

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, DC 20549

FORM 10-Q

Quarterly report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

For the quarterly period ended March 31, 2020

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 001-33957

**HARVARD BIOSCIENCE, INC.**

(Exact Name of Registrant as Specified in Its Charter)

**Delaware**

(State or other jurisdiction of  
Incorporation or organization)

**04-3306140**

(I.R.S. Employer  
Identification No.)

**84 October Hill Road, Holliston, Massachusetts 01746**  
(Address of Principal Executive Offices, including zip code)

**(508) 893-8999**  
(Registrant's telephone number, including area code)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant 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

Non-accelerated filer

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

**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, \$0.01 par value	HBIO	The Nasdaq Global Market

As of April 30, 2020, there were 38,380,403 shares of the registrant's common stock issued and outstanding.

**HARVARD BIOSCIENCE, INC.**  
**FORM 10-Q**  
**For the Three Months Ended March 31, 2020**  
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## PART I. FINANCIAL INFORMATION

## Item 1. Financial Statements.

**HARVARD BIOSCIENCE, INC.**  
**CONSOLIDATED BALANCE SHEETS**  
(Unaudited, in thousands, except share and per share data)

	March 31, 2020	December 31, 2019
<b>Assets</b>		
Current assets:		
Cash and cash equivalents	\$ 5,882	\$ 8,335
Accounts receivable, net	15,425	20,704
Inventories	23,143	22,061
Other current assets	3,715	2,472
Total current assets	48,165	53,572
Property, plant and equipment, net	4,488	4,776
Operating lease right-of-use assets	8,127	8,463
Goodwill	56,792	57,381
Intangible assets, net	36,807	38,405
Other long-term assets	1,881	2,273
Total assets	\$ 156,260	\$ 164,870
<b>Liabilities and Stockholders' Equity</b>		
Current liabilities:		
Current portion of long-term debt	\$ 2,807	\$ 6,900
Current portion of operating lease liabilities	2,297	2,424
Accounts payable	6,625	5,339
Deferred revenue	3,673	3,949
Accrued income taxes	624	609
Other current liabilities	7,449	6,091
Total current liabilities	23,475	25,312
Long-term debt	46,280	46,917
Deferred tax liability	1,767	1,974
Operating lease liabilities	7,867	8,224
Other long-term liabilities	862	749
Total liabilities	80,251	83,176
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, par value \$0.01 per share, 5,000,000 shares authorized	-	-
Common stock, par value \$0.01 per share, 80,000,000 shares authorized; 46,120,640 and 45,933,715 shares issued and 38,375,133 and 38,188,208 shares outstanding, respectively	438	438
Additional paid-in-capital	229,740	229,189
Accumulated deficit	(129,092)	(124,576)
Accumulated other comprehensive loss	(14,409)	(12,689)
Treasury stock at cost, 7,745,507 common shares	(10,668)	(10,668)
Total stockholders' equity	76,009	81,694
Total liabilities and stockholders' equity	\$ 156,260	\$ 164,870

See accompanying notes to consolidated financial statements.

**HARVARD BIOSCIENCE, INC.**  
**CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS**  
**(Unaudited, in thousands, except share and per share data)**

	<b>Three months Ended March 31,</b>	
	<b>2020</b>	<b>2019</b>
Revenues	\$ 23,771	\$ 28,202
Cost of revenues	10,789	12,048
Gross profit	<u>12,982</u>	<u>16,154</u>
Sales and marketing expenses	5,579	6,306
General and administrative expenses	6,759	5,803
Research and development expenses	2,490	2,735
Amortization of intangible assets	1,427	1,430
Total operating expenses	<u>16,255</u>	<u>16,274</u>
Operating loss	<u>(3,273)</u>	<u>(120)</u>
Other expense:		
Interest expense, net	(1,299)	(1,405)
Other (income) expense, net	111	(269)
Total other expense	<u>(1,188)</u>	<u>(1,674)</u>
Loss before income taxes	(4,461)	(1,794)
Income tax expense	55	576
Net loss	<u>\$ (4,516)</u>	<u>\$ (2,370)</u>
Loss per share:		
Basic loss per common share	<u>\$ (0.12)</u>	<u>\$ (0.06)</u>
Diluted loss per common share	<u>\$ (0.12)</u>	<u>\$ (0.06)</u>
Weighted-average common shares:		
Basic	38,329	37,645
Diluted	<u>38,329</u>	<u>37,645</u>
Comprehensive income (loss):		
Net loss	\$ (4,516)	\$ (2,370)
Other comprehensive (loss):		
Foreign currency translation adjustments	(1,576)	4
Derivatives qualifying as hedges, net of tax:		
(Loss) gain on derivative instruments designated and qualifying as cash flow hedges	(216)	(196)
Amounts reclassified from accumulated other comprehensive loss to net loss	72	17
Derivatives qualifying as hedges, net of tax	<u>(144)</u>	<u>(179)</u>
Other comprehensive (loss)	<u>(1,720)</u>	<u>(175)</u>
Comprehensive loss	<u>\$ (6,236)</u>	<u>\$ (2,545)</u>

See accompanying notes to consolidated financial statements.

**HARVARD BIOSCIENCE, INC.**  
**CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY**  
(Unaudited, in thousands)

	Number of Shares Issued	Common Stock	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Treasury Stock	Total Stockholders' Equity
<b>Balance at December 31, 2019</b>	45,934	\$ 438	\$ 229,189	\$ (124,576)	\$ (12,689)	\$ (10,668)	\$ 81,694
Vesting of restricted stock units	268	-	-	-	-	-	-
Shares withheld for taxes	(81)	-	(242)	-	-	-	(242)
Stock compensation expense	-	-	793	-	-	-	793
Net loss	-	-	-	(4,516)	-	-	(4,516)
Other comprehensive loss	-	-	-	-	(1,720)	-	(1,720)
<b>Balance at March 31, 2020</b>	<b>46,121</b>	<b>\$ 438</b>	<b>\$ 229,740</b>	<b>(129,092)</b>	<b>(14,409)</b>	<b>(10,668)</b>	<b>76,009</b>
<b>Balance at December 31, 2018</b>	45,124	\$ 436	\$ 226,377	\$ (119,889)	\$ (13,532)	\$ (10,668)	\$ 82,724
Stock option exercises	3	-	8	-	-	-	8
Vesting of restricted stock units	440	-	-	-	-	-	-
Shares withheld for taxes	(134)	-	(429)	-	-	-	(429)
Stock compensation expense	-	-	591	-	-	-	591
Net loss	-	-	-	(2,370)	-	-	(2,370)
Other comprehensive loss	-	-	-	-	(175)	-	(175)
<b>Balance at March 31, 2019</b>	<b>45,433</b>	<b>\$ 436</b>	<b>\$ 226,547</b>	<b>(122,259)</b>	<b>(13,707)</b>	<b>(10,668)</b>	<b>80,349</b>

See accompanying notes to consolidated financial statements.

