the 225,000 shares of Series B Preferred Stock was determined to be $262.8 million as of March 31, 2022 and $285.1 million as of April 4, 2022. The $22.3 million increase in the fair value of the Series B Preferred Stock from March 31, 2022 to April 4, 2022 was included in the loss on forward sale of Series B Preferred Stock on the condensed consolidated statement of operations for the three months ended June 30, 2022. The loss was primarily due to the increase in our common stock price from $3.59 per share on March 31, 2022 to $3.99 per share on April 4, 2022.

The $60.1 million loss on forward sales of Series B Preferred Stock for the nine months ended September 30, 2022 reflected the increase in the share price of our common stock from $2.84 per share at the inception of the contracts to $3.99 per share as of April 4, 2022 and the value of the various conversion rights and key provisions discussed above.

Bridge Loans

Prior to their conversion, the Bridge Loans bore interest (i) from and including the effective date of the Bridge Loan Agreements to but excluding March 1, 2022, at a rate of 10% per annum, (ii) from and including March 1, 2022 to but excluding June 1, 2022, at a rate of 12% per annum, (iii) from and including June 1, 2022 to but excluding September 1, 2022, at a rate of 14% per annum, and (iv) from and including September 1, 2022 and thereafter, at a rate of 16% per annum. Interest accrued daily and was payable in kind by adding the accrued interest to the outstanding principal amount. Unless earlier converted, the outstanding principal amount of the Bridge Loans (inclusive of principal and accrued and unpaid interest) was due and payable in cash on the maturity date.

The Bridge Loans automatically converted into Series B Preferred Stock upon the closing of the Private Placement Issuance, in accordance with the terms of the Bridge Loan Agreements. The Bridge Loans converted into a number of shares of Series B Preferred Stock equal to (i) the then-outstanding principal amount of the applicable Bridge Loan (including any interest added to the original principal amount thereof) plus accrued and unpaid interest (together, the Conversion Amount) on the Bridge Loans divided by $1,000 multiplied by (ii) the Conversion Price (as defined in the Series B Certificates of Designations) divided by $2.84.

If the Series B Preferred Stock had not been approved for issuance by our stockholders, or the Purchase Agreements were terminated, then the Bridge Loans would have become convertible, at each lender’s option, into common stock, par value $0.001 per share, of the Company at an initial conversion rate of 352.1126 shares of common stock per $1,000.00 of the Conversion Amount, subject to the cap set forth in the Bridge Loan Agreements.

Applying the guidance in ASC 825 Financial Instruments, we elected to record the Bridge Loans at their fair value. We employed a probability-weighted expected return method in our valuation analysis of the Bridge Loans. Specifically, our analysis contemplated two scenarios: 1) our stockholders approve the transaction (Approval Scenario) and 2) our stockholders do not approve the transaction (Disapproval Scenario). To estimate the fair value of the Bridge Loans pursuant to the Approval Scenario, we employed a Monte Carlo Simulation (MCS) analysis, discussed above, based on the underlying Series B Preferred Stock into which the Bridge Loans were convertible.

The change in fair value of the Bridge Loans from inception to conversion on April 4, 2022 is included as a non-operating loss on Bridge Loans in the condensed consolidated statement of operations. The loss on Bridge Loans was $13.7 million for the nine months ended September 30, 2022. The loss was attributable to the increase in our share price from the inception of the Bridge Loans to the April 4, 2022 closing date. Upon conversion, the carrying value of the Bridge Loans was reclassified to Series B Redeemable Preferred Stock. In addition, as required under the fair value option, issuance costs associated with the Bridge Loans of $0.2 million were recognized in general and administrative expenses in the first quarter of 2022.

4. NIH Contract

In September 2020, we executed a definitive contract with the National Institutes of Health (NIH), which amended the letter contract we entered into with NIH in July 2020 (collectively, the NIH Contract), under the NIH Rapid Acceleration of Diagnostics (RADx) program to support the expansion of our production capacity and throughput capabilities for COVID-19 test products that use our microfluidics technology. We completed the required milestones in 2021 and received the total NIH Contract value of $34.0 million. Proceeds from the NIH Contract have been used primarily for capital expenditures to expand production capacity and, to a lesser extent, to offset applicable operating costs. The non-operating income recognized from the grant proceeds received in excess of the amounts spent for capital expenditures and operating expenses incurred is reflected on the condensed consolidated statement of operations as surplus funding from the NIH contract.

The following table summarizes the activity under the NIH Contract as of September 30, 2022 and December 31, 2021 (in thousands):

	September 30, 2022	December 31, 2021
Cash receipts from milestones achieved	$ 34,016	$ 34,016
Cumulative amounts applied against operating costs (excluding depreciation)	(4,526)	(4,522)
Cumulative amounts applied against depreciation expense for assets placed in service	(3,276)	(703)
Cumulative amounts recognized as non-operating income	(7,293)	(7,140)
Total deferred grant income	$ 18,921	$ 21,651
Assets placed in service, gross	$ 22,197	$ 16,890
Construction-in-progress	—	3,909
Cumulative amounts applied against depreciation expense for assets placed in service	(3,276)	(703)
Carrying value of property and equipment, net	18,921	20,096
Estimated future capital expenditures	—	1,555
Total deferred grant income	$ 18,921	$ 21,651
Deferred grant income, current	$ 3,656	$ 3,535
Deferred grant income, non-current	15,265	18,116
Total deferred grant income	$ 18,921	$ 21,651

The current portion of deferred grant income on our condensed consolidated balance sheet represents the amounts expected to be offset against depreciation expense over the next twelve months. The non-current portion of deferred grant income includes amounts expected to be offset against depreciation expense in later periods.

We spent a total of $22.2 million on capital expenditures associated with the NIH Contract. As of September 30, 2022, the capacity expansion project has been completed and all of the related assets have been placed in service. During the three months ended September 30, 2022, we recognized $0.2 million of non-operating income associated with the contract, bringing the cumulative total of such income under the NIH Contract to $7.3 million.

5. Revenue

Disaggregation of Revenue

The following tables present our revenue based upon the geographic location of our customers' facilities, and by segment, for the three and nine months ended September 30, 2022 and 2021 (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2021	2022	2021
Americas	$ 11,119	$ 13,013	$ 33,482	$ 47,656
EMEA	8,074	10,108	22,352	28,470
Asia-Pacific	6,453	5,383	15,093	16,190
Total revenue	$ 25,646	$ 28,504	$ 70,927	$ 92,316

	Three Months Ended September 30, 2022			Three Months Ended September 30, 2021		
	Mass Cytometry	Microfluidics	Total	Mass Cytometry	Microfluidics	Total
Product and service revenue	$ 14,266	$ 10,903	$ 25,169	$ 15,837	$ 12,116	$ 27,953
Other revenue	300	177	477	—	551	551
Total revenue	$ 14,566	$ 11,080	$ 25,646	$ 15,837	$ 12,667	$ 28,504

	Nine Months Ended September 30, 2022			Nine Months Ended September 30, 2021		
	Mass Cytometry	Microfluidics	Total	Mass Cytometry	Microfluidics	Total
Product and service revenue	$ 37,914	$ 31,428	$ 69,342	$ 46,498	$ 41,723	$ 88,221
Other revenue	850	735	1,585	—	4,095	4,095
Total revenue	$ 38,764	$ 32,163	$ 70,927	$ 46,498	$ 45,818	$ 92,316

Revenue from customers in the United States represented $10.6 million and $12.0 million, or 41% and 42% of total revenue, respectively, for the three months ended September 30, 2022 and 2021. For the nine months ended September 30, 2022 and 2021, respectively, revenue from domestic customers totaled $31.2 million and $45.6 million, or 44% and 49% of total revenue. Revenue from customers in China and Sweden totaled $3.2 million and $2.7 million, or 12% and 11% of total revenue, respectively, for the three months ended September 30, 2022. For the three months ended September 30, 2021, revenue from customers in China totaled $3.2 million, or 11% or total revenue.

For the nine months ended September 30, 2022 and 2021, revenue from customers in China totaled $7.7 million and $8.7 million, or 11% and 9% of total revenue, respectively. With the exception of China and Sweden, no foreign country had revenue in excess of 10% of total revenue during any periods presented in this report. Most of our principal operations, other than manufacturing and our decision-making functions, continue to be located at our corporate headquarters in the United States.

One microfluidics customer accounted for 15% and 10% of our total revenues for the three and nine months ended September 30, 2022. No single customer represented more than 10% of total revenue for the same periods in 2021. Revenue from our five largest customers represented 28% and 21% of total revenue for the three months ended September 30, 2022, and 2021, respectively. For the nine months ended September 30, 2022 and 2021, revenue from our five largest customers represented 19%, and 22% of total revenue, respectively.

Refer to Note 14 Segment Reporting for additional information.

Unfulfilled Performance Obligations

We reported $17.9 million of deferred revenue on our December 31, 2021 consolidated balance sheet. During the nine months ended September 30, 2022, $9.5 million of the opening balance was recognized as revenue and $7.4 million of net additional advance payments were received from customers, primarily associated with instrument service contracts. At September 30, 2022, we reported $15.8 million of deferred revenue.

We expect to recognize revenue from unfulfilled performance obligations associated with service contracts that were partially completed as of September 30, 2022 in the following periods (in thousands):

Fiscal Year		Expected Revenue (1)
2022 remainder of the year	$	4,262
2023		9,402
2024		4,606
Thereafter		2,920
Total	$	21,190

(1) Expected revenue includes both billed amounts included in deferred revenue and $5.4 million of unbilled amounts that are not reflected in our condensed consolidated financial statements and are subject to change if our customers decide to cancel or modify their contracts. Purchase orders for instrument service contracts can generally be canceled before the service period begins without penalty.

We apply the practical expedient that permits us not to disclose information about unsatisfied performance obligations for service contracts with an expected term of one year or less.

Customer Concentration

One customer accounted for $2.7 million, or 15%, of our trade accounts receivable, net as of September 30, 2022. No customer had an outstanding trade accounts receivable balance that represented more than 10% of net trade receivables as of December 31, 2021.

6. Goodwill and Intangible Assets, net

In connection with our acquisition of DVS Sciences, Inc. (DVS) in February 2014, we recognized $104.1 million of goodwill and $112.0 million of long-lived intangible assets associated with DVS' developed technology. In the first quarter of 2020, we recognized $2.2 million (Euro 2.0 million) of goodwill and $5.4 million (Euro 4.9 million) of developed technology from the InstruNor AS (InstruNor) acquisition.

Goodwill and long-lived intangible assets are tested for impairment either annually during the fourth quarter of the fiscal year or whenever events or changes in circumstances indicate the carrying amount of the assets may not be recoverable. To test for impairment, a qualitative assessment is initially performed. The qualitative evaluation includes assessing significant events and circumstances such as our current operating results, assumptions about our future performance, strategic initiatives and overall economic factors, including the ongoing global COVID-19 pandemic, in order to determine if potential indicators of impairment exist. If indicators of impairment are identified during the qualitative test, a quantitative impairment test is performed. As a result of our operating and reporting segment change and the significant decline in our share price during the three months ended September 30, 2022, we performed quantitative impairment tests for goodwill and our long-lived intangibles as of August 31, 2022 and as of September 30, 2022 and concluded that no impairment charge was necessary.

In determining the fair value of our two operating segments, significant assumptions including forecasted cash flows (revenue growth rates), discount rates, earnings multiples and an implied control premium were utilized. As these assumptions are inherently judgmental and subject to uncertainty, future impairments that cannot be reasonably estimated, but could be material, may occur.

Intangible assets include patents and licenses, which are included in other non-current assets on our condensed consolidated balance sheet. Intangible assets, net, were as follows (in thousands):

	September 30, 2022						
		Gross Amount		Accumulated Amortization and Impairment		Net	Weighted-Average Amortization Period
Developed technology	$	116,753	$	(101,353)	$	15,400	10.0 years
Patents and licenses	$	11,245	$	(10,500)	$	745	7.0 years

	December 31, 2021			
	Gross Amount	Accumulated Amortization	Net	Weighted-Average Amortization Period
Developed technology	$ 117,503	$ (89,576)	$ 27,927	9.9 years
Patents and licenses	$ 11,257	$ (10,000)	$ 1,257	7.0 years

Total amortization expense was $2.9 million and $3.1 million for the three months ended September 30, 2022 and 2021, respectively. Total amortization expense for the nine months ended September 30, 2022 and 2021 was $9.2 million and $9.5 million, respectively. A $3.5 million impairment charge on InstruNor's developed technology intangible asset was recorded in research and development expense in the second quarter of 2022 and is reflected in accumulated amortization in the above table.

Based on the carrying value of intangible assets as of September 30, 2022, our estimated future amortization expense is as follows (in thousands):

Fiscal Year	Developed Technology Amortization Expense	Patents and Licenses Amortization Expense	Total
2022 remainder of the year	$ 2,800	$ 168	$ 2,968
2023	11,200	571	11,771
2024	1,400	6	1,406
Total	$ 15,400	$ 745	$ 16,145

7. Balance Sheet Details

Cash, Cash Equivalents and Restricted Cash

Cash, cash equivalents and restricted cash consisted of the following as of September 30, 2022 and December 31, 2021 (in thousands):

	September 30, 2022	December 31, 2021
Cash and cash equivalents	$ 60,200	$ 28,451
Restricted cash	1,015	1,016
Total cash, cash equivalents and restricted cash	$ 61,215	$ 29,467

Restricted cash of $1.0 million is included in other non-current assets while the remainder of restricted cash is included in prepaid expenses and other current assets on the September 30, 2022 and December 31, 2021 condensed consolidated balance sheets.

Inventories, net

Inventories, net consisted of the following as of September 30, 2022 and December 31, 2021 (in thousands):

	September 30, 2022	December 31, 2021
Raw materials	$ 12,540	$ 9,345
Work-in-process	372	867
Finished goods	9,034	10,613
Total inventories, net	$ 21,946	$ 20,825

Property and Equipment, net

Property and equipment, net consisted of the following as of September 30, 2022 and December 31, 2021 (in thousands):

	September 30, 2022	December 31, 2021
Laboratory and manufacturing equipment	$ 33,449	$ 30,260
Leasehold improvements	12,118	12,095
Computer equipment and software	5,867	5,759
Office furniture and fixtures	1,850	2,074
Property and equipment, gross	53,284	50,188
Less accumulated depreciation and amortization	(28,168)	(26,703)
Construction-in-progress	1,468	4,549
Property and equipment, net	$ 26,584	$ 28,034

Accrued Compensation and Related Benefits

Accrued compensation and related benefits, which are included in current liabilities on the condensed consolidated balance sheets consisted of the following as of September 30, 2022 and December 31, 2021 (in thousands):

	September 30, 2022	December 31, 2021
Accrued incentive compensation	$ 1,928	$ 14
Accrued vacation	3,353	3,388
Accrued payroll taxes and other	1,796	1,411
Accrued severance and retention payments	2,640	107
Accrued restructuring	907	—
Accrued compensation and related benefits	$ 10,624	$ 4,920

Refer to Note 15 for additional information on restructuring.

Warranty

Accrued warranty is included in current other accrued liabilities on our condensed consolidated balance sheets. Activity for our warranty accrual for the nine months ended September 30, 2022 and 2021 is summarized below (in thousands):

	Nine Months Ended September 30,	
	2022	2021
Beginning balance	$ 1,170	$ 1,663
Accrual for current period warranties	241	554
Warranty costs incurred	(875)	(713)
Ending balance	$ 536	$ 1,504

8. Debt

2014 Senior Convertible Notes (2014 Notes) and 2019 Senior Convertible Notes (2019 Notes)

The carrying values of the components of the 2014 Notes and 2019 Notes are as follows (in thousands):

	September 30, 2022	December 31, 2021
2.75% 2014 Notes due 2034		
Principal amount	$ 578	$ 578
Unamortized debt discount	(8)	(8)
Unamortized debt issuance cost	(2)	(2)
Net carrying value of 2014 Notes	$ 568	$ 568
5.25% 2019 Notes due 2024		
Principal amount	$ 55,000	$ 55,000
Unamortized debt issuance cost	(1,069)	(1,408)
Net carrying value of 2019 Notes	$ 53,931	$ 53,592
Net carrying value of all Notes	$ 54,499	$ 54,160

2014 Senior Convertible Notes (2014 Notes)

In February 2014, we closed an underwritten public offering of 2014 Notes. In 2019, the outstanding 2014 Notes were largely refinanced with the 2019 Notes, as discussed below. The effective interest rate on the 2014 Notes, reflecting the impact of debt discounts and issuance costs, is approximately 3% per annum. The 2014 Notes will mature on February 1, 2034, unless earlier converted, redeemed, or repurchased in accordance with the terms of the 2014 Notes. Holders may require us to repurchase all or a portion of their 2014 Notes on each of February 6, 2024 and February 6, 2029, at a repurchase price in cash equal to 100% of the principal amount of the 2014 Notes plus accrued and unpaid interest.

As provided by the indenture governing the 2014 Notes, in February 2021, holders of $0.5 million of the 2014 Notes required us to repurchase their notes at 100% of the principal amount plus accrued and unpaid interest. As of September 30, 2022, there was $0.6 million aggregate principal of the 2014 Notes outstanding.

2019 Senior Convertible Notes (2019 Notes)

In November 2019, we issued $55.0 million aggregate principal amount of 2019 Notes. Net proceeds of the 2019 Notes issuance were $52.7 million, after deductions for commissions and other debt issuance costs. $51.8 million of the proceeds of the 2019 Notes were used to retire $50.2 million aggregate principal amount of our 2014 Notes, leaving $1.1 million of aggregate principal value of 2014 Notes then outstanding.

The 2019 Notes bear interest at 5.25% per annum, payable semiannually on June 1 and December 1 of each year. The 2019 Notes will mature on December 1, 2024, unless earlier repurchased or converted pursuant to their terms. The 2019 Notes will be convertible at the option of the holder at any point prior to the close of business on the second scheduled trading day preceding the maturity date. The initial conversion rate of the 2019 Notes is 344.8276 shares of our common stock per $1,000 principal amount of 2019 Notes (which is equivalent to an initial conversion price of approximately $2.90 per share). The conversion rate is subject to adjustment upon the occurrence of certain specified events. Those certain specified events include voluntary conversion of the 2019 Notes prior to our exercise of the Issuer’s Conversion Option (as defined below) or in connection with a make-whole fundamental change, entitling the holders, under certain circumstances, to a make-whole premium in the form of an increase in the conversion rate determined by reference to a make-whole table set forth in the indenture governing the 2019 Notes. The conversion rate will not be adjusted for any accrued and unpaid interest.

The 2019 Notes will also be convertible at our option upon certain conditions in accordance with the terms of the indenture governing the 2019 Notes. On or after December 1, 2021 to December 1, 2022, if the volume-weighted average price of our common stock has equaled or exceeded 150% of the Conversion Price (as defined in the indenture governing the 2019 Notes) then in effect for a specified number of days (Issuer’s Conversion Option), we may, at our option, elect to convert the 2019 Notes in whole but not in part into shares of our common stock, determined in accordance with the terms of the indenture governing the 2019 Notes. On or after December 1, 2022, if the volume-weighted average price of our common stock has equaled or exceeded 130% of the Conversion Price then in effect for a specified number of days, we may, at our option, elect to convert the 2019 Notes in whole but not in part into shares of our common stock, determined in accordance with the terms of the indenture governing the 2019 Notes.

Offering-related costs for the 2019 Notes were capitalized as debt issuance costs and are recorded as an offset to the carrying value of the 2019 Notes. The effective rate on the 2019 Notes is 8.2% per annum.

Revolving Credit Facility and Term Loan, net

The carrying values of our term loan and advances under the Credit Facility (as defined below) are as follows (in thousands):

	September 30, 2022	December 31, 2021
Term Loan		
Principal amount	$ 10,000	$ 10,000
End of term fee accretion	241	79
Unamortized debt issuance cost	(22)	(30)
Net carrying value of term loan	10,219	10,049
Less: term loan, current	833	—
Term loan, non-current	$ 9,386	$ 10,049
Revolving Credit Facility		
Carrying value of advances under credit agreement	$ —	$ 6,838

In August 2018, we entered into a revolving credit facility with Silicon Valley Bank (as amended, the Revolving Credit Facility) in an aggregate principal amount of up to the lesser of (i) $15.0 million (Maximum Amount) or (ii) the sum of (a) 85% of our eligible receivables and (b) 50% of our eligible inventory, in each case, subject to certain limitations (Borrowing Base), provided that the amount of eligible inventory that may be counted towards the Borrowing Base shall be subject to a cap as set forth in the Revolving Credit Facility.

On August 2, 2021, we amended our Revolving Credit Facility to extend the maturity date to August 2, 2023 and to provide for a new $10.0 million term loan facility (the Term Loan Facility and, together with the Revolving Credit Facility, the Credit Facility). The stated maturity of the Term Loan Facility is July 1, 2025. However, if the principal amount of our convertible debt exceeds $0.6 million as of June 1, 2024 or if the maturity of our 2019 Notes has not been extended beyond January 1, 2026 by June 1, 2024, then the maturity date of the Term Loan Facility will be June 1, 2024. The Credit Facility is collateralized by substantially all our property, other than intellectual property. The Credit Facility also includes a financial covenant that requires us to maintain a minimum Adjusted Quick Ratio (as defined in the Credit Facility) of at least 1.25 to 1.00.

The interest rate on advances made under the Revolving Credit Facility is the greater of (i) prime rate plus 0.50% or (ii) 5.25% per annum. Interest on any outstanding amounts is due and payable monthly and the principal balance is due at maturity, though loans can be prepaid at any time without penalty. Fees for the Revolving Credit Facility include an annual commitment fee of $112,500 and a quarterly unused line fee of 0.75% per annum based on the availability amount. Total availability under the Revolving Credit Facility as of September 30, 2022 was $12.5 million. There were no borrowings outstanding under the Revolving Credit Facility at September 30, 2022.

As of September 30, 2022, the Term Loan Facility was fully drawn. The interest rate on the Term Loan Facility is the greater of 4.0% or a floating per annum rate equal to three quarters of one percentage point (0.75%) above the prime rate. Interest on any outstanding term loan advances is due and payable monthly. In addition to the monthly interest payments, a final payment equal to 6.5% of the original principal amount of each advance is due on the earlier of the maturity date or the date the advance is repaid. Principal balances are required to be repaid in twenty-four equal installments beginning on August 1, 2023. The $0.8 million current portion of the term loan reflected on the September 30, 2022 condensed consolidated balance sheet represents principal debt repayments scheduled to be made in the third quarter of 2023. The effective interest rate on the Term Loan Facility, reflecting the impact of debt issuance costs, the end-of-term fee and expected timing of principal repayment, was 8.2% per annum as of September 30, 2022.

9. Leases

We have operating leases for buildings, equipment and vehicles. Existing leases have remaining terms ranging from less than one year to seven years. Some leases contain options to extend the lease, typically for periods of up to five years, along with termination options.

In August 2022, we entered into an agreement to sublease approximately 25% of our corporate headquarters location in South San Francisco for a period of 39 months. We expect to recognize $4.7 million of sublease income over the lease term commencing in October 2022.

Supplemental balance sheet information related to our leases as of September 30, 2022 and December 31, 2021 is as follows (in thousands, except for discount rate and lease term):

	September 30, 2022	December 31, 2021
Operating lease right-of-use buildings	$ 43,520	$ 43,457
Operating lease right-of-use equipment	72	84
Operating lease right-of-use vehicles	541	676
Total operating lease right-of-use assets, gross	44,133	44,217
Accumulated amortization	(9,407)	(7,098)
Total operating lease right-of-use assets, net	$ 34,726	$ 37,119
Operating lease liabilities, current	$ 3,515	$ 3,053
Operating lease liabilities, non-current	34,869	37,548
Total operating lease liabilities	$ 38,384	$ 40,601
Weighted average remaining lease term (in years)	7.0	7.7
Weighted average discount rate per annum	11.8 %	11.7 %

10. Fair Value of Financial Instruments

The following tables summarize our cash, cash equivalents, restricted cash, and available-for-sale securities by significant investment category within the fair value hierarchy as of September 30, 2022 and December 31, 2021 (in thousands):

	September 30, 2022					
	Amortized Cost	Gross Unrealized Loss	Fair Value	Cash and Cash Equivalents	Short-Term Marketable Securities	Cash-Restricted
Assets:						
Cash and money market funds	$ 60,200	$ —	$ 60,200	$ 60,200	$ —	$ —
Cash-restricted	1,015	—	1,015	—	—	1,015
Total cash, cash equivalents and restricted cash	$ 61,215	$ —	$ 61,215	$ 60,200	$ —	$ 1,015
Available-for-sale:						
Level I:						
U.S. treasury securities	$ 125,917	$ (949)	$ 124,968	$ —	$ 124,968	$ —
Total	$ 187,132	$ (949)	$ 186,183	$ 60,200	$ 124,968	$ 1,015

	December 31, 2021					
	Amortized Cost	Gross Unrealized Loss	Fair Value	Cash and Cash Equivalents	Short-Term Marketable Securities	Cash-Restricted
Assets:						
Cash and money market funds	$ 28,451	$ —	$ 28,451	$ 28,451	$ —	$ —
Cash-restricted	1,016	—	1,016	—	—	1,016
Total cash, cash equivalents and restricted cash	$ 29,467	$ —	$ 29,467	$ 28,451	$ —	$ 1,016
Available-for-sale:						
Level I:						
U.S. treasury securities	$ —	$ —	$ —	$ —	$ —	$ —
Total	$ 29,467	$ —	$ 29,467	$ 28,451	$ —	$ 1,016

Cash and cash equivalents are Level I measurements. There were no changes in the valuation techniques used during the nine months ended September 30, 2022.

Our convertible notes are not regularly traded and it is difficult to estimate a reliable and accurate market price for these securities. The estimated fair values for these securities represent Level III valuations since a fair value for these securities cannot be determined by using readily observable inputs or measures, such as market prices. Fair values were estimated using pricing models and risk-adjusted value ranges.

The estimated fair value of our term loan also represents a Level III valuation since the value cannot be determined by using readily observable inputs or measures, such as market prices. The fair value of our term loan was estimated using a discounted cash flows approach and current market interest rate data for similar loans.

The following table summarizes the par value, carrying value and estimated fair value of our debt as of September 30, 2022 and December 31, 2021 (in thousands):

	September 30, 2022			December 31, 2021		
	Par Value	Carrying Value	Fair Value	Par Value	Carrying Value	Fair Value
Convertible Notes:						
2014 Notes	$ 578	$ 568	$ 467	$ 578	$ 568	$ 601
2019 Notes	55,000	53,931	46,464	55,000	53,592	81,880
Total Notes	$ 55,578	$ 54,499	$ 46,931	$ 55,578	$ 54,160	$ 82,481
Term loan, net	$ 10,000	$ 10,219	$ 9,336	$ 10,000	$ 10,049	$ 10,113
Advances under revolving credit agreement	$ —	$ —	$ —	$ 6,838	$ 6,838	$ 6,838
Total debt	$ 65,578	$ 64,718	$ 56,267	$ 72,416	$ 71,047	$ 99,432

Assets Measured at Fair Value on a Nonrecurring Basis

During the third quarter of 2022, the Company changed its reporting structure and reorganized itself under two reporting units. This transition from one to two units required us to assign a portion of goodwill to each reporting unit using a relative fair value approach and then test the goodwill for impairment by comparing each unit's fair value to its respective carrying value. The fair value of a reporting unit refers to the amount received when an entire operating unit is sold in an orderly transaction between market participants. We estimated the fair value of our two reporting units using a discounted cash flow (DCF) approach which utilized Level 3 unobservable inputs. Our DCF model relied on assumptions regarding forecasted cash flows (revenue growth rates), discount rates, earnings multiples and an implied control premium. We prepared separate DCF valuations as of August 31, 2022 and September 30, 2022 and concluded that no impairment charge was necessary.

11. Shareholders' Equity

On April 1, 2022, our stockholders approved the Charter Amendment Proposal and Private Placement Issuance Proposal discussed in Note 3. The Private Placement Issuance closed on April 4, 2022 and we issued 255,559 shares of Series B Preferred Stock. In connection with the closing, we adopted the 2022 Inducement Equity Incentive Plan (2022 Inducement Plan) with an initial reserve for issuance of approximately 9.5 million shares.

Following stockholder approval of the Charter Amendment Proposal and the Private Placement Issuance Proposal, our name was changed to Standard BioTools Inc. Shortly after the closing of the Private Placement Issuance, we also changed the trading symbol for our common stock on the Nasdaq Global Select Market to LAB. Upon the closing of the Private Placement Issuance, Dr. Michael Egholm was appointed as our President and Chief Executive Officer and as a member of the Board of Directors.

Common Shares Reserved

As of September 30, 2022, we had reserved shares of common stock for future issuance under equity compensation plans as follows:

In thousands	Securities To Be Issued Upon Exercise Of Options	Securities To Be Issued Upon Release Of Restricted Stock and Performance Stock Units at Maximum	Number Of Remaining Securities Available For Future Issuance
2022 Inducement Equity Incentive Plan	6,498	1,379	1,560
2011 Equity Incentive Plan	1,685	5,225	3,650
2017 Inducement Award Plan	159	18	—
DVS Sciences Inc. 2010 Equity Incentive Plan	3	—	—
2017 Employee Stock Purchase Plan	—	—	2,324
	8,345	6,622	7,534

Included in the number of securities to be issued upon release of restricted stock units (RSUs) and performance stock units (PSUs) are the maximum number of shares that could be issued for PSU awards, which can vest at 0%-200% of the number of awards granted.

12. Stock-Based Plans

Our board of directors sets the terms, conditions, and restrictions related to our 2017 Employee Stock Purchase Plan (ESPP) and the grant of stock options, RSUs and performance-based awards under our equity incentive plans. Our board of directors determines the number of awards to grant and also sets the vesting criteria.

In general, RSUs vest on a quarterly basis over a period of four years from the date of grant at a rate of 25% on the first anniversary of the grant date and ratably each quarter over the remaining 12 quarters, or ratably over 16 quarters, subject to the employees’ continued employment. We may grant RSUs with different vesting terms from time to time.

Stock options granted under our 2022 Inducement Plan and 2011 Equity Incentive Plan (2011 Plan) have a term of no more than ten years from the date of grant and an exercise price of at least 100% of the fair market value of the underlying common stock on the date of grant. Generally, options vest at a rate of either 25% on the first anniversary of the option grant date and ratably each month over the remaining period of 36 months, or ratably each month over 48 months. We may grant options with different vesting terms from time to time.

For performance-based share awards, our board of directors sets the performance objectives and other vesting provisions in determining the number of shares or value of performance units and performance shares that will be paid out. Such payout will be a function of the extent to which performance objectives or other vesting provisions have been achieved.

2011 Equity Incentive Plan

In January 2011, our board of directors adopted the 2011 Plan under which incentive stock options, non-statutory stock options, RSUs, stock appreciation rights, PSUs and performance shares may be granted to our employees, directors, and consultants. In April 2019, our board of directors authorized, and in June 2019, our stockholders approved an amendment and restatement of the 2011 Plan to make various changes, including increasing the number of shares reserved for issuance by approximately 5.0 million shares and extending the term of the 2011 Plan until April 2029. In May 2020, our board of directors authorized, and in June 2020, our stockholders approved, an increase of 1.4 million shares reserved for issuance under the 2011 Plan. In April 2021, our board of directors authorized, and in May 2021, our stockholders approved, an additional increase of 4.1 million shares reserved for issuance under the 2011 Plan.

2022 Inducement Equity Incentive Plan

As discussed in Note 11, we adopted the 2022 Inducement Plan in April 2022 and reserved 9.5 million shares of common stock for the issuance of equity-based awards, including non-statutory stock options, RSUs, restricted stock, stock appreciation rights, performance shares and PSUs. In accordance with Nasdaq listing rules, equity awards issued under the 2022 Inducement Plan are restricted to individuals who are not already employees or directors of the Company. The terms and conditions of the 2022 Inducement Plan are substantially similar to those of the 2011 Plan.

Activity under the various plans was as follows:

Restricted Stock Units:

	Number of Units (in 000s)	Weighted-Average Grant Date Fair Value per Unit
Balance at December 31, 2021	5,141	$ 5.18
RSU granted	3,492	$ 3.16
RSU released	(2,059)	$ 4.95
RSU forfeited	(1,379)	$ 4.64
Balance at September 30, 2022	5,195	$ 4.02

As of September 30, 2022, the unrecognized compensation costs related to outstanding unvested RSUs under our equity incentive plans were $17.1 million. We expect to recognize those costs over a weighted average period of 2.5 years.

Stock Options:

	Number of Options (000s)	Weighted-Average Exercise Price per Option	Weighted-Average Remaining Contractual Life (in Years)	Aggregate Intrinsic Value [(1)] in (000s)
Balance at December 31, 2021	1,597	$ 7.08	5.6	$ 82
Options granted	7,810	$ 3.91		$ —
Options exercised	(31)	$ 3.25		$ 10
Options forfeited	(1,031)	$ 4.55		$ —
Balance at September 30, 2022	8,345	$ 4.44	8.7	$ —
Vested at September 30, 2022	1,898	$ 6.20	6.0	$ —
Unvested awards at September 30, 2022	6,447	$ 3.92	9.5	$ —

(1) Aggregate intrinsic value as of September 30, 2022 was calculated as the difference between the closing price per share of our common stock on the last trading day of September 30, 2022, which was $1.10, and the exercise price of the options, multiplied by the number of in-the-money options.

The majority of the options granted during 2022 were under the 2022 Inducement Plan and awarded to new members of our management team.

As of September 30, 2022, the unrecognized compensation costs related to outstanding unvested options under our equity incentive plans were $15.0 million. We expect to recognize those costs over a weighted average period of 3.5 years.

Performance Stock Units:

We have granted PSU awards to certain executive officers and senior level employees. The number of PSUs ultimately earned under these awards is calculated based on the Total Shareholder Return (TSR) of our common stock as compared to the TSR of a defined group of peer companies during the applicable three-year performance period. The percentage of PSUs that vest will depend on our relative position at the end of the performance period and can range from 0% to 200% of the number of units granted.

Based on the performance of our stock relative to our defined group of peer companies, none of the PSUs awarded in 2019 for the 2019-2021 measurement period were vested. The performance adjustment in the table below reflects that no shares were issued upon vesting of the 2019 PSU awards.

Activity under the TSR-based PSUs was as follows:

	Number of Units (in 000s)	Weighted-Average Grant Date Fair Value per Unit
Balance at December 31, 2021	1,210	$ 10.11
PSU granted	—	$ —
Performance adjustment for 2019 awards	(341)	$ 16.97
PSU released	—	$ —
PSU forfeited	(156)	$ 8.17
Balance at September 30, 2022	713	$ 6.38

As of September 30, 2022, the unrecognized compensation costs related to these awards were $1.3 million. We expect to recognize those costs over a weighted average period of 1.2 years.

2017 Employee Stock Purchase Plan (ESPP)

Our ESPP offers U.S. and some non-U.S. employees the right to purchase shares of our common stock. Our ESPP program has a six-month offering period, with a new period commencing on the first trading day on or after May 31 and November 30 of each year. Employees are eligible to participate through payroll deductions of up to 10% of their compensation. Employees may not purchase more than $25 thousand of stock for any calendar year. The purchase price at which shares are sold under the ESPP is 85% of the lower of the fair market value of a share of our common stock on the first day of the offering period or the last day of the offering period.

Stock-based Compensation Expense

Total stock-based compensation expense recognized was as follows (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2021	2022	2021
Restricted stock units, stock options and performance stock units	$ 4,417	$ 4,190	$ 12,929	$ 11,229
Employee stock purchase plan	77	130	270	509
Total stock-based compensation	$ 4,494	$ 4,320	$ 13,199	$ 11,738

13. Income Taxes

Our quarterly provision for income taxes is based on an estimated effective annual income tax rate. Our quarterly provision for income taxes also includes discrete items, such as changes in valuation allowances or adjustments upon finalization of tax returns as well as infrequently occurring items, if any, such as the effects of changes in tax laws or rates, in the interim period in which they occur.

We recorded a tax benefit of $0.7 million and $1.4 million for the three months ended September 30, 2022 and 2021, respectively. Higher profits in our foreign subsidiaries during the quarter ended September 30, 2022 compared to the quarter ended September 30, 2021 resulted in a lower tax benefit for our foreign operations. For the nine months ended September 30, 2022 and 2021, we recorded a tax benefit of $2.9 million and $3.6 million, respectively. The effective tax rates were 1.7% and 6.8% for the nine months ended September 30, 2022 and 2021, respectively. The effective tax rates decreased due to higher pre-tax losses for the three and nine months ended September 30, 2022 compared to the same periods in 2021.

Our tax benefit for the periods presented in this report differs from the 21% U.S. Federal statutory rate principally because we maintain a valuation allowance for our domestic deferred tax assets, which primarily consist of net operating loss carryforwards.

Recording deferred tax assets is appropriate when realization of these assets is more likely than not. Assessing the realizability of deferred tax assets is dependent upon several factors including historical financial results and future expected financial results. Domestic deferred tax assets have been offset by valuation allowances. Any release of valuation allowances could have the effect of decreasing the income tax provision in the period the valuation allowance is released. We continue to assess the likelihood that we will be able to recover our deferred tax assets, including those for which a valuation allowance is recorded. There can be no assurance that we will generate profits in the future periods enabling us to fully realize our deferred tax assets. The timing of recording a valuation allowance or the reversal of such valuation allowance is subject to objective and subjective factors that cannot be readily predicted in advance.

Our tax positions are subject to audits by multiple tax jurisdictions. We believe that we have provided adequate reserves for uncertain tax positions for all tax years still open for assessment. For the nine months ended September 30, 2022 and 2021, respectively, we did not recognize any material interest or penalties related to uncertain tax positions.

14. Segment Reporting

We have historically operated as a single reportable segment and managed our business operations and evaluated our financial performance on a consolidated basis. During the third quarter of 2022, our CEO, who is our CODM, instituted the practice of evaluating operating performance and making resource allocation decisions using two reportable segments: mass cytometry and microfluidics. In the fourth quarter of 2022, we will begin referring to these two segments as proteomics and genomics, respectively. Each segment is identified by its unique portfolio of products.

We determine each segment’s loss from operations by subtracting direct expenses, including cost of product and service revenues, R&D expense and sales and marketing expense, from revenues. Amortization, depreciation, and restructuring expense are included in each segment’s operating expenses. Corporate costs, including general and administrative expenses for functions shared by both operating segments such as executive management, human resources and finance, along with interest and taxes, are excluded from each segment’s results, which is consistent with how our CODM measures segment performance.

In conjunction with our change in segment reporting, we allocated goodwill to each operating segment using a relative fair value approach and performed trigger-based impairment testing on the goodwill and our long-lived intangible assets. We conducted the tests as we considered the change in operating segments to be a triggering event. The tests were performed as of August 31, 2022, and no impairment was identified. Following the significant decline in the price of our common stock during the month of September, we performed the trigger-based impairment tests again as of September 30, 2022. No impairment was identified. Goodwill was tested at the reporting unit level, while our long-lived intangible assets were tested at the asset group level.

Segment reporting for historical periods has been included in this report to ensure comparability with the current year. We do not prepare or report segmented balance sheet information as our CODM does not use the information to assess operating performance.

Our business segment information for the three and nine months ended September 30, 2022 and 2021 appears below (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2021	2022	2021
Revenue:				
Mass cytometry	$ 14,566	$ 15,837	$ 38,764	$ 46,498
Microfluidics	11,080	12,667	32,163	45,818
Total revenue	$ 25,646	$ 28,504	$ 70,927	$ 92,316
Loss from operations:				
Mass cytometry	$ (4,851)	$ (3,574)	$ (22,929)	$ (12,080)
Microfluidics	(8,552)	(4,819)	(24,612)	(8,483)
Corporate expenses	(15,624)	(11,219)	(47,552)	(35,637)
Total loss from operations	$ (29,027)	$ (19,612)	$ (95,093)	$ (56,200)

15. Restructuring and Other Related Costs

In August 2022, we announced a restructuring plan, including a reduction in force, to improve operational efficiency, achieve cost savings and align our Company’s workforce to the future needs of the business. In addition to the reduction in force, we are reducing leased office space, optimizing our manufacturing footprint, and streamlining support functions. We are employing a more disciplined cost management culture throughout our organization, investing in training, and plan to take advantage of more advanced technologies including upgrading our enterprise resource planning (ERP) system.

We currently expect cash expenses related to the reduction in force and sublease activities, consisting primarily of severance and termination benefits, commissions and related costs, to be in the range of $3 million to $5 million. We expect to recognize the restructuring costs over the remainder of 2022 and 2023. These estimates are subject to a number of assumptions, and actual results may differ. We recognized $1.3 million of restructuring expense and $1.0 million of other related costs for both the three and nine months ended September 30, 2022.

We record restructuring and other related costs as incurred. These items are classified within cost of product and service revenue, R&D expenses, and selling, general and administrative expenses in our condensed consolidated statements of operations.

A summary of the changes in our restructuring and other related liabilities for the three and nine months ended September 30, 2022 appears below (in thousands):

	Balance at December 31, 2021	Three and Nine Months Ended September 30, 2022		Balance at September 30, 2022
	Liabilities	Charges	Payments	Liabilities(1)
Restructuring:				
Severance and employee-related benefits	$ —	$ 1,293	$ (386)	$ 907
Other related costs:				
Legal and consulting expenses	—	952	(840)	112
Total	$ —	$ 2,245	$ (1,226)	$ 1,019

(1) Restructuring liabilities are recorded in accrued compensation and related benefits on the condensed consolidated balance sheet. Other related costs are recorded in other accrued liabilities on the condensed consolidated balance sheet. We expect to fund these liabilities using our cash reserves.

Restructuring and other related costs were classified in the condensed consolidated statement of operations as follows for the three and nine months ended September 30, 2022 (in thousands):

	Three and Nine Months Ended September 30,	
Restructuring:	2022	
Cost of product and service	$	36
Research and development		164
Selling, general and administrative		1,093
Total restructuring		1,293
Other related costs:		
Selling, general and administrative		952
Total other related costs		952
Total restructuring and other related costs	$	2,245

The Company's restructuring and other related costs by segment were as follows for the three and nine months ended September 30, 2022 (in thousands):

	Three and Nine Months Ended September 30,	
	2022	
Restructuring:		
Mass cytometry	$	428
Microfluidics		499
Total restructuring		927
Other related costs:		
Corporate expenses		1,318
Total other related costs		1,318
Total restructuring and other related costs	$	2,245

16. Commitments and Contingencies

Indemnification

From time to time, we have entered into indemnification provisions under certain of our agreements in the ordinary course of business, typically with business partners, customers, and suppliers. Pursuant to these agreements, we may indemnify, hold harmless, and agree to reimburse the indemnified parties on a case-by-case basis for losses suffered or incurred by the indemnified parties in connection with any patent or other intellectual property infringement claim by any third party with respect to our products. The term of these indemnification provisions is generally perpetual from the time of the execution of the agreement. The maximum potential amount of future payments we could be required to make under these indemnification provisions is typically not limited to a specific amount. In addition, we have entered into indemnification agreements with our officers, directors, and certain other employees. With certain exceptions, these agreements provide for indemnification for related expenses including, among others, attorneys' fees, judgments, fines and settlement amounts incurred by any of these individuals in any action or proceeding.

Contingencies

In September 2020, a putative class action complaint alleging violations of the federal securities laws was filed against the Company (also naming our now-former Chief Executive Officer and our Chief Financial Officer as defendants) in the U.S. District Court for the Northern District of California (Reena Saintjermain, et al. v. Fluidigm Corporation, et al). The Court appointed a lead plaintiff and lead counsel in December 2020, and an amended complaint was filed on February 19, 2021. The complaint, as amended, seeks unspecified damages on behalf of a purported class of persons and entities who acquired our common stock between February 7, 2019 and November 5, 2019 and alleges securities laws violations based on statements and alleged omissions made by the Company during such period. The Company filed a motion to dismiss the complaint on April 5, 2021 and, on August 4, 2021, the Court granted defendants' motion to dismiss with leave to amend. A second amended complaint was filed on September 14, 2021. The Company filed a motion to dismiss the second amended complaint on October 29, 2021 and, on February 14, 2022, the Court granted defendants' motion and dismissed the second amended complaint with prejudice. The plaintiff has appealed the decision, and the appeal remains pending before the U.S. Court of Appeals for the Ninth Circuit. We believe the claims alleged in the complaint lack merit and we intend to defend this action vigorously.

From time to time, we may be subject to various legal proceedings and claims arising in the ordinary course of business. These include disputes and lawsuits related to intellectual property, mergers and acquisitions, licensing, contract law, tax, regulatory, distribution arrangements, employee relations and other matters. Periodically, we review the status of each matter and assess its potential financial exposure. If the potential loss from any claim or legal proceeding is considered probable and a range of possible losses can be estimated, we accrue a liability for the estimated loss. Legal proceedings are subject to uncertainties, and the outcomes are difficult to predict. Because of such uncertainties, accruals are based only on the best information available at the time. As additional information becomes available, we continue to reassess the potential liability related to pending claims and litigation and may revise estimates.

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

The following Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) is intended to help the reader understand the results of operations and financial condition of Standard BioTools Inc. MD&A is provided as a supplement to, and should be read together with, our condensed consolidated financial statements and the notes to those statements included elsewhere in this Form 10-Q. This Form 10-Q contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the Securities Act), and Section 21E of the Securities Exchange Act of 1934, as amended (the Exchange Act), that are based on our management's beliefs and assumptions and on information currently available to our management. The forward-looking statements are contained principally in the section titled "Risk Factors" and this Management's Discussion and Analysis of Financial Condition and Results of Operations. Forward-looking statements include information concerning our possible or assumed future cash flow, revenue, sources of revenue and results of operations, cost of product revenue and product margin, operating and other income and expenses, unit sales and the selling prices of our products, business strategies and strategic priorities, changes in commercial and strategic focus, restructuring plan, reduction-in-force and real estate footprint reduction plans, microfluidics research and development and marketing investment reduction plans, other cost reduction initiatives, portfolio rationalization initiatives, operating discipline improvement plans, implementation of Standard BioTools Business Systems, expected costs and cost savings associated with such plans and initiatives, future product offerings, financing plans, capital allocation plans, expansion of our business, merger and acquisition opportunities, competitive position, industry environment, potential growth opportunities and drivers, market growth expectations, and the effects of competition and public health crises (including the COVID-19 pandemic) on our business, the global supply chain, and our customers, suppliers, and other business partners. Forward-looking statements include statements that are not historical facts and can be identified by terms such as "anticipates," "believes," "could," "seeks," "estimates," "expects," "intends," "may," "plans," "potential," "predicts," "projects," "should," "will," "would," or similar expressions and the negatives of those terms.

Forward-looking statements involve known and unknown risks, uncertainties, and other factors that may cause our actual results, performance, or achievements to be materially different from any future results, performance, or achievements expressed or implied by the forward-looking statements. We discuss these risks in greater detail in Part II, Item 1A, "Risk Factors," located elsewhere in this quarterly report on Form 10-Q, and in our annual report on Form 10-K filed with the Securities and Exchange Commission (SEC). Given these uncertainties, you should not place undue reliance on these forward-looking statements. Also, forward-looking statements represent our management's beliefs and assumptions only as of the date of this Form 10-Q.

Except as required by law, we assume no obligation to update these forward-looking statements, or to update the reasons actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in the future. You should read this Form 10-Q completely and with the understanding that our actual future results may be materially different from what we expect.

Unless the context requires otherwise, references in this Form 10-Q to "Standard BioTools" the "Company," "we," "us," and "our" refer to Standard BioTools Inc. and its subsidiaries.

Our MD&A is organized in the following sections:

- *Overview*
- *Recent Developments*
- *Critical Accounting Policies, Significant Judgments and Estimates*
- *Recent Accounting Changes and Accounting Pronouncements*
- *Results of Operations*
- *Liquidity and Capital Resources*

Overview

Standard BioTools Inc. is driven by a bold vision – unleashing tools to accelerate breakthroughs in human health. We have an established portfolio of essential, standardized next-generation technologies that help biomedical researchers develop medicines faster and better. As a leading solutions provider, we provide reliable and repeatable insights in health and disease using our proprietary mass cytometry and microfluidics technologies that help transform scientific discoveries into better patient outcomes. We work with leading academic, government, pharmaceutical, biotechnology, plant and animal research, and clinical laboratories worldwide, focusing on the most pressing needs in translational and clinical research, including oncology, immunology, and immunotherapy.

We distribute our systems through our direct sales force and support organizations located in North America, Europe, and Asia-Pacific, and through distributors or sales agents in several European, Latin American, Middle Eastern, and Asia-Pacific countries. Our manufacturing operations are located in Singapore and Canada. Our facility in Singapore manufactures microfluidics instruments and integrated fluidic circuits (IFCs). Microfluidics products are currently assembled by a contract manufacturer located within our Singapore facility. We are transitioning the assembly work back to our production lines which is expected to be completed in the first quarter of 2023. Mass cytometry instruments, assays and reagents are manufactured at our facility in Canada.

Our total revenue for the nine months ended September 30, 2022 and 2021 was $70.9 million and $92.3 million, respectively. We have incurred significant net losses since our inception in 1999 and, as of September 30, 2022, our accumulated deficit was $905.3 million.

Recent Developments

Segment Reporting

We have historically operated as a single reportable segment and managed our business operations and evaluated our financial performance on a consolidated basis. During the third quarter of 2022, our Chief Executive Officer (CEO), who is our Chief Operating Decision Maker (CODM), instituted the practice of evaluating operating performance and making resource allocation decisions using two reportable segments: mass cytometry and microfluidics. In the fourth quarter of 2022, we will begin referring to these two segments as proteomics and genomics, respectively. Each segment is identified by its unique portfolio of products.

The Company determines each segment’s loss from operations by subtracting direct expenses, including cost of product and service revenues, research and development (R&D) expense and sales and marketing expense, from revenues. Amortization, depreciation, and restructuring expense are included in each segment’s operating expenses. Corporate costs, including general and administrative expenses for functions shared by both operating segments such as executive management, human resources and finance, along with interest and taxes, are excluded from each segment’s results, which is consistent with how our CODM measures segment performance.

In conjunction with our change in segment reporting, we allocated goodwill to each operating segment using a relative fair value approach and performed trigger-based impairment testing on the goodwill and our long-lived intangible assets. The tests were performed as of August 31, 2022, and no impairment was identified. Following the significant decline in the price of our common stock during the month of September, we performed the trigger-based impairment tests again as of September 30, 2022. No impairment was identified. Goodwill was tested at the reporting unit level, while our long-lived intangible assets were tested at the asset group level.

Segment reporting for historical periods has been included in this report to ensure comparability with the current year. We do not prepare or report segmented balance sheet information as our CODM does not use the information to assess operating performance.

Private Placement Issuance

On January 23, 2022, we entered into separate Loan Agreements (together, the Bridge Loan Agreements) with (i) Casdin Private Growth Equity Fund II, L.P. and Casdin Partners Master Fund, L.P. (collectively, Casdin) and (ii) Viking Global Opportunities Illiquid Investments Sub-Master LP and Viking Global Opportunities Drawdown (Aggregator) LP (collectively, Viking and, together with Casdin, the Purchasers). Each Bridge Loan Agreement provided for a $12.5 million term loan to the Company (the Bridge Loans). The Bridge Loans were fully drawn on January 24, 2022. The Bridge Loans automatically converted into Series B Preferred Stock (as defined below) upon the completion of the Preferred Equity Financing (as defined below). Also on January 23, 2022, we entered into separate Series B Convertible Preferred Stock Purchase Agreements (together, the Purchase Agreements) with each Purchaser, relating to, among other things, the issuance and sale of an aggregate of $225 million of convertible preferred stock, consisting of: (i) 112,500 shares of our Series B-1 Convertible Preferred Stock, par value $0.001 per share (the Series B-1 Preferred Stock), at a purchase price of $1,000 per share to Casdin; and (ii) 112,500 shares of our Series B-2 Convertible Preferred Stock, par value $0.001 per share (the Series B-2 Preferred Stock, and together with the Series B-1 Preferred Stock, the Series B Preferred Stock) at a purchase price of $1,000 per share to Viking (the Preferred Equity Financing, and together with the issuance of shares of Series B Preferred Stock in connection with the conversion of the Bridge Loans, the Private Placement Issuance).

On April 4, 2022, following stockholder approval of the Private Placement Issuance and related matters, the Private Placement Issuance closed and in connection therewith (i) we received $225 million, before expenses, and issued 225,000 shares of Series B Preferred Stock, pursuant to the Purchase Agreements and (ii) the Bridge Loans converted into 30,559 shares of Series B Preferred Stock. In addition, our certificate of incorporation was amended to, among other things, increase the number of shares of our common stock that we are authorized to issue from two hundred million (200,000,000) shares to four hundred million (400,000,000) and our name was changed to Standard BioTools Inc. Shortly thereafter, we also changed our trading symbol for our common stock on the Nasdaq Global Select Market to "LAB". Upon the closing of the Private Placement Issuance, Dr. Michael Egholm was appointed as the Company's President and Chief Executive Officer and as a member of our board of directors. The proceeds of the Private Placement Issuance have been and will be used to fund expenses related to the Private Placement Issuance, as well as working capital, general corporate purposes and potential future merger and acquisition opportunities that we may identify from time to time.

Strategic Priorities

Following the Private Placement Issuance, our new leadership team has identified three strategic priorities: revenue growth, improving operating discipline through the Standard BioTools Business Systems (SBS) and strategic capital allocation.

Revenue Growth

Our top priority is to grow our core product and service revenue. We have taken several steps including adopting innovative approaches to improving our lead generation to support revenue growth. While we are encouraged by the early results of these initial steps in the third quarter of 2022, there is still a lot of work remaining to be done to execute on our long-term goal to transform our existing product offerings - accelerating revenue growth in mass cytometry while gearing microfluidics toward profitability, and fulfilling our vision to become a leading life science tools company and an established standard in our customers' workflows.

Improving Operating Discipline Through SBS

Our second priority is to improve our operating discipline through the implementation of SBS. Our vision is to establish a culture where the entire organization is driving continuous improvement to achieve world class operational excellence and an exceptional customer experience and value. We are leveraging SBS with a set of organizing principles and rigorous standard work processes to build best in class operations, commercial execution and a high-performance culture. A phased restructuring plan, including a reduction in force, is currently underway to improve efficiency, reduce operating costs and better align our workforce with the current needs of our business, with a longer-term goal of significantly reducing operating cash burn and generating positive free cash flow by year-end 2024.

As part of the restructuring, the following steps are being taken:

- **Right Sizing General and Administrative Expenses.** We plan to significantly lower general and administrative spend through a reduction in headcount and a decrease in office space to better align our spending with our streamlined operations. Specifically, we plan to reduce our real estate footprint, including our headquarters location in South San Francisco while fostering remote work for certain employees. In August 2022, we entered into a sublease agreement for approximately 25% of our corporate headquarters location for a 39 month term commencing in October 2022. We expect to recognize sublease rental income of $4.7 million over the lease term. Beyond these near-term initiatives, we will pursue continued process optimization through a focused SBS-based approach which may result in additional cost savings and will direct resources into areas with the highest impact to the business.

- **Right Sizing Microfluidics Business.** We expect to significantly reduce our investments in research and development and marketing while narrowing our commercial focus to the high value niche markets for specialized applications that this segment is ideally suited for. In addition, we plan to pursue additional OEM opportunities, similar to our relationship with Olink® Bioscience, as a lower cost and more efficient go-to-market approach.

- **Portfolio Rationalization.** We have rationalized our product portfolio by discontinuing our laser capture microdissection (LCM) and Flow Conductor offerings, and also de-emphasizing our diagnostics/COVID-19 activities.

We currently expect cash expenses related to the reduction in force and sublease activities, consisting primarily of severance, termination benefits, commissions and other related costs, to be in the range of $3 million to $5 million. We expect to recognize the restructuring and other related costs over the remainder of 2022 and 2023. We recognized $1.3 million in restructuring expenses for the three months ended September 30, 2022. We also recognized $1.0 million of other costs for consulting and legal expenses related to future cost efficiencies and business improvements. As of September 30, 2022, the liability for restructuring and other related costs was $1.0 million. Based on actions taken to date, we expect to realize annualized operating expense reduction of approximately $8 million. These estimates are subject to a number of assumptions, and actual results may differ. See Note 15 within our condensed consolidated financial statements for further details.

Strategic Capital Allocation

Our third priority is strategic capital allocation. We intend to be active on the business development front with consolidation expected to be a key growth driver sustaining the longer-term value proposition of the Company. Our vision is to become a preferred partner in the life science industry and embedded in, and integral to our customers' workflows, and we believe a portfolio approach is essential for our success.

Critical Accounting Policies, Significant Judgments and Estimates

Our condensed consolidated financial statements and the related notes included elsewhere in this Form 10-Q are prepared in accordance with accounting principles generally accepted in the United States (U.S. GAAP). The preparation of these condensed financial statements in accordance with U.S. GAAP requires management to make estimates and judgments that affect the amounts reported in the condensed consolidated financial statements and accompanying notes. We base these estimates on historical experience, the current economic environment and on various other assumptions believed to be reasonable, which together form the basis for making judgments about the carrying values of assets and liabilities. We also assessed certain accounting matters that generally require consideration of forecasted financial information, including the unknown impact of the COVID-19 pandemic, the war in Ukraine, supply chain shortages and inflation. Accounting matters that rely on forecasted financial information included, but were not limited to, our inventory, and related reserves, and the carrying value of goodwill and other long-lived assets and liabilities. Actual results could differ materially from these estimates and could have a material adverse effect on our condensed consolidated financial statements. The full extent to which the COVID-19 pandemic impacts our business, results of operations and financial condition will depend on numerous evolving factors including, but not limited to, the magnitude and duration of the pandemic, the extent to which it will impact worldwide macroeconomic conditions, including the speed of recovery, and governmental and business reactions to the pandemic. We also use significant judgment in determining the fair value of financial instruments, including debt and equity instruments.

Recent Accounting Changes and Accounting Pronouncements

Adoption of New Accounting Guidance

In August 2020, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2020-06 Debt-Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging-Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity. The amendment to this ASU reduces the number of accounting models for convertible instruments and allows more contracts to qualify for equity classification, which is expected to result in more convertible instruments being accounted for as a single unit, rather than being bifurcated between debt and equity. The new guidance is effective for fiscal years beginning after December 15, 2021. We adopted ASU 2020-06 effective January 1, 2022. The adoption of ASU 2020-06 did not have an impact on our 2014 Senior Convertible Notes (2014 Notes) and 2019 Senior Convertible Notes (2019 Notes).

In November 2021, the FASB issued ASU 2021-10 Government Assistance (Topic 832): Disclosures by Business Entities about Government Assistance. The amendment is effective for annual periods beginning after December 15, 2021.
The amendment establishes financial disclosure requirements for business entities that receive government assistance that they account for by analogizing to a grant or contribution model because there is no specific authoritative guidance under U.S. GAAP that applies to the transaction. Entities that receive this type of assistance should include the following information in their annual report: (1) the nature of the transaction, (2) the significant terms and conditions, (3) the accounting treatment, (4) the line items on the balance sheet and income statement that are affected along with (5) the respective amounts that have been recorded. We adopted ASU 2021-10 effective January 1, 2022. The adoption of ASU 2021-10 did not have a material impact on our financial statements.

Recent Accounting Pronouncements

None.

Results of Operations

The following table presents our historical condensed consolidated statements of operations for the three and nine months ended September 30, 2022 and 2021 (in thousands):

	Three Months Ended September 30,				Nine Months Ended September 30,			
	2022		2021		2022		2021	
Revenue	$ 25,646	100 %	$ 28,504	100 %	$ 70,927	100 %	$ 92,316	100 %
Costs and expenses								
Cost of product revenue	14,091	55	13,327	47	39,168	55	37,720	41
Cost of service revenue	2,335	9	1,508	5	5,875	8	5,465	6
Research and development	8,650	34	9,209	32	30,121	42	29,403	32
Selling, general and administrative	29,597	115	24,072	85	90,856	128	75,928	82
Total costs and expenses	54,673	213	48,116	169	166,020	233	148,516	161
Loss from operations	(29,027)	(113)	(19,612)	(69)	(95,093)	(133)	(56,200)	(61)
Interest expense	(1,049)	(5)	(968)	(4)	(3,141)	(4)	(2,751)	(3)
Loss on forward sale of Series B Preferred Stock	—	—	—	—	(60,081)	(86)	—	—
Loss on bridge loans	—	—	—	—	(13,719)	(20)	—	—
Surplus funding from NIH Contract	153	1	5,000	18	153	—	5,000	5
Other income (expense), net	(216)	(1)	315	1	(272)	—	534	1
Loss before income taxes	(30,139)	(118)	(15,265)	(54)	(172,153)	(243)	(53,417)	(58)
Income tax benefit	713	3	1,422	5	2,900	4	3,609	4
Net loss	$ (29,426)	(115)%	$ (13,843)	(49)%	$ (169,253)	(239)%	$ (49,808)	(54)%

Strategic Financing and Business Improvement Actions

Our operating results in 2022 include certain items related to the strategic financing transaction and the subsequent business improvement actions taken by the new management team, including the ongoing rationalization of our product portfolio and the restructuring program announced in August 2022. These items increased our operating loss by $6.1 million and $24.5 million for the three and nine months ended September 30, 2022 as shown below (in thousands):

	Three Months Ended September 30, 2022	Nine Months Ended September 30, 2022
Revenue:		
Portfolio rationalization[1]	$ —	$ (1,588)
Cost of product and service revenue:		
Business improvement initiatives[2]	2,183	2,183
Portfolio rationalization[1]	282	3,350
Total cost of product and service revenue items	2,465	5,533
Research and development:		
Retention bonuses	214	562
Portfolio rationalization[1]	—	3,526
Restructuring (see Note 15)	164	164
Total research and development items	378	4,252
Selling, general and administrative:		
Strategic financing support[3]	—	3,800
Retention bonuses	1,104	2,919
Severance costs[4]	75	2,346
Restructuring and other related cost[4] (see Note 15)	2,045	2,045
Business improvement initiatives[2]	—	2,000
ERP upgrade	49	49
Total selling, general and administrative items	3,273	13,159
Total	$ 6,116	$ 24,532

(1) Costs related to the exit/de-emphasis of the LCM, Flow Conductor and COVID-19 product lines. Includes $3.5 million of impairment charges for the InstruNor developed technology intangible.

(2) Costs related to the termination of the microfluidics instrument manufacturing contract, strategic advisory, and business consulting expenses.

(3) Costs to prepare the Private Placement Issuance, including legal and consulting expenses.

(4) Termination benefits for members of the former management team, including the former CEO.

Total Revenue

We generate revenue primarily from sales of our products and services and by entering into product development agreements, license and royalty agreements, and grants.

Product and Service Revenue. Our product revenue consists of sales of instruments and consumables. Consumables revenue is largely driven by the size of our installed base of instruments and the annual level of pull-through per instrument. Service revenue is linked to the sales and active installed base of our instruments as our service revenue primarily consists of post-warranty service contracts, preventive maintenance plans, instrument parts, installation and training. We sell our products to leading academic and government laboratories, as well as pharmaceutical, biotechnology, clinical, plant and animal research organizations and clinical laboratories worldwide.

Development Revenue. In March 2020, we entered into an OEM Supply and Development Agreement with a customer to develop OEM products based on our microfluidics technology. The agreement provided for up-front and periodic milestone payments during its development stage, which was completed during the third quarter of 2021, and $0.4 million of annual on-going payments for sustaining efforts. We recognized $0.2 million and $0.1 million of development revenue during the three months ended September 30, 2022 and 2021, respectively. We recognized $0.6 million and $2.4 million of development revenue during the nine months ended September 30, 2022 and 2021, respectively.

Grant Revenue. During the three and nine months ended September 30, 2021, we recognized $0.5 million and $1.6 million, respectively, of grant revenue for research and development services performed under a contract we entered into in the second half of 2019. The contract was completed during the third quarter of 2021.

One microfluidics customer accounted for 15% and 10% of our total revenue for the three and nine months ended September 30, 2022, respectively. No single customer represented more than 10% of total revenue for the same periods in 2021. Revenue from our five largest customers represented 28% and 21% of total revenue for the three months ended September 30, 2022, and 2021, respectively. For the nine months ended September 30, 2022 and 2021, revenue from our five largest customers represented 19% and 22% of total revenue, respectively.