**HARVARD BIOSCIENCE, INC.**  
**CONSOLIDATED STATEMENTS OF CASH FLOWS**  
(Unaudited, in thousands)

	<b>Three Months Ended March 31,</b>	
	<b>2020</b>	<b>2019</b>
<b>Cash flows from operating activities:</b>		
Net Loss	\$ (4,516)	\$ (2,370)
Adjustments to reconcile net loss to net cash provided by operating activities:		
Depreciation	484	538
Amortization of intangible assets	1,427	1,430
Amortization of deferred financing costs	98	91
Stock-based compensation expense	793	591
Provision for allowance for doubtful accounts	4	348
Other non-cash charges	(166)	4
Changes in operating assets and liabilities:		
Accounts receivable	5,149	2,331
Inventories	(1,413)	(1,416)
Other current assets	(767)	536
Accounts payable	1,322	(118)
Accrued income taxes	6	380
Other current liabilities	1,411	(76)
Deferred revenue	(256)	(116)
Other long-term liabilities	(705)	(143)
Net cash provided by operating activities	<u>2,871</u>	<u>2,010</u>
<b>Cash flows from investing activities:</b>		
Additions to property, plant and equipment	(241)	(143)
Other	-	(9)
Net cash used in investing activities	<u>(241)</u>	<u>(152)</u>
<b>Cash flows from financing activities:</b>		
Repayments of debt	(4,829)	(4,583)
Taxes paid for issuance of stock	(242)	(421)
Net cash used in financing activities	<u>(5,071)</u>	<u>(5,004)</u>
Effect of exchange rate changes on cash	(12)	3
Decrease in cash and cash equivalents	(2,453)	(3,143)
Cash and cash equivalents at beginning of period	8,335	8,173
Cash and cash equivalents at end of period	<u>\$ 5,882</u>	<u>\$ 5,030</u>
<b>Supplemental disclosures of cash flow information:</b>		
Cash paid for interest	\$ 1,237	\$ 1,406
Cash paid for income taxes	\$ 110	\$ 94

See accompanying notes to consolidated financial statements.

**HARVARD BIOSCIENCE, INC.**

**NOTES TO UNAUDITED CONSOLIDATED FINANCIAL STATEMENTS**

**1. Basis of Presentation, Risks and Uncertainties, and Summary of Significant Accounting Policies**

***Basis of Presentation***

The unaudited consolidated financial statements of Harvard Bioscience, Inc. and its wholly-owned subsidiaries (collectively, Harvard Bioscience or the Company) as of March 31, 2020 and for the three months ended March 31, 2020 and 2019, have been prepared by the Company pursuant to the rules and regulations of the Securities and Exchange Commission (SEC). Certain information and footnote disclosures normally included in financial statements prepared in accordance with U.S. generally accepted accounting principles (U.S. GAAP) have been condensed or omitted pursuant to such rules and regulations. The December 31, 2019 consolidated balance sheet was derived from audited financial statements but does not include all disclosures required by U.S. GAAP. However, the Company believes that the disclosures are adequate to make the information presented not misleading. These unaudited consolidated financial statements should be read in conjunction with the consolidated financial statements and the notes thereto included in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2019, which was filed with the SEC on March 16, 2020.

In the opinion of management, all adjustments, which include normal recurring adjustments necessary to present a fair statement of financial position as of March 31, 2020, results of operations and comprehensive income (loss) for the three months ended March 31, 2020 and 2019 and cash flows for the three months ended March 31, 2020 and 2019, as applicable, have been made. The results of operations for the three months ended March 31, 2020 are not necessarily indicative of the operating results for the full fiscal year or any future periods.

***Risks and Uncertainties***

On March 11, 2020, the World Health Organization declared the outbreak of a novel coronavirus (COVID-19) as a pandemic. The COVID-19 pandemic has had a negative impact on the Company's operations to date and the future impacts of the pandemic and any resulting economic impact are largely unknown and rapidly evolving. Since the COVID-19 outbreak in the United States, Europe and elsewhere, many customers, particularly academic research institutions, have been unable to maintain laboratory work which has, and will continue to, negatively impact our sales. Additionally, to ensure business continuity while maintaining a safe environment for employees aligned with guidance from government and health organizations, the Company transitioned the majority of its workforce to work-from-home while implementing social distancing requirements and other measures in factories to allow manufacturing and other personnel essential to production to continue work within our facilities. Business travel was significantly reduced during this period. While the Company has maintained operations under these conditions, these measures represent disruptions which can impact productivity including sales and marketing activities. Accordingly, these conditions in addition to the overall impact on the global economy has negatively impacted our results of operations and cash flows.

As a result of these market and economic conditions, in accordance with the guidelines set forth in ASC 350 and ASC 360, the Company performed an analysis for potential interim impairment indicators of its intangible and other long-lived assets. As of March 31, 2020, the Company concluded there were no impairments of goodwill, other indefinite-lived intangibles, or long-lived assets that resulted from triggering events due to COVID-19. The Company will continue to monitor its assets for potential impairment through the remainder of 2020.

***Summary of Significant Accounting Policies***

The accounting policies underlying the accompanying unaudited consolidated financial statements are those set forth in Note 2 to the consolidated financial statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2019, which was filed with the SEC on March 16, 2020. There have been no material changes in the Company's significant accounting policies during the three months ended March 31, 2020.

**2. Recently Issued Accounting Pronouncements**

***Accounting Pronouncements to be Adopted***

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments—Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*, which amends the impairment model by requiring entities to use a forward-looking approach based on expected losses rather than incurred losses to estimate credit losses on certain types of financial instruments, including trade receivables. This may result in the earlier recognition of allowances for losses. The FASB issued several ASUs after ASU 2016-13 to clarify implementation guidance and to provide transition relief for certain entities. ASU 2016-13 is effective for the Company for fiscal years beginning after December 15, 2022, with early adoption permitted. The Company is evaluating the impact of adopting ASU 2016-13 and related amendments will have on its consolidated financial position, results of operations and cash flows.

In August 2018, the FASB issued ASU No. 2018-14, *Disclosure Framework—Changes to the Disclosure Requirements for Defined Benefit Plans*, which amends ASC 715 to add, remove and clarify disclosure requirements related to defined benefit pension and other postretirement plans. The ASU is effective for public entities for fiscal years beginning after December 15, 2020, with early adoption permitted. Management has not yet completed its assessment of the impact of the new standard on the Company's Consolidated Financial Statements.

In December 2019, the FASB issued ASU 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*, which enhances and simplifies various aspects of the income tax accounting guidance related to intra-period tax allocation, interim period accounting for enacted changes in tax law, and the year-to-date loss limitation in interim period tax accounting. ASU 2019-12 also amends other aspects of the guidance to reduce complexity in certain areas. ASU 2019-12 will become effective for the Company on January 1, 2021. Early adoption is permitted. The Company is evaluating the impact of adopting this guidance to its financial statements and related disclosures.

### 3. Accumulated Other Comprehensive Loss

Changes in each component of accumulated other comprehensive loss, net of tax are as follows:

(in thousands)	Foreign currency translation adjustments	Derivatives qualifying as hedges	Defined benefit pension plans	Total
Balance at December 31, 2019	\$ (13,173)	\$ (603)	\$ 1,087	\$ (12,689)
Other comprehensive (loss) income before reclassifications	(1,576)	(216)		(1,792)
Amounts reclassified from AOCI into Income	-	72		72
Net other comprehensive (loss) income	(1,576)	(144)	-	(1,720)
Balance at March 31, 2020	\$ (14,749)	\$ (747)	\$ 1,087	\$ (14,409)

### 4. Goodwill and Intangible Assets

#### Goodwill

The change in the carrying amount of goodwill for the three months ended March 31, 2020 is as follows:

(in thousands)	March 31, 2020
Balance at December 31, 2019	\$ 57,381
Effect of change in currency translation	(589)
Balance at March 31, 2020	\$ 56,792

#### Intangible Assets

	Weighted Average Life* (Years)	March 31, 2020			December 31, 2019		
		Gross	Accumulated Amortization	Net	Gross	Accumulated Amortization	Net
(in thousands)							
Intangible assets:							
Distribution agreements/customer relationships	8.4	\$ 17,685	\$ (6,550)	\$ 11,135	\$ 17,891	\$ (6,340)	\$ 11,551
Existing technology	5.5	40,923	(20,327)	20,596	41,222	(19,698)	21,524
Trade names	5.3	8,511	(3,667)	4,844	7,692	(3,497)	4,195
Patents	-	206	(206)	-	218	(218)	-
Indefinite-lived tradename	NA	232	-	232	1,135	0	1,135
Total intangible assets		\$ 67,557	\$ (30,750)	\$ 36,807	\$ 68,158	\$ (29,753)	\$ 38,405

\* Weighted average life as of March 31, 2020.

During the three months ended March 31, 2020, the Company determined that \$0.9 million of tradenames previously classified as indefinite-lived should be classified as amortizing due to anticipated changes in worldwide marketing programs and estimated an economic life of 4 years for this intangible asset.

Intangible asset amortization expense was \$1.4 million for each of the three months ended March 31, 2020 and 2019. Amortization expense of existing amortizable intangible assets is currently estimated to be \$4.1 million for the remainder of 2020, \$5.5 million for the year ending December 31, 2021, \$5.5 million for the year ending December 31, 2022, \$5.3 million for the year ending December 31, 2023, \$5.3 million for the year ending December 31, 2024, and \$4.2 million for the year ending December 31, 2025.

## 5. Inventories

Inventories consist of the following:

	<b>March 31, 2020</b>	<b>December 31, 2019</b>
	(in thousands)	
Finished goods	\$ 5,280	\$ 5,561
Work in process	3,160	3,153
Raw materials	14,703	13,347
Total	<u>\$ 23,143</u>	<u>\$ 22,061</u>

## 6. Property, Plant and Equipment

Property, plant, and equipment consist of the following:

	<b>March 31, 2020</b>	<b>December 31, 2019</b>
	(in thousands)	
Machinery and equipment	\$ 7,437	\$ 7,198
Computer equipment and software	8,763	8,954
Leasehold improvements	2,157	2,151
Furniture and fixtures	1,309	1,321
Automobiles	90	92
	<u>19,756</u>	<u>19,716</u>
Less: accumulated depreciation	<u>(15,268)</u>	<u>(14,940)</u>
Property, plant and equipment, net	<u>\$ 4,488</u>	<u>\$ 4,776</u>

## 7. Restructuring and Other Exit Costs

During 2019, the Board of Directors of the Company approved a restructuring program designed to improve gross margins and operating margins while reinvesting in resources required to deliver sustained, profitable organic growth. The restructuring program will entail consolidating and downsizing several sites and includes headcount reductions in Europe and North America to improve operational efficiency and reduce costs.

The restructuring program is expected to be completed by the end of 2020. The Company expects to incur costs associated with headcount reductions, program management and other transition costs necessary to affect the site consolidations and other business improvements. Substantially all these costs are expected to result in future cash outlays.

The following table summarizes the activity for the accrued restructuring liability for the three months ended March 31, 2020:

(in thousands)	Severance		Total
	Costs	Other	
Balance at December 31, 2019	\$ 364	\$ 4	\$ 368
Restructuring charges	834	40	874
Adjustments	(45)	-	(45)
Cash payments	(569)	(36)	(605)
Balance at March 31, 2020	<u>\$ 584</u>	<u>\$ 8</u>	<u>\$ 592</u>

As of March 31, 2020, the Company had a restructuring liability of \$0.6 million which is payable within the next twelve months and has been included in other current liabilities in the consolidated balance sheet.

## 8. Related Party Transactions

As part of the acquisitions of Multi Channel Systems MCS GmbH (MCS) and Triangle BioSystems, Inc. (TBSI) in 2014, the Company signed lease agreements with the former owners of these acquired companies. The principals of such former owners of MCS and TBSI became employees of the Company. Pursuant to these lease agreements, the Company made rent payments of approximately \$0.1 million for each of the three months ended March 31, 2020 and 2019.

## 9. Employee Benefit Plans

The Company's subsidiary in the United Kingdom, Biochrom Limited, maintains two contributory, defined benefit pension plans that have been closed to new employees since 2014, as well as closed to the future accrual of benefits for existing participating employees.

For the three months ended March 31, 2020 and 2019, the Company recorded defined benefit pension expense of \$0.1 million and \$0.2 million, respectively. For each of the three months ended March 31, 2020 and 2019, the Company contributed \$0.2 million to its defined benefit pension plans. The Company expects to contribute approximately \$0.7 million to its defined benefit pension plans during the remainder of 2020. As of December 31, 2019, the Company pension assets exceeded its pension liability by approximately \$1.1 million that is included in the other long-term asset in the consolidated balance sheets.

## 10. Leases

The Company has noncancelable operating leases for office, manufacturing facilities, warehouse space, automobiles and equipment expiring at various dates through 2024 and thereafter.

The components of lease expense for the three months ended March 31, 2020 and 2019 are as follows:

	Three Months Ended March 31, 2020	Three Months Ended March 31, 2019
	(in thousands)	(in thousands)
Operating lease cost	\$ 535	\$ 523
Short term lease cost	42	76
Sublease income	(107)	(102)
Total lease cost	<u>\$ 470</u>	<u>\$ 497</u>

Supplemental cash flow information related to the Company's operating leases was as follows:

	Three Months Ended March 31, 2020	Three Months Ended March 31, 2019
	(in thousands)	(in thousands)
Cash paid for amounts included in the measurement of lease liabilities:	\$ 687	\$ 702

Supplemental balance sheet information related to the Company's operating leases was as follows:

	<u>March 31, 2020</u>	<u>December 31, 2019</u>
	(in thousands)	(in thousands)
Operating lease right-of use assets	\$ 8,127	\$ 8,463
Current portion, operating lease liabilities	\$ 2,297	\$ 2,424
Operating lease liabilities, long term	7,867	8,224
<b>Total operating lease liabilities</b>	<b>\$ 10,164</b>	<b>\$ 10,648</b>
Weighted average remaining lease term (in years)	8.0	8.1
Weighted average discount rate	9.2%	9.2%

Future minimum lease payments for operating leases, with initial or remaining terms in excess of one year at March 31, 2020, are as follows:

	<u>Operating Leases</u>
	(in thousands)
2021	\$ 2,297
2022	1,905
2023	1,842
2024	1,827
2025	1,367
Thereafter	5,574
<b>Total lease payments</b>	<b>14,812</b>
Less interest	(4,648)
<b>Total operating lease liabilities</b>	<b>\$ 10,164</b>

## 11. Capital Stock and Stock-Based Compensation

### *Employee Stock Purchase Plan (as amended, the ESPP)*

Under the Company's ESPP, participating employees can authorize the Company to withhold a portion of their base pay during consecutive six-month payment periods for the purchase of shares of the Company's common stock. At the conclusion of the period, participating employees can purchase shares of the Company's common stock at 85% of the lower of the fair market value of the Company's common stock at the beginning or end of the period. Shares are issued under the ESPP for the six-month periods ending June 30 and December 31. On May 16, 2019, the stockholders of the Company approved an increase of 350,000 shares of common stock in the number of shares available for issuance under the ESPP. Following such amendment, 1,400,000 shares of common stock are authorized for issuance, of which 1,081,404 shares were issued as of December 31, 2019. There were no shares issued under the ESPP during the period ended March 31, 2020. As of March 31, 2020, there were 318,596 shares available for issuance under the plan.