The following table presents our revenue by product type for the three and nine months ended September 30, 2022 and 2021 (in thousands):

	Three Months Ended September 30,				Year-over-Year Change	Nine Months Ended September 30,				Year-over-Year Change
	2022		2021			2022		2021		
Revenue:										
Instruments	$ 7,873	31 %	$ 10,056	35 %	(22)%	$ 18,057	25 %	$ 27,943	30 %	(35)%
Consumables	11,439	45	11,881	42	(4)%	33,478	48	41,349	45	(19)%
Product revenue	19,312	76	21,937	77	(12)%	51,535	73	69,292	75	(26)%
Service revenue	5,857	23	6,016	21	(3)%	17,807	25	18,929	20	(6)%
Product and service revenue	25,169	99	27,953	98	(10)%	69,342	98	88,221	95	(21)%
Development revenue	177	—	90	—	97%	621	1	2,420	3	(74)%
Grant revenue	—	—	461	2	(100)%	—	—	1,582	2	(100)%
License revenue	300	1	—	—	NA	964	1	93	—	937%
Total revenue	$ 25,646	100 %	$ 28,504	100 %	(10)%	$ 70,927	100 %	$ 92,316	100 %	(23)%

The following table presents our revenue based upon the geographic location of our customers' facilities for the three and nine months ended September 30, 2022 and 2021 (in thousands):

	Three Months Ended September 30,				Year-over-Year Change	Nine Months Ended September 30,				Year-over-Year Change
	2022		2021			2022		2021		
Americas	$ 11,119	43 %	$ 13,013	46 %	(15)%	$ 33,482	47 %	$ 47,656	52 %	(30)%
EMEA	8,074	32 %	10,108	35 %	(20)%	22,352	32 %	28,470	31 %	(21)%
Asia-Pacific	6,453	25 %	5,383	19 %	20%	15,093	21 %	16,190	17 %	(7)%
Total revenue	$ 25,646	100 %	$ 28,504	100 %	(10)%	$ 70,927	100 %	$ 92,316	100 %	(23)%

Three months ended September 30, 2022

Total revenue decreased by $2.9 million, or 10%, for the three months ended September 30, 2022 compared to the three months ended September 30, 2021, driven by a $2.2 million, or 22%, decline in instruments revenue and a $0.4 million, or 4%, decline in consumables revenue. Year over year changes in foreign exchange rates negatively impacted the Company's total revenue by approximately 4.4 percent.

Americas revenue decreased by $1.9 million, or 15%, for the three months ended September 30, 2022 compared to the three months ended September 30, 2021. The decline was primarily attributable to lower revenue from COVID-19 test products and lower instruments revenue. EMEA revenue decreased by $2.0 million, or 20%, driven by a decline in instruments and service revenue, partially offset by higher consumables revenue. A stronger dollar negatively impacted EMEA revenues by approximately 7.7 percent. In Asia-Pacific, revenue increased by $1.1 million, or 20%, for the three months ended September 30, 2022 compared to the three months ended September 30, 2021, driven by an increase in instruments revenue. A stronger dollar negatively impacted Asia-Pacific revenues by approximately 8.7 percent.

Nine months ended September 30, 2022

Total revenue decreased by $21.4 million, or 23%, for the nine months ended September 30, 2022 compared to the nine months ended September 30, 2021, driven by a $9.9 million decline in instruments revenue, a $7.9 million decline in consumables revenue and a $2.5 million net reduction in development, grant and license revenue. A stronger dollar negatively impacted the Company's total revenue by approximately 2.8 percent.

Americas revenue decreased by $14.2 million, or 30%, for the nine months ended September 30, 2022 compared to the nine months ended September 30, 2021. The decline was primarily attributable to a reduction in product revenue driven by lower unit sales of instruments and consumables. EMEA revenue decreased by $6.1 million, or 21%, primarily driven by a decline in instrument revenue. A stronger dollar negatively impacted EMEA revenue by approximately 6.2 percent. In Asia-Pacific, revenue decreased by $1.1 million, or 7%, for the nine months ended September 30, 2022 compared to the nine months ended September 30, 2021, primarily due to a decline in consumables revenue, partially offset by an increase in instruments revenue. A stronger dollar negatively impacted Asia-Pacific revenues by approximately 5.2 percent.

Segment Product and Service Revenue

The following tables present the split of product and service revenue between our mass cytometry and microfluidic segments for the three and nine months ended September 30, 2022 and 2021 (in thousands):

	Three Months Ended September 30,				Year-Over-Year Change	Nine Months Ended September 30,				Year-over-Year Change
	2022		2021			2022		2021		
Mass cytometry:										
Instruments	$ 5,818	41%	$ 7,125	45%	(18)%	$ 12,483	33%	$ 19,491	42%	(36)%
Consumables	4,263	30	4,254	27	NA	12,864	34	13,376	29	(4)%
Total product revenue	10,081	71	11,379	72	(11)%	25,347	67	32,867	71	(23)%
Service revenue	4,185	29	4,458	28	(6)%	12,567	33	13,631	29	(8)%
Total product and service revenue	$ 14,266	100%	$ 15,837	100%	(10)%	$ 37,914	100%	$ 46,498	100%	(18)%
Microfluidics:										
Instruments	$ 2,055	19%	$ 2,931	24%	(30)%	$ 5,574	18%	$ 8,452	20%	(34)%
Consumables	7,176	66	7,627	63	(6)%	20,614	66	27,973	67	(26)%
Total product revenue	9,231	85	10,558	87	(13)%	26,188	84	36,425	87	(28)%
Service revenue	1,672	15	1,558	13	7%	5,240	16	5,298	13	(1)%
Total product and service revenue	$ 10,903	100%	$ 12,116	100%	(10)%	$ 31,428	100%	$ 41,723	100%	(25)%

Mass cytometry. Mass cytometry product and service revenue declined by $1.6 million, or 10%, and $8.6 million, or 18%, respectively, during the three and nine months ended September 30, 2022 compared to the three and nine months ended September 30, 2021. The year-over-year declines were primarily attributable to reduced unit sales of imaging instrument systems.

Microfluidics. Microfluidics product and service revenue declined by $1.2 million, or 10%, and $10.3 million, or 25%, respectively, during the three and nine months ended September 30, 2022 compared to the three and nine months ended September 30, 2021. The year-over-year declines were primarily attributable to lower revenue from COVID-19 test products and lower instruments revenue.

Product and Service Cost, Gross Profit and Margin

Cost of product revenue includes manufacturing costs incurred in the production process, including component materials, labor and overhead, installation, packaging, and delivery costs. In addition, cost of product revenue includes amortization of developed technology and intangibles, royalty costs for licensed technologies included in our products, warranty, and provisions for slow-moving and obsolete inventory. Our cost of product revenue and related product margin may fluctuate depending on the capacity utilization of our manufacturing facilities in response to market conditions and the demand for our products.

Cost of service revenue includes direct labor hours, overhead and instrument parts. Our cost of service revenue and related service margin may fluctuate depending on the variability of material and labor costs required to service instruments.

The following table presents our product and service cost, product and service gross profit, and product and service margin for the three and nine months ended September 30, 2022 and 2021 (in thousands):

	Three Months Ended September 30,		Year-over-Year Change	Nine Months Ended September 30,		Year-over-Year Change
	2022	2021		2022	2021	
Cost of product revenue	$ 14,091	$ 13,327	6%	$ 39,168	$ 37,720	4%
Cost of service revenue	2,335	1,508	55%	5,875	5,465	8%
Cost of product and service revenue	$ 16,426	$ 14,835	11%	$ 45,043	$ 43,185	4%
Product and service gross profit	$ 8,743	$ 13,118	(33)%	$ 24,299	$ 45,036	(46)%
Product and service margin	34.7 %	46.9 %	(12.2) ppt	35.0 %	51.0 %	(16.0) ppt

Product and service margin decreased by 12.2 percentage points for the three months ended September 30, 2022 compared to the three months ended September 30, 2021. Increased provisions for excess and obsolete inventory contributed 9.5 percentage points of the decrease in the product and service margin. Provisions for excess and obsolete inventory were $2.6 million, or 10.5%, of product and service revenue for the three months ended September 30, 2022 compared to $0.3 million, or 1.0%, of product and service revenue for the three months ended September 30, 2021. The increase in these provisions primarily reflected the impact of our ongoing portfolio rationalization initiatives. Fixed depreciation and amortization costs on a lower revenue base contributed 1.1 percentage points to the decline in the product and service margin, while product mix primarily accounted for the remainder of the decline.

Product and service margin decreased by 16.0 percentage points for the nine months ended September 30, 2022 compared to the nine months ended September 30, 2021. Increased provisions for excess and obsolete inventory contributed 8.7 percentage points of the decrease in the product and service margin. Provisions for excess and obsolete inventory were $7.2 million, or 10.4%, of product and service revenue for the nine months ended September 30, 2022 compared to $1.5 million, or 1.7%, of product and service revenue for the nine months ended September 30, 2021. The increase in these provisions primarily reflected the impact of our ongoing portfolio rationalization initiatives. Fixed depreciation and amortization costs on a lower revenue base contributed 2.7 percentage points to the decline in the product and service margin, while other factors, including product mix and lower mass cytometry plant utilization accounted for the remainder of the decline.

Operating Expenses

The following table presents our operating expenses for the three and nine months ended September 30, 2022 and 2021 (in thousands):

	Three Months Ended September 30,		Year-over-Year Change	Nine Months Ended September 30,		Year-over-Year Change
	2022	2021		2022	2021	
Research and development	$ 8,650	$ 9,209	(6)%	$ 30,121	$ 29,403	2%
Selling, general and administrative	29,597	24,072	23%	90,856	75,928	20%
Total operating expenses	$ 38,247	$ 33,281	15%	$ 120,977	$ 105,331	15%

Research and Development

Research and development expense consists primarily of compensation-related costs, material and product development expenses, and other allocated facilities and information technology expenses. Our research and development efforts have focused primarily on enhancing our technologies and supporting development and commercialization of new and existing products and services. Research and development expense also includes costs incurred in conjunction with research grants and product development arrangements.

Research and development expense decreased by $0.6 million, or 6%, for the three months ended September 30, 2022 compared to the three months ended September 30, 2021 primarily due to lower compensation costs as a result of reduced headcount and a decline in consulting costs.

Research and development expense increased by $0.7 million, or 2%, for the nine months ended September 30, 2022 compared to the nine months ended September 30, 2021. The increase was primarily attributable to a $3.5 million impairment charge the Company recorded in June 2022 to write off the InstruNor AS developed technology intangible asset. The non-cash impairment charge was partially offset by a $1.7 million reduction in laboratory supplies and a $1.3 million reduction in consulting costs as a result of planned reduction in program activity.

Selling, General and Administrative

Selling, general and administrative expense consists primarily of personnel costs for our sales and marketing, business development, finance, legal, human resources, information technology and general management, as well as professional services, such as legal and accounting services.

Selling, general and administrative expense increased by $5.5 million, or 23%, for the three months ended September 30, 2022 compared to the three months ended September 30, 2021. The increase included $1.1 million in restructuring costs related to the phased restructuring plan that was announced in August 2022, along with $1.1 million of retention bonuses and $1.1 million in higher incentive compensation. Legal and consulting expenses increased by $1.0 million primarily due to operational efficiency activities while travel expense increased by $0.5 million as travel restrictions eased.

Selling, general and administrative expense increased by $14.9 million, or 20%, for the nine months ended September 30, 2022, compared to the nine months ended September 30, 2021. The increase was primarily driven by an increase in retention bonuses and severance costs of $5.4 million, $2.0 million of restructuring and operational efficiency costs, $2.8 million of legal and consulting fees reflecting the costs of the Private Placement Issuance, Company name change and rebranding activities, $1.4 million of stock-based compensation expense from equity awards provided to the new management team and key employees, and $1.4 million of travel expense, as COVID-related restrictions continued to relax.

Segment Loss from Operations

The following table presents loss from operations for our mass cytometry and microfluidics segments for the three and nine months ended September 30, 2022 and 2021 (in thousands):

	Three Months Ended September 30,		Year-over-Year Change	Nine Months Ended September 30,		Year-over-Year Change
	2022	2021		2022	2021	
Mass cytometry	$ (4,851)	$ (3,574)	36%	$ (22,929)	$ (12,080)	90%
Microfluidics	$ (8,552)	$ (4,819)	77%	$ (24,612)	$ (8,483)	190%

Mass cytometry. Mass cytometry loss from operations increased by $1.3 million, or 36%, for the for the three months ended September 30, 2022 compared to the three months ended September 30, 2021 primarily due to an increase in operating expenses. Mass cytometry loss from operations increased by $10.8 million, or 90%, for the nine months ended September 30, 2022 compared to the nine months ended September 30, 2021, primarily driven by lower units sales of instruments and an impairment of the InstruNor AS development technology intangible.

Microfluidics. Microfluidics loss from operations increased by $3.7 million, or 77%, for the three months ended September 30, 2022 compared to the three months ended September 30, 2021, primarily due to lower revenue from COVID-19 test products, lower instruments revenue and higher provisions for excess and obsolete inventory. Microfluidics loss from operations increased by $16.1 million, or 190%, for the nine months ended September 30, 2022 compared to the nine months ended September 30, 2021, primarily due to the LCM revenue reserve, lower revenue from COVID-19 test products, lower instruments revenue, higher provisions for excess and obsolete inventory and higher operating expenses.

Interest Expense and Other Non-Operating Items

The following table presents interest expense and other non-operating items for the three and nine months ended September 30, 2022 and 2021 (in thousands):

	Three Months Ended September 30,		Year-over-Year Change	Nine Months Ended September 30,		Year-over-Year Change
	2022	2021		2022	2021	
Interest expense	$ (1,049)	$ (968)	8%	$ (3,141)	$ (2,751)	14%
Loss on forward sale of Series B Preferred Stock	—	—	NA	(60,081)	—	NA
Loss on bridge loans	—	—	NA	(13,719)	—	NA
Surplus funding from NIH Contract	153	5,000	(97)%	153	5,000	(97)%
Other income (expense), net	(216)	315	(169)%	(272)	534	(151)%
Total	$ (1,112)	$ 4,347	(126)%	$ (77,060)	$ 2,783	NA

Interest expense is primarily comprised of interest on our convertible debt and our Term Loan Facility (as defined below). The increase in interest expense for the three and nine months ended September 30, 2022 compared to the same periods in the prior year is due primarily to our Term Loan Facility, which was established on August 1, 2021.

The Purchase Agreements for the issuance of 225,000 shares of Series B Preferred Stock for $225 million were accounted for as forward sales contracts at fair value in accordance with ASC 480 Distinguishing Liabilities from Equities. The fair value of the payable portion of the Purchase Agreements was determined to be $285.1 million as of April 4, 2022 (the closing date of the Private Placement Issuance). The $60.1 million loss on the forward sales of Series B Preferred Stock for the nine months ended September 30, 2022 reflects the increase in the share price of our common stock from $2.84 per share at the inception of the Agreements to $3.99 per share as of April 4, 2022.

Applying the guidance in ASC 825 Financial Instruments, we elected to record the Bridge Loans at their fair value. The change in fair value of the Bridge Loans from inception to their conversion on April 4, 2022 was recorded as a loss on Bridge Loans. The fair value of the Bridge Loans was largely driven by the value of our common stock and the value of the Series B Preferred Stock into which they were converted. The loss on Bridge Loans of $13.7 million for the nine months ended September 30, 2022 was largely driven by the increase in the price of our common stock from inception to the conversion date. Refer to Note 3 within our condensed consolidated financial statements for additional details relating to the Series B Preferred Stock and the Bridge Loans.

In September 2020, we executed a definitive contract with the National Institutes of Health (NIH), which amended the letter contract we entered into with NIH in July 2020 (collectively, the NIH Contract), under the NIH Rapid Acceleration of Diagnostics (RADx) program to support the expansion of our production capacity and throughput capabilities for COVID-19 test products that use our microfluidics technology. We recognized $0.2 million and $5.0 million of income from the NIH Contract during the three and nine months ended September 30, 2022 and 2021, respectively. As of September 30, 2022, the capacity expansion project funded by the NIH Contract has been completed and all of the related assets aggregating $22.2 million have been placed in service. The cumulative amount of income recognized from the NIH Contract totaled $7.3 million.

Income Tax Benefit

Our tax provision is generally driven by three components: (i) tax provision from foreign operations, (ii) tax benefits from amortization of acquisition-related intangible assets, and (iii) discrete items, such as changes in valuation allowances or adjustments upon finalization of tax returns. Depending on the relative value of these components, we can have either a tax benefit or expense for any given period.

We recorded a tax benefit of $0.7 million, or an effective tax rate of 2.4%, for the three months ended September 30, 2022. In the three months ended September 30, 2021, we recorded a tax benefit of $1.4 million, or an effective tax rate of 9.3%. Higher profitability in certain of our foreign operations in the quarter ended September 30, 2022 compared to the quarter ended September 30, 2021 resulted in a lower tax benefit for our foreign operations for the three months ended September 30, 2022.

For the nine months ended September 30, 2022, we recorded a tax benefit of $2.9 million, and the effective tax rate was 1.7%. For the nine months ended September 30, 2021, we recorded a tax benefit of $3.6 million, and the effective rate was 6.8%. The lower effective tax rates for the three and nine months ended September 30, 2022 were a result of higher pre-tax losses compared to the same periods in 2021.

Liquidity and Capital Resources

Sources of Liquidity

As of September 30, 2022, our principal sources of liquidity consisted of $60.2 million of cash and cash equivalents, $125.0 million of short-term investments and $1.0 million of restricted cash, as well as $12.5 million of availability under the Revolving Credit Facility (as defined below).

The following table presents our cash flow summary for the nine months ended September 30, 2022 and 2021 (in thousands):

	Nine Months Ended September 30,	
	2022	2021
Cash flow summary:		
Net cash used in operating activities	$ (70,189)	$ (37,059)
Net cash used in investing activities	(128,372)	(10,801)
Net cash provided by financing activities	231,028	8,662
Effect of foreign exchange rate fluctuations on cash and cash equivalents	(719)	(13)
Net increase (decrease) in cash, cash equivalents and restricted cash	$ 31,748	$ (39,211)

Net Cash Used in Operating Activities

We derive cash flows from operations primarily from cash collected on sales of products and services, license agreements and grants. Our cash flows from operating activities are also significantly influenced by our use of cash for operating expenses and working capital to support the business. We have historically experienced negative cash flows from operating activities due to the expansion of our business and infrastructure, both domestically and internationally.

Net cash used in operating activities for the nine months ended September 30, 2022 was $70.2 million and consisted of a $169.3 million net loss, less non-cash items of $110.0 million and net cash used by assets and liabilities of $10.9 million. Non-cash items included a loss on forward sale of Series B Preferred Stock of $60.1 million, a loss on Bridge Loans of $13.7 million, stock-based compensation expense of $13.2 million, amortization of developed technology of $8.7 million, depreciation and amortization of $2.7 million, provision for excess and obsolete inventory of $7.2 million, an impairment charge of $3.5 million, and other smaller items. The net increase in assets and liabilities was primarily attributable to an increase in inventories, net of $7.8 million, a decrease of other liabilities of $5.8 million, a decrease of accounts payable of $1.5 million, and a decrease of deferred revenue of $2.4 million. These items were partially offset by a reduction of accounts receivable, net of $1.1 million, and a $5.6 million increase in accrued compensation and related benefits primarily due to an increase in severance and retention bonus expenses and restructuring costs associated with the phased restructuring program.

Net cash used in operating activities for the nine months ended September 30, 2021 was $37.1 million and consisted of a net loss of $49.8 million, less non-cash items of $25.8 million and net cash used in assets and liabilities of $13.0 million. Non-cash items included stock-based compensation expense of $11.7 million, amortization of developed technology of $8.9 million, depreciation and amortization of $2.7 million, provision for excess and obsolete inventory of $1.5 million, and a variety of smaller items. The cash used in assets and liabilities, net was primarily attributable to a $5.4 million reduction of accrued compensation and related benefits from bonus payments made in the first quarter of 2021, a reduction of deferred revenue of $2.3 million, a reduction of other liabilities of $8.0 million, an increase in prepaid expenses and other assets of $2.7 million, and an increase of inventories, net of $7.5 million. These uses of funds were partially offset by a reduction of accounts receivable, net of $11.4 million, and an increase in accounts payable of $1.4 million.

Net Cash Used in Investing Activities

Our primary investing activities consist of purchases, sales, and maturities of our short-term investments and capital expenditures for manufacturing, laboratory, computer equipment and software to support our infrastructure and workforce. We expect to continue to incur costs for capital expenditures to improve manufacturing efficiencies and strengthen information technology and network security. However, we may choose to decrease or defer certain capital expenditures and development activities, while further optimizing our organization.

Net cash used in investing activities for the nine months ended September 30, 2022 was $128.4 million, which was primarily due to purchases of short-term investments of $137.3 million, and capital expenditures of $3.1 million. These items were partially offset by $12.0 million in maturities of investments.

Net cash used in investing activities for the nine months ended September 30, 2021 was $10.8 million. Capital expenditures of $12.8 million were incurred primarily to expand our microfluidics IFC production capacity in Singapore related to the NIH Contract. We received $2.0 million from the NIH during this period under the terms of the agreement to fund the facility's capacity expansion.

Net Cash Provided by Financing Activities

Net cash provided by financing activities totaled $231.0 million during the nine months ended September 30, 2022. The principal sources of cash were proceeds from issuance of Series B Preferred Stock of $225.0 million, and proceeds from Bridge Loans of $25.0 million, which were subsequently converted into Series B Preferred Stock on April 4, 2022. These proceeds were also partially offset by a $12.5 million payment for equity issuance costs on the Series B Preferred Stock and a repayment of $6.8 million of advances under the Revolving Credit Facility.

Net cash provided by financing activities totaled $8.7 million during the nine months ended September 30, 2022. The principal source of cash was $10.0 million of advances drawn against our Term Loan Facility with Silicon Valley Bank. Other sources included $0.7 million of Employee Stock Purchase Plan (ESPP) receipts and $0.2 million of proceeds from the exercise of stock options. Partially offsetting these inflows was $1.7 million of withholding tax payments related to the net share settlement of equity awards and the $0.5 million repurchase of 2014 Notes completed in February 2021.

Purchase Obligations and Commitments

Purchase obligations consist of contractual and legally binding commitments to purchase goods and services. The majority of our contracts are cancellable with little or no notice or penalty. However, if a vendor incurs costs to fulfill a contract with us, and the vendor cannot use those items for some other purpose, we are liable for those costs upon cancellation.

We have additional obligations as part of our ordinary course of business, beyond those committed for capital expenditures and other purchase obligations and commitments for purchases of goods and services. See Note 3 within our condensed consolidated financial statements for information on our contingent obligations as a result of our issuance of Series B Preferred Stock. See Note 8 within our condensed consolidated financial statements for information about our short-term and long-term debt obligations. See Note 9 within our condensed consolidated financial statements for information about our lease obligations and see Note 16 within our condensed consolidated financial statements for information about certain commitments and contingencies. Other than as disclosed above, there have been no material changes during the nine months ended September 30, 2022 to our contractual obligations disclosed in our "Management's Discussion and Analysis of Financial Condition and Results of Operations" included in our annual report on Form 10-K for the year ended December 31, 2021. The expected timing of payments of our obligations is estimated based on current information. Timing of payments and actual amounts paid may be different, depending on the timing of receipt of goods or services, or changes to agreed-upon amounts for some obligations. In addition, some of our purchasing requirements are not current obligations and are therefore not included in the amounts above. For example, some of these requirements are not managed through binding contracts or are fulfilled by vendors on a purchase order basis within short time horizons.

Capital Resources

At September 30, 2022 and December 31, 2021, our working capital, excluding deferred revenues, current and deferred grant income, current, and restricted cash, was $197.8 million and $38.0 million, respectively, including cash and cash equivalents of $60.2 million and $28.5 million, respectively. We had $125.0 million short-term investments as of September 30, 2022 and no short-term investments as of December 31, 2021. See "Recent Developments—Strategic Priorities" above for additional information regarding our restructuring plans. We expect our cash, cash equivalents, and short-term investments, along with the funding available under the Revolving Credit Facility, will be sufficient to support the operations of our business for at least the next 12 months.

2014 Notes and 2019 Notes

In February 2014, we closed an underwritten public offering of 2014 Notes. The 2014 Notes will mature on February 1, 2034, unless earlier converted, redeemed, or repurchased in accordance with the terms of the 2014 Notes. Holders may require us to repurchase all or a portion of their 2014 Notes on each of February 6, 2024 and February 6, 2029, at a repurchase price in cash equal to 100% of the principal amount of the 2014 Notes plus accrued and unpaid interest. As provided by the indenture governing the 2014 Notes, in February 2021, holders of $0.5 million of the 2014 Notes required us to repurchase their notes at 100% of the principal amount plus accrued and unpaid interest. As of September 30, 2022, there was $0.6 million aggregate principal of the 2014 Notes outstanding.

In November 2019, we issued $55.0 million aggregate principal amount of our 2019 Notes. The 2019 Notes bear interest at 5.25% per annum, payable semiannually on June 1 and December 1 of each year. The 2019 Notes will mature on December 1, 2024, unless earlier repurchased or converted pursuant to their terms. The 2019 Notes will be convertible at the option of the holder at any point prior to the close of business on the second scheduled trading day preceding the maturity date. The initial conversion rate of the 2019 Notes is 344.8276 shares of our common stock per $1,000 principal amount of 2019 Notes (which is equivalent to an initial conversion price of approximately $2.90 per share). The conversion rate is subject to adjustment upon the occurrence of certain specified events but will not be adjusted for any accrued and unpaid interest.

The 2019 Notes will also be convertible at our option upon certain conditions in accordance with the terms of the indenture governing the 2019 Notes. On or after December 1, 2021 to December 1, 2022, if the volume weighted average price of our common stock has equaled or exceeded 150% of the Conversion Price (as defined in the indenture governing the 2019 Notes), then in effect for a specified number of days (Issuer's Conversion Option), we may, at our option, elect to convert the 2019 Notes in whole but not in part into shares of our common stock, determined in accordance with the terms of the indenture governing the 2019 Notes. On or after December 1, 2022, if the volume-weighted average price of our common stock has equaled or exceeded 130% of the Conversion Price then in effect for a specified number of days, we may, at our option, elect to convert the 2019 Notes in whole but not in part into shares of our common stock, determined in accordance with the terms of the indenture governing the 2019 Notes.

Credit Facility

In August 2018, we entered into a revolving credit facility with Silicon Valley Bank (as amended, the Revolving Credit Facility) in an aggregate principal amount of up to the lesser of (i) $15.0 million or (ii) the sum of (a) 85% of our eligible receivables and (b) 50% of our eligible inventory, in each case, subject to certain limitations (Borrowing Base), provided that the amount of eligible inventory that may be counted towards the Borrowing Base shall be subject to a cap as set forth in the Revolving Credit Facility.

On August 2, 2021, we amended our Revolving Credit Facility to extend the maturity date to August 2, 2023 and to provide for a new $10.0 million term loan facility (the Term Loan Facility and, together with the Revolving Credit Facility, the Credit Facility). The stated maturity of the Term Loan Facility is July 1, 2025. However, if the principal amount of our convertible debt exceeds $0.6 million as of June 1, 2024 or if the maturity of our 2019 Notes has not been extended beyond January 1, 2026 by June 1, 2024, then the maturity date of the Term Loan Facility will be June 1, 2024. The Credit Facility is collateralized by substantially all our property, other than intellectual property. The Credit Facility also includes a financial covenant that requires us to maintain a minimum Adjusted Quick Ratio (as defined in the Credit Facility) of at least 1.25 to 1.00.

As of September 30, 2022, the balance outstanding on the Term Loan Facility was $10.2 million. The interest rate on the Term Loan Facility is the greater of 4.0% or a floating per annum rate equal to three quarters of one percentage point (0.75%) above the prime rate. Interest on any outstanding term loan advances is due and payable monthly. In addition to the monthly interest payments, a final payment equal to 6.5% of the original principal amount of each advance is due on the earlier of the maturity date or the date the advance is repaid. Principal balances are required to be repaid in twenty-four equal installments beginning on August 1, 2023. Current portion of the Term Loan Facility of $0.8 million represents principal debt repayments to be made in the third quarter of 2023.

As of September 30, 2022, total availability under the Revolving Credit Facility was $12.5 million. We currently have no outstanding debt under the Revolving Credit Facility, and we are in compliance with all terms and conditions of the Revolving Credit Facility as of September 30, 2022. See Note 8 within our condensed consolidated financial statements for more information about the Revolving Credit Facility and Term Loan Facility.

Series B Preferred Stock

On April 4, 2022, we completed the Private Placement Issuance, issuing 255,559 shares of Series B Preferred Stock. The rights, preferences and privileges of the Series B Preferred Stock are set forth in the Series B-1 Certificate of Designations and Series B-2 Certificate of Designations (collectively, the Series B Certificates of Designations). The Series B Preferred Stock ranks senior to our common stock with respect to dividend rights, redemption rights and rights on the distribution of assets on any voluntary or involuntary liquidation, dissolution or winding up of the affairs of the Company. The holders of Series B Preferred Stock are entitled to participate in all dividends declared on our common stock on an as-converted basis, on the terms and subject to the conditions set forth in the Series B Certificates of Designations.

The following is a brief summary of the conversion rights and other key provisions of the Series B Preferred Stock:

Holder Voluntary Conversion Rights

The Series B Preferred Stock is convertible at the option of the holders thereof at any time into a number of shares of common stock equal to the Conversion Rate (as defined in the Series B Certificates of Designations), which is initially

294.1176 shares of common stock per share of Series B Preferred Stock, in each case subject to certain adjustments and certain limitations on conversion.

Issuer Call Provision

At any time after the fifth anniversary of the closing of the Private Placement Issuance, if the last reported sale price of the common stock is greater than 250% of the Conversion Price (as defined in the Series B Certificates of Designations) as of such time for at least 20 consecutive trading days, we may elect to convert all of the outstanding shares of Series B Preferred Stock into shares of common stock.

Issuer Redemption Provision

After the seventh anniversary of the closing of the Private Placement Issuance, subject to certain conditions, we may, at our option, redeem all of the outstanding shares of Series B Preferred Stock at a redemption price per share of Series B Preferred Stock, payable in cash, equal to the Liquidation Preference (as defined in the Series B Certificates of Designations).

Change of Control Provisions

If we undergo certain change of control transactions, each holder of outstanding shares of Series B Preferred Stock will have the option, subject to the holder’s right to convert all or a portion of the shares of Series B Preferred Stock held by such holder into common stock, to require us to purchase all or a portion of such holder’s outstanding shares of Series B Preferred Stock that have not been converted into common stock at a purchase price per share of Series B Preferred Stock, payable in cash, equal to the greater of (A) the Liquidation Preference of such share of Series B Preferred Stock, and (B) the amount of cash and/or other assets that such holder would have been entitled to receive if such holder had converted such share of Series B Preferred Stock into common stock immediately prior to the change of control transaction (Change of Control Put).

In the event of a change of control in which we are not expected to be the surviving corporation or if our common stock will no longer be listed on a U.S. national securities exchange, we will have a right to redeem, subject to the holder’s right to convert into common stock prior to such redemption, all of such holder’s shares of Series B Preferred Stock, or if a holder exercises the Change of Control Put in part, the remainder of such holder’s shares of Series B Preferred Stock, at a redemption price per share payable in cash, equal to the greater of (A) the Liquidation Preference of such share of Series B Preferred Stock, and (B) the amount of cash and/or other assets that the holder would have received if such holder had converted such share of Series B Preferred Stock into common stock immediately prior to the change of control transaction.

Liquidation Rights

In the event of any voluntary or involuntary liquidation, dissolution or winding up of the affairs of the Company, the Series B Preferred Stock has a liquidation preference equal to the greater of (i) the Liquidation Preference (as defined in the Series B Certificates of Designations, currently $3.40) and (ii) the amount per share of Series B Preferred Stock that such holder would have received had all holders of Series B Preferred Stock, immediately prior to such voluntary or involuntary liquidation, dissolution or winding up of the affairs of the Company, converted all shares of Series B Preferred Stock into common stock pursuant to the terms of the Series B Certificates of Designations (without regard to any limitations on conversion contained therein).

We believe our existing cash, cash equivalents, and short-term investments, along with funding available under the Revolving Credit Facility, will be sufficient to meet our working capital and capital expenditure needs for at least the next 12 months.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. Our market risk exposure is primarily a result of fluctuations in foreign currency exchange rates and interest rates. We do not hold or issue financial instruments for trading purposes.

Foreign Currency Exchange Risk

As we expand internationally our results of operations and cash flows will become increasingly subject to fluctuations due to changes in foreign currency exchange rates. Our revenue is generally denominated in the local currency of the contracting party. Historically, the majority of our revenue has been denominated in U.S. dollars. Our expenses are generally denominated in the currencies where our operations are located, which is primarily in the United States, with a portion of expenses incurred in Singapore and Canada where our manufacturing facilities are located. Our results of operations and cash flows are, therefore, subject to fluctuations due to changes in foreign currency exchange rates. The volatility of exchange rates depends on many factors that we cannot forecast with reliable accuracy. We have experienced and will continue to experience fluctuations in our net income or loss as a result of transaction gains or losses related to revaluing certain current asset and current liability balances that are denominated in currencies other than the functional currency of the entities in which they are recorded. For the nine months ended September 30, 2022, we had a foreign currency loss of $1.7 million compared to a foreign currency loss of $0.1 million in the prior year for the same period. To date, we have not entered into any foreign currency hedging contracts although we may do so in the future. As our international operations grow, we will continue to reassess our approach to manage our risk relating to fluctuations in currency rates. If foreign currency exchange rates had changed by 10% during the periods presented, it would not have had a material impact on our financial position or results of operations.

Interest Rate Sensitivity

We had cash and cash equivalents of $60.2 million as of September 30, 2022. These amounts were held primarily in cash on deposit with banks and money market funds which are short-term. We held $125.0 million short-term investments in treasury securities as of September 30, 2022. Cash, cash equivalents and short-term investments are held for working capital purposes. We believe that we do not have any material exposure to changes in the fair value of our money market portfolio as a result of changes in interest rates. Declines in interest rates, however, will reduce future investment income. If overall interest rates had decreased by 10% during the periods presented, our interest income would not have been materially affected.

Fair Value of Financial Instruments

We do not have material exposure to market risk with respect to investments. We do not use derivative financial instruments for speculative or trading purposes. We may adopt specific hedging strategies in the future.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and our Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of September 30, 2022. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company’s management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of September 30, 2022, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting that occurred during the nine months ended September 30, 2022 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Limitations on the Effectiveness of Controls

Control systems, no matter how well conceived and operated, are designed to provide a reasonable, but not an absolute, level of assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. Because of the inherent limitations in any control system, misstatements due to error or fraud may occur and not be detected.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

In September 2020, a putative class action complaint alleging violations of the federal securities laws was filed against the Company (also naming our now-former Chief Executive Officer and our Chief Financial Officer as defendants) in the U.S. District Court for the Northern District of California (Reena Saintjermain, et al. v. Fluidigm Corporation, et al). The Court appointed a lead plaintiff and lead counsel in December 2020, and an amended complaint was filed on February 19, 2021. The complaint, as amended, seeks unspecified damages on behalf of a purported class of persons and entities who acquired our common stock between February 7, 2019 and November 5, 2019 and alleges securities laws violations based on statements and alleged omissions made by the Company during such period. The Company filed a motion to dismiss the complaint on April 5, 2021 and, on August 4, 2021, the Court granted defendants' motion to dismiss with leave to amend. A second amended complaint was filed on September 14, 2021. The Company filed a motion to dismiss the second amended complaint on October 29, 2021 and, on February 14, 2022, the Court granted defendants' motion and dismissed the second amended complaint with prejudice. The plaintiff has appealed the decision, and the appeal remains pending before the U.S. Court of Appeals for the Ninth Circuit. We believe the claims alleged in the complaint lack merit and we intend to defend this action vigorously.

In the normal course of business, we are from time to time involved in legal proceedings or potential legal proceedings, including disputes involving employment, intellectual property, or other matters. Although the results of litigation and claims cannot be predicted with certainty, we currently believe that the final outcome of any currently pending matters would not have a material adverse effect on our business, operating results, financial condition, or cash flows. Regardless of the 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

We operate in a rapidly changing environment that involves numerous uncertainties and risks. The following risks and uncertainties may have a material and adverse effect on our business, financial condition, or results of operations. You should consider these risks and uncertainties carefully, together with all of the other information included or incorporated by reference in this quarterly report on Form 10-Q. The risks described below are not the only ones we face. Our business is also subject to the risks that affect many other companies, such as employment relations, general economic conditions, global sociopolitical events and international operations. Further, additional risks not currently known to us or that we currently believe are immaterial may in the future materially and adversely affect our business, operations, liquidity and stock price. If any of these risks occur, our business, results of operations, or financial condition could suffer, the trading price of our securities could decline, and you may lose all or part of your investment.

Summary of Risk Factors

Risks Related to our Business, Industry, and Strategy

- The COVID-19 pandemic has significantly affected our business operations.
- Our financial results and revenue growth rates have varied significantly from quarter-to-quarter and year-to-year, and may not be consistent with expectations.
- We have incurred losses since inception, and we may continue to incur substantial losses for the foreseeable future.
- Market opportunities may not develop as we expect.
- The life science markets are highly competitive and subject to rapid technological change.
- If our research and product development efforts do not result in commercially viable products within anticipated timelines, if at all, our business and results of operations will be adversely affected.
- Our future success is dependent upon our ability to expand our customer base and introduce new applications.
- If our products fail to achieve and sustain sufficient market acceptance, our revenue will be adversely affected.
- If we fail to achieve the expected financial and operational benefits of our recently announced restructuring plan and other strategic initiatives, our business and financial results may be harmed.
- The planned implementation of a company-wide enterprise resource planning (ERP) system could adversely affect our business.
- Our business growth strategy involves the potential for significant acquisitions.

Risks Related to Operations and Reliance on Third Parties

- We may experience development or manufacturing problems or delays.

- Our business depends on research and development spending levels of our customers.
- Disruption of our manufacturing facilities or other operations, or in the operations of our customers or business partners, could result in cancellation of orders, delays in deliveries or other business activities, or loss of customers.
- We rely on single and sole source suppliers for some of the components and materials used in our products.
- We may not be able to convert our orders in backlog into revenue.
- Any disruption or delay in the shipping or off-loading of our products may have an adverse effect on our financial condition and results of operations.
- Our business operations depend upon the continuing efforts of our management team and other skilled and experienced personnel.
- Our distribution capabilities and direct sales, field support, and marketing forces must be sufficient to meet our customers' needs.
- To use our analytical systems, customers typically need to purchase specialized reagents.
- Security breaches, loss of data, cyberattacks, and other IT failures could adversely affect our business.

Risks Related to Quality and the Regulatory Environment

- Our products could have defects or errors.
- To the extent we elect to label and promote any of our products as medical devices, we would be required to obtain prior approval or clearance by the U.S. Food and Drug Administration (FDA) or comparable foreign regulatory authority.
- Compliance or the failure to comply with current and future regulations affecting our products and business operations worldwide could cause us significant expense and adversely impact our business.

Risks Related to Economic Conditions and Operating a Global Business

- We generate a substantial portion of our revenue internationally and our international business exposes us to additional business, regulatory, political, operational, financial, and economic risks.
- Adverse conditions in the global economy may significantly harm our revenue, profitability, and results of operations.
- We are subject to fluctuations in the exchange rate of the U.S. dollar and foreign currencies.

Financial, Tax, and Accounting Risks

- Our future capital needs are uncertain and we may need to raise additional funds in the future.
- Any failure to maintain effective internal control over financial reporting could adversely affect our business.
- We may not realize the value of our goodwill or other intangible assets.
- If we fail to comply with the covenants and other obligations under our debt facilities, the lenders may be able to accelerate amounts owed under the facilities and, in the case of our Credit Facility (as defined below), may foreclose upon the assets securing our obligations.
- We are subject to risks related to taxation in multiple jurisdictions.
- We have a significant amount of outstanding indebtedness.

Risks Related to Intellectual Property

- Our ability to protect our intellectual property and proprietary technology is uncertain.
- We may be involved in lawsuits to protect or enforce our patents and proprietary rights.
- We may be subject to damages resulting from claims that we or our employees have wrongfully used or disclosed alleged trade secrets.
- We depend on certain technologies that are licensed to us.
- We are subject to certain manufacturing restrictions related to licensed technologies that were developed with the financial assistance of U.S. governmental grants.
- We are subject to certain obligations and restrictions relating to technologies developed in cooperation with Canadian government agencies.

Risks Related to Our Common Stock

- Our stock price is volatile.
- Future sales of our common stock in the public market could cause our stock price to fall.

- If securities or industry analysts publish unfavorable research about us or cease to cover our business, our stock price and/or trading volume could decline.
- Any conversions of our 2014 Notes or 2019 Notes (each as defined below) will dilute the ownership interest of our existing stockholders.

Risks Related to our Capital Structure

- The holders of our Series B Preferred Stock (as defined below) own a significant portion of our total outstanding voting securities and may prevent other stockholders from influencing material corporate decisions.
- The market value of our common stock could decline if the holders of our Series B Preferred Stock sell their shares.
- The holders of our Series B Preferred Stock may exercise influence over us, including through their ability to designate members of our board of directors.

RISKS RELATED TO OUR BUSINESS, INDUSTRY, AND STRATEGY

The COVID-19 pandemic has significantly affected our business operations and could continue to adversely impact our financial position and cash flows to an extent that is unknown and difficult to predict.

The pandemic and international public health emergency caused by SARS-CoV-2, the novel strain of coronavirus that causes the disease commonly known as COVID-19, has adversely affected all the countries in which we and our customers, suppliers, and other business partners operate, disrupting supply chains, causing significant volatility in global financial markets, and raising the prospect of an extended global recession. Public health problems resulting from COVID-19 and precautionary measures instituted by governments and businesses to mitigate its spread and resurgence, including travel restrictions and quarantines, could continue to contribute to a general slowdown in the global economy, cause increasingly adverse impacts on our customers, suppliers, and other business partners, and further disrupt our operations. Changes in our operations as a result of the COVID-19 pandemic have resulted in inefficiencies and delays, including in sales and product development efforts, and additional costs related to business continuity initiatives that cannot be fully mitigated through succession planning, employees working remotely, or teleconferencing technologies.

The COVID-19 pandemic and related governmental and societal reactions have had, and may continue to have, a negative impact on our business, liquidity, results of operations, and stock price due to the occurrence of some or all of the following events or circumstances among others:

- reduced demand for some of our products and services due to the impact of COVID-19 on our customers, including in the global academic research community;
- the negative impact of ongoing travel restrictions on our sales operations, marketing efforts, and customer field support;
- diminished business productivity due to inefficiencies in employees working from home or increasing physical distancing and other pandemic response protocols in our production facilities;
- increased voluntary turnover, together with impaired ability to hire and effectively train new personnel due to labor shortages and travel restrictions;
- increased susceptibility to the risk of information technology security breaches and other disruptions due to increased volumes of remote access to our information systems from our employees working at home;
- increased operating costs if one of our facilities were to experience a COVID-19 outbreak;
- disruption of the operations of our contract manufacturers, suppliers, and other business partners;
- shortages or delays in the supply of components and materials used in our products; and
- increased volatility in our stock price due to financial market instability.

In 2021, factors such as supply chain constraints, China trade restrictions, and the ongoing slowdown in the Asia-Pacific region caused our overall revenues to decline more than expected. The extent to which the COVID-19 pandemic will continue to impact our business and financial results will depend on future developments, which are highly uncertain and cannot be predicted with confidence, such as the continued spread and resurgences of the coronavirus; the emergence of new strains of the disease, such as the Delta and Omicron variants; the availability, efficacy, and acceptance of COVID-19 vaccines and boosters; the scope and duration of the public health emergency; and COVID-19 mitigation measures such as travel bans and restrictions, social distancing, quarantines, and business shutdowns and closures. Additionally, in response to a surge in COVID-19 infections in the first half of 2022, the Chinese government imposed lockdowns in certain parts of the country that have negatively impacted and continue to negatively impact manufacturing and/or supply chains, as well as demand for our products.

Because the severity, magnitude, and duration of the COVID-19 pandemic and its economic consequences are uncertain, we are unable to predict the impact of COVID-19 on our operations, our financial performance, and our ability to successfully execute our business strategies and initiatives. The ultimate impact of the COVID-19 pandemic on our operations and financial performance depends on many factors that are not within our control, including, but not limited, to: governmental, business, and individual actions that have been and continue to be taken in response to the pandemic (including restrictions on travel, and transport and workforce pressures); the risk of waning immunity among persons already vaccinated and an increase in fatigue or skepticism with respect to initial or booster vaccinations; the impact of the pandemic and actions taken in response on global and regional economies, travel, and economic activity; the availability of federal, state, local or non-U.S. funding programs; general economic uncertainty in key global markets and financial market volatility; global economic conditions and levels of economic growth; labor and materials shortages; supply chain difficulties, including disruption of logistics, shipping, and other distribution operations; and the pace of recovery when the threat of COVID-19 subsides.

As the COVID-19 pandemic continues to affect our operating and financial results, it may also have the effect of heightening many of the other risks described in our other risk factors below. COVID-19 may also affect our operating and financial results in a manner that is not presently known to us or that we currently do not expect to present significant risks to our operations or financial results, particularly if the pandemic and its associated impacts reoccur in the coming months.

Our financial results and revenue growth rates have varied significantly from quarter-to-quarter and year-to-year due to a number of factors, and a significant variance in our operating results or rates of growth from our financial guidance or market expectations, if any, could lead to substantial volatility in our stock price.

Our revenue, results of operations, and revenue growth rates have varied in the past and may continue to vary significantly from quarter-to-quarter or year-to-year. We may experience substantial variability in our product mix from period-to-period as revenue from sales of our instruments relative to sales of our consumables may fluctuate or deviate significantly from expectations. Although our revenue increased year-over-year in 2020 compared to 2019 and in 2019 compared to 2018, we experienced a year-over-year decline in revenue in 2021 compared to 2020, and we may be similarly unable to achieve revenue growth in future periods. Variability in our quarterly or annual results of operations, mix of product revenue, or rates of revenue growth, if any, may lead to volatility in our stock price as research analysts and investors respond to these fluctuations. These fluctuations are due to numerous factors that are difficult to forecast, including:

- fluctuations in demand for our products;
- changes in customer budget cycles, capital spending, and the availability of VAT and import tax exemptions;
- seasonal variations in customer operations;
- tendencies among some customers to defer purchase decisions to the end of the quarter;
- the large unit value of our systems, particularly our proteomics systems;
- changes in our pricing and sales policies or the pricing and sales policies of our competitors;
- our ability to design, manufacture, market, sell, and deliver products to our customers in a timely and cost-effective manner;
- our ability to timely obtain adequate quantities of the materials or components used in our products, which in certain cases are purchased through sole and single source suppliers;
- staffing shortages, lack of skilled labor, increased turnover, and competitive job markets;
- fluctuations or reductions in revenue from sales of legacy instruments that may have contributed significant revenue in prior periods;
- quality control or yield problems in our manufacturing operations;
- new product introductions and enhancements by us and our competitors;
- unanticipated increases in costs or expenses;
- our complex, variable and, at times, lengthy sales cycle;
- trade restrictions and government protectionism;
- global economic conditions; and
- fluctuations in foreign currency exchange rates.

Additionally, we have certain customers who have historically placed large orders in multiple quarters during a calendar year. A significant reduction in orders from one or more of these customers could adversely affect our revenue and operating results, and if these customers defer or cancel purchases or otherwise alter their purchasing patterns, our financial results and actual results of operations could be significantly impacted. Similarly, the loss of one or more key customers, or the inability of any such customer to pay amounts owing to us, could materially and adversely affect our business, financial performance and results of operations. Other unknown or unpredictable factors also could harm our results.

In addition, inflationary pressure, including as a result of supply shortages, has adversely impacted and could continue to adversely impact our financial results. Our operating costs have increased, and may continue to increase, due to the recent growth in inflation. We may not fully offset these cost increases by raising prices for our products and services, which could result in downward pressure on our margins. Further, our customers may choose to reduce their business with us if we increase our pricing.

The foregoing factors, as well as other factors, could materially and adversely affect our quarterly and annual results of operations and rates of revenue growth, if any. We have experienced significant revenue growth in the past but we may not achieve similar growth rates in future periods. You should not rely on our operating results for any prior quarterly or annual period as an indication of our future operating performance. If we are unable to achieve adequate revenue growth, our operating results could suffer and our stock price could decline. In addition, a significant amount of our operating expenses are relatively fixed due to our manufacturing, research and development, and sales and general administrative efforts. Any failure to adjust spending quickly enough to compensate for a shortfall relative to our anticipated revenue could magnify the adverse impact of such shortfalls on our results of operations. We expect that our sales will continue to fluctuate on an annual and quarterly basis and that our financial results for some periods may be below market expectations or projections of securities analysts, which could significantly decrease the price of our common stock.

We have incurred losses since inception, and we may continue to incur substantial losses for the foreseeable future.

We have incurred significant losses in each fiscal year since our inception, including net losses of $59.2 million, $53.0 million, and $64.8 million during the years 2021, 2020, and 2019, respectively. As of September 30, 2022, we had an accumulated deficit of $905.3 million. These losses have resulted principally from costs incurred in our research and development programs, and from our manufacturing costs and selling, general, and administrative expenses. To date, we have funded our operations primarily through equity offerings, the issuance of debt instruments, and from sales of our products. Until we are able to generate additional revenue to support our level of operating expenses, we will continue to incur operating and net losses and negative cash flow from operations.

In addition, inflationary pressure, including as a result of supply shortages, has adversely impacted and could continue to adversely impact our financial results. Our operating costs have increased, and may continue to increase, due to the recent growth in inflation. We may not fully offset these cost increases by raising prices for our products and services, which could result in downward pressure on our margins. Further, our customers may choose to reduce their business with us if we increase our pricing.

While we plan to reduce our general and administrative spend and levels of investment in microfluidics research and development and marketing as part of the restructuring plan that we announced in August 2022, our cost restructuring efforts may not result in the anticipated savings or other economic benefits, or could result in total costs and expenses that are greater than expected, and there is no guarantee that our post-restructuring focus will be sufficient for us to achieve success. Consequently, we may incur operating losses for the foreseeable future and may never achieve profitability.

Market opportunities may not develop as we expect, limiting our ability to successfully sell our products, or our product development and strategic plans may change and our entry into certain markets may be delayed, if it occurs at all.

The application of our technologies to high-throughput genomics, single-cell genomics and, particularly, mass cytometry applications are in many cases emerging market opportunities. We believe these opportunities will take several years to develop or mature and we cannot be certain that these market opportunities will develop as we expect. The future growth of our markets and the success of our products depend on many factors beyond our control, including recognition and acceptance by the scientific community, and the growth, prevalence, and costs of competing methods of genetic and protein analysis. Additionally, our success depends on the ability of our sales organization to successfully sell our products into these new markets. If we are not able to successfully market and sell our products, or to achieve the revenue or margins we expect, our operating results may be harmed and we may not recover our product development and marketing expenditures. In addition, our product development and strategic plans may change, which could delay or impede our entry into these markets.

The life science markets are highly competitive and subject to rapid technological change, and we may not be able to successfully compete.

The markets for our products are characterized by rapidly changing technology, evolving industry standards, changes in customer needs, emerging competition, new product introductions, and strong price competition. We compete with both established and development stage life science research companies that design, manufacture, and market instruments and consumables for gene expression analysis, single-cell targeted gene expression and protein expression analysis, single nucleotide polymorphism (SNP) genotyping, quantitative polymerase chain reaction (qPCR), digital PCR, flow cytometry, tissue imaging, and additional applications using well established laboratory techniques, as well as newer technologies such as bead encoded arrays, microfluidics, next-generation DNA sequencing (NGS), microdroplets, spatial protein expression, and photolithographic arrays. Most of our current competitors have significantly greater name recognition, greater financial and human resources, broader product lines and product packages, larger sales forces, larger existing installed bases, larger intellectual property portfolios, and greater experience and scale in research and development, manufacturing, and marketing than we do.

We consider Agilent Technologies, Inc., Thermo Fisher Scientific Inc. (Thermo), Bio-Rad Laboratories, Inc., and Agena Bioscience, Inc. to be our principal competitors in the microfluidics space. We believe that Cytek Biosciences, Inc. and Becton, Dickinson and Company are currently our principal competitors for our mass cytometry market share, and that Ionpath, Inc., Akoya Biosciences, Inc., NanoString Technologies, Inc., and 10x Genomics, Inc. are our principal competitors for our Imaging Mass Cytometry™ market share. While the aforementioned principal competitors are the largest and most prevalent in their representative technology areas, the combined markets in which we compete have an additional 10 to 20 smaller competitors with competing approaches and technologies that we routinely face in selling situations.

Competitors may be able to respond more quickly and effectively than we can to new or changing opportunities, technologies, standards, or customer requirements. In light of these advantages, even if our technology is more effective than the product or service offerings of our competitors, current or potential customers might accept competitive products and services in lieu of purchasing our technology. We anticipate that we will continue to face increased competition in the future as existing companies and competitors develop new or improved products and as new companies enter the market with new technologies. Increased competition is likely to result in pricing pressures, which could reduce our profit margins and increase our sales and marketing expenses. In addition, mergers, consolidations, or other strategic transactions between two or more of our competitors, or between our competitor and one of our key customers, could change the competitive landscape and weaken our competitive position, adversely affecting our business.

If our research and product development efforts do not result in commercially viable products within anticipated timelines, if at all, our business and results of operations will be adversely affected.

Our business is dependent on the improvement of our existing products, our development of new products to serve existing markets, and our development of new products to create new markets and applications that were previously not practical with existing systems. We have developed design rules for the implementation of our technology that are frequently revised to reflect new insights we have gained about the technology. In addition, we have discovered that biological or chemical reactions sometimes behave differently when implemented on our systems rather than in a standard laboratory environment. Furthermore, many such reactions take place within the confines of single cells, which have also demonstrated unexpected behavior when grown and manipulated within microfluidic environments. As a result, research and development efforts may be required to transfer certain reactions and cell handling techniques to our systems. In the past, product development projects have been significantly delayed when we encountered unanticipated difficulties in implementing a process on our systems. We may have similar delays in the future, and we may not obtain any benefits from our research and development activities. Any delay or failure by us to develop and release new products or product enhancements would have a substantial adverse effect on our business and results of operations.

Our future success is dependent upon our ability to expand our customer base and introduce new applications.

Our customer base is primarily composed of academic research institutions, translational research and medicine centers, cancer centers, clinical research laboratories, biopharmaceutical, biotechnology, and plant and animal research companies, and contract research organizations that perform analyses for research and commercial purposes. Our success will depend, in part, upon our ability to increase our market share among these customers, attract additional customers outside of these markets, and market new applications to existing and new customers as we develop such applications. Attracting new customers and introducing new applications require substantial time and expense. For example, it may be difficult to identify, engage, and market to customers who are unfamiliar with the current applications of our systems. Any failure to expand our existing customer base or launch new applications would adversely affect our ability to increase our revenue.

If our products fail to achieve and sustain sufficient market acceptance, our revenue will be adversely affected.

Our success depends on our ability to develop and market products that are recognized and accepted as reliable, enabling and cost-effective. Most of our potential customers already use expensive research systems in their laboratories and may be reluctant to replace those systems. Market acceptance of our systems will depend on many factors, including our ability to convince potential customers that our systems are an attractive alternative to existing technologies. Compared to some competing technologies, our technology is relatively new, and most potential customers have limited knowledge of, or experience with, our products. Prior to adopting our systems, some potential customers may need to devote time and effort to testing and validating our systems. Any failure of our systems to meet these customer benchmarks could result in customers choosing to retain their existing systems or to purchase systems other than ours, and revenue from the sale of legacy instruments that may have contributed significant revenue in prior periods may decrease.

In addition, it is important that our systems be perceived as accurate and reliable by the scientific and medical research community as a whole. Historically, a significant part of our sales and marketing efforts has been directed at convincing industry leaders of the advantages of our systems and encouraging such leaders to publish or present the results of their evaluation of our systems. If we are unable to continue to induce leading researchers to use our systems, or if such researchers are unable to achieve and publish or present significant experimental results using our systems, acceptance and adoption of our systems will be slowed and our ability to increase our revenue would be adversely affected.

We may not be able to develop new products or enhance the capabilities of our existing systems to keep pace with rapidly changing technology and customer requirements, which could have a material adverse effect on our business, revenue, financial condition, and operating results.

Our success depends on our ability to develop new products and applications for our technology in existing and new markets, while improving the performance and cost-effectiveness of our systems. New technologies, techniques, or products could emerge that might offer better combinations of price and performance than our current or future product lines and systems. Existing markets for our products, including high-throughput genomics, single-cell genomics and mass cytometry, as well as potential markets for our products such as high-throughput NGS and molecular applications, are characterized by rapid technological change and innovation. It is critical to our success for us to anticipate changes in technology and customer requirements and to successfully introduce new, enhanced, and competitive technology to meet our customers' and prospective customers' needs on a timely and cost-effective basis. Developing and implementing new technologies typically involve substantial development costs and we may not have adequate resources available to be able to successfully introduce new applications of, or enhancements to, our systems. We cannot guarantee that we will be able to maintain technological advantages over emerging technologies in the future. While we typically plan improvements to our systems, we may not be able to successfully implement these improvements. If we fail to keep pace with emerging technologies, demand for our systems will not grow and may decline, and our business, revenue, financial condition, and operating results could suffer materially. In addition, if we introduce enhanced systems but fail to manage product transitions effectively, customers may delay or forgo purchases of our systems and our operating results may be adversely affected by product obsolescence and excess inventory. Even if we successfully implement some or all of these planned improvements, we cannot guarantee that our current and potential customers will find our enhanced systems to be an attractive alternative to existing technologies, including our current products.

If we fail to achieve the expected financial and operational benefits of our recently announced restructuring plan and other strategic initiatives, our business and financial results may be harmed.

From time to time, we have implemented efficiency and cost-savings initiatives intended to stabilize our business operations. In August 2022, we announced a restructuring plan including a reduction in force. In addition to the reduction in force, we will also seek to reduce leased office space and other operating expenses. The purpose of the restructuring plan is to improve operational efficiency and operating costs and better align our workforce with the current needs of our business. There is no guarantee that the restructuring plan will achieve its intended benefits and cost savings or that our post-restructuring focus will be sufficient for us to achieve success. For example, our cost restructuring efforts may not result in the anticipated savings or other economic benefits, or could result in total costs and expenses that are greater than expected, which would require us to seek potentially dilutive financing alternatives, disrupt or restrain the scope of our business activities, and would make it more difficult to attract and retain qualified personnel, each of which could have a material adverse effect on our business, financial condition, results of operations and prospects. Similarly, changes in our commercial and strategic focus and allocation of resources contemplated by the restructuring plan, including reductions in our levels of investment in microfluidics research and development and marketing, as well as implementation of our other strategic initiatives, may be unsuccessful or result in unanticipated risks or other unintended consequences for our business, any of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

Risks associated with implementing a company-wide enterprise resource planning (ERP) system could adversely affect our business and results of operations or the effectiveness of internal control over financial reporting.

We are preparing to implement a company-wide ERP system to handle the business and financial processes within our operations and corporate functions. ERP implementations are complex and time-consuming projects that involve substantial expenditures on system software and implementation activities that can continue for several years. ERP implementations also require transformation of business and financial processes in order to reap the benefits of the ERP system. Our business and results of operations may be adversely affected if we experience operating problems and/or cost overruns during the ERP implementation process, or if the ERP system and the associated process changes do not give rise to the benefits that we expect. Additionally, if we do not effectively implement the ERP system as planned or if the system does not operate as intended, our business, results of operations, and internal controls over financial reporting could be adversely affected.

Our business growth strategy involves the potential for significant acquisitions, and our operating results and prospects could be harmed if we are unable to integrate future acquisitions successfully.

We may acquire other businesses to improve our product offerings or expand into new markets. Our future acquisition strategy will depend on our ability to identify, negotiate, complete, and integrate acquisitions and, if necessary, to obtain satisfactory debt or equity financing to fund those acquisitions. Mergers and acquisitions are inherently risky, and any transaction we complete may not be successful. Any merger or acquisition we may pursue would involve numerous risks, including but not limited to the following:

- difficulties in integrating and managing the operations, technologies, and products of the companies we acquire;
- diversion of our management’s attention from normal daily operation of our business;
- our inability to maintain the key business relationships and the reputations of the businesses we acquire;
- our inability to retain key personnel of the acquired company;
- uncertainty of entry into markets in which we have limited or no prior experience and in which competitors have stronger market positions;
- our dependence on unfamiliar affiliates and customers of the companies we acquire;
- insufficient revenue to offset our increased expenses associated with acquisitions;
- our responsibility for the liabilities of the businesses we acquire, including those which we may not anticipate;
- the possibility that we may not realize the value of acquired assets recorded as goodwill or intangible assets, and would be required to incur material charges relating to the impairment of those assets; and
- our inability to maintain internal standards, controls, procedures, and policies.

We may be unable to secure the equity or debt funding necessary to finance future acquisitions on terms that are acceptable to us. If we finance acquisitions by issuing equity or convertible debt securities, our existing stockholders will likely experience dilution, and if we finance future acquisitions with debt funding, we will incur interest expense and may have to comply with financial covenants and secure that debt obligation with our assets.

RISKS RELATED TO OPERATIONS AND RELIANCE ON THIRD PARTIES

We may experience development or manufacturing problems or delays that could limit the potential growth of our revenue or increase our losses.

We may encounter unforeseen situations in the manufacturing and assembly of our products that would result in delays or shortfalls in our production. For example, our production processes and assembly methods may have to change to accommodate any significant future expansion of our manufacturing capacity, which may increase our manufacturing costs, delay production of our products, reduce our product margin, and adversely impact our business. Conversely, if demand for our products shifts such that a manufacturing facility is operated below its capacity for an extended period, we may adjust our manufacturing operations to reduce fixed costs, which could lead to uncertainty and delays in manufacturing times and quality during any transition period.

Additionally, all of our integrated fluidic circuits (IFCs) for commercial sale are manufactured at our facility in Singapore. Production of the elastomeric block that is at the core of our IFCs is a complex process requiring advanced clean rooms, sophisticated equipment, and strict adherence to procedures. Any contamination of the clean room, equipment malfunction, or failure to strictly follow procedures can significantly reduce our yield in one or more batches. We have in the past experienced variations in yields due to such factors. A drop in yield can increase our cost to manufacture our IFCs or, in more severe cases, require us to halt the manufacture of our IFCs until the problem is resolved. Identifying and resolving the cause of a drop in yield can require substantial time and resources.

Furthermore, developing an IFC for a new application may require developing a specific production process for that type of IFC. While all of our IFCs are produced using the same basic processes, significant variations may be required to ensure adequate yield of any particular type of IFC. Developing such a process can be time consuming, and any unexpected difficulty in doing so can delay the introduction of a product.

If our manufacturing activities are adversely impacted, or if we are otherwise unable to keep up with demand for our products by successfully manufacturing, assembling, testing, and shipping our products in a timely manner, our revenue could be impaired, market acceptance for our products could be adversely affected and our customers might instead purchase our competitors' products.

Our business depends on research and development spending levels of our customers, a reduction in which could limit our ability to sell our products and adversely affect our business.

We expect that our revenue in the foreseeable future will continue to be derived primarily from sales of our systems, IFCs, assays, and reagents to academic research institutions, translational research and medicine centers, cancer centers, clinical research laboratories, biopharmaceutical, biotechnology, and plant and animal research companies, and contract research organizations worldwide. Our success will depend upon their demand for and use of our products. Accordingly, the spending policies and practices of these customers—which have been impacted by the COVID-19 pandemic and may additionally be impacted by other factors—have had and will continue to have a significant effect on the demand for our technology. These policies may be based on a wide variety of factors, including concerns regarding any future federal government budget sequestrations, the availability of resources to make purchases, the spending priorities among various types of equipment, policies regarding spending during recessionary periods, tariffs and trade restrictions, and changes in the political climate. In addition, academic, governmental, and other research institutions that fund research and development activities may be subject to stringent budgetary constraints that could result in spending reductions, reduced allocations, or budget cutbacks, which could jeopardize the ability of these customers to purchase our products. Our operating results have fluctuated and may continue to fluctuate substantially due to reductions and delays in research and development expenditures by our customers. For example, reductions in operating expenditures by global academic research facilities because of the COVID-19 pandemic have resulted in lower than expected sales of our mass cytometry instruments. Additionally, the imposition of tariffs and delays in issuing VAT and import tax exemptions have adversely affected the sales of our products in China. Similar reductions and delays in customer spending have resulted and may continue to result from other factors that are not within our control, such as:

- changes in economic conditions;
- natural disasters or public health crises;
- changes in government programs that provide funding to research institutions and companies;
- macroeconomic conditions and the political climate;
- governmental protectionism, the escalation of tariffs and other trade barriers;
- availability of tax permits and incentives, including VAT and import tax exemptions;
- changes in the regulatory environment affecting life science and plant and animal research companies engaged in research and commercial activities;
- changes in our customers' research priorities;
- differences in budget cycles across various geographies and industries;
- personnel shortages among our customers;
- market-driven pressures on companies to consolidate operations and reduce costs;
- mergers and acquisitions in the life science and plant and animal research industries; and
- other factors affecting research and development spending.