### *Third Amended and Restated 2000 Stock Option and Incentive Plan (as amended, the Third A&R Plan)*

On May 25, 2011, the stockholders of the company approved the Third A&R Plan, which such plan currently authorizes the grant of stock options and stock-based awards to officers, employees, non-employee directors and other key persons of the Company and its subsidiaries. The Third Amendment to the Third A&R Plan (the Amendment) was adopted by the Board of Directors on April 2, 2018. Such Amendment was approved by the stockholders at the Company's 2018 Annual Meeting of Stockholders. Pursuant to the Amendment, the aggregate number of shares authorized for issuance under the Third A&R Plan was increased by 3,400,000 shares to 20,908,929. As of March 31, 2020, there were 275,419 shares available for issuance under the plan

### *Restricted Stock Units with a Market Condition (the Market Condition RSUs)*

In 2019, the Compensation Committee of the Board of Directors of the Company approved and granted deferred stock awards of Market Condition RSUs (the 2019 Market Condition RSUs) to certain members of the Company's management team under the Third A&R Plan. The vesting of the 2019 Market Condition RSUs is based on a graded-vesting schedule (one third at the end of each year for three years) and linked to the achievement of a relative total shareholder return of the Company's common stock measured relative to the Nasdaq Biotechnology index from the 2019 Market Condition RSUs grant date to the earlier of (i) the anniversary date of the grant or (ii) upon a change of control.

As of March 31, 2020, the target number of these market condition restricted stock units that may be earned is 529,491 shares; the maximum amount is 150% of the target number.

#### Stock-Based Payment Awards

The Company accounts for stock-based payment awards in accordance with the provisions of FASB ASC 718, which requires it to recognize compensation expense for all stock-based payment awards made to employees and directors including stock options, restricted stock units, Market Condition RSUs and employee stock purchases related to the ESPP. The Company has elected as an accounting policy to account for forfeitures for service-based awards as they occur, with no adjustment for estimated forfeitures.

Stock option and restricted stock unit activity for the three months ended March 31, 2020 were as follows:

	Stock Options		Restricted Stock Units		Market Condition RSU's	
	Stock Options Outstanding	Weighted Average Exercise Price	Restricted Stock Units Outstanding	Grant Date Fair Value	Market Condition RSU's Outstanding	Grant Date Fair Value
Balance at December 31, 2019	2,266,122	\$ 3.93	1,590,450	\$ 2.27	529,491	\$ 1.67
Granted	42,373	2.58	142,766	3.00	-	-
Vested (RSUs)	-	-	(267,588)	2.75	-	-
Cancelled / forfeited	(49,074)	3.81	(31,795)	3.02	-	-
Balance at March 31, 2020	<u>2,259,421</u>	\$ 3.90	<u>1,433,833</u>	\$ 2.24	<u>529,491</u>	\$ 1.67

For the three months ended March 31, 2020, the total compensation costs related to unvested awards not yet recognized is \$3.3 million and the weighted average period over which it is expected to be recognized is approximately two years.

#### Valuation and Expense Information under Stock-Based-Payment Accounting

Stock-based compensation expense for the three months ended March 31, 2020 and 2019 was allocated as follows:

	Three Months Ended March 31,	
	2020	2019
	(in thousands)	
Cost of product revenues	\$ 10	\$ 13
Sales and marketing	51	(7)
General and administrative	696	551
Research and development	36	34
Total stock-based compensation	<u>\$ 793</u>	<u>\$ 591</u>

The Company did not capitalize any stock-based compensation.

The weighted-average estimated fair value per share of stock options granted during the three months ended March 31, 2020 was \$1.18 using the Black Scholes option-pricing model with the following weighted-average assumptions:

	2020
Volatility	54.83%
Risk-free interest rate	1.16%
Expected holding period (in years)	4.6

The Company used historical volatility to calculate the expected volatility as of March 31, 2020. Historical volatility was determined by calculating the mean reversion of the daily adjusted closing stock price. The risk-free interest rate assumption is based upon observed U.S. Treasury bill interest rates (risk-free) appropriate for the term of the Company's stock options. The expected holding period of stock options represents the period of time options are expected to be outstanding and were based on historical experience. The vesting period ranges from one to four years and the contractual life is ten years.

### *Earnings per share*

Basic earnings per share is calculated by dividing net income by the number of weighted average common shares outstanding during the period. The calculation of diluted earnings per share assumes conversion of stock options, restricted stock units and Market Condition RSUs into common stock using the treasury method. The weighted average number of shares used to compute basic and diluted earnings per share consists of the following:

	Three Months Ended March 31,	
	2020	2019
Basic	38,328,791	37,644,684
Diluted	38,328,791	37,644,684

Excluded from the shares used in calculating the diluted earnings per common share in the above table are options, restricted stock units and Market Condition RSUs of approximately 4,222,745 and 3,691,304 shares of common stock for the three months ended March 31, 2020 and 2019, respectively, as the impact of these shares would be anti-dilutive.

## **12. Long term Debt**

On January 31, 2018, the Company entered into a financing agreement by and among the Company and certain subsidiaries of the Company as borrowers (collectively, the Borrower), certain subsidiaries of the Company as guarantors, various lenders from time to time (the Lenders), and Cerberus Business Finance, LLC, as collateral agent and administrative agent for the Lenders (the Financing Agreement).

On August 16, 2018, the Company and Cerberus Business Finance, LLC entered into a First Amendment to the Financing Agreement, which such amendment modified certain provisions related to the borrowing base and reporting, among other things. On November 4, 2019, the Company and Cerberus Business Finance, LLC entered into a Second Amendment to the Financing Agreement, which modified certain provisions effective as of September 30, 2019 related to the Company's quarterly leverage ratio financial covenant amongst other provisions.

The Financing Agreement provided for senior secured credit facilities (the Senior Secured Credit Facilities) comprised of a \$64.0 million term loan and up to a \$25.0 million revolving line of credit subject to available borrowing base. The revolving facility is available for use by the Company and its subsidiaries for general corporate and working capital needs, and other purposes to the extent permitted by the Financing Agreement. Borrowings available under the revolving line of credit are limited to a borrowing base derived from the Company's eligible accounts receivable and inventory, as defined in the Financing Agreement. As of March 31, 2020, borrowings available under the revolving facility were \$4.6 million.

Commencing on March 31, 2018, the outstanding term loans began to amortize in equal quarterly installments equal to \$0.4 million per quarter on such date and during each of the next three quarters thereafter, \$0.6 million per quarter during the next four quarters thereafter and \$0.8 million per quarter thereafter, with a balloon payment at maturity in 2023. Furthermore, within ten days of the Company's delivery of its audited annual financial statements each year, the term loans are permanently reduced pursuant to certain mandatory prepayment events including an annual "excess cash flow sweep" of 50% of the consolidated excess cash flow; provided that, in any fiscal year, any voluntary prepayments of the term loans shall be credited against the Company's "excess cash flow" prepayment obligations on a dollar-for-dollar basis for such fiscal year. During the three months ended March 31, 2020, the Company made an excess cash flow payment of \$4.0 million. During the year ended December 31, 2019, the Company made an excess cash flow payment of \$4.0 million and a payment of \$1.0 million in connection with the release of an escrow amount associated with the Denville Transaction, as required by the Financing Agreement.

The obligations of the Borrower under the Senior Secured Credit Facilities are unconditionally guaranteed by the Company and certain of the Company's existing and subsequently acquired or organized subsidiaries. The Senior Secured Credit Facilities and related guarantees are secured on a first-priority basis (subject to certain liens permitted under the Financing Agreement) by a lien on substantially all the tangible and intangible assets of the Borrower and the subsidiary guarantors, including all of the capital stock held by such obligors (subject to a 65% limitation on pledges of capital stock of foreign subsidiaries), subject to certain exceptions.

Interest on all loans under the Senior Secured Credit Facilities is paid monthly. Borrowings under the Financing Agreement accrue interest at a per annum rate equal to, at the Borrower's option, a base rate plus 4.75% or a London Interbank Offered Rate (LIBOR) rate plus 6.25%. The loans are also subject to a 1.25% interest rate floor for LIBOR loans and a 4.25% interest rate floor for base rate loans. The LIBOR index is expected to be discontinued by the end of calendar year 2021. The terms of the revolving credit facility allow for a replacement rate if the LIBOR index is discontinued.

The Financing Agreement contains customary representations and warranties and affirmative covenants applicable to the Company and its subsidiaries and also contains certain restrictive covenants, including, among others, limitations on the incurrence of additional debt, liens on property, acquisitions and investments, loans and guarantees, mergers, consolidations, liquidations and dissolutions, asset sales, dividends and other payments in respect of the Company's capital stock, prepayments of certain debt, transactions with affiliates and modifications of organizational documents, material contracts, affiliated practice agreements and certain debt agreements. The Financing Agreement contains customary events of default and is subject to covenant and working capital borrowing restrictions.

The Company is compliant with all covenants under the Financing Agreement as of March 31, 2020.

The Company's covenants include a requirement to maintain a maximum leverage ratio among other financial and non-financial covenants, as defined in the Financing Agreement. The maximum permitted leverage is the ratio of total debt to consolidated EBITDA, as defined in the Financing Agreement, with a maximum ratio of 3.50 as of March 31, 2020, stepping down to 3.25 for the three months ended June 30, 2020 and all quarters thereafter. Due to the negative impact of COVID-19 on revenue and consolidated EBITDA, the Company's leverage ratio has increased, and the gap between the leverage ratio and maximum permitted leverage has reduced.

Based on the Company's current operating plans, including actions taken to mitigate the impact of COVID-19, it expects that available cash, cash generated from current operations and debt capacity will be sufficient to finance current operations, any costs associated with restructuring activities and capital expenditures. This assessment includes consideration of the Company's best estimates of the impact of the COVID-19 pandemic on its financial results. If the negative impact of COVID-19 is more significant than anticipated it may impact the Company's ability to comply with financial covenants in the future, which would require the Company to seek an amendment or waivers from its lenders, limit access to or require accelerated repayment of the existing credit facilities, or require the Company to pursue alternative financing. There are no assurances that any such alternative financing, if required, could be obtained at terms acceptable to the Company, or at all.

As of March 31, 2020, the weighted effective interest rate, net of the impact of the Company's interest rate swap, on its borrowings was 8.40%. The carrying value of the debt approximates fair value because the interest rate under the obligation approximates market rates of interest available to the Company for similar instruments.

As of March 31, 2020, and December 31, 2019, the Company's borrowings were comprised of:

	March 31, 2020	December 31, 2019
	(in thousands)	
Long-term debt:		
Term loan	\$ 50,168	54,997
Revolving line	-	-
Total unamortized deferred financing costs	(1,081)	(1,180)
Total debt	49,087	53,817
Less: current installments	(3,200)	(3,200)
Less: excess cash flow sweep	-	(4,093)
Current unamortized deferred financing costs	393	393
Long-term debt	<u>\$ 46,280</u>	<u>\$ 46,917</u>

### 13. Derivatives

The Company uses interest-rate-related derivative instruments to manage its exposure related to changes in interest rates on its variable-rate debt instruments. The Company does not enter into derivative instruments for any purpose other than cash flow hedging. The Company does not speculate using derivative instruments.

By using derivative financial instruments to hedge exposures to changes in interest rates, the Company exposes itself to credit risk and market risk. Credit risk is the failure of the counterparty to perform under the terms of the derivative contract. When the fair value of a derivative contract is positive, the counterparty owes the Company, which creates credit risk for the Company. When the fair value of a derivative contract is negative, the Company owes the counterparty and, therefore, the Company is not exposed to the counterparty's credit risk in those circumstances. The Company minimizes counterparty credit risk in derivative instruments by entering into transactions with carefully selected major financial institutions based upon their credit profile.

Market risk is the adverse effect on the value of a derivative instrument that results from a change in interest rates. The market risk associated with interest-rate contracts is managed by establishing and monitoring parameters that limit the types and degree of market risk that may be undertaken.

The Company assesses interest rate risk by continually identifying and monitoring changes in interest rate exposures that may adversely impact expected future cash flows and by evaluating hedging opportunities. The Company maintains risk management control systems to monitor interest rate risk attributable to both the Company's outstanding and forecasted debt obligations as well as the Company's offsetting hedge positions. The risk management control systems involve the use of analytical techniques, including cash flow sensitivity analysis, to estimate the expected impact of changes in interest rates on the Company's future cash flows.

The Company uses variable-rate LIBOR debt to finance its operations. The debt obligations expose the Company to variability in interest payments due to changes in interest rates. Management believes that it is prudent to limit the variability of a portion of its interest payments. To meet this objective, management enters into LIBOR based interest rate swap agreements to manage fluctuations in cash flows resulting from changes in the benchmark interest rate of LIBOR. These swaps change the variable-rate cash flow exposure on the debt obligations to fixed cash flows. Under the terms of the interest rate swaps, the Company receives LIBOR based variable interest rate payments and makes fixed interest rate payments, thereby creating the equivalent of fixed-rate debt for the notional amount of its debt hedged.

As disclosed in Note 12, on January 31, 2018, the Company entered into a Financing Agreement comprised of a \$64.0 million term loan and up to a \$25.0 million revolving line of credit. Shortly after entering into this Financing Agreement, the Company entered into an interest rate swap contract with PNC Bank with a notional amount of \$36.0 million and a termination date of January 1, 2023 in order to hedge the risk of changes in the effective benchmark interest rate (LIBOR) associated with the Company's Term Loan. The swap contract converted specific variable-rate debt into fixed-rate debt and fixed the LIBOR rate associated with a portion of the term loan under the Financing Agreement at 2.72%. The interest rate swap was designated as a cash flow hedge instrument in accordance with ASC 815 "Derivatives and Hedging".

The following table presents the notional amount and fair value of the Company's derivative instruments as of March 31, 2020 and December 31, 2019.