Any decrease in our customers' budgets or expenditures or in the size, scope, or frequency of capital or operating expenditures, as well as any increase in local tariffs could materially and adversely affect our operations or financial condition.

If one or more of our manufacturing facilities become unavailable or inoperable, we will be unable to continue manufacturing our instruments, IFCs, assays and/or reagents and, as a result, our business will be harmed until we are able to secure a new facility.

We manufacture our microfluidics analytical and preparatory instruments and IFCs for commercial sale at our facility in Singapore and our mass cytometry instruments, assays, and reagents for commercial sale at our facility in Canada. No other manufacturing facilities are currently available to us, particularly facilities of the size and scope of our Singapore and Canada operations. Our facilities and the equipment we use to manufacture our instruments, IFCs, assays, and reagents would be costly to replace and could require substantial lead times to repair or replace. Our facilities may be harmed or rendered inoperable by natural or man-made disasters, which may render it difficult or impossible for us to manufacture our products for some period of time. If any of our facilities become unavailable to us, we cannot provide assurances that we will be able to secure a new manufacturing facility on acceptable terms, if at all. The inability to manufacture our products, combined with our limited inventory of manufactured supplies, may result in the loss of customers or harm our reputation, and we may be unable to reestablish relationships with those customers in the future. Although we possess insurance for damage to our property and the disruption of our business, this insurance may not be sufficient to cover all of our potential losses and may not continue to be available to us on acceptable terms, or at all. If our manufacturing capabilities are impaired, we may not be able to manufacture and ship our products in a timely manner, which would adversely impact our business.

Disruption of our manufacturing facilities or other operations, or in the operations of our customers or business partners, due to earthquake, flood, other natural catastrophic events, public health crises, or terrorism could result in cancellation of orders, delays in deliveries or other business activities, or loss of customers and could seriously harm our business.

We have significant manufacturing operations in Singapore and Canada and operations in the United States. In addition, our business is international in nature, with our sales, service and administrative personnel and our customers located in numerous countries throughout the world. Operations at our manufacturing facilities and our subcontractors, as well as our other operations and those of our customers, are subject to disruption for a variety of reasons, including work stoppages, acts of war, terrorism, public health crises (including the ongoing COVID-19 pandemic), fire, earthquake, volcanic eruptions, energy shortages, flooding, or other natural disasters. Such disruption could cause delays in, among other things, shipments of products to our customers, our ability to perform services requested by our customers, or the installation of our products at customer sites.

We cannot provide any assurance that alternate means of conducting our operations (whether through alternate production capacity or service providers or otherwise) would be available if a major disruption were to occur or that, if such alternate means were available, they could be obtained on favorable terms.

We rely on a limited number of third-party suppliers for some of the components and materials used in our products, and the loss of any of these suppliers, or delays or problems in the supply of components and materials could harm our business.

We rely on a limited number of third-party suppliers for certain components and materials used in our products, including single and sole source suppliers. Additionally, certain of our instruments are assembled at the facilities of contract manufacturers in Singapore. We do not have long-term contracts with our suppliers of these components and materials or our assembly service providers. The loss of a single or sole source supplier of any of the following components and/or materials would require significant time and effort to locate and qualify an alternative source of supply, if at all:

- The IFCs used in our microfluidic systems are fabricated using a specialized polymer, and other specialized materials, that are available from a limited number of sources. In the past, we have encountered quality issues that have reduced our manufacturing yield or required the use of additional manufacturing processes.
- The electron multiplier detector included in the Hyperion/Hyperion+/CyTOF/CyTOF XT systems and certain metal isotopes used with the Hyperion/Hyperion+/CyTOF/CyTOF XT systems are purchased from sole source suppliers.
- The raw materials for our Delta Gene and SNP Type assays and Access Array target-specific primers are available from a limited number of sources.

Our reliance on single and sole source suppliers and assembly service providers also subjects us to other risks that could harm our business, including the following:

- we may be subject to increased component or assembly costs; and
- we may not be able to obtain adequate supply or services in a timely manner or on commercially reasonable terms, if at all.

If, as a result of global economic or political instability or health pandemics, such as the ongoing escalation of the situation in Ukraine or the COVID-19 pandemic, our suppliers experience shortages or delays for materials sourced or manufactured in the affected countries, their ability to supply us with instruments or product components may be affected. If any of these events occur, our business and operating results could be harmed. In connection with the global supply chain disruptions following the onset of the COVID-19 pandemic, we have experienced and are continuing to experience problems with some of our suppliers. In the third quarter of 2021, shortages of certain components caused a backlog and we were unable to fulfill all of the demand for our products during the quarter. We have in the past experienced supply issues, as well as quality control problems such as manufacturing errors, with some of our suppliers, and may again experience problems in the future. We may not be able to quickly establish additional or replacement suppliers, particularly for our single source components, or assembly service providers. Any continued or future interruption or delay in the supply of components or materials or assembly of our instruments, or our inability to obtain components, materials, or assembly services from alternate sources at acceptable prices in a timely manner, could impair our ability to meet the demand of our customers and cause them to cancel orders or switch to competitive products, which would harm our business. Additionally, in response to a surge in COVID-19 infections in the first half of 2022, the Chinese government imposed lockdowns in certain parts of the country that have negatively impacted and continue to negatively impact manufacturing and/or supply chains.

We may not be able to convert our orders in backlog into revenue.

Our backlog represents product orders from our customers that we have confirmed but have not been able to fulfill, and, accordingly, for which we have not yet recognized revenue. We may not receive revenue from these orders, and any order backlog we report may not be indicative of our future revenue.

Many events can cause an order to be delayed or not completed at all, some of which may be out of our control, including the potential impacts from the COVID-19 pandemic and our suppliers not being able to provide us with products or components. If we delay fulfilling customer orders or if customers reconsider their orders, those customers may seek to cancel or modify their orders with us. Customers may otherwise seek to cancel or delay their orders even if we are prepared to fulfill them. If our orders in backlog do not result in sales, our operating results may suffer.

Any disruption or delay in the shipping or off-loading of our products, whether domestically or internationally, may have an adverse effect on our financial condition and results of operations.

We rely on shipping providers to deliver products to our customers globally. Labor, tariff, or World Trade Organization-related disputes, piracy, physical damage to shipping facilities or equipment caused by severe weather or terrorist incidents, congestion at shipping facilities, complications related to public health crises (including the ongoing COVID-19 pandemic), inadequate equipment to load, dock, and offload our products, energy-related tie-ups, or other factors could disrupt or delay shipping or off-loading of our products domestically and internationally. Such disruptions or delays may have an adverse effect on our financial condition and results of operations.

Our business operations depend upon the continuing efforts of our management team and other skilled and experienced personnel, and if we are unable to retain them or to recruit and train new key executives, scientists, and technical support personnel, we may be unable to achieve our goals.

Our success depends largely on the skills, experience, and performance of our management team and scientific and technical support personnel. The loss of the services of certain members of our management team or our scientific or technical support staff might significantly delay or prevent the development of our products or achievement of other business objectives by diverting management’s attention to transition matters and identification of suitable replacements, and staffing shortages could also negatively impact our ability to expand and scale functions that are needed to support the development of our products and the growth of our business. Our research and product development efforts could also be delayed or curtailed if we are unable to attract, train, and retain highly skilled employees, particularly senior scientists and engineers. Competition for qualified senior management and key employees in our industry is intense. This competition has become exacerbated by the increase in employee resignations reported by employers nationwide in 2021 and continued high rates of employee turnover continuing into 2022. The loss of qualified employees, or an inability to attract, retain, and motivate employees could prevent us from pursuing collaborations and materially and adversely affect our support of existing products, product development and introductions, business growth prospects, results of operations and financial condition. We have experienced increased turnover at all levels since the start of the COVID-19 pandemic and general labor shortages in various areas of our business, all of which could have a material adverse impact on our business. We may need to increase employee wages and benefits in order to attract and retain the personnel necessary to achieve our goals, and our business, operations, and financial results may suffer if we are unable to do so. Attrition and workforce reductions, such as the August 2022 restructuring plan, including the related reduction in force, could adversely affect our reputation among job seekers, cause our existing employees to experience distractions or decreases in employee morale, and result in a loss of institutional know-how, reduced productivity, slower customer service response, reduced effectiveness of internal compliance and risk-mitigation programs, and cancellations of or delays in completing new product developments and other strategic projects. We do not currently maintain key person life insurance covering any of our employees and all our employees, including our management team, may terminate employment without notice and without cause or good reason.

Additionally, in connection with our research and product development efforts, we need to retain and recruit scientists skilled in areas such as molecular and cellular biology, assay development, engineering physics, and manufacturing. We also need highly trained technical support personnel with the necessary scientific background and ability to understand our systems at a technical level to effectively support potential new customers and the expanding needs of current customers. Competition for these people is intense and we may face challenges in retaining and recruiting such individuals if, for example, our stock price declines, thereby reducing the retention value of equity awards, or our business or technology is no longer perceived as leading in our field. Because of the complex and technical nature of our systems and the dynamic market in which we compete, any failure to attract and retain a sufficient number of qualified employees could materially harm our ability to develop and commercialize our technology.

If our direct sales, field support, and marketing forces and distribution capabilities are not sufficient to adequately address our customers' needs, our business will be adversely affected.

We may not be able to market, sell, and distribute our products effectively enough to support our planned growth. We sell our products primarily through our own sales force and through distributors in certain territories. Our future sales will depend on a number of factors including our ability to execute with our existing team, the scope of our marketing efforts and development of our direct sales force, field application specialists and service engineer teams. Our products are technically complex and used for highly specialized applications. As a result, we believe it is necessary to continue to develop a direct sales force that includes people with specific scientific backgrounds and expertise, and a marketing group with technical sophistication.

In the past year, we have experienced significant changes and increased turnover in our sales and marketing organizations, and we face considerable challenges in recruiting and training qualified replacements. Our future success will depend largely on our ability to recruit, retain, and motivate the skilled sales and marketing force necessary to support our business activities, and any failure to maintain competitive levels of compensation will negatively impact our ability to so. Because competition for such employees is intense, we can provide no assurance that we will be able to retain them on favorable or commercially reasonable terms, if at all. Failure to attract and retain our current personnel or to build an efficient and effective sales and marketing force would negatively impact sales of our products and reduce our revenue and profitability.

In addition, we may continue to enlist one or more sales representatives and distributors to assist with sales, distribution, and customer support globally or in certain regions of the world. If we do seek to enter into such arrangements, we may not be successful in attracting desirable sales representatives and distributors, or we may not be able to enter into such arrangements on favorable terms. If our sales and marketing efforts, or those of any third-party sales representatives and distributors, are not successful, our technologies and products may not gain market acceptance, which would materially and adversely impact our business operations.

To use our products—our Biomark, EP1, CyTOF, and Hyperion systems in particular—customers typically need to purchase specialized reagents. Any interruption in the availability of these reagents for use in our products could limit our ability to market our products.

Our products, and our Biomark, EP1, CyTOF, and Hyperion systems in particular, must be used in conjunction with one or more reagents designed to produce or facilitate the particular biological or chemical reaction desired by the user. Many of these reagents are highly specialized and available to the user only from a single supplier or a limited number of suppliers. Although we sell reagents for use with certain of our products, our customers may purchase these reagents directly from third-party suppliers, and we have no control over the supply of those materials. In addition, our products are designed to work with these reagents as they are currently formulated. We have no control over the formulation of reagents sold by third-party suppliers, and the performance of our products might be adversely affected if the formulation of these reagents is changed. If one or more of these reagents were to become unavailable or were reformulated, our ability to market and sell our products could be materially and adversely affected.

In addition, the use of a reagent for a particular process may be covered by one or more patents relating to the reagent itself, the use of the reagent for the particular process, the performance of that process, or the equipment required to perform the process. Typically, reagent suppliers, who are either the patent holders or their authorized licensees, sell the reagents along with a license or covenant not to sue with respect to such patents. The license accompanying the sale of a reagent often purports to restrict the purposes for which the reagent may be used. If a patent holder or authorized licensee were to assert against us or our customers that the license or covenant relating to a reagent precluded its use with our systems, our ability to sell and market our products could be materially and adversely affected. For example, our Biomark system involves real-time quantitative polymerase chain reaction (qPCR) technology. Leading suppliers of reagents for real-time qPCR reactions include Life Technologies Corporation (now part of Thermo) and Roche Diagnostics Corporation, who are our direct competitors, and their licensees. These real-time qPCR reagents are typically sold pursuant to limited licenses or covenants not to sue with respect to patents held by these companies. We do not have any contractual supply agreements for these real-time qPCR reagents, and we cannot assure you that these reagents will continue to be available to our customers for use with our systems, or that these patent holders will not seek to enforce their patents against us, our customers, or suppliers.

Security breaches, loss of data, cyberattacks, and other information technology failures could disrupt our operations, damage our reputation, and adversely affect our business, operations, and financial results.

We are dependent upon our data and information technology systems for the effective operation of our business and for the secure maintenance and storage of confidential data relating to our business and third-party businesses. Our information technology systems may be damaged, disrupted or shut down due to attacks by experienced programmers or hackers who may be able to penetrate our security controls and deploy computer viruses, cyberattacks, phishing schemes, or other malicious software programs, or due to employee error or malfeasance, power outages, hardware failures, telecommunication or utility failures, catastrophes or other unforeseen events, and our system redundancy and other disaster recovery planning may be ineffective or inadequate in preventing or responding to any of these circumstances. Furthermore, there may be a heightened risk of potential cyberattacks by state actors or others since the escalation of the war in Ukraine. Any such compromise of our information technology systems could result in the unauthorized publication of our confidential business or proprietary information and unauthorized release of customer, supplier or employee data, any of which could expose us to a risk of legal claims or proceedings, liability under privacy or other laws, disruption of our operations and damage to our reputation, which could divert our management's attention from the operation of our business and materially and adversely affect our business, revenues and competitive position. In addition, our liability insurance may not be sufficient in type or amount to cover us against claims related to security breaches, cyberattacks and other related breaches. The cost and operational consequences of implementing further data protection measures, either as a response to specific breaches or as a result of evolving risks, could be significant. In addition, our inability to use or access our information systems at critical points in time could adversely affect the timely and efficient operation of our business. Any delayed sales, significant costs or lost customers resulting from these technology failures could adversely affect our business, operations, and financial results.

We have implemented security controls to protect our information technology infrastructure but, due to the ever-evolving nature of information security threats, we are not fully insulated from technology disruptions that could adversely impact us. For example, in early 2019, we experienced a ransomware attack that infiltrated and encrypted certain of our information technology systems, including systems containing critical business data. Immediately following the attack, actions were taken to recover the compromised systems and we were able to restore their operation without significant loss of business data within weeks. Based on the nature of the attack and its impact on our systems, we believe no confidential data was lost or disclosed. If, however, confidential data were determined to have been released in the course of any future event, it is possible that we could be the subject of actions by governmental authorities or claims from persons alleging they suffered damages from such a release. We believe our mitigation measures and expanded information security program have reduced, but cannot eliminate, the risk of a similar attack, and we anticipate additional work and expense in the future as we continuously improve our security processes and initiatives in response to ever-changing information security challenges.

In addition to risks affecting our own systems, we could also be negatively impacted by a data breach or cyber incident happening to a third party's network and affecting us. Third parties with which we conduct business have access to certain portions of our sensitive data, including information pertaining to our customers and employees. In the event that these third parties do not adequately safeguard our data, security breaches could result and negatively impact our business, operations, and financial results.

Since the beginning of the COVID-19 pandemic, a significant percentage of our employees has been working remotely. As a result, we may have increased cyber security and data security risks, due to increased use of home wi-fi networks and virtual private networks, as well as increased disbursement of physical machines. While we have implemented security controls, updated our policies, and augmented our information security training program to reduce the risk of cyberattacks and security breaches, there is no guarantee that these measures will be adequate to safeguard all systems with the increased number of employees working remotely.

RISKS RELATED TO QUALITY AND THE REGULATORY ENVIRONMENT

Our products could have defects or errors, which may give rise to claims against us, adversely affect market adoption of our systems, and adversely affect our business, financial condition, and results of operations.

Our systems utilize novel and complex technology and such systems may develop or contain undetected defects or errors. We cannot assure you that material performance problems, defects, or errors will not arise, and as we increase the density and integration of our systems, these risks may increase. We generally provide warranties that our systems will meet performance expectations and will be free from defects. The costs incurred in correcting any defects or errors may be substantial and could adversely affect our operating margins. For example, we have experienced a performance issue with respect to certain IFCs used in our C1 systems due to the presence of more than one cell in an IFC chamber. Although we have redesigned such C1 IFCs, we may experience additional unexpected product defects or errors that could affect our ability to adequately address these performance issues.

In manufacturing our products, including our systems, IFCs, and assays, we depend upon third parties for the supply of various components, many of which require a significant degree of technical expertise to produce. In addition, we purchase certain products from third-party suppliers for resale. If our suppliers fail to produce components to specification or provide defective products to us for resale and our quality control tests and procedures fail to detect such errors or defects, or if we or our suppliers use defective materials or workmanship in the manufacturing process, the reliability and performance of our products will be compromised.

If our products contain defects, we may experience:

- a failure to achieve market acceptance or expansion of our product sales;
- loss of customer orders and delay in order fulfillment;
- damage to our brand reputation;
- increased cost of our warranty program due to product repair or replacement;
- product recalls or replacements;
- inability to attract new customers;
- diversion of resources from our manufacturing and research and development departments into our service department; and
- legal claims against us, including product liability claims, which could be costly and time consuming to defend and result in substantial damages.

In addition, certain of our products are marketed for use with products sold by third parties. For example, certain of our systems are marketed as compatible with major NGS instruments. If such third-party products are not produced to specification, are produced in accordance with modified specifications, or are defective, they may not be compatible with our products. In such case, the reliability and performance of our products may be compromised.

The occurrence of any one or more of the foregoing could negatively affect our business, financial condition, and results of operations.

Although the FDA granted Emergency Use Authorization (EUA) for our Advanta Dx SARS-CoV-2 RT-PCR Assay in August 2020 (which was updated for use with the AZOVA COVID-19 Test Collection Kit in February 2021, among other updates) and our Advanta Dx COVID-19 EASE Assay in February 2022, these authorizations are only valid during the COVID-19 public health emergency, and when the federally declared public health emergency ends, we may be required to stop commercial distribution of our assay and the collection kit immediately in the United States unless we comply with FDA requirements, which may include obtaining FDA clearance or approval for our assay under a traditional regulatory pathway for in vitro diagnostics (IVDs), which is lengthy and expensive.

Under section 564 of the Federal Food, Drug, and Cosmetic Act (FD&C Act), the FDA has authority to allow certain unapproved medical products or unapproved uses of approved medical products to be used during a public health emergency under an EUA. In issuing an EUA, the FDA will consider the totality of scientific evidence available to the FDA regarding safety, efficacy and known and potential risks of such products and availability of alternatives to the emergency use products, among others. EUAs issued by the FDA will specify the scope of authorization and conditions of authorization, including limitations on distribution and conditions related to product advertising and promotion. Once granted, an EUA is effective until the declaration that circumstances exist justifying the authorization of the emergency use is terminated under Section 564(b)(2) of the FD&C Act or the EUA is revoked under Section 564(g) of the FD&C Act, after which the product must be cleared or approved by the FDA under a traditional pathway as defined by the FDA and we must comply with the FDA quality system regulations in order to remain on the market or to continue commercialization of the product.

In August 2020, the FDA granted EUA for our Advanta Dx SARS-CoV-2 RT-PCR Assay for qualitative detection of nucleic acid from SARS-CoV-2 in saliva specimens from individuals suspected by their healthcare providers of having COVID-19, with the use of the assay limited to CLIA high complexity laboratories. Six supplements have been submitted and authorized by the FDA. In February 2021, the FDA updated that EUA for our Advanta Dx SARS-CoV-2 RT-PCR Assay for use with the AZOVA COVID-19 Test Collection Kit, which is authorized for self-collection of saliva specimens at home. In February 2022, we were granted EUA for our the Advanta Dx COVID-19 EASE Assay, which is authorized for the qualitative detection of nucleic acid from SARS-CoV-2 in nasopharyngeal swab, oropharyngeal swab, mid-turbinate nasal swab, and anterior nasal swab specimens from individuals suspected of COVID-19 by their healthcare provider. As set forth in each EUA, we are required to comply with the conditions of authorization, including certain requirements pertaining to FDA notification, distribution, printed materials, advertising and promotion. If we, our distributors, or authorized laboratories do not comply with the EUA requirements, our business, financial condition and results of operations may be adversely impacted, and we may be subject to regulatory or enforcement actions, including recall of our products and the issuance of an untitled letter, a warning letter, penalties, or fines, among other adverse actions.

If the FDA's policies and guidance change unexpectedly and/or materially or if we misinterpret them, potential sales of Advanta Dx SARS-CoV-2 RT-PCR and the AZOVA COVID-19 Test Collection Kit could be adversely impacted. In addition, the FDA may revoke an EUA where it is determined that the underlying public health emergency no longer exists or warrants such authorization, or if new evidence becomes available that indicates the test does not meet the conditions of authorization or perform as provided in the EUA application. We cannot predict how long this EUA will remain effective. The termination or revocation of the EUA and changing policies and regulatory requirements could adversely impact our business, financial condition and results of operations. The demand for our product and our profitability may decline or be adversely impacted by the federal government's implementation of a national COVID-19 testing strategy. Given the uncertain nature of the COVID-19 pandemic and future legislation and regulation in this space, we can provide no assurance with respect to our ability to achieve or sustain profitability on a quarterly or annual basis.

The healthcare industry is highly regulated and if we fail to comply with applicable healthcare laws and regulations, we could suffer fines and penalties or be required to make significant changes to our operations which could have a significant adverse effect on the results of our business operations.

We compete in markets in which we or our customers must comply with federal, state, local and foreign regulations, such as healthcare fraud and abuse, data privacy and medical product laws and regulations. The healthcare industry is subject to extensive and frequently changing international and United States federal, state and local laws and regulations. In addition, federal and state enforcement agencies have substantial powers and remedies to pursue suspected violations under broad laws and regulations relating to healthcare fraud and abuse, interactions and financial arrangements with healthcare professionals or entities, data privacy and misconduct involving government programs or contracts. If we, our employees, collaborators or contractors fail to comply with applicable laws and regulations, we could suffer civil and criminal damages, fines and penalties, exclusion from participation in governmental healthcare programs, and the loss of various licenses and authorizations necessary to operate our business, as well as incur liabilities from third-party claims, all of which could have a significant adverse effect on our business.

To the extent we elect to label and promote any of our non-EUA products as medical devices, we would be required to obtain prior approval or clearance by the FDA or comparable foreign regulatory authority, which could take significant time and expense and could fail to result in a marketing authorization for the intended uses we believe are commercially attractive. Obtaining marketing authorization in one jurisdiction does not mean that we will be successful in obtaining marketing authorization in other jurisdictions where we conduct business.

Except for the Advanta Dx SARS-CoV-2 RT-PCR Assay and the AZOVA COVID-19 Test Collection Kit authorized by the FDA under an EUA granted in August 2020 and updated in February 2021, among other updates, and our Advanta Dx COVID-19 EASE Assay authorized by the FDA under an EUA granted in February 2022, our other products are currently labeled, promoted and sold to academic research institutions, translational research and medicine centers, cancer centers, clinical research laboratories, contract research organizations, and biopharmaceutical, biotechnology, and plant and animal research companies as "research use only" (RUO), and are not designed, or intended to be used, for clinical diagnostic tests or as medical devices as currently marketed. If we elect to label and market our products for use as, or in the performance of, clinical diagnostics in the United States, thereby subjecting them to FDA regulation as medical devices, we would be required to obtain premarket 510(k) clearance or premarket approval from the FDA, unless an exception applies.

We are currently registered with the FDA as a medical device manufacturer, with the reagents for the Advanta Dx SARS-CoV-2 RT-PCR Assay listed as our sole medical device product. As noted in the issued EUA for the Advanta Dx SARS-CoV-2 RT-PCR Assay (including the EUA update for use with the AZOVA COVID-19 Test Collection Kit, among other updates) and the issued EUA for the Advanta Dx COVID-19 EASE Assay, the FDA has waived certain quality system requirements under 21 CFR Part 820 for the duration of each EUA. We may in the future list some of our other products with the FDA pursuant to an FDA Class I listing for general purpose laboratory equipment if we pursue clinical applications for such equipment. While this regulatory classification is generally exempt from certain FDA requirements, such as the need to submit a premarket notification commonly known as a 510(k), and some of the requirements of the FDA's Quality System Regulations (QSRs), we would be subject to ongoing FDA "general controls," which include compliance with FDA regulations for labeling, inspections by the FDA, complaint evaluation, corrections and removals reporting, promotional restrictions, reporting adverse events or malfunctions for our products, and general prohibitions against misbranding and adulteration. If we do not comply with all the requirements of the EUA or the normal regulatory requirements for any of our medical device products, including additional regulatory requirements that would apply to the Advanta Dx SARS-CoV-2 RT-PCR Assay, the AZOVA COVID-19 Test Collection Kit and the Advanta Dx COVID-19 EASE Assay after the expiration or termination of the EUA, we may be subject to regulatory or enforcement actions, including the issuance of an untitled letter, a warning letter, penalties, or fines, among other adverse actions, any of which may adversely impact our business, financial condition and results of operations. Compliance with additional or changing regulatory requirements can be time-consuming and costly.

In addition, we may in the future submit 510(k) premarket notifications to the FDA to obtain FDA clearance of certain of our products on a selected basis. It is possible, in the event we elect to submit 510(k) applications for certain of our products, that the FDA would take the position that a more burdensome premarket application, such as a premarket approval application or a de novo application is required for some of our products. If such applications were required, greater time and investment would be required to obtain FDA approval. Even if the FDA agreed that a 510(k) was appropriate, FDA clearance can be expensive and time consuming. It generally takes a significant amount of time to prepare a 510(k), including conducting appropriate testing on our products, and several months to years for the FDA to review a submission. Notwithstanding the effort and expense, FDA clearance or approval could be denied for some or all of our products. Even if we were to seek and obtain regulatory approval or clearance, it may not be for the intended uses we believe are important or commercially attractive.

If we sought and received regulatory clearance or approval for certain of our products, we would be subject to ongoing FDA obligations and continued regulatory oversight and review, including the general controls listed above and the FDA's QSRs for our development and manufacturing operations. In addition, we would be required to obtain a new 510(k) clearance before we could introduce subsequent material modifications or improvements to such products. We could also be subject to additional FDA post-marketing obligations for such products, any or all of which would increase our costs and divert resources away from other projects. If we sought and received regulatory clearance or approval and are not able to maintain regulatory compliance with applicable laws, we could be prohibited from marketing our products for use as, or in the performance of, clinical diagnostics and/or could be subject to enforcement actions, including warning letters and adverse publicity, fines, injunctions, and civil penalties; recall or seizure of products; operating restrictions; and criminal prosecution.

In addition, to the extent we decide to seek regulatory marketing authorization for certain of our products in countries outside of the United States, we or our partners, or collaborators, will need to obtain regulatory marketing authorization for our products for the intended use in the jurisdiction where such products will be marketed. Regulatory clearance or approval in one jurisdiction does not mean that we will be successful in obtaining regulatory marketing authorization in other jurisdictions where we conduct business. Sales of such products outside the United States will likely be subject to foreign regulatory requirements, which can vary greatly from country to country. As a result, the time required to obtain clearances or approvals outside the United States may differ from that required to obtain FDA clearance or approval and we may not be able to obtain foreign regulatory approvals on a timely basis or at all. In addition, the FDA regulates exports of medical devices. Failure to comply with these regulatory requirements or obtain and maintain required approvals, clearances and certifications could impair our ability to commercialize our products for diagnostic use outside of the United States.

In February 2021, we announced a supply and distribution agreement to market our CyTOF technology, panels, and reagents to clinical labs in China. As part of the agreement, we are working to seek National Medical Products Administration (NMPA) approval for our CyTOF instrument for diagnostic use in China. As we increase our operations outside of the United States, our compliance and operational costs will increase, and we will be exposed to greater liability under additional laws and regulations.

Our products could become subject to regulation as medical devices by the FDA or other regulatory agencies even if we do not elect to seek regulatory clearance or approval to market our products for diagnostic purposes, which would adversely impact our ability to market and sell our products and harm our business.

As products that are currently labeled, promoted and intended as RUO, our products are not currently subject to regulation as medical devices by the FDA or comparable agencies of other countries. However, the FDA or comparable agencies of other countries could disagree with our conclusion that our products are currently intended for research use only or deem our current sales, marketing and promotional efforts as being inconsistent with research use only products. For example, our customers may independently elect to use our research use only labeled products in their own laboratory developed tests (LDTs) for clinical diagnostic use. The FDA has historically exercised enforcement discretion in not enforcing the medical device regulations against laboratories offering LDTs. However, on October 3, 2014, the FDA issued two draft guidance documents that set forth the FDA's proposed risk-based framework for regulating LDTs, which are designed, manufactured, and used within a single laboratory. The draft guidance documents provide the anticipated details through which the FDA would propose to establish an LDT oversight framework, including premarket review for higher-risk LDTs, such as those that have the same intended use as FDA-approved or cleared companion diagnostic tests currently on the market. In January 2017, the FDA announced that it would not issue final guidance on the oversight of LDTs and manufacturers of products used for LDTs, but would seek further public discussion on an appropriate oversight approach, and give Congress an opportunity to develop a legislative solution. More recently, the FDA has issued warning letters to certain genomics labs for illegally marketing genetic tests that claim to predict patients' responses to specific medications, noting that the FDA has not created a legal "carve-out" for LDTs and retains discretion to take action when appropriate, such as when certain genomic tests raise significant public health concerns. As manufacturers develop more complex genetic tests and diagnostic software, the FDA may increase its regulation of LDTs. Any future legislative or administrative rule making or oversight of LDTs, if and when finalized, may impact the sales of our products and how customers use our products, and may require us to change our business model in order to maintain compliance with these laws. We cannot predict how these various efforts will be resolved, how Congress or the FDA will regulate LDTs in the future, or how that regulatory system will impact our business.

Additionally, on November 25, 2013, the FDA issued Final Guidance "Distribution of In Vitro Diagnostic Products Labeled for Research Use Only." The guidance emphasizes that the FDA will review the totality of the circumstances when it comes to evaluating whether equipment and testing components are properly labeled as RUO. The final guidance states that merely including a labeling statement that the product is for research purposes only will not necessarily render the device exempt from the FDA's clearance, approval, and other regulatory requirements if the circumstances surrounding the distribution, marketing and promotional practices indicate that the manufacturer knows its products are, or intends for its products to be, used for clinical diagnostic purposes. These circumstances may include written or verbal sales and marketing claims or links to articles regarding a product's performance in clinical applications and a manufacturer's provision of technical support for clinical applications.

In August 2020, as part of the U.S. government's efforts to combat COVID-19 and consistent with the direction in Executive Orders 13771 and 13924, the Department of Health and Human Services (HHS) announced rescission of guidances and other informal issuances of the FDA regarding premarket review of LDTs absent notice-and-comment rulemaking, stating that, absent notice-and-comment rulemaking, those seeking approval or clearance of, or an emergency use authorization, for an LDT may nonetheless voluntarily submit a premarket approval application, premarket notification or an EUA request, respectively, but are not required to do so. However, laboratories opting to use LDTs without FDA premarket review or authorization would not be eligible for liability protection under the Public Readiness and Emergency Preparedness Act (PREP Act). In November 2021, HHS under the Biden administration issued a statement that withdrew the August 2020 policy announcement, stating that HHS does not have a policy on LDTs that is separate from FDA's longstanding approach. The FDA also issued a revised version of its COVID-19 test policy that states the FDA expects newly offered COVID-19 tests, including LDTs, to have an EUA, or traditional marketing authorization such as a granted De Novo or cleared 510(k), prior to clinical use. Further, in June 2021, Congress introduced an updated legislation called the Verifying Accurate, Leading-edge IVCT Development Act (VALID Act), which, if enacted, will establish a new risk-based regulatory framework for in vitro clinical tests (IVCTs), which include IVDs, LDTs, collection devices, and instruments used with such tests, and a technology certification program, among other proposals. The adoption of new restrictions on IVDs, LDTs, or RUOs, whether by the FDA or Congress, could adversely affect our ability to commercialize our products and the demand for our specialized reagents and instruments. Further, we could be required to obtain premarket clearance or approval from the FDA before we can sell our products to certain customers.