		<b>March 31, 2020</b>	
		<b>Notional Amount</b>	<b>Fair Value (a)</b>
		(in thousands)	
<b>Derivatives instruments</b>	<b>Balance sheet classification</b>		
Interest rate swaps	Other long term liabilities	\$ 27,289	\$ (747)

  

		<b>December 31, 2019</b>	
		<b>Notional Amount</b>	<b>Fair Value (a)</b>
		(in thousands)	
<b>Derivatives instruments</b>	<b>Balance sheet classification</b>		
Interest rate swaps	Other long term liabilities	\$ 28,821	\$ (603)

(a) See Note 14 for the fair value measurements related to these financial instruments.

All of the Company's derivative instruments are designated as hedging instruments. The Company has structured its interest rate swap agreements to be 100% effective and as a result, there was no impact to earnings resulting from hedge ineffectiveness. Changes in the fair value of interest rate swaps designated as hedging instruments that effectively offset the variability of cash flows associated with variable-rate, long-term debt obligations are reported in accumulated other comprehensive income (AOCI). These amounts subsequently are reclassified into interest expense as a yield adjustment of the hedged interest payments in the same period in which the related interest affects earnings. The Company's interest rate swap agreement was deemed to be fully effective in accordance with ASC 815, and, as such, unrealized gains and losses related to these derivatives were recorded as AOCI.

The following table summarizes the effect of derivatives designated as cash flow hedging instruments and their classification within comprehensive loss for the three months ended March 31, 2020 and 2019:

Derivatives in Hedging Relationships	Amount of gain (loss) recognized in OCI on derivative (effective portion)	
	Three Months Ended March 31,	
	2020	2019
	(in thousands)	
Interest rate swaps	\$ (216)	\$ (196)

The following table summarizes the reclassifications out of accumulated other comprehensive loss for the three months ended March 31, 2020 and 2019:

Details about AOCI Components	Amount reclassified from AOCI into income (effective portion)		Location of amount reclassified from AOCI into income (effective portion)
	Three Months Ended March 31,		
	2020	2019	
	(in thousands)		
Interest rate swaps	\$ 72	\$ 17	Interest expense

As of March 31, 2020, \$0.4 million of deferred losses on derivative instruments accumulated in AOCI are expected to be reclassified to earnings during the next twelve months. Transactions and events expected to occur over the next twelve months that will necessitate reclassifying these derivatives' losses to earnings include the repricing of variable-rate debt.

#### 14. Fair Value Measurement

Fair value measurement is defined as the price that would be received to sell an asset or paid to transfer a liability in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants at the measurement date. A fair value hierarchy is established, which prioritizes the inputs used in measuring fair value into three broad levels as follows:

Level 1—Quoted prices in active markets for identical assets or liabilities.

Level 2—Inputs, other than the quoted prices in active markets, that are observable either directly or indirectly.

Level 3—Unobservable inputs based on the Company's own assumptions.

The following tables present the fair value hierarchy for those assets or liabilities measured at fair value on a recurring basis:

(in thousands)	Fair Value as of March 31, 2020			
	Level 1	Level 2	Level 3	Total
Assets (Liabilities):				
Interest rate swap agreements	\$ -	\$ (747)	\$ -	\$ (747)

(in thousands)	Fair Value as of December 31, 2019			
	Level 1	Level 2	Level 3	Total
Assets (Liabilities):				
Interest rate swap agreements	\$ -	\$ (603)	\$ -	\$ (603)

The Company uses the market approach technique to value its financial liabilities. The Company's financial assets and liabilities carried at fair value include derivative instruments used to hedge the Company's interest rate risks. The fair value of the Company's interest rate swap agreements was based on LIBOR yield curves at the reporting date.

## 15. Other Current Liabilities

	<b>March 31,</b>	<b>December 31,</b>
	<b>2020</b>	<b>2019</b>
	(in thousands)	
Compensation and payroll	\$ 2,896	\$ 2,554
Professional fees	567	395
Warranty costs	201	252
Local taxes, including VAT	91	345
Customer related costs	1,179	963
Interest	490	425
Other	2,025	1,157
<b>Total</b>	<b>\$ 7,449</b>	<b>\$ 6,091</b>

## 16. Revenues

The following table represents a disaggregation of revenue from contracts with customers. Revenue originating from the following geographic areas for the three months ended March 31, 2020 and 2019 consist of:

	<b>Three Months Ended March 31, 2020</b>				
	(in thousands)				
	United States	United Kingdom	Germany	Rest of the world	Total
Instruments, equipment, software and accessories	\$ 15,956	\$ 2,507	\$ 2,573	\$ 1,901	\$ 22,937
Service, maintenance and warranty contracts	575	204	39	16	834
<b>Total revenues</b>	<b>\$ 16,531</b>	<b>\$ 2,711</b>	<b>\$ 2,612</b>	<b>\$ 1,917</b>	<b>\$ 23,771</b>

	<b>Three Months Ended March 31, 2019</b>				
	(in thousands)				
	United States	United Kingdom	Germany	Rest of the world	Total
Instruments, equipment, software and accessories	\$ 18,671	\$ 3,129	\$ 2,913	\$ 2,044	\$ 26,757
Service, maintenance and warranty contracts	1,143	190	97	15	1,445
<b>Total revenues</b>	<b>\$ 19,814</b>	<b>\$ 3,319</b>	<b>\$ 3,010</b>	<b>\$ 2,059</b>	<b>\$ 28,202</b>

### *Deferred revenue*

The Company had approximately \$3.7 million in deferred revenue from service contracts and advance payments as of March 31, 2020 and 2019, respectively. Changes in deferred revenue from service contracts and advance payments from customers during the period were as follows:

	<b>Three Months Ended March 31, 2020</b>		
	(in thousands)		
	Service Contracts	Customer Advances	Total
Balance, beginning of period	\$ 1,587	\$ 2,362	\$ 3,949
Deferral of revenue	308	223	531
Recognition of deferred revenue	(499)	(322)	(821)
Effect of foreign currency translation	14	-	14
<b>Balance, end of period</b>	<b>\$ 1,410</b>	<b>\$ 2,263</b>	<b>\$ 3,673</b>

	<b>Three Months Ended March 31, 2019</b>		
	(in thousands)		
	<b>Service Contracts</b>	<b>Customer Advances</b>	<b>Total</b>
Balance, beginning of period	\$ 1,659	\$ 2,161	\$ 3,820
Deferral of revenue	845	111	956
Recognition of deferred revenue	(848)	(223)	(1,071)
Effect of foreign currency translation	10	-	10
Balance, end of period	<u>\$ 1,666</u>	<u>\$ 2,049</u>	<u>\$ 3,715</u>

#### **Allowance for Doubtful Accounts**

Allowance for doubtful accounts is based on the Company's assessment of the collectability of accounts receivable. A rollforward of allowance for doubtful accounts is as follows:

	<b>Three Months Ended March 31,</b>	
	<b>2020</b>	<b>2019</b>
	(in thousands)	
Balance, beginning of period	\$ 325	\$ 332
Bad debt expense	4	348
Charge-offs and other recoveries	(31)	(337)
Effect of foreign currency translation	(1)	(2)
Balance, end of period	<u>\$ 297</u>	<u>\$ 341</u>

#### **Concentrations**

No customer accounted for more than 10% of the revenues for the three months ended March 31, 2020, and 2019. At March 31, 2020, and 2019, no customer accounted for more than 10% of net accounts receivable.

#### **17. Income Tax**

Income tax expense was approximately \$0.1 million and \$0.6 million for the three months ended March 31, 2020 and 2019, respectively. The effective tax rate was (1.2) % for the three months ended March 31, 2020 compared with (32.1) % for the same period in 2019.

The difference between the Company's effective tax rates in 2020 and 2019 compared to the U.S. statutory tax rate of 21% is primarily due to the mix of 2020 forecasted income or losses in the U.S. and foreign tax jurisdictions, the impact of different tax rates in certain foreign jurisdictions and the impact of the inclusion of foreign income in U.S. taxable income under the GILTI (Global Intangible Low-Taxed Income) tax rules. Changes made by the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") to the limitation on interest expense deductions, including a retroactive change to the calendar year 2019 deduction, also impacted the 2020 effective tax rate.

## **18. Commitments and Contingent Liabilities**

On April 14, 2017, representatives for the estate of an individual plaintiff filed a wrongful death complaint with the Suffolk Superior Court, in the County of Suffolk, Massachusetts, against the Company and other defendants, including Biostage, Inc. (f/k/a Harvard Apparatus Regenerative Technology, Inc.), the Company's former subsidiary that was spun off in 2013, as well as another third party. The complaint seeks payment for an unspecified amount of damages and alleges that the plaintiff sustained terminal injuries allegedly caused by products, including synthetic trachea scaffolds and bioreactors, provided by certain of the named defendants and utilized in connection with surgeries performed by third parties in 2012 and 2013. The litigation is at an early stage and the Company intends to vigorously defend this case and has contacted its liability insurance carrier to request defense and indemnification of any losses incurred in connection with this lawsuit. While the Company believes that such claim is without merit, the Company is unable to predict the ultimate outcome of this litigation.

The Company is involved in various other claims and legal proceedings arising in the ordinary course of business. Based on the consultation with the Company's legal counsel, the ultimate disposition of such proceedings is not likely to have a material adverse effect on the Company's business, financial condition, results of operations or cash flows. The Company has not accrued for loss contingencies relating to any such matters because the Company believes that, although unfavorable outcomes in the proceedings are possible, they are not considered by management to be probable and reasonably estimable. If one or more of these matters are resolved in a manner adverse to the Company, the impact on its business, financial condition, results of operations and cash flows could be material.

## **19. Subsequent Event**

On April 18, 2020, the Company entered into a promissory note (the "Note") with PNC Bank, National Association (the "Lender"), which provides for a loan in the amount of \$6.1 million (the "PPP Loan") pursuant to the Paycheck Protection Program (the "PPP") of the CARES Act administered by the U.S. Small Business Administration (the "SBA").

On April 23, 2020, the SBA, in consultation with the U.S. Department of the Treasury issued guidance regarding consideration of alternate available sources of liquidity and its impact on qualification for PPP loans. The Company reassessed its business plans and liquidity available under its existing credit facility and determined it was appropriate to repay funds received under the PPP Loan. The PPP Loan was repaid in full on May 4, 2020.

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

### Forward-Looking Statements

*This Quarterly Report on Form 10-Q contains statements that are not statements of historical fact and are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 (the Exchange Act). The forward-looking statements are principally, but not exclusively, contained in “Item 2: Management’s Discussion and Analysis of Financial Condition and Results of Operations.” These 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. Forward-looking statements include, but are not limited to, statements about management’s confidence or expectations, and our plans, objectives, expectations and intentions that are not historical facts. In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “could,” “would,” “seek,” “expects,” “plans,” “aim,” “anticipates,” “believes,” “estimates,” “projects,” “predicts,” “intends,” “think,” “potential,” “objectives,” “optimistic,” “strategy,” “goals,” “sees,” “new,” “guidance,” “future,” “continue,” “drive,” “growth,” “long-term,” “projects,” “develop,” “possible,” “emerging,” “opportunity,” “pursue” and similar expressions intended to identify forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Factors that may cause our actual results to differ materially from those in the forward-looking statements include reductions in customers’ research budgets or government funding; domestic and global economic conditions; economic, political and other risks associated with international revenues and operations; recently enacted U.S. government tax reform; currency exchange rate fluctuations; economic and political conditions generally and those affecting pharmaceutical and biotechnology industries; the seasonal nature of purchasing in Europe; our failure to expand into foreign countries and international markets; our inability to manage our growth; competition from our competitors; our substantial debt and our ability to meet the financial covenants contained in our credit facility; failure or inadequacy of the our information technology structure; impact of difficulties implementing our enterprise resource planning systems; information security incidents or cybersecurity breaches; our failure to identify potential acquisition candidates and successfully close such acquisitions with favorable pricing or integrate acquired businesses or technologies; unanticipated costs relating to acquisitions and known and unknown costs arising in connection with our consolidation of business functions and any restructuring initiatives; failure of any banking institution in which we deposit our funds or its failure to provide services; our failure to raise or generate capital necessary to implement our acquisition and expansion strategy; the failure of Biostage to indemnify us for any liabilities associated with Biostage’s business; impact of any impairment of our goodwill or intangible assets; our ability to retain key personnel; failure or inadequacy of our information technology structure; rising commodity and precious metals costs; our ability to protect our intellectual property and operate without infringing on others’ intellectual property; exposure to product and other liability claims; global stock market volatility, currency exchange rate fluctuations and regulatory changes caused by the United Kingdom’s likely exit from the European Union; the impact of the COVID-19 pandemic on our business; plus other factors described under the heading “Item 1A. Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2019, or described in our other public filings. Our results may also be affected by factors of which we are not currently aware. We may not update these forward-looking statements, even though our situation may change in the future, unless we have obligations under the federal securities laws to update and disclose material developments related to previously disclosed information.*

Unless the context requires otherwise, references in this Quarterly Report to “we,” “us” and “our” refer to Harvard Bioscience, Inc., and its subsidiaries.

### Overview

Harvard Bioscience is a leading developer, manufacturer and seller of technologies, products and services that enable fundamental research, discovery, and pre-clinical testing for drug development. Our customers range from renowned academic institutions and government laboratories, to the world’s leading pharmaceutical, biotechnology and contract research organizations. With operations in North America and Europe, we sell through a combination of direct and distribution channels to customers around the world.

### Recent Developments

#### COVID-19

On March 11, 2020, the World Health Organization declared the outbreak of a novel coronavirus (COVID-19) as a pandemic. The COVID-19 pandemic has had a negative impact on our operations to date and the future impacts of the pandemic and any resulting economic impact are largely unknown and rapidly evolving. Since the COVID-19 outbreak in the United States, Europe and elsewhere, many customers, particularly academic research institutions, have been unable to maintain laboratory work which has, and will continue to, negatively impact our sales. Additionally, to ensure business continuity while maintaining a safe environment for employees aligned with guidance from government and health organizations, we transitioned the majority of our workforce to work-from-home while implementing social distancing requirements and other measures in factories to allow manufacturing and other personnel essential to production to continue work within our facilities. Business travel was significantly reduced during this period. While we have maintained operations under these conditions, these measures represent disruptions which can impact productivity including sales and marketing activities. Accordingly, these conditions in addition to the overall impact on the global economy has negatively impacted our results of operations and cash flows.

As a result of market and economic conditions, in accordance with the guidelines set forth in ASC 350 and ASC 360, we performed an analysis for potential interim impairment indicators of our intangible and other long-lived assets. As of March 31, 2020, we concluded there were no impairments of goodwill, other indefinite-lived intangibles, or long-lived assets that resulted from triggering events due to COVID-19. We will continue to monitor our assets for potential impairment through the remainder of 2020.