If the FDA determines our products or related applications should be subject to additional regulation as in vitro diagnostic devices based upon customers' use of our products for clinical diagnostic or therapeutic decision-making purposes, our ability to market and sell our products could be impeded and our business, prospects, results of operations and financial condition may be adversely affected. In addition, the FDA could consider our products to be misbranded or adulterated under the FD&C Act and subject to recall and/or other enforcement action.

Compliance or the failure to comply with current and future regulations affecting our products and business operations worldwide, such as environmental regulations enacted in the European Union, could cause us significant expense and adversely impact our business.

We are subject to many federal, state, local, and foreign regulations relating to various aspects of our business operations. Governmental entities at all levels are continuously enacting new regulations, and it is difficult to identify all applicable regulations and anticipate how such regulations will be implemented and enforced. We continue to evaluate the necessary steps for compliance with applicable regulations. To comply with applicable regulations, we have and will continue to incur significant expense and allocate valuable internal resources to manage compliance-related issues. In addition, such regulations could restrict our ability to expand or equip our facilities, or could require us to acquire costly equipment or to incur other significant expenses to comply with the regulations. For example, the Restriction on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Directive (RoHS) and the Waste Electrical and Electronic Equipment Directive (WEEE), both enacted in the European Union, regulate the use of certain hazardous substances in, and require the collection, reuse, and recycling of waste from, products we manufacture. Certain of our products sold in these countries are subject to WEEE and RoHS. These and similar regulations that have been or are in the process of being enacted in other countries may require us to redesign our products, use different types of materials in certain components, or source alternative components to ensure compliance with applicable standards, and may reduce the availability of parts and components used in our products by negatively impacting our suppliers' ability to source parts and components in a timely and cost-effective manner.

The Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) regulation (EC) No. 1907/206 is the European Union's regulation on chemicals and their safe use. The list of chemicals has been updated and some of the updates affect chemicals used in our products. We will request a research exception, but if not granted, we will need to reduce the concentration of some of the chemicals in our products, which will require significant research and development and operations efforts.

Any such redesigns, required use of alternative materials, or limited availability of parts and components used in our products may detrimentally impact the performance of our products, add greater testing lead times for product introductions, reduce our product margins, or limit the markets for our products, and if we fail to comply with any present and future regulations, we could be subject to future fines, penalties, and restrictions, such as the suspension of manufacturing of our products or a prohibition on the sale of products we manufacture. Any of the foregoing could adversely affect our business, financial condition, or results of operations.

RISKS RELATED TO ECONOMIC CONDITIONS AND OPERATING A GLOBAL BUSINESS

We generate a substantial portion of our revenue internationally and our international business exposes us to business, regulatory, political, operational, financial, and economic risks associated with doing business outside of the United States.

During the years 2021, 2020, and 2019, approximately 56%, 54%, and 63% respectively, of our product and service revenue was generated from sales to customers located outside of the United States. We believe that a significant percentage of our future revenue will continue to come from international sources as we expand our international operations and develop opportunities in other countries. Engaging in international business inherently involves a number of difficulties and risks, including:

- required compliance with existing and changing foreign regulatory requirements and laws that are or may be applicable to our business in the future, such as the European Union's General Data Protection Regulation, the California Consumer Privacy Act, and other data privacy requirements, labor and employment regulations, anticompetition regulations, the U.K. Bribery Act of 2010 and other anticorruption laws, and the RoHS and WEEE directives and REACH regulation, which regulate the use and importation of certain hazardous substances in, and require the collection, reuse, and recycling of waste from, products we manufacture;
- required compliance with U.S. laws such as the Foreign Corrupt Practices Act, and other U.S. federal laws and regulations established by the Office of Foreign Assets Control;
- export requirements and import or trade restrictions;
- laws and business practices favoring local companies;
- longer payment cycles and difficulties in enforcing agreements and collecting receivables through certain foreign legal systems;
- changes in social, economic, and political conditions or in laws, regulations and policies governing foreign trade, manufacturing, development, and investment both domestically as well as in the other countries and jurisdictions in which we operate and into which we sell our products, including as a result of the separation of the United Kingdom from the European Union (Brexit) or the Russian invasion of Ukraine;
- business interruptions and travel restrictions resulting from global sociopolitical events, including war and terrorism, public health crises (including the ongoing COVID-19 pandemic), and natural disasters including earthquakes, typhoons, floods and fires;
- potentially adverse tax consequences, tariffs, customs charges, bureaucratic requirements, and other trade barriers;
- difficulties and costs of staffing and managing foreign operations; and
- difficulties protecting or procuring intellectual property rights.

Since the beginning of the COVID-19 pandemic, travel restrictions have caused significant slowdowns in China, Japan, and other parts of the Asia-Pacific region. These slowdowns, in addition to shipment delays in China due to delays in obtaining VAT and import tax exemptions for our products, have caused our financial results to suffer. If these situations continue, or if other risks occur, we could be forced to dedicate significant resources to their resolution, and if we are unsuccessful in finding a solution, our financial condition and results will suffer.

In addition, political instability, civil unrest, the deterioration of the political situation in a country in which we have significant sales or operations, or the breakdown of trade relations between the United States and a foreign country in which we have significant operations, could adversely affect our business, financial condition, and results of operations. For example, a change in trade status between the United States and a foreign country could result in a substantial increase in the import duty applicable to products manufactured in that foreign country and imported into the United States. The United States has commenced certain trade actions, including imposing increased tariffs on certain goods imported into the United States from China, which has resulted in retaliatory tariffs by China. In addition, the United States has commenced certain trade actions as a result of the Russian invasion of Ukraine, which has resulted in retaliatory measures by Russia. Any increased trade barriers or restrictions on global trade imposed by the United States, or further retaliatory trade measures taken by China, Russia, or other countries in response, could adversely affect our business, financial condition, and results of operations.

Our business is subject to a variety of new U.S. and foreign export controls and economic sanctions regulations that were issued in response to Russia's invasion of Ukraine; our failure to comply with these laws and regulations could harm our business.

Due to recent regulations, U.S. companies can no longer provide or receive services or conduct any business with, including selling, shipping, or otherwise transferring any U.S.-controlled products to, the Donetsk People's Republic (DNR) and Luhansk People's Republic (LNR) regions of Ukraine. Additionally, existing U.S. sanctions continue to extend these prohibitions to the Crimea region of Ukraine. Our business is also subject to the expansion of previously existing sanctions imposed by the Treasury Department's Office of Foreign Assets Controls that now cover a significant number of individuals and entities located in Russia, Belarus, and surrounding regions as well as new U.S. export controls imposed by the U.S. Department of Commerce's Export Administration Regulations on exports to Russia. These laws and regulations cover U.S. persons as well as U.S.-controlled products, software, and technologies wherever located. Failure to comply with U.S. and foreign export control and economic sanctions laws and regulations can result in criminal sanctions, civil fines, debarment from government contracting, the loss of export privileges, and, in some cases, imprisonment.

We have implemented new measures to reduce our exposure to this liability. Any additional changes in export control laws, sanctions requirements, or our operations in the affected regions may require us to expend additional resources or to discontinue certain products or services, which would negatively affect our business, financial condition, and operating results. In addition, the increased attention focused upon liability issues as a result of lawsuits, regulatory proceedings, and legislative proposals could damage our brand or otherwise impact the growth of our business. Finally, our ability to receive payment from these regions has been significantly impacted. Any costs incurred or loss of business that occurs as a result of compliance or other liabilities under these laws or regulations could harm our business and operating results.

Adverse conditions in the global economy and disruption of financial markets may significantly harm our revenue, profitability, and results of operations.

Adverse economic conditions in the U.S. and international markets, including the worldwide economic disruption related to the COVID-19 pandemic and related slowdowns in China, Japan, and elsewhere in the Asia-Pacific region, have negatively affected our revenues and operating results and may continue to do so. Even before the current public health crisis took hold, the global credit and financial markets had been experiencing volatility and disruptions, including diminished liquidity and credit availability, increased concerns about inflation and deflation, and the downgrade of U.S. debt and exposure risks on other sovereign debts, decreased consumer confidence, lower economic growth, volatile energy costs, increased unemployment rates, and uncertainty about economic stability. Geopolitical events including the COVID-19 pandemic, the Russian invasion of Ukraine, including any resulting adoption and expansion of trade restrictions by the United States, Russia, and/or China, and Brexit have caused significant economic, market, political and regulatory uncertainty in some of our markets. Volatility and disruption of financial markets could limit our customers' ability to obtain adequate financing or credit to purchase and pay for our products in a timely manner or to maintain operations, which could result in a decrease in sales volume that could harm our results of operations. General concerns about the fundamental soundness of domestic and international economies may also cause our customers to reduce their purchases. Changes in governmental banking, monetary, and fiscal policies to address liquidity and increase credit availability may not be effective. Significant government investment and allocation of resources to assist the economic recovery of sectors that do not include our customers may reduce the resources available for government grants and related funding for life science, plant and animal research, and clinical research and development. Continuation or further deterioration of these financial and macroeconomic conditions could significantly harm our sales, profitability, and results of operations.

We are subject to fluctuations in the exchange rate of the U.S. dollar and foreign currencies.

Our revenue is generally denominated in the local currency of the contracting party. Historically, the majority of our revenue has been denominated in U.S. dollars and fluctuations in the value of the U.S. dollar relative to foreign currencies could decrease demand for our products and adversely impact our financial performance. For example, if the value of the U.S. dollar increases relative to foreign currencies, our products could become more costly to the international consumer and therefore less competitive in international markets, or if the value of the U.S. dollar decreases relative to the Singapore dollar or the Canadian dollar, it would become more costly in U.S. dollars for us to manufacture our products in Singapore and/or in Canada. Additionally, our expenses are generally denominated in the currencies where our operations are located, which is primarily in the United States, with a portion of expenses incurred in Singapore and Canada where our manufacturing facilities are located. Our results of operations and cash flows are, therefore, subject to fluctuations due to changes in foreign currency exchange rates. The volatility of exchange rates depends on many factors that we cannot forecast with reliable accuracy. We have experienced and will continue to experience fluctuations in our net income or loss as a result of transaction gains or losses related to revaluing certain current asset and current liability balances that are denominated in currencies other than the functional currency of the entities in which they are recorded. Fluctuations in currency exchange rates could have an adverse impact on our financial results in the future.

FINANCIAL, TAX, AND ACCOUNTING RISKS

Our future capital needs are uncertain and we may need to raise additional funds in the future, which may cause dilution to stockholders or may be upon terms that are not favorable to us.

We believe our existing cash, cash equivalents, and short-term investments, along with funding available under the Revolving Credit Facility (as defined below), will be sufficient to meet our working capital and capital expenditure needs for at least the next 12 months. However, we have continued to experience losses and, if that trend continues, we may need to seek additional sources of financing. In addition, we may need to raise substantial additional capital for various purposes, including:

- funding our operations;
- expanding the commercialization of our products;
- furthering our research and development; and
- acquiring other businesses or assets and licensing technologies.

Our future funding requirements will depend on many factors, including:

- market acceptance of our products;
- the cost of our research and development activities;
- the cost of filing and prosecuting patent applications;
- the cost of defending any litigation including intellectual property, employment, contractual or other litigation;
- the cost and timing of regulatory clearances or approvals, if any;
- the cost and timing of establishing additional sales, marketing, and distribution capabilities;
- the cost and timing of establishing additional technical support capabilities;
- fluctuations in cash demands (e.g., due to interest or principal payments or payouts under existing cash compensation plans);
- variability in sales and timing of related cash collections;
- the effectiveness of our efficiency, cost-savings and other strategic initiatives (including those contemplated by the restructuring plan that we announced in August 2022);
- the impact of any natural disasters or public health crises (including the COVID-19 pandemic);
- the effect of competing technological and market developments; and
- the extent to which we acquire, license or otherwise invest in businesses, products, and technologies.

To the extent we draw on our Revolving Credit Facility or otherwise incur additional indebtedness, the risks described above could increase. Further, if we increase our indebtedness, our actual cash requirements in the future may be greater than expected. Our cash flow from operations may not be sufficient to repay all of the outstanding debt as it becomes due, and we cannot assure you that we will be able to obtain additional funds on acceptable terms, or at all. The ongoing COVID-19 pandemic has led to significant disruption and volatility in the global capital markets, increasing the cost of—and adversely impacting access to—capital. If we raise additional funds by issuing equity securities, our stockholders will experience dilution. Debt financing in addition to the Credit Facility (as defined below), if available, may involve covenants restricting our operations or our ability to incur additional debt. Any additional debt or equity financing that we raise may contain terms that are not favorable to us or our stockholders, and our ability to raise additional capital may be adversely impacted by the impact of the COVID-19 pandemic on the economy.

If we raise additional funds through collaboration and licensing arrangements with third parties, it may be necessary to relinquish some rights to our technologies or our products, or grant licenses on terms that are not favorable to us. If we do not have or are unable to raise adequate funds, we may have to liquidate some or all of our assets, delay development or commercialization of our products, or license to third parties the rights to commercialize products or technologies that we would otherwise seek to commercialize. We also may have to reduce marketing, customer support, research and development, or other resources devoted to our products, or cease operations. Any of these factors could harm our operating results.

If we fail to maintain effective internal control over financial reporting in the future, the accuracy and timing of our financial reporting may be impaired, which could adversely affect our business and our stock price.

The Sarbanes-Oxley Act requires, among other things, that we maintain effective internal control over financial reporting and disclosure controls and procedures. In particular, we must perform system and process evaluation and testing of our internal control over financial reporting to allow management to report on the effectiveness of our internal control over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act. Our testing may reveal deficiencies in our internal control over financial reporting that are deemed to be material weaknesses.

Our compliance with Section 404 requires that we incur substantial accounting expense and expend significant management time on compliance-related issues. We currently do not have an internal audit group, and we continue to evaluate our need for additional accounting and financial staff with appropriate public company experience and technical accounting knowledge. Moreover, if we do not comply with the requirements of Section 404, or if we or our independent registered public accounting firm identify deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, the market price of our stock could decline and we could be subject to sanctions or investigations by The Nasdaq Stock Market LLC, the Securities and Exchange Commission (SEC), or other regulatory authorities, which would require additional financial and management resources.

We may not realize the value of our goodwill or other intangible assets, which would be reflected in an impairment charge.

Our business acquisitions typically result in goodwill and other intangible assets, which affect the amount of future period amortization expense and possible impairment expense. We make estimates and assumptions in valuing such intangible assets that affect our condensed consolidated financial statements. As of September 30, 2022, we had approximately $122.2 million of goodwill and net intangible assets, including approximately $106.1 million of goodwill and $16.1 million of net intangible assets. These assets represent a significant portion of the assets recorded on our condensed consolidated balance sheet and relate primarily to our acquisition of DVS Sciences, Inc. in February 2014 and InstruNor AS in 2020. In addition, if in the future we acquire additional businesses, technologies, or other intangible assets, a substantial portion of the value of such assets may be recorded as goodwill or intangible assets.

We assess the realizability of goodwill and indefinite-lived intangible assets annually as well as whenever events or changes in circumstances indicate that these assets may be impaired. We also assess the realizability of definite-lived intangible assets whenever events or changes in circumstances indicate that these assets may be impaired. These events or circumstances may include a significant deterioration in overall economic conditions, a decline in our market capitalization, reorganizations of our business, the disposal of all or a portion of a reporting unit, operating losses or a significant decline in earnings associated with the acquired business or asset. Our ability to realize the value of the goodwill and intangible assets will depend on the future cash flows of these businesses, including our ability to realize revenue growth, cost savings, and other macro factors which impact the enterprise value. These cash flows in turn depend in part on how well we have integrated these businesses. If we are not able to realize the value of the goodwill and intangible assets, we may be required to incur material charges relating to the impairment of those assets.

As a result of our operating and reporting segment change and the significant decline in our share price during the three months ended September 30, 2022, we performed quantitative impairment tests for goodwill and our long-lived intangibles as of August 31, 2022 and as of September 30, 2022 and concluded that no impairment charge was necessary. In determining the fair value of our two operating segments, significant assumptions including forecasted cash flows (revenue growth rates), discount rates, earnings multiples and an implied control premium were utilized. As these assumptions are inherently judgmental and subject to uncertainty, future impairments that cannot be reasonably estimated, but could be material, may occur.

If we fail to comply with the covenants and other obligations under our Credit Facility, the lending bank may be able to accelerate amounts owed under the facilities and may foreclose upon the assets securing our obligations.

In August 2018, we entered into a revolving credit facility with Silicon Valley Bank (as amended, the Revolving Credit Facility) in an aggregate principal amount of up to the lesser of (i) $15.0 million or (ii) the sum of (a) 85% of our eligible receivables and (b) 50% of our eligible inventory, in each case, subject to certain limitations (Borrowing Base), provided that the amount of eligible inventory that may be counted towards the Borrowing Base shall be subject to a cap as set forth in the Revolving Credit Facility. In August 2021, we amended our Revolving Credit Facility to extend the maturity date to August 2, 2023 and to provide for a new $10.0 million term loan facility (the Term Loan Facility and, together with the Revolving Credit Facility, the Credit Facility). The stated maturity of the Term Loan Facility is July 1, 2025. However, if the principal amount of our convertible debt exceeds $0.6 million as of June 1, 2024 or if the maturity of our 2019 Notes has not been extended beyond January 1, 2026 by June 1, 2024, then the maturity date of the Term Loan Facility will be June 1, 2024. The interest rate on the Term Loan Facility is the greater of 4.0% or a floating per annum rate equal to three quarters of one percentage point (0.75%) above the prime rate. Interest on any outstanding term loan advances is due and payable monthly. In addition to the monthly interest payments, a final payment equal to 6.5% of the original principal amount of each advance is due on the earlier of the maturity date or the date the advance is repaid. Principal balances are required to be repaid in twenty-four equal installments beginning on August 1, 2023. The Credit Facility is secured by substantially all of our assets, other than intellectual property. The Credit Facility contains customary affirmative and negative covenants which, unless waived by the bank, limit our ability to, among other things, incur additional indebtedness, grant liens, make investments, repurchase stock, pay dividends, transfer assets, enter into affiliate transactions, undergo a change of control, or engage in merger and acquisition activity, including merging or consolidating with a third party. Additionally, we are required to maintain a minimum Adjusted Quick Ratio (as defined in the Credit Facility) of at least 1.25 to 1.00. If we fail to comply with the covenants and our other obligations under the Credit Facility, the lending bank would be able to accelerate the required repayment of amounts due under the Credit Facility and, if they are not repaid, could foreclose upon the assets securing our obligations under the Credit Facility.

Our ability to use net operating loss carryforwards to offset future taxable income for U.S. federal income tax purposes and other tax benefits may be limited.

Section 382 of the Internal Revenue Code of 1986, as amended (the Code), imposes an annual limitation on the amount of taxable income that may be offset by net operating loss carryforwards (NOLs) if a corporation experiences an “ownership change.” As provided in Section 382 of the Code, an “ownership change” occurs when a company’s “five-percent shareholders” collectively increase their ownership in the company by more than 50 percentage points (by value) over a rolling three-year period. Various states also have limitations on the use of state NOLs following an ownership change.

Future changes in our stock ownership, some of which are outside our control, could result in an ownership change under Section 382 of the Code. If we experience an ownership change, our ability to use our NOLs or other tax benefits could be substantially limited, which could significantly impair their value. There is no assurance that we will be able to fully utilize our NOLs or other tax benefits, which could adversely impact our results of operations.

We believe that these tax benefits are a valuable asset for us and we monitor our stock ownership to determine whether our NOLs are at material risk of limitation based on an ownership change pursuant to Section 382. If our board of directors determines a potential risk exists that our NOLs could be limited, it could elect to adopt a tax benefit preservation plan in an effort to protect our tax benefits. Adoption of a tax benefit preservation plan could make it more difficult for a third party to acquire, or could discourage a third party from acquiring, us or a large block of our common stock.

We are subject to risks related to taxation in multiple jurisdictions and our effective income tax rate could be adversely affected and we could have additional tax liability if existing tax laws or regulations change or if taxing authorities disagree with our interpretations of tax laws or regulations.

We are subject to income taxes in both the United States and certain foreign jurisdictions. Significant judgments based on interpretations of existing tax laws or regulations are required in determining the provision for income taxes. For example, we have made certain interpretations of existing tax laws or regulations based upon the operations of our business internationally and we have implemented intercompany agreements based upon these interpretations and related transfer pricing analyses. If the U.S. Internal Revenue Service or other taxing authorities disagree with the positions, our effective income tax rate could be adversely affected and we could have additional tax liability, including interest and penalties. From time to time, we may review our corporate structure and tax positions in the various international jurisdictions in which we operate and such review may result in changes to how we structure our international business operations, which may adversely impact our effective income tax rate. Our effective income tax rate could also be adversely affected by changes in the mix of earnings in tax jurisdictions with different statutory tax rates, changes in the valuation of deferred tax assets and liabilities, changes in existing tax laws or tax rates, changes in the level of non-deductible expenses (including share-based compensation), changes in our future levels of research and development spending, mergers and acquisitions, or the result of examinations by various tax authorities. Payment of additional amounts as a result of changes in applicable tax law or upon final adjudication of any disputes could have a material impact on our results of operations and financial position.

Changes in accounting principles, or interpretations thereof, could have a significant impact on our financial position and results of operations.

We prepare our consolidated financial statements in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP). These principles are subject to interpretation by the SEC and various bodies formed to interpret and create appropriate accounting principles. A change in these principles can have a significant effect on our reported results and may even retroactively affect previously reported transactions. Additionally, the adoption of new or revised accounting principles may require that we make significant changes to our systems, processes and controls.

It is not clear if or when potential changes in accounting principles may become effective, whether we have the proper systems and controls in place to accommodate such changes and the impact that any such changes may have on our financial position and results of operations.

We have a significant amount of outstanding indebtedness, and our financial condition and results of operations could be adversely affected if we do not efficiently manage our liabilities.

We have significant outstanding convertible debt. As of September 30, 2022, we had outstanding $0.6 million aggregate principal amount of our 2.75% Convertible Senior Notes due 2034 that were issued in February 2014 (2014 Notes) and $55.0 million aggregate principal amount of our 5.25% Convertible Senior Notes due 2024 that were issued in November 2019 (2019 Notes and, together with the 2014 Notes, the Convertible Notes). The 2014 Notes will mature on February 1, 2034, unless earlier converted, redeemed, or repurchased in accordance with the terms of the 2014 Notes. Pursuant to the terms of the indenture governing the 2014 Notes, holders of the 2014 Notes may require us to repurchase all or a portion of their 2014 Notes at a repurchase price in cash equal to 100% of the principal amount of such 2014 Notes plus accrued and unpaid interest thereon, on each of February 6, 2024 and February 6, 2029. The 2019 Notes will mature on December 1, 2024, unless earlier converted or repurchased in accordance with the terms of the 2019 Notes.

If we undergo a fundamental change (as defined in the indenture governing the 2014 Notes or the 2019 Notes, as applicable), holders of the applicable series of Convertible Notes may require us to repurchase such Convertible Notes in whole or in part for cash at a repurchase price equal to 100% of the principal amount of the applicable series of Convertible Notes plus accrued and unpaid interest. If we refinance all or any portion of the Convertible Notes, we may issue additional convertible notes or other debt, which could include additional company obligations and represent more dilution to existing stockholders and noteholders.

This significant amount of debt has important risks to us and our investors, including:

- requiring a portion of our cash flow from operations to make interest payments on this debt;
- increasing our vulnerability to general adverse economic and industry conditions;
- reducing the cash flow available to fund capital expenditures and other corporate purposes and to grow our business;
- limiting our flexibility in planning for, or reacting to, changes in our business and the industry; and
- limiting our ability to borrow additional funds as needed or take advantage of business opportunities as they arise.

In addition, to the extent we draw on our Revolving Credit Facility or otherwise incur additional indebtedness, the risks described above could increase. Further, if we increase our indebtedness, our actual cash requirements in the future may be greater than expected. Our cash flow from operations may not be sufficient to repay all of the outstanding debt as it becomes due, and we may not be able to borrow money, sell assets or otherwise raise funds on acceptable terms, or at all, to refinance our debt.

RISKS RELATED TO INTELLECTUAL PROPERTY

Our ability to protect our intellectual property and proprietary technology through patents and other means is uncertain.

Our commercial success depends in part on our ability to protect our intellectual property and proprietary technologies. We rely on patent protection, where appropriate and available, as well as a combination of copyright, trade secret, and trademark laws, and nondisclosure, confidentiality, and other contractual restrictions to protect our proprietary technology. However, these legal means afford only limited protection and may not adequately protect our rights or permit us to gain or keep any competitive advantage. We apply for patents covering our products and technologies and uses thereof, as we deem appropriate. However, we may fail to apply for patents on important products and technologies in a timely fashion or at all. Our pending U.S. and foreign patent applications may not issue as patents or may not issue in a form that will be sufficient to protect our proprietary technology and gain or keep our competitive advantage. Any patents we have obtained or do obtain may be subject to re-examination, reissue, opposition, or other administrative proceeding, or may be challenged in litigation, and such challenges could result in a determination that the patent is invalid or unenforceable. In addition, competitors may be able to design alternative methods or devices that avoid infringement of our patents. Both the patent application process and the process of managing patent disputes can be time consuming and expensive.

Furthermore, the laws of some foreign countries may not protect our intellectual property rights to the same extent as do the laws of the United States, and many companies have encountered significant problems in protecting and defending such rights in foreign jurisdictions. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial cost and divert our efforts and attention from other aspects of our business. Changes in either the patent laws or in interpretations of patent laws in the United States or other countries may diminish the value of our intellectual property. We cannot predict the breadth of claims that may be allowed or enforced in our patents or in third-party patents. For example:

- we might not have been the first to make the inventions covered by each of our pending patent applications;
- we might not have been the first to file patent applications for these inventions;
- the patents of others may have an adverse effect on our business; and
- others may independently develop similar or alternative products and technologies or duplicate any of our products and technologies.

To the extent our intellectual property, including licensed intellectual property, offers inadequate protection, or is found to be invalid or unenforceable, our competitive position and our business could be adversely affected.

We may be involved in lawsuits to protect or enforce our patents and proprietary rights, to determine the scope, coverage and validity of others' proprietary rights, or to defend against third-party claims of intellectual property infringement, any of which could be time-intensive and costly and may adversely impact our business or stock price.

Litigation may be necessary for us to enforce our patent and proprietary rights, determine the scope, coverage, and validity of others' proprietary rights, and/or defend against third-party claims of intellectual property infringement against us as well as against our suppliers, distributors, customers, and other entities with which we do business. Litigation could result in substantial legal fees and could adversely affect the scope of our patent protection. The outcome of any litigation or other proceeding is inherently uncertain and might not be favorable to us, and we might not be able to obtain licenses to technology that we require. Even if such licenses are obtainable, they may not be available at a reasonable cost. We could therefore incur substantial costs related to royalty payments for licenses obtained from third parties, which could negatively affect our product margins or financial position. Further, we could encounter delays in product introductions, or interruptions in product sales, as we develop alternative methods or products.

As we move into new markets and applications for our products, incumbent participants in such markets may assert their patents and other proprietary rights against us as a means of impeding our entry into such markets or as a means to extract substantial license and royalty payments from us. Our commercial success may depend in part on our non-infringement of the patents or proprietary rights of third parties. Numerous significant intellectual property issues have been litigated, and will likely continue to be litigated, between existing and new participants in our existing and targeted markets. For example, some of our products provide for the testing and analysis of genetic material, and patent rights relating to genetic materials remain a developing area of patent law. A recent U.S. Supreme Court decision held, among other things, that claims to isolated genomic DNA occurring in nature are not patent eligible, while claims relating to synthetic DNA may be patent eligible. We expect the ruling will result in additional litigation in our industry. In addition, third parties may assert that we are employing their proprietary technology without authorization, and if they are successful in making such claims, we may be forced to enter into license agreements, pay additional royalties or license fees, or enter into settlements that include monetary obligations or restrictions on our business.

Our customers have been sued for various claims of intellectual property infringement in the past, and we expect that our customers will be involved in additional litigation in the future. In particular, our customers may become subject to lawsuits claiming that their use of our products infringes third-party patent rights, and we could become subject to claims that we contributed to or induced our customer's infringement. In addition, our agreements with some of our suppliers, distributors, customers, and other entities with which we do business may require us to defend or indemnify these parties to the extent they become involved in infringement claims against us, including the claims described above. We could also voluntarily agree to defend or indemnify third parties in instances where we are not obligated to do so if we determine it would be important to our business relationships. If we are required or agree to defend or indemnify any of these third parties in connection with any infringement claims, we could incur significant costs and expenses that could adversely affect our business, operating results, or financial condition.

We may be subject to damages resulting from claims that we or our employees have wrongfully used or disclosed alleged trade secrets of our employees' former employers or other institutions or third parties with which such employees may have been previously affiliated.

Many of our employees were previously employed at universities or other life science or plant and animal research companies, including our competitors or potential competitors. In the future, we may become subject to claims that our employees, or we, have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their former employers or other third parties or institutions with which our employees may have been previously affiliated. Litigation may be necessary to defend against these claims. A resulting loss of key research personnel work product could hamper or prevent our ability to commercialize certain potential products or a loss of or inability to hire key marketing, sales or research and development personnel could adversely affect our future product development, sales and revenues, any of which could severely harm our business. Even if we are successful in defending against any such claims, litigation could result in substantial costs and be a distraction to management.

We depend on certain technologies that are licensed to us. We do not control these technologies and any loss of our rights to them could prevent us from selling our products, which would have an adverse effect on our business.

We rely on licenses in order to be able to use various proprietary technologies that are material to our business, including our core IFC, multi-layer soft lithography, and mass cytometry technologies. In some cases, we do not control the prosecution, maintenance, or filing of the patents to which we hold licenses, or the enforcement of these patents against third parties. Additionally, our business and product development plans anticipate and may substantially depend on future in-license agreements with additional third parties, some of which are currently in the early discussion phase. For example, our Canadian subsidiary (SB Canada) was party to an interim license agreement, now expired, under which the licensor granted SB Canada a worldwide, non-exclusive, research use only, royalty bearing license to certain cytometric reagents, instruments, and other products. While we were able to secure a license under a new license agreement with the licensor, we cannot provide assurances that we will always be able to obtain suitable license rights to technologies or intellectual property of other third parties on acceptable terms, if at all.

In-licensed intellectual property rights that are fundamental to our business being operated present numerous risks and limitations. For example, all or a portion of the license rights granted may be limited for research use only, and in the event we attempt to expand into diagnostic applications, we would be required to negotiate additional rights, which may not be available to us on commercially reasonable terms, if at all.

Our rights to use the technology we license are also subject to the negotiation and continuation of those licenses. Certain of our licenses contain provisions that allow the licensor to terminate the license upon specific conditions. Our rights under the licenses are subject to our continued compliance with the terms of the license, including the payment of royalties due under the license. Because of the complexity of our products and the patents we have licensed, determining the scope of the license and related royalty obligation can be difficult and can lead to disputes between us and the licensor. An unfavorable resolution of such a dispute could lead to an increase in the royalties payable pursuant to the license. If a licensor believed we were not paying the royalties due under the license or were otherwise not in compliance with the terms of the license, the licensor might attempt to revoke the license. If such an attempt were successful and the license is terminated, we might be barred from marketing, producing, and selling some or all of our products, which would have an adverse effect on our business. Potential disputes between us and one of our existing licensors concerning the terms or conditions of the applicable license agreement could result, among other risks, in substantial management distraction; increased expenses associated with litigation or efforts to resolve disputes; substantial customer uncertainty concerning the direction of our product lines; potential infringement claims against us and/or our customers, which could include efforts by a licensor to enjoin sales of our products; customer requests for indemnification by us; and, in the event of an adverse determination, our inability to operate our business as currently operated. Termination of material license agreements could prevent us from manufacturing and selling our products unless we can negotiate new license terms or develop or acquire alternative intellectual property rights that cover or enable similar functionality. Any of these factors would be expected to have a material adverse effect on our business, operating results, and financial condition and could result in a substantial decline in our stock price.

We are subject to certain manufacturing restrictions related to licensed technologies that were developed with the financial assistance of U.S. governmental grants.

We are subject to certain U.S. government regulations because we have licensed technologies that were developed with U.S. government grants. In accordance with these regulations, these licenses provide that products embodying the technologies are subject to domestic manufacturing requirements. If this domestic manufacturing requirement is not met, the government agency that funded the relevant grant is entitled to exercise specified rights, referred to as “march-in rights,” which if exercised would allow the government agency to require the licensors or us to grant a non-exclusive, partially exclusive, or exclusive license in any field of use to a third party designated by such agency. All of our microfluidic systems revenue is dependent upon the availability of our IFCs, which incorporate technology developed with U.S. government grants. Our genomics instruments, including microfluidic systems and IFCs, are manufactured at our facility in Singapore. The federal regulations allow the funding government agency to grant, at the request of the licensors of such technology, a waiver of the domestic manufacturing requirement. Waivers may be requested prior to any government notification. We have assisted the licensors of these technologies with the analysis of the domestic manufacturing requirement, and, in December 2008, the sole licensor subject to the requirement applied for a waiver of the domestic manufacturing requirement with respect to the relevant patents licensed to us by this licensor. In July 2009, the funding government agency granted the requested waiver of the domestic manufacturing requirement for a three-year period commencing in July 2009. In June 2012, the licensor requested a continued waiver of the domestic manufacturing requirement with respect to the relevant patents, but the government agency has not yet taken any action in response to this request. If the government agency does not grant the requested waiver or the government fails to grant additional waivers of such requirement that may be sought in the future, then the U.S. government could exercise its march-in rights with respect to the relevant patents licensed to us. In addition, the license agreement under which the relevant patents are licensed to us contains provisions that obligate us to comply with this domestic manufacturing requirement. We are not currently manufacturing instruments and IFCs in the United States that incorporate the relevant licensed technology. If our lack of compliance with this provision constituted a material breach of the license agreement, the license of the relevant patents could be terminated or we could be compelled to relocate our manufacturing of microfluidic systems and IFCs to the United States to avoid or cure a material breach of the license agreement. Any of the exercise of march-in rights, the termination of our license of the relevant patents or the relocation of our manufacturing of microfluidic systems and IFCs to the United States could materially adversely affect our business, operations and financial condition.

We are subject to certain obligations and restrictions relating to technologies developed in cooperation with Canadian government agencies.

Some of our Canadian research and development is funded in part through government grants and by government agencies. The intellectual property developed through these projects is subject to rights and restrictions in favor of government agencies and Canadians generally. In most cases the government agency retains the right to use intellectual property developed through the project for non-commercial purposes and to publish the results of research conducted in connection with the project. This may increase the risk of public disclosure of information relating to our intellectual property, including confidential information, and may reduce its competitive advantage in commercializing intellectual property developed through these projects. In certain projects, we have also agreed to use commercially reasonable efforts to commercialize intellectual property in Canada, or more specifically in the province of Ontario, for the economic benefit of Canada and the province of Ontario. These restrictions will limit our choice of business and manufacturing locations, business partners and corporate structure and may, in certain circumstances, restrict our ability to achieve maximum profitability and cost efficiency from the intellectual property generated by these projects. In one instance, a dispute with the applicable government funded entity may require mediation, which could lead to unanticipated delays in our commercialization efforts to that project. One of our Canadian government funded projects is also subject to certain limited “march-in” rights in favor of the government of the Province of Ontario, under which we may be required to grant a license to our intellectual property, including background intellectual property developed outside the scope of the project, to a responsible applicant on reasonable terms in circumstances where the government determines that such a license is necessary in order to alleviate emergency or extraordinary health or safety needs or for public use. In addition, we must provide reasonable assistance to the government in obtaining similar licenses from third parties required in connection with the use of its intellectual property. Instances in which the government of the Province of Ontario has exercised similar “march-in” rights are rare; however, the exercise of such rights could materially adversely affect our business, operations and financial condition.

RISKS RELATED TO OUR COMMON STOCK

Our stock price is volatile.

Our stock is currently traded on the Nasdaq Global Select Market (Nasdaq), but we can provide no assurance that we will be able to maintain an active trading market on Nasdaq or any other exchange in the future. The trading volume of our stock tends to be low relative to our total outstanding shares, and we have several stockholders who hold substantial blocks of our stock. As of December 31, 2021, we had 76,919,287 shares of common stock outstanding, and stockholders holding at least 5% of our stock, individually or with affiliated persons or entities, collectively beneficially owned or controlled approximately 51% of such shares. Sales of large numbers of shares by any of our large stockholders could adversely affect our trading price, particularly given our relatively small historic trading volumes. If stockholders holding shares of our common stock sell, indicate an intention to sell, or if it is perceived that they will sell, substantial amounts of their common stock in the public market, the trading price of our common stock could decline. Moreover, if there is no active trading market or if the volume of trading is limited, holders of our common stock may have difficulty selling their shares. In addition, the concentration of ownership of our outstanding common stock (approximately 51% held by our top seven stockholders as of December 31, 2021) means that a relatively small number of stockholders have significant control over the outcomes of stockholder voting.

The trading price of our common stock is highly volatile and subject to wide fluctuations in response to various factors, some of which are beyond our control. These factors include:

- the impact of public health crises, including the COVID-19 pandemic, on global financial markets;
- actual or anticipated quarterly variation in our results of operations or the results of our competitors;
- our failure to achieve performance consistent with our financial guidance and/or market expectations;
- announcements or communications by us or our competitors relating to, among other things, new commercial products, technological advances, significant contracts, commercial relationships, capital commitments, acquisitions or sales of businesses, and/or misperceptions in or speculation by the market regarding such announcements or communications;
- issuance of new or changed securities analysts' reports or recommendations for our stock;
- developments or disputes concerning our intellectual property or other proprietary rights;
- commencement of, or our involvement in, litigation;
- market conditions in the life science, plant and animal research, and contract research organization sectors;
- failure to complete significant sales;
- manufacturing disruptions that could occur if we are unable to successfully expand our production in our current or alternative facilities;
- supply chain disruptions;
- any future sales of our common stock or other securities in connection with raising additional capital or otherwise;
- any major change to the composition of our board of directors or management;
- general market conditions and other factors unrelated to our operating performance or the operating performance of our competitors, including deteriorating market conditions due to investor concerns regarding inflation and hostilities between Russia and Ukraine; and
- general economic conditions, including current macroeconomic trends and geopolitical events, and slow or negative growth of our markets.

The stock market in general, and market prices for the securities of technology-based companies like ours in particular, have from time to time experienced volatility that often has been unrelated to the operating performance of the underlying companies. These broad market and industry fluctuations may adversely affect the market price of our common stock regardless of our operating performance.

In several recent situations where the market price of a stock has been volatile, holders of that stock have instituted securities class action litigation against the company that issued the stock. As discussed in the Legal Proceedings section of this quarterly report on Form 10-Q, a class action securities lawsuit against us is currently pending. While we are continuing to defend such action vigorously, the defense of this action and any additional actions can be costly, divert the time and attention of our management, and harm our operating results, and any judgment against us or any future stockholder litigation could result in substantial costs.

Future sales of our common stock in the public market could cause our stock price to fall.

Our stock price could decline as a result of sales of a large number of shares of our common stock or the perception that these sales could occur. These sales, or the possibility that these sales may occur, also might make it more difficult for us to sell equity securities in the future at a time and at a price that we deem appropriate.

In addition, in the future, we may issue additional shares of common stock or other equity or debt securities convertible into common stock in connection with a financing, acquisition, litigation settlement, employee arrangements or otherwise. Any such future issuance could result in substantial dilution to our existing stockholders and could cause our stock price to decline.

If securities or industry analysts publish unfavorable research about us or cease to cover our business, our stock price and/or trading volume could decline.

The trading market for our common stock may rely, in part, on the research and reports that equity research analysts publish about us and our business. We do not have any control of the analysts or the content and opinions included in their reports. The price of our stock could decline if one or more equity research analysts downgrade our stock or issue other unfavorable commentary or research. If one or more equity research analysts ceases coverage of our company or fails to publish reports on us regularly, demand for our stock could decrease, which in turn could cause our stock price or trading volume to decline.

Anti-takeover provisions in our charter documents and under Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management and limit the market price of our common stock.

Provisions in our certificate of incorporation and bylaws may have the effect of delaying or preventing a change of control or changes in our management, including provisions that:

- authorize our board of directors to issue, without further action by the stockholders, up to 10,000,000 shares of undesignated preferred stock;
- require that any action to be taken by our stockholders be effected at a duly called annual or special meeting and not by written consent;
- specify that special meetings of our stockholders can be called only by our board of directors, the chairman of the board, the chief executive officer or the president;
- establish an advance notice procedure for stockholder approvals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to our board of directors;
- establish that our board of directors is divided into three classes, Class I, Class II, and Class III, with each class serving staggered three-year terms;
- provide that our directors may be removed only for cause;
- provide that vacancies on our board of directors may be filled only by a majority of directors then in office, even though less than a quorum;
- specify that no stockholder is permitted to cumulate votes at any election of directors; and
- require a super-majority of votes to amend certain of the above-mentioned provisions.

These provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors, which is responsible for appointing the members of our management. In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law (DGCL), which limits the ability of stockholders owning in excess of 15% of our outstanding voting stock to merge or combine with us.

The forum selection provision in our bylaws could limit the ability of our stockholders to bring a claim in a judicial forum viewed by the stockholders as more favorable for disputes with us or our directors, officers or other employees.

Our bylaws provide that the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, another State court in Delaware or the federal district court for the District of Delaware) is the exclusive forum for the following (except for any claim as to which such court determines that there is an indispensable party not subject to the jurisdiction of such court (and the indispensable party does not consent to the personal jurisdiction of such court within 10 days following such determination), which is vested in the exclusive jurisdiction of a court or forum other than such court or for which such court does not have subject matter jurisdiction):

- any derivative action or proceeding brought on our behalf;
- any action asserting a claim of breach of fiduciary duty;
- any action asserting a claim against us arising under the DGCL, our certificate of incorporation or our bylaws; and
- any action asserting a claim against us that is governed by the internal-affairs doctrine.

This provision does not apply to suits brought to enforce a duty or liability created by the Securities Exchange Act of 1934, as amended (the Exchange Act), or any other claim for which the U.S. federal courts have exclusive jurisdiction.

Our bylaws further provide that the federal district courts of the United States of America will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act of 1933, as amended (the Securities Act).

These exclusive-forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage lawsuits against us and our directors, officers and other employees. Any person or entity purchasing or otherwise acquiring any interest in any of our securities shall be deemed to have notice of and consented to these provisions. There is uncertainty as to whether a court would enforce such provisions, and the enforceability of similar choice of forum provisions in other companies' charter documents has been challenged in legal proceedings.

It is possible that a court could find these types of provisions to be inapplicable or unenforceable, and if a court were to find either exclusive-forum provision in our bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving the dispute in other jurisdictions, which could seriously harm our business.

Any conversions of the 2014 Notes or 2019 Notes will dilute the ownership interest of our existing stockholders and may otherwise depress the price of our common stock.

Any conversion of some or all of the 2014 Notes or 2019 Notes will dilute the ownership interests of our existing stockholders. Any sales in the public market of our common stock issuable upon such conversion could also adversely affect prevailing market prices of our common stock. In addition, holders of the 2014 Notes or 2019 Notes may hedge their position in such Convertible Notes by entering into short positions with respect to the underlying common stock. As a result, any anticipated conversion of the 2014 Notes or 2019 Notes could depress the market price of our common stock and impair our ability to raise capital through the sale of additional equity securities.

RISKS RELATED TO OUR CAPITAL STRUCTURE

As a result of the Private Placement Issuance (as defined below), the Purchasers (as defined below) own a significant portion of our total outstanding voting securities and may prevent other stockholders from influencing material corporate decisions, and the Purchasers' interests may conflict with those of our other stockholders.

In April 2022, (i) we issued and sold to (a) Casdin Private Growth Equity Fund II, L.P. and Casdin Partners Master Fund, L.P. (collectively, Casdin) an aggregate of 112,500 shares of our Series B-1 Convertible Preferred Stock, par value $0.001 per share (Series B-1 Preferred Stock) and (b) Viking Global Opportunities Illiquid Investments Sub-Master LP and Viking Global Opportunities Drawdown (Aggregator) LP (collectively, Viking and, together with Casdin, the Purchasers) an aggregate of 112,500 shares of our Series B-2 Convertible Preferred Stock, par value $0.001 per share (Series B-2 Preferred Stock and, together with the Series B-1 Preferred Stock, the Series B Preferred Stock) and (ii) in connection therewith, bridge loans previously provided to us by the Purchasers were automatically converted into an aggregate of 30,559 shares of Series B Preferred Stock (such transactions, collectively, the Private Placement Issuance).

The Series B Preferred Stock is initially convertible into up to approximately 75,164,397 shares of our common stock (without giving effect to limitations associated with any conversion cap). On an as-converted basis, this collectively represents approximately 48.7% of our issued and outstanding common stock (equating to approximately 24.3% per Purchaser) based on the number of shares of common stock outstanding as of September 30, 2022, but assuming full conversion of all Series B Preferred Stock (without giving effect to limitations associated with any conversion cap). As a result, the Purchasers are our largest stockholders. This concentration of ownership, together with the voting rights, director designation rights and consent rights granted to the Purchasers as part of the Private Placement Issuance, may be perceived negatively by other investors and, as a result, may adversely affect the market price of our common stock. The Purchasers, if they acted together, could significantly influence all matters requiring approval by our stockholders, including the election of directors and the approval of mergers or other business combination transactions. The interests of the Purchasers may not always coincide with our interests or the interests of other stockholders.

The market value of our common stock could decline if the Purchasers sell their Series B Preferred Stock or common stock.

Pursuant to the Registration Rights Agreement that we entered into on January 23, 2022 with the Purchasers, we registered the resale of the shares of common stock issuable upon conversion of the Series B Preferred Stock with the SEC, which means that such shares would become eligible for resale in the public markets, subject to any applicable transfer restrictions. Any sale of such shares, or the anticipation of the possibility of such sales, could create downward pressure on the market price of our common stock.

Our Series B Preferred Stock has rights, preferences and privileges that are not held by, and are preferential to, the rights of our common stockholders, which could adversely affect our liquidity and financial condition, result in the interests of holders of our Series B Preferred Stock differing from those of our common stockholders and make an acquisition of us more difficult.

Holders of our Series B Preferred Stock have (i) a liquidation preference, (ii) rights to dividends, which are senior to all of our other equity securities, (iii) the right to require us to repurchase any or all of their Series B Preferred Stock in connection with certain change of control events, and (iv) conversion price adjustments upon the occurrence of certain events, each subject to the terms, conditions and exceptions contained in the applicable Certificate of Designations. These dividend and other rights and obligations could impact our liquidity and reduce the amount of cash flows available for working capital, capital expenditures, growth opportunities, acquisitions, and other general corporate purposes.

The terms of our Series B Preferred Stock could also limit our ability to obtain additional financing or increase our borrowing costs, which could have an adverse effect on our financial condition. The preferential rights could also result in divergent interests between the Purchasers and holders of our common stock. Furthermore, a sale of our Company, as a change of control event, may require us to repurchase the Series B Preferred Stock, which could have the effect of making an acquisition of our Company more expensive and potentially deterring proposed transactions that may otherwise be beneficial to our stockholders.

The holders of our Series B Preferred Stock are entitled to vote with the holders of our common stock with voting power measured in a manner related to the conversion ratio of the shares of Series B Preferred Stock, and the holders of our Series B Preferred Stock have rights to approve certain actions. The holders of our Series B Preferred Stock may exercise influence over us, including through the ability of the holders of the Series B-1 Preferred Stock and the holders of the Series B-2 Preferred Stock to each designate a member of our board of directors.

The holders of our Series B Preferred Stock are generally entitled to vote with the holders of our common stock on all matters submitted for a vote of holders of our common stock (voting together with the holders of common stock as one class) with voting power measured in a manner related to the conversion ratio of the shares of Series B Preferred Stock, subject to certain voting limitations as described in the applicable Certificate of Designations. Additionally, the consent of the holders of at least 60% of the shares of Series B Preferred Stock is required for, among other things, (i) amendments to our certificate of incorporation or bylaws that have an adverse effect on the rights, preferences, privileges or voting powers of the Series B Preferred Stock and (ii) issuances by us of securities that are senior to, or equal in priority with, the Series B Preferred Stock.

Additionally, pursuant to the Certificates of Designations for the Series B Preferred Stock, the holders of a majority of the outstanding Series B-1 Preferred Stock and the holders of a majority of the outstanding Series B-2 Preferred Stock each have the right to nominate and elect one member to our board of directors at each annual meeting of the stockholders of the Company or at any special meeting called for the purpose of electing directors, for so long as the Casdin Preferred Percentage or Viking Preferred Percentage (each as defined in the applicable Certificate of Designations), as applicable, is equal to or greater than 7.5%. Such directors are not subject to the classified board of directors provisions of our certificate of incorporation, and are entitled to serve on committees of our board of directors, subject to applicable law and Nasdaq rules. Notwithstanding the fact that all directors will be subject to fiduciary duties to us and to applicable law, the interests of the directors designated by the holders of Series B Preferred Stock may differ from the interests of our security holders as a whole or of our other directors.

These significant stockholders may be able to determine or significantly influence matters requiring stockholder approval. The interests of significant stockholders may not always coincide with our interests or the interests of other stockholders. The Certificates of Designations for the Series B Preferred Stock also provide that for so long as the Casdin Preferred Percentage or Viking Preferred Percentage, as applicable, is equal to or greater than 7.5%, the director designated by the holders of the Series B-1 Preferred Stock or the Series B-2 Preferred Stock, as applicable, will have certain consent rights over, among other things: (i) any increase in the number of directors on our board of directors beyond seven; (ii) the hiring, promotion, demotion, or termination of the Company's Chief Executive Officer; (iii) entering into or modifying (including by waiver) any transaction, agreement or arrangement with any Related Person (as defined in the Certificates of Designations for the Series B Preferred Stock), subject to certain exceptions; (iv) any voluntary petition under any applicable federal or state bankruptcy or insolvency law effected by the Company; (v) any change in the principal business of the Company or entry by the Company into any material new line of business; and (vi) for a period of three years after the closing date of the Private Placement Issuance, (A) any acquisition (including by merger, consolidation or acquisition of stock or assets) of any assets, securities or property of any other person or (B) any sale, lease, license, transfer or other disposition of any assets of the Company or any of its subsidiaries, in each case, other than acquisitions or dispositions of inventory or equipment in the ordinary course of business consistent with past practice, for consideration in excess of $50,000,000 in the aggregate in any six month period.

As a result, the holders of our Series B Preferred Stock have the ability to influence the outcome of certain matters affecting our governance and capitalization. Our obligations to the holders of our Series B Preferred Stock could also limit our ability to obtain additional financing or increase our borrowing costs, which could have an adverse effect on our financial condition.

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

None.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

None.

Item 5. Other Information

None.

Item 6. Exhibits

The documents listed in the Exhibit List, which follows below, are incorporated by reference or are filed with this quarterly report on Form 10-Q, in each case as indicated therein (numbered in accordance with Item 601 of Regulation S-K).

EXHIBIT LIST

Exhibit Number	Description	Incorporated by Reference From Form	Incorporated by Reference From Exhibit Number	Date Filed
3.1	Eighth Amended and Restated Certificate of Incorporation filed on February 15, 2011.	10-K	3.1	3/28/2011
3.2	Amended and Restated Bylaws of Standard BioTools Inc.	S-8	4.8	4/1/2022
3.3	Certificate of Amendment to the Eighth Amended and Restated Certificate of Incorporation.	S-8	4.3	4/1/2022
3.4	Certificate of Designation of Rights, Preferences and Privileges of Series A Participating Preferred Stock.	8-K	3.1	11/22/2016
3.5	Certificate of Elimination of Series A Participating Preferred Stock.	8-K	3.1	8/2/2017
3.6	Certificate of Designations of Rights, Preferences and Privileges of Series B-1 Convertible Preferred Stock.	8-K	3.6	4/5/2022
3.7	Certificate of Designations of Rights, Preferences and Privileges of Series B-2 Convertible Preferred Stock.	8-K	3.7	4/5/2022
10.1	Sublease, dated as of August 30, 2022, between Standard BioTools Inc. and CIRC Bio, Inc.	Filed herewith		
31.1	Certification Pursuant to Rule 13a-14(a)/15d-14(a), as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 of Chief Executive Officer.	Filed herewith		
31.2	Certification Pursuant to Rule 13a-14(a)/15d-14(a), as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 of Chief Financial Officer.	Filed herewith		
32.1[(1)]	Certification Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 of Chief Executive Officer.	Filed herewith		
32.2[(1)]	Certification Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 of Chief Financial Officer.	Filed herewith		
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.	Filed herewith		
101.SCH	Inline XBRL Taxonomy Extension Schema Document	Filed herewith		
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document	Filed herewith		
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document	Filed herewith		
101.LAB	Inline XBRL Taxonomy Extension Label Document	Filed herewith		
101.PRE	Inline XBRL Taxonomy Extension Presentation Document	Filed herewith		
104	Cover Page Interactive Data File (formatted as inline XBRL with applicable taxonomy extension information contained in Exhibits 101).	Filed herewith		

(1) In accordance with Item 601(b)(32)(ii) of Regulation S-K and SEC Release No. 33-8238 and 34-47986, Final Rule: Management's Report on Internal Control Over Financial Reporting and Certification of Disclosure in Exchange Act Periodic Reports, the certifications furnished in Exhibits 32.1 and 32.2 hereto are deemed to accompany this Form 10-Q and will not be deemed "filed" for purposes of Section 18 of the Exchange Act. Such certifications will not be deemed to be incorporated by reference into any filing under the Securities Act or the Exchange Act, except to the extent that the registrant specifically incorporates them by reference.

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.

STANDARD BIOTOOLS INC.

Dated: November 9, 2022	By:	/s/ Michael Egholm Michael Egholm Chief Executive Officer and President (Principal Executive Officer)
Dated: November 9, 2022	By:	/s/ Vikram Jog Vikram Jog Chief Financial Officer (Principal Accounting and Financial Officer)

SUBLEASE

THIS SUBLEASE (this "Sublease") is dated for reference purposes as of August 30, 2022, and is made by and between STANDARD BIOTOOLS INC., a Delaware corporation (formerly known as Fluidigm Corporation) ("Sublessor"), and CIRC BIO, INC., a Delaware corporation ("Sublessee"). Sublessor and Sublessee hereby agree as follows:

1. Recitals: This Sublease is made with reference to the fact that GNS NORTH TOWER, LP (successor-in-interest to AP3-SF3 CT NORTH, LLC), as landlord ("Master Lessor"), and Sublessor, as tenant, entered into that certain lease, dated as of March 20, 2019 (the "Original Lease"), as amended by that certain First Amendment to Lease dated as of April 26, 2019 (the "First Amendment") and that certain Confirmation and Second Amendment to Lease dated as of February 25, 2020 (the "Second Amendment"; together with the Original Lease and the First Amendment, the "Master Lease"), with respect to premises consisting of approximately 77,929 rentable square feet of space, located on the 18th - 21st floors of Two Tower Place, South San Francisco, California (the "Premises"). Sublessor represents to Sublessee that a true and correct copy of the Master Lease is attached hereto as Exhibit A.

2. Premises: Sublessor hereby subleases to Sublessee, and Sublessee hereby subleases from Sublessor, a portion of the Premises consisting of approximately 19,482 rentable square feet of space located on the 18th floor of the Building (hereinafter, the "Subleased Premises"). The Subleased Premises are more particularly described on Exhibit B attached hereto. Together with its use of the Subleased Premises, Sublessee shall have the exclusive right to use the storage cage on the second floor shown on Exhibit C attached hereto on the terms of Section 5.2.10(i) of the Master Lease. For so long as the same are made available for use by Sublessor, Sublessee and its personnel (including contractors that support operations), subject to Master Lessor's reasonable, non-discriminatory rules and regulations, shall have the right to use the Building amenities provided by Master Lessor on the same terms and conditions as are applicable to Sublessor under the Master Lease.

3. Term: The term (the "Term") of this Sublease shall be for the period commencing on the date that is one (1) day following receipt of a fully executed consent document from Master Lessor, estimated to be September 1, 2022 (the "Commencement Date") and ending on the date that is three (3) years and three (3) months following the Commencement Date (the "Expiration Date"), unless this Sublease is sooner terminated pursuant to its terms or the Master Lease sooner expires pursuant to its terms.

4. Rent:

A. Base Rent. Sublessee shall pay to Sublessor as base rent for the Subleased Premises for each month during the Term the following amounts per month ("Base Rent").

Months	Base Rent per Month
1-12*	$126,633.00
13-24	$131,065.16
25-36	$135,652.44
37-39	$140,400.28

*So long as Sublessee is not in default under this Sublease, Base Rent for the first three (3) full calendar months of the Term shall be abated.

Base Rent and Additional Rent, as defined in Paragraph 4.B below, shall be paid on or before the first (1st) day of each month. Base Rent and Additional Rent for any period during the Term hereof which is for less than one (1) month of the Term shall be a pro rata portion of the monthly installment based on a thirty (30) day month. If an increase in Base Rent becomes effective on a date other than the first day of a calendar month, the Base Rent for that month shall be the sum of the two applicable rates, each prorated for the portion of the month during which the rate is in effect. Base Rent and Additional Rent shall be payable without notice or demand (if, with respect to Additional Rent, such amounts are known) and without any deduction, offset, or abatement, in lawful money of the United States of America. Base Rent and Additional Rent shall be paid directly to Sublessor at:

FOR EFT / ELECTRONIC FUND TRANSFER:
BENEFICIARY NAME: ##########
##########
ACCOUNT NUMBER: ##########
DOMESTIC WIRES / ACH: ABA RTG NO. ##########
ROUTING NUMBER ACH/EFT: ##########

Checks:
##########
##########
##########
##########
##########

, or such other address as may be designated in writing by Sublessor.

B. Additional Rent. All monies other than Base Rent required to be paid by Sublessor under the Master Lease to the extent attributable or reasonably and equitably allocable to the Subleased Premises during the Term, including, without limitation, any amounts payable by Sublessor to Master Lessor as “Operating Expenses”, “Tax Expenses” and “Utilities Costs” (all as defined in Section 4.2 of the Master Lease) shall be paid by Sublessee hereunder as and when such amounts are due under the Master Lease, as incorporated herein. Sublessee shall also pay to Sublessor any gross receipts or rent tax based upon the receipt of Base Rent and payable with respect to this Sublease, and all costs directly incurred by or at the request of Sublessee with respect to its use of the Subleased Premises. All such amounts shall be deemed additional rent (“Additional Rent”). Base Rent and Additional Rent hereinafter collectively shall be referred to as “Rent”. Sublessee and Sublessor agree, as a material part of the consideration given by Sublessee to Sublessor for this Sublease, that Sublessee shall pay all costs, expenses, taxes, insurance, maintenance and other charges of every kind and nature arising in connection with this Sublease, the Master Lease to the extent attributable or reasonably and equitably allocable to the Subleased Premises during the Term, or the Subleased Premises during the Term, such that Sublessor shall receive, as a net consideration for this Sublease, the Base Rent payable under Paragraph 4.A hereof without mark-up by Sublessor.

C. Payment of First Month’s Rent. Upon execution hereof by Sublessee, Sublessee shall pay to Sublessor the sum of One Hundred Twenty-Six Thousand Six Hundred Thirty-Three Dollars ($126,633) which shall constitute Base Rent for the first month of the Term.

5. Letter of Credit: Concurrent with Sublessee’s execution of this Sublease, Sublessee shall deliver to Sublessor a letter of credit (the “**Letter of Credit**”) in the form attached hereto as Exhibit E. The Letter of Credit shall be in the amount of Seven Hundred Fifty-Nine Thousand Seven Hundred Ninety-Eight Dollars ($759,798) (the “**Security Deposit**”). The initial Letter of Credit must be issued by Silicon Valley

Bank and any subsequent or replacement Letter of Credit shall be issued by a domestic bank reasonably acceptable to Sublessor whose deposits are insured by the FDIC. The Letter of Credit shall (i) be unconditional, irrevocable, transferable, and payable to Sublessor or Sublessor's agent solely upon presentment by Sublessor or Sublessor's agent of a sight draft in person, by courier, facsimile or overnight mail, in partial or full draws, (ii) contain an "evergreen" provision which provides that it is automatically renewed on an annual basis unless the issuer delivers sixty (60) days' prior written notice of cancellation to Sublessor, and (iii) be in the form attached hereto as Exhibit E or otherwise in form reasonably acceptable to Sublessor. If the Letter of Credit is lost, mutilated, stolen, or destroyed, Sublessee shall cooperate with Sublessor to have the Letter of Credit replaced or reissued. If the issuer's Fitch Ratings have been reduced below a rating from Standard and Poors Corporation of A- or better, or there is otherwise a material adverse change in the financial condition of the issuer, then Sublessee shall, within ten (10) business days following Sublessor's demand, provide to Sublessor a substitute letter of credit from a financial institution reasonably acceptable to Sublessor. Without limiting any of Sublessor's rights or remedies hereunder, if the bank issuing the Letter of Credit provides Sublessor with a cancellation notice or nonrenewal notice, Sublessor may immediately draw upon all or any part of the Letter of Credit and Sublessee shall provide Sublessor with a replacement letter of credit in similar form. Any and all fees or costs charged by the issuer in connection with the issuance, maintenance or transfer of the Letter of Credit shall be paid by Sublessee. The Letter of Credit shall remain effective through the date that is sixty (60) days following the expiration of this Sublease and the delivery of possession of the Subleased Premises to Sublessor in accordance with the provisions of this Sublease. If Sublessee defaults with respect to any provision of this Sublease, including, without limitation the provisions relating to the payment of Rent, Sublessor may, but shall not be required to, draw upon all or any part of the Letter of Credit. Any cash proceeds of the Letter of Credit following a draw by Sublessor are property of Sublessor, Sublessor shall not be required to keep such amount separate from its other accounts, and Sublessee shall have no right in such amounts or the Letter of Credit other than the right to a return of the Letter of Credit when both this Sublease has terminated and Sublessee's obligations under this Sublease have been completely fulfilled as set forth herein. If any portion of the Letter of Credit is drawn upon, Sublessee shall cause the Letter of Credit to be increased to the amount required as the Security Deposit under this Sublease within five (5) business days after written demand from Sublessor, and in such event, provided there is then no outstanding default by Sublessee, any proceeds of the Letter of Credit retained by Sublessor as a cash security deposit and not applied to cure any default shall be returned to Sublessee. The original of the Letter of Credit shall be returned to Sublessee within sixty (60) days of the later of (a) the termination or earlier expiration of the Sublease Term and (b) Sublessee's delivery of possession of the Subleased Premises to Sublessor. The Letter of Credit shall not operate as a limitation on any recovery to which Sublessor may be entitled. The Letter of Credit shall be subject to the terms of Article 20 of the Master Lease, as incorporated herein. Upon the expiration of this Sublease, Sublessor shall return to Sublessee so much of the Security Deposit as has not been applied by Sublessor pursuant to this paragraph, or which is not otherwise required to cure Sublessee's defaults. If Sublessee is not then and has not been in default under this Sublease and closes a Series A round of equity funding in an amount greater than Sixty Million Dollars ($60,000,000) and provides evidence thereof reasonably satisfactory to Sublessor, the Security Deposit shall be reduced to the sum of Three Hundred Seventy-Nine Thousand Eight Hundred Ninety-Nine Dollars ($379,899).

6. Holdover: In the event that Sublessee does not surrender the Subleased Premises by the Expiration Date in accordance with the terms of this Sublease, Sublessee shall indemnify, defend, protect and hold harmless Sublessor from and against all loss and liability resulting from Sublessee's delay in surrendering the Subleased Premises and pay Sublessor holdover rent to the extent attributable to the Subleased Premises as provided in Article 16 of the Master Lease, as incorporated herein. For clarity, in the event of such delay, the Base Rent owed to Sublessor by Sublessee shall be equal to one hundred fifty percent (150%) of the Base Rent applicable during the last rental period of the Term.

7. Repairs: Sublessor shall deliver the Subleased Premises to Sublessee in working condition and fully decommissioned with respect to Hazardous Materials used by Sublessor as required by the Master Lease and/or local jurisdiction, with all carpets and the entirety of the Subleased Premises professionally cleaned, with all of Sublessor's signage and branding removed from the Subleased Premises and with only the Furniture described in Exhibit D remaining in place. The parties acknowledge and agree that, except as set forth in this paragraph, Sublessee is subleasing the Subleased Premises on an "as is" basis, and that Sublessor has made no representations or warranties with respect to the condition of the Subleased Premises. Except as set forth herein, Sublessor shall have no obligation whatsoever to make or pay the cost of any alterations, improvements or repairs to the Subleased Premises, including, without limitation, any improvement or repair required to comply with any law. Master Lessor shall be solely responsible for performance of any repairs required to be performed by Master Lessor under the terms of the Master Lease. Sublessor represents and warrants to Sublessee that Sublessor has not received written notice from Master Lessor or any governmental authority regarding a violation of applicable law with respect to the Subleased Premises. Sublessor shall work cooperatively with Sublessee to transfer any maintenance responsibilities for any building system exclusively serving the Subleased Premises and required to be maintained by the "Tenant" under the Master Lease.

8. Assignment and Subletting: Sublessee may not assign this Sublease, sublet the Subleased Premises, transfer any interest of Sublessee therein or permit any use of the Subleased Premises by another party (collectively, "Transfer"), without the prior written consent of Sublessor and Master Lessor in accordance with Article 14 of the Master Lease; provided, however, subject to Master Lessor's consent, Sublessor's consent shall not be required for entities as described in Section 14.7 of the Master Lease. Sublessor's waiver or consent to any assignment or subletting shall be ineffective unless set forth in writing. Any Transfer shall be subject to the terms of Article 14 of the Master Lease.

9. Use: Sublessee may use the Subleased Premises only as permitted in Section 5.1 of the Master Lease.

10. Effect of Conveyance: As used in this Sublease, the term "Sublessor" means the holder of the tenant's interest under the Master Lease. In the event of any assignment, transfer or termination of the tenant's interest under the Master Lease, which assignment, transfer or termination may occur at any time during the Term hereof in Sublessor's sole discretion, Sublessor shall be and hereby is entirely relieved of all covenants and obligations of Sublessor hereunder, and it shall be deemed and construed, without further agreement between the parties, that any transferee has assumed and shall carry out all covenants and obligations thereafter to be performed by Sublessor hereunder. Sublessor may transfer and deliver any security of Sublessee to the transferee of the tenant's interest under the Master Lease, and thereupon Sublessor shall be discharged from any further liability with respect thereto. Notwithstanding any provision herein to the contrary, Sublessor shall not: (a) violate the terms of the Master Lease resulting in a forfeiture or termination of the Master Lease (unless Master Lessor or a successor tenant agrees to permit Sublessee to continue to occupy the Subleased Premises on the terms of this Sublease for the remainder of the Term) or imposition of any material obligation on Sublessee; (b) voluntarily terminate the Master Lease with respect to the Subleased Premises (except pursuant to Sections 11.2, 11.4, 12.1 and 14.4 of the Master Lease), unless Master Lessor or a successor tenant agrees to permit Sublessee to continue to occupy the Subleased Premises on the terms of this Sublease for the remainder of the Term; nor (c) amend the Master Lease in any way that results in a material decrease in Sublessee's rights or material increase in Sublessee's obligations under the Sublease.

11. Delivery and Acceptance: Except as set forth herein, by taking possession of the Subleased Premises, Sublessee conclusively shall be deemed to have accepted the Subleased Premises in their as-is, then-existing condition, without any warranty whatsoever of Sublessor with respect thereto. Sublessor's

obligation to deliver the Subleased Premises to Sublessee shall be contingent upon Sublessor's receipt of the Letter of Credit.

12. Improvements: No alteration or improvements shall be made to the Subleased Premises, except in accordance with the Master Lease, and with the prior written consent of both Master Lessor in accordance with the Master Lease and Sublessor.

13. Release: Sublessor shall not be liable to Sublessee, nor shall Sublessee be entitled to terminate this Sublease or to abate Rent due to any: (i) failure or interruption of any utility system or service; (ii) failure of Master Lessor to maintain the Subleased Premises as may be required under the Master Lease; or (iii) penetration of water into or onto any portion of the Subleased Premises. The obligations of Sublessor and Sublessee shall not constitute the personal obligations of the officers, directors, trustees, partners, joint venturers, members, owners, stockholders or other principals or representatives of the business entity.

14. Insurance: Sublessee shall obtain and keep in full force and effect, at Sublessee's sole cost and expense, during the Term the insurance required under Sections 10.3 and 10.5 of the Master Lease. Sublessee shall name Master Lessor and Sublessor as additional insureds under its liability insurance policy. The release and waiver of subrogation set forth in Section 10.4 of the Master Lease, as incorporated herein, shall be binding on the parties.

15. Default: Sublessee shall be in "default" under this Sublease if Sublessee commits any act or omission which constitutes a default under the Master Lease, which has not been cured after delivery of written notice and passage of the applicable grace period provided in the Master Lease as modified, if at all, by the provisions of this Sublease. In the event of any default by Sublessee, Sublessor shall have all remedies provided pursuant to Section 19.2 of the Master Lease and by applicable law, including damages that include the worth at the time of award of the amount by which the unpaid rent for the balance of the term after the time of award exceeds the amount of such rental loss that the lessee proves could be reasonably avoided and the remedy described in California Civil Code Section 1951.4 (lessor may continue lease in effect after lessee's breach and abandonment and recover rent as it becomes due, if lessee has right to sublet or assign, subject only to reasonable limitations).

16. Surrender: Prior to expiration of this Sublease, Sublessee shall remove all of its trade fixtures (other than the Furniture) and shall surrender the Subleased Premises to Sublessor in the condition required under the Master Lease; provided, however, Sublessee shall not be required to remove any alterations or improvements to the Subleased Premises that were made prior to Sublessor's delivery, or remedy any conditions that existed prior to Sublessor's delivery; and further provided, that (a) Sublessee shall remove the Furniture from the Subleased Premises if the Furniture becomes the property of Sublessee pursuant to Section 24, below and (b) if the Term is extended under Paragraph 27 or is otherwise extended to end within ten (10) days of the expiration of the Master Lease, Sublessor may, without any reduction in Rent hereunder or constituting a constructive eviction, enter the Subleased Premises in the last ten (10) days before the expiration of the Master Lease to perform any required restoration under the Master Lease that is not Sublessee's responsibility hereunder. If the Subleased Premises are not so surrendered, then Sublessee shall be liable to Sublessor for all liabilities Sublessor incurs as a result thereof, including costs incurred by Sublessor in returning the Subleased Premises to the required condition, plus interest thereon at the Interest Rate.

17. Broker: Sublessor and Sublessee each represents to the other that it has dealt with no real estate brokers, finders, agents or salesmen other than Cushman Wakefield, representing Sublessor, and Colliers International, representing Sublessee, in connection with this transaction. Each party agrees to hold the other party harmless from and against all claims for brokerage commissions, finder's fees or other

compensation made by any other agent, broker, salesman or finder as a consequence of such party's actions or dealings with such agent, broker, salesman, or finder.

18. Notices: Unless at least five (5) days' prior written notice is given in the manner set forth in this paragraph, the address of each party for all purposes connected with this Sublease shall be that address set forth below its signature at the end of this Sublease. All notices, demands or communications in connection with this Sublease shall be (a) personally delivered; or (b) properly addressed and (i) submitted to an overnight courier service, charges prepaid, or (ii) deposited in the mail (certified, return receipt requested, and postage prepaid); provided, however, all notices to Sublessor must also be provided by email to the email address provided by Sublessor. Notices shall be deemed delivered upon receipt, if personally delivered, one (1) business day after being submitted to an overnight courier service and three (3) business days after mailing, if mailed as set forth above. All notices given to Master Lessor under the Master Lease shall be considered received only when delivered in accordance with the Master Lease.

19. Miscellaneous: This Sublease may not be amended except by the written agreement of all parties hereto. This Sublease may be executed in any number of counterparts, each of which shall be deemed to be an original, and all of such counterparts shall constitute one document. To facilitate execution of this Sublease, the parties may execute and exchange, by electronic mail PDF, counterparts of the signature pages. Signature pages may be detached from the counterparts and attached to a single copy of this Sublease to physically form one document. In addition, the parties hereto consent and agree that this Sublease may be signed using electronic signature technology (e.g., via DocuSign or similar electronic signature technology), and that such signed electronic record shall be valid and as effective to bind the party so signing as a paper copy bearing such party's handwritten signature. Sublessor has not had an inspection of the Premises performed by a Certified Access Specialist as described in California Civil Code § 1938. A Certified Access Specialist (CASp) can inspect the Subleased Premises and determine whether the Subleased Premises complies with all of the applicable construction-related accessibility standards under state law. Although state law does not require a CASp inspection of the Subleased Premises, the commercial property owner or lessor may not prohibit the lessee or tenant from obtaining a CASp inspection of the Subleased Premises for the occupancy or potential occupancy of the lessee or tenant, if requested by the lessee or tenant. If Sublessee requires a CASp inspection, the parties shall mutually agree on the arrangements for the time and manner of the CASp inspection, the payment of the fee for the CASp inspection, and the cost of making any repairs necessary to correct violations of construction-related accessibility standards within the Subleased Premises. Capitalized terms used but not defined in this Sublease shall have the meanings ascribed to such terms in the Master Lease.

20. Other Sublease Terms:

A. Incorporation by Reference. Except as set forth below, the terms and conditions of this Sublease shall include all of the terms of the Master Lease and such terms are incorporated into this Sublease as if fully set forth herein, except that: (i) each reference in such incorporated sections to "Lease" shall be deemed a reference to "Sublease"; (ii) each reference to the "Premises" shall be deemed a reference to the "Subleased Premises"; (iii) each reference to "Landlord" and "Tenant" shall be deemed a reference to "Sublessor" and "Sublessee", respectively, except as otherwise expressly set forth herein; (iv) with respect to work, services, repairs, restoration, insurance, indemnities, representations, warranties or the performance of any other obligation of Master Lessor under the Master Lease, the sole obligation of Sublessor shall be to request the same in writing from Master Lessor as and when requested to do so by Sublessee, and to use Sublessor's reasonable efforts (without requiring Sublessor to spend more than a nominal sum) to obtain Master Lessor's performance; (v) with respect to any obligation of Sublessee to be performed under this Sublease, wherever the Master Lease grants to Sublessor a specified number of days to perform its obligations under the Master Lease, except as otherwise provided herein, Sublessee shall have three (3) fewer days to perform the obligation (but not less than three (3) days, unless the Master Lease specifies less than five (5) days, in which case Sublessee's period shall not be less than one (1) business day), including, without limitation, curing any defaults; (vi) with respect to any approval required to be obtained from the "Landlord" under the Master Lease, such consent must be obtained from both Master Lessor and Sublessor, and the approval of Sublessor may be withheld if Master Lessor's consent is not obtained, and shall not be unreasonably withheld if Master Lessor consents; (vii) in any case where the "Landlord" reserves or is granted the right to manage, supervise, control, repair, alter, regulate the use of, enter or use the Premises or any areas beneath, above or adjacent thereto, perform any actions or cure any failures, such reservation or right shall be deemed to be for the benefit of both Master Lessor and Sublessor; (viii) in any case where "Tenant" is to indemnify, release or waive claims against "Landlord", such indemnity, release or waiver shall be deemed to cover, and run from Sublessee to, both Master Lessor and Sublessor; (ix) in any case where "Tenant" is to execute and/or deliver certain documents or notices to "Landlord", such obligation shall be deemed to run from Sublessee to both Master Lessor and Sublessor; (x) all payments shall be made to Sublessor; (xi) Sublessee shall pay all consent and review fees set forth in the Master Lease to each of Master Lessor and Sublessor (except that Sublessor shall pay all consent and review fees for Master Lessor's consent to this Sublease); (xii) Sublessee shall not have the right to terminate this Sublease due to casualty or condemnation unless Sublessor has such right under the Master Lease; (xiii) all "profit" under subleases and assignments shall be paid to Sublessor; (xiv) Sublessor's obligations under Section 4.3 are limited to forwarding statements and refunds provided by Master Lessor, and Sublessee shall have no right to dispute or audit such statements directly, but Sublessor shall use commercially reasonable efforts to audit such statements under Section 4.6 of the Master Lease on Sublessee's behalf and at Sublessee's cost, if reasonably requested by Sublessee; and (xv) Tenant's Share shall mean 25% of the Premises and 5.2% of the Building. Under no circumstances shall rent abate under this Sublease except to the extent that rent correspondingly abates under the Master Lease as to the Subleased Premises.

Notwithstanding the foregoing, the following provisions of the Master Lease shall not be incorporated herein: Summary of Basic Lease Information (except Section 6.2); all references to the Tenant Work Letter; Sections 1.1.1, 1.2 (except the third and fourth sentences), 1.4, 2 (except the third sentence), 3, 4.1 (the second sentence only), 4.2.6, 4.6, 5.2.9 (the second - fifth sentences), 5.2.10 (except with respect to the storage cage on the second floor of the Building as shown on Exhibit C of this Sublease and described in subpart (i) of Section 5.2.10), 5.3.2 (the first sentence only), 14.4 (only with respect to references to the L-C Amount), 14.7 (subject to the terms of Paragraph 8), 17 (the sixth sentence between the first two commas), 18 (the last sentence and after the semicolon in the first sentence only), 20 (subparts 20.1(A) and (E) and 20.3.1), 24.8.1 (the first sentence only), 24.8.2, 24.19, 24.25, 24.28 and 24.36.1(b) (the last sentence only); Exhibits A, B, E, G and H; Rider 1; First Amendment to Lease; Second Amendment to Lease. In addition, notwithstanding subpart (iii) above, (a) references in the following provisions to "Landlord" shall mean Master Lessor only: Sections 4.2.3, 4.2.5, 4.2.7, 4.3.4, 5.2.9, 6.1, 6.3, 6.5, 7.1 (the first instance only), 7.2 (except the last two instances), 8.3 (except the second and third sentences), 8.4, 11.1, 11.2, 11.4, 14.2 (the third and fourth instances only), 15.2 (the last instance only), 21, 23, 24.30, 24.33, 24.36.2, 24.37.2; (b) references in the following provisions to "Landlord" shall mean Master Lessor and Sublessor: 5.2.6, 5.2.7, 5.3.5, 7.2 (the last two instances only), 8.2 (the last reference in the penultimate sentence), 9, 10.3.7, 15.2 (the seventh sentence) and 24.7; and (c) the reference in Section 1.3 to Section 6.1 of the Summary shall be to Paragraph 2 of this Sublease.

B. Assumption of Obligations. This Sublease is and at all times shall be subject and subordinate to the Master Lease and the rights of Master Lessor thereunder. Sublessee hereby expressly assumes and agrees: (i) to comply with all provisions of the Master Lease that are, and as, incorporated hereunder; and (ii) to perform all the obligations on the part of the "Tenant" to be performed under the terms of the Master Lease during the Term of this Sublease that are, and as, incorporated hereunder. In the event the Master Lease is terminated for any reason whatsoever, this Sublease shall terminate simultaneously with such termination (unless Master Lessor or a successor tenant agrees to permit Sublessee to continue to occupy the Subleased Premises on the terms of this Sublease for the remainder of the Term), without any liability of Sublessor to Sublessee except for Sublessee's rights and remedies arising by reason of Sublessor's breach under Paragraph 10 hereof. In the event of a conflict between the provisions of this Sublease and the Master Lease, as between Sublessor and Sublessee, the provisions of this Sublease shall control. In the event of a conflict between the express provisions of this Sublease and the provisions of the Master Lease, as incorporated herein, the express provisions of this Sublease shall prevail. Notwithstanding any provision herein to the contrary, Sublessee shall have no obligation to perform any of the obligations of Sublessor under the Master Lease prior to the commencement of the Term. Sublessor represents and warrants to Sublessee that: (a) the Master Lease is in full force and effect and has not been amended; (b) to Sublessor's knowledge, no default exists on the part of Sublessor or Master Lessor under the Master Lease; (c) Sublessor has not received any written notice of default under the Master Lease from Master Lessor that remains uncured; and (d) to Sublessor's knowledge, there is no event or condition that would constitute a default under the Master Lease after notice or passage of time or both. Sublessor agrees to promptly deliver to Sublessee a copy of any notices of default received by Sublessor with respect to the Master Lease, as well as a copy of any notices of default delivered by Sublessor with respect to the Master Lease.

21. Conditions Precedent: This Sublease and Sublessor’s and Sublessee’s obligations hereunder are conditioned upon the written consent of Master Lessor. Each party shall use commercially reasonable efforts to obtain such consent, including by promptly signing a commercially reasonable consent form. If Sublessor fails to obtain Master Lessor’s consent within thirty (30) days after execution of this Sublease by Sublessor, then Sublessor or Sublessee may terminate this Sublease by giving the other party written notice thereof prior to the date such consent is received, and Sublessor shall return to Sublessee its payment of the first month’s Rent paid by Sublessee pursuant to Paragraph 4 hereof and the Security Deposit.

22. Termination; Recapture: Notwithstanding anything to the contrary herein, Sublessee acknowledges that, under the Master Lease, both Master Lessor and Sublessor have certain termination and recapture rights, including, without limitation, in Sections 11.2, 11.4, 12.1 and 14.4. Nothing herein shall prohibit Master Lessor or Sublessor from exercising any such rights and neither Master Lessor nor Sublessor shall have any liability to Sublessee as a result thereof. In the event Master Lessor or Sublessor exercise any such termination or recapture rights, this Sublease shall terminate without any liability to Master Lessor or Sublessor.

23. Inducement Recapture: Any agreement for free or abated rent or other charges, or for the giving or paying by Sublessor to or for Sublessee of any cash or other bonus, inducement or consideration for Sublessee’s entering into this Sublease, all of which concessions are hereinafter referred to as “Inducement Provisions”, shall be deemed conditioned upon Sublessee’s full and faithful performance of all of the terms, covenants and conditions of this Sublease. Upon a termination of this Sublease by reason of a default by Sublessee beyond applicable notice and cure periods, any such Inducement Provision shall automatically be deemed deleted from this Sublease and no further force or effect, and any rent, other charge, bonus, inducement or consideration theretofore abated, given or paid by Sublessor under such an Inducement Provision shall be immediately due and payable by Sublessee to Sublessor.

24. Furniture, Fixtures and Equipment: Sublessee shall have the right to use during the Term the office furnishings within the Subleased Premises that are identified on Exhibit D attached hereto (the “Furniture”) at no additional cost to Sublessee. The Furniture is provided in its “AS IS, WHERE IS” condition, without representation or warranty whatsoever. Sublessee shall insure the Furniture under the property insurance policy required under the Master Lease, as incorporated herein, and pay all taxes with respect to the Furniture. Sublessee shall maintain the Furniture in good condition and repair, reasonable wear and tear excepted, and shall be responsible for any loss or damage to the same occurring during the Term.

Sublessee shall surrender the Furniture to Sublessor upon the termination of this Sublease in such condition. Sublessee shall not remove any of the Furniture from the Subleased Premises. Notwithstanding the foregoing, provided (a) Sublessee has not defaulted under this Sublease and no event has occurred that with the passing of time or the giving of notice, would constitute a default by Sublessee under this Sublease, (b) this Sublease has not terminated prior to the Expiration Date, and (c) Sublessee has exercised its Extension Option pursuant to Paragraph 27 hereof, which conditions may be waived by Sublessor in its sole discretion, then upon the Expiration Date, as extended thereby, the Furniture shall become the property of Sublessee for the sum of one dollar, and Sublessee shall accept the same in its "AS IS, WHERE IS" condition, without representation or warranty whatsoever, and upon Sublessee's request, Sublessor will provide Sublessee with a bill of sale for such Furniture.

25. Expansion Right. Provided that no default has occurred or is then continuing and Sublessee has not Transferred this Sublease or any of the Subleased Premises, and subject to any currently existing rights of expansion, first refusal, recapture, first offer or similar rights granted to third parties as of the date of this Sublease, and Master Lessor's approval of such expansion, Sublessor shall notify Sublessee if Sublessor receives a bona fide offer from a prospective third party tenant (other than a Permitted Transferee or other entity with which Sublessor has a collaboration or other business relationship) that Sublessor is willing to accept to sublease solely all or any portion of the nineteenth (19^{th}) floor of the Building (the "Expansion Space"). Sublessee shall have the non-recurring, one-time right (the "Expansion Right") to sublease the Expansion Space on the terms stated in Sublessor's notice. If Sublessee, within ten (10) business days after receipt of Sublessor's written notice indicates in writing its agreement to sublease the applicable Expansion Space on the terms stated in Sublessor's notice, then Sublessor shall sublease to Sublessee and Sublessee shall sublease from Sublessor the applicable Expansion Space on the terms stated in Sublessor's notice; provided that, if the term set forth in Sublessor's notice is longer than the Term, the Term shall be extended to be co-terminus with the term set forth in Sublessor's notice. If the Term is extended as set forth in the preceding sentence, the Base Rent shall increase annually at a rate of 3.5% during the extension term. If Sublessee does not indicate in writing its agreement to sublease the Expansion Space within such ten (10) business day period, then Sublessor thereafter shall have the right to sublease the Expansion Space to a third party on terms not materially more favorable to the subtenant than those set forth in the above-mentioned bona fide offer.

26. Allowance. Sublessor shall contribute the sum of $60,000 (the "Allowance") toward the cost of Sublessee's construction of two (2) chemical fume hoods within the Subleased Premises (the "Work"). Such construction must be performed in accordance with the terms of Article 8 of the Master Lease, as incorporated herein. The Allowance may only be used for the cost of preparing design and construction documents, permit fees and hard construction costs for the Work. The Allowance shall be paid to Sublessee within thirty (30) days following substantial completion of the Work and receipt by Sublessor of (1) receipted bills covering all labor and materials expended and used for the Work; (2) a sworn contractor's affidavit from the general contractor and a request to disburse from Sublessee containing an approval by Sublessee of the Work done; (3) full and final waivers of lien from all contractors, subcontractors and suppliers; (4) as-built plans of the Work; and (5) the certification of Sublessee and its architect that the Work has been performed in a good and workmanlike manner in accordance with the approved plans, and in accordance with applicable laws. If all such conditions are not met within twelve (12) months of the date of this Sublease, Sublessor's obligation to provide the Allowance shall expire. The Allowance shall be disbursed in the amount reflected on the receipted bills meeting the requirements above. Notwithstanding anything herein to the contrary, Sublessor shall not be obligated to disburse any portion of the Allowance during the continuance of an uncured default under the Sublease, and Sublessor's obligation to disburse shall only resume when and if such default is cured. Any construction management fees payable to Master Lessor by Sublessor for the Work shall be paid for by Sublessee. The Allowance may also be used by Sublessor to pay any costs or fees charged by Master Lessor under the Master Lease.

27. Extension Option. Provided that no default has occurred or is then continuing and Sublessee has not Transferred this Sublease or any of the Subleased Premises, Sublessee shall have one (1) option to extend (the "Extension Option") the Term of this Sublease, which term (the "Option Term") shall commence upon the expiration of the initial Term (the "Option Commencement Date") and expire upon the "Lease Expiration Date" of April 30, 2030, by providing written notice to Sublessor of its desire to exercise such Extension Option at least eighteen (18) months and no more than twenty (20) months prior to the expiration of the Term. The monthly Base Rent for the first year of the Option Term shall be in the amount which is equal to the greater of (i) the annual Base Rent payable by Sublessee during the last month of the applicable Term; or (ii) the Fair Market Rental Rate for comparable office/laboratory space in the South San Francisco market (as defined in Rider 1 o the Master Lease), which applicable amount shall increase at a rate of 3.5% per year on each anniversary of the Option Commencement Date. Notwithstanding the foregoing, in the event that Sublessee is offered the Expansion Space pursuant to Paragraph 25 hereof and fails to exercise its right to the Expansion Space, the Extension Option shall expire immediately and become null and void. For the avoidance of doubt, the Extension Option shall be applicable to the Expansion Space if Sublessee properly exercises its Expansion Option. If Sublessee properly exercises the Extension Option, then not less than twelve (12) months prior to the expiration of the initial Term of this Sublease, Sublessor shall provide Sublessee with written notice of Sublessor's determination of Base Rent for the Option Term (the "Option Rent Notice"). Within ten (10) days thereafter, Sublessee may deliver written notice to Sublessor that it disputes Sublessor's determination of the Base Rent for the Option Term, in which case Sublessor and Sublessee shall attempt in good faith to agree upon such Base Rent within thirty (30) days thereafter (the "Outside Agreement Date"). If Sublessee fails to deliver such notice within such period, Base Rent for the Option Term shall be as set forth in the Option Rent Notice. If Sublessee delivers such notice within such period and the parties fail to reach agreement on the Base Rent for the Option Term by the Outside Agreement Date, Base Rent for the Option Term shall be established pursuant to the procedure set forth in Section 4 of Rider 1 to the Master Lease.

28. Parking. Sublessee shall have the right to park in 58 parking spaces in the Parking Facility servicing the Building, on an unreserved basis, free of charge by Sublessor, as provided in Section 23 of the Master Lease, as incorporated herein.

29. Signage. Subject to Master Lessor's and Sublessor's consent and Section 24.8 of the Master Lease, and provided the same do not reduce or diminish Sublessor's ability to install its own signs, Sublessee shall be entitled to install one (1) identification sign on or near the entry door of the Subleased Premises, and its name in the lobby directory of the Building.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the parties have executed this Sublease as of the day and year first above written.

SUBLESSOR:

STANDARD BIOTOOLS INC.,
a Delaware corporation

By: /s/ Alex Kim 8/30/2022

Name: Alex Kim

Its: ___________________________

Address: 2 Tower Place, Suite 200
South San Francisco, CA 94080
Attn: General Counsel
Email: legal@standardbio.com

SUBLESSEE:

CIRC BIO, INC.,
a Delaware corporation

By: /s/ Keith Lenden

Name: Keith Lenden

Its: Ceo

Address: 1700 Owens Street #535
San Francisco, CA 94158
____

With a copy to:

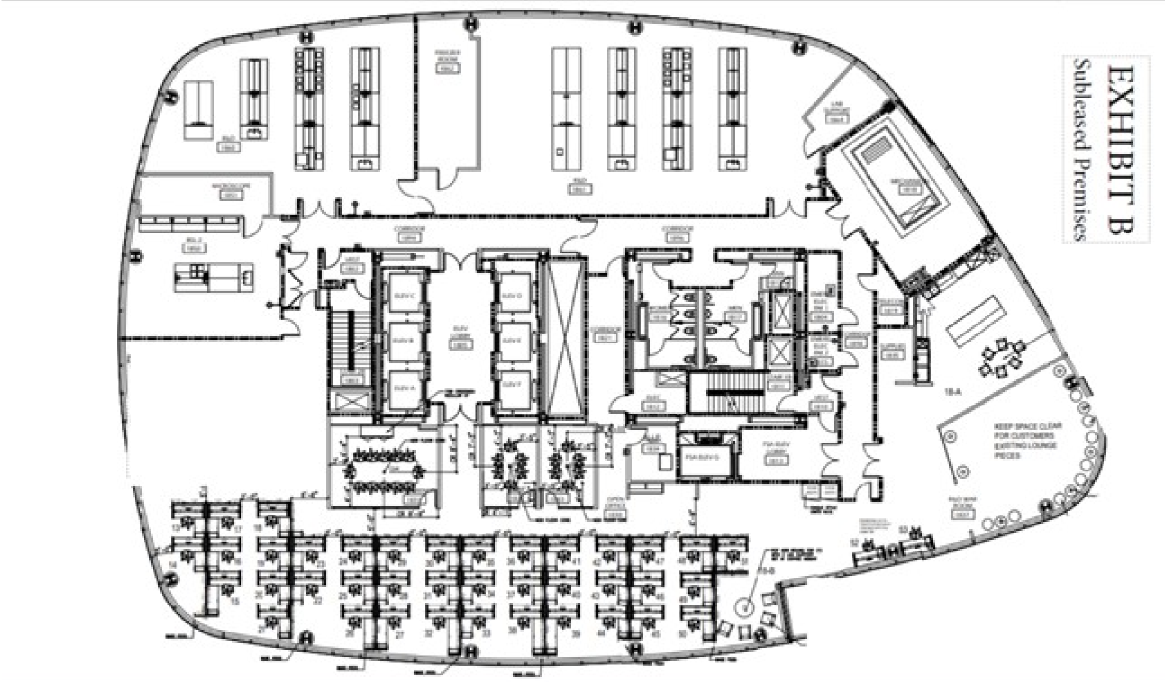
Hanson Bridgett LLP
1676 No. California Blvd., Suite 620
Walnut Creek, CA 94596
Attn: Derek A. Ridgway, Esq.

EXHIBIT A

MASTER LEASE

EXHIBIT B

SUBLEASED PREMISES



<u>EXHIBIT C</u>

STORAGE

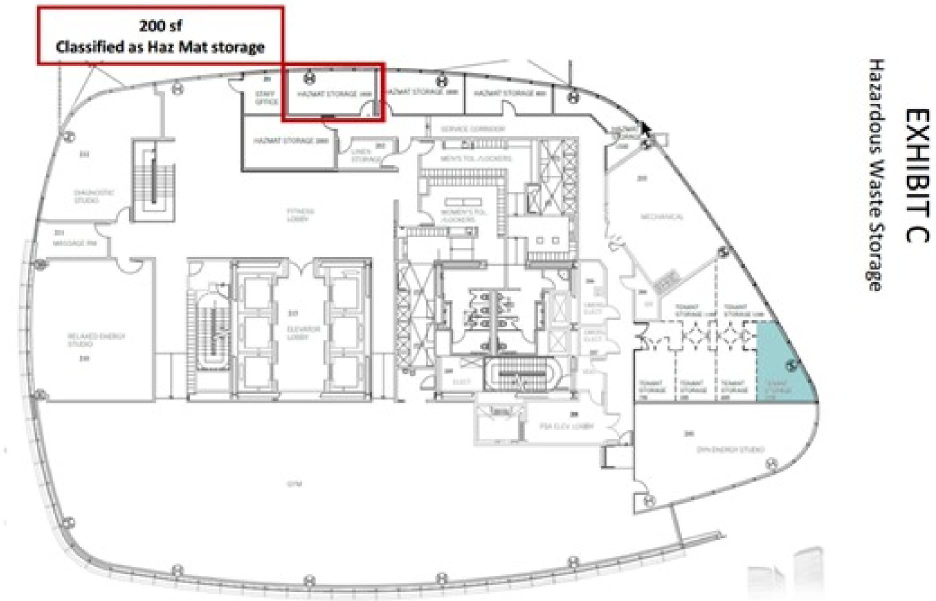


EXHIBIT D

FURNITURE

18th floor	Quantity
Cubicles with floating pedestals	38
Black task chairs	38
Orange & black collaboration bench seating	4
White coffee table	3
Blue breakroom table	1
Silver metal breakroom chairs	6
Large conference table 12' x 48"	1
Conference chairs, blue	20
Conference table 6'	2
Grey swivel chairs with orange stripes	3
6' matching conference room credenza	1
Phone booths	3
Conference Room TV monitors 75"	1
Conference Room TV monitors 50"	2
Side by Side Breakroom refrigerators	2
IT rack	1

All icemakers on the 18th floor

All wall storage racks and shelves on the 18th floor

All equipment tables on the 18th floor

All under bench storage in the lab

EXHIBIT E

LETTER OF CREDIT

Exhibit 31.1

**CERTIFICATION OF THE PRESIDENT AND CHIEF EXECUTIVE OFFICER
PURSUANT TO SECURITIES EXCHANGE ACT RULES 13a-14(a) AND 15d-14(a),
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Michael Egholm, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Standard BioTools 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 and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth 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 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: November 9, 2022

By: /s/ Michael Egholm
Michael Egholm
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF THE CHIEF FINANCIAL OFFICER
PURSUANT TO SECURITIES EXCHANGE ACT RULES 13a-14(a) AND 15d-14(a),
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Vikram Jog, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Standard BioTools 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 and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c. Evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d. Disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth 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 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: November 9, 2022

By: /s/ Vikram Jog
Vikram Jog
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

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

I, Michael Egholm, the Chief Executive Officer of Standard BioTools Inc. (the “Company”), certify for the purposes of 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge,

1. the Company’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2022 (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 results of operations of the Company.

Date: November 9, 2022

By: /s/ Michael Egholm
Michael Egholm
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 32.2

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

I, Vikram Jog, the Chief Financial Officer of Standard BioTools Inc. (the “Company”), certify for the purposes of 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge,

1. the Company’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2022 (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 results of operations of the Company.

Date: November 9, 2022	By: /s/ Vikram Jog
	Vikram Jog
	Chief Financial Officer
	(Principal Financial Officer)