We currently believe revenue for the three months ending June 30, 2020 will decline significantly year over year due to the conditions noted and to begin recovering as academic research institutions reopen. In April 2020, we implemented a COVID-19 mitigation plan designed to reduce expenses by approximately \$3.0 million for the three months ending June 30, 2020. Actions taken to date include work hour and salary reductions, reductions-in-force and a realignment of our organizational structure to reduce management layers. These cost reductions are in addition to the significant restructuring actions we initiated in the fourth quarter of 2019 as discussed below. If business interruptions resulting from COVID-19 were to be prolonged or expanded in scope, our business, financial condition, results of operations and cash flows would be negatively impacted. We will continue to actively monitor this situation and will implement actions necessary to maintain business continuity. For a further discussion of potential risks to our business from the COVID-19 pandemic, see Item 1A “Risk Factors” in this quarterly reporting on Form 10-Q.

### ***Restructuring Plan***

On July 8, 2019, we announced the departure of the previous President and Chief Executive Officer and the appointment by the Board of Directors of James Green as President and Chief Executive Officer. In addition, on July 18, 2019 we announced the appointment of Michael Rossi as Chief Financial Officer.

Immediately after the appointment of Mr. Green and Mr. Rossi, we began a process to identify opportunities to improve profitability, increase cash flow and enhance internal capabilities to position the business for organic growth. As a result of this assessment, in September 2019 we announced a strategic action plan and financial targets for 2020 and 2021 (the “Restructuring Plan”). Key elements of this plan include:

- Capitalizing on the strong existing Harvard Bioscience and Data Science franchises and products;
- Adding new senior leadership with significant experience with turnarounds and driving growth and operational improvements within global, middle market life science manufacturing businesses;
- Consolidation of sub-scale operations and integration of existing functions and processes to drive scale and reduce fixed costs;
- Increasing effectiveness of sales and product management to deliver organic sales growth; and
- Improve cash flow and reduce debt.

The Restructuring Plan includes consolidation of our Connecticut manufacturing plant to our existing Massachusetts site, downsizing of operations in the United Kingdom and a reduction in force across the business amounting to a 10% overall reduction in headcount. A portion of the savings generated will be reinvested to drive profitable growth. We have continued to execute our Restructuring Plan during the COVID-19 pandemic, and expanded the scope of the restructuring by realigning our organizational structure to reduce management layers and accelerate our efforts to move to a leaner organization and operation as anticipated within our overall original plans.

We believe these strategic actions will significantly improve our profitability and position the business for improved organic revenue growth. We do not expect to pursue new acquisitions or incur significant capital expenditures until the operational and commercial improvement elements of the strategic action plan are achieved.

### **Components of Operating Income**

**Revenues.** We generate revenues by selling apparatus, instruments, devices, systems, software, services, and consumables through distributors, and our direct sales force, websites and catalogs. Our websites and catalogs serve as the primary sales tools for our various product lines. These product lines include both proprietary manufactured products and complementary products from various suppliers. Our reputation as a leading producer in many of our manufactured products creates traffic to our website, enables cross-selling and facilitates the introduction of new products. We have field sales teams in the U.S., Canada, the United Kingdom, Germany, France, Spain and China. In those regions where we do not have a direct sales team, we use distributors. Revenues from direct sales to end users represented approximately 64% and 68% of our revenues for the three months ended March 31, 2020 and March 31, 2019, respectively.

Our products consist of instruments, consumables, and systems that are made up of several individual products. Sales prices of these products range from under \$100 to over \$100,000, although are mostly priced in the range of \$5,000 to \$15,000. They are mainly scientific instruments like spectrophotometers and plate readers that analyze light to detect and quantify a wide range of molecular and cellular processes, or apparatus like gel electrophoresis units. Our products and services also include wireless monitors, data acquisition and analysis products and software, and ancillary services including post-contract customer support, training and installation.

We use distributors for both our catalog products and our higher priced products, as well as for sales in locations where we do not have subsidiaries or where we have existing distributors in place from acquired businesses. For the three months ended March 31, 2020 and March 31, 2019, approximately 36% and 32% of our total revenues, respectively, were derived from sales to distributors.

For the three months ended March 31, 2020 and 2019, approximately 83% and 84% of our revenues, respectively, were derived from products we manufacture and approximately 17% and 16%, respectively, were derived from complementary products we distribute in order to provide the researcher with a single source for all equipment needed to conduct a particular experiment..

For the three months ended March 31, 2020 and 2019, approximately 31% and 30% of our revenues, respectively, were derived from sales made by our non-United States operations.

*Cost of revenues.* Cost of revenues includes material, labor and manufacturing overhead costs, obsolescence charges, packaging costs, warranty costs, shipping costs and royalties. Our cost of revenues may vary over time, including based on the mix of products sold. We sell products that we manufacture and products that we purchase from third parties. The products that we purchase from third parties typically have a higher cost of revenues as a percent of revenues because the profit is effectively shared with the original manufacturer. We anticipate that our manufactured products will continue to have a lower cost of revenues as a percentage of revenues as compared with the cost of non-manufactured products for the foreseeable future. Additionally, our cost of revenues as a percent of revenues will vary based on mix of direct to end user sales and distributor sales, mix by product line and mix by geography.

*Sales and marketing expenses.* Sales and marketing expense consists primarily of salaries and related expenses for personnel in sales, marketing and customer support functions. We also incur costs for travel, trade shows, demonstration equipment, public relations and marketing materials, consisting primarily of the printing and distribution of our catalogs, supplements and the maintenance of our websites. We may from time to time expand our marketing efforts by employing additional technical marketing specialists in an effort to increase sales of selected categories of products. We may also from time to time expand our direct sales organizations in an effort to concentrate on key accounts or promote certain product lines.

*General and administrative expenses.* General and administrative expense consists primarily of salaries and other related costs for personnel in executive, finance, accounting, information technology and human resource functions. Other costs include professional fees for legal and accounting services, information technology infrastructure, facility costs, investor relations, insurance and provision for doubtful accounts.

*Research and development expenses.* Research and development expense consists primarily of salaries and related expenses for personnel and spending to develop and enhance our products. Other research and development expense includes fees for consultants and outside service providers, and material costs for prototype and test units. We expense research and development costs as incurred. Grants received from governmental entities related to research projects are accounted for as a reduction in research and development expense over the period of the project. We believe that investment in product development is a competitive necessity and plan to continue to make these investments to realize the potential of new technologies that we develop, license or acquire for existing markets.

**Selected Results of Operations**

In the table below, we provide an overview of selected operating metrics for the three months ended March 31, 2020 as compared to the three months ended March 31, 2019.

	<b>Three Months Ended March 31,</b>			
	<b>2020</b>	<b>% of revenue</b>	<b>2019</b>	<b>% of revenue</b>
	(dollars in thousands)			
Revenues	\$ 23,771		\$ 28,202	
Cost of revenues	10,789	45.4%	12,048	42.7%
Sales and marketing expenses	5,579	23.5%	6,306	22.4%
General and administrative expenses	6,759	28.4%	5,803	20.6%
Research and development expenses	2,490	10.5%	2,735	9.7%
Amortization of intangible assets	1,427	6.0%	1,430	5.1%
Interest expense	1,299	5.5%	1,405	5.0%
Income tax expense	55	0.2%	576	2.0%

**Revenues**

Revenues for the three months ended March 31, 2020 were \$23.8 million, a decrease of approximately \$4.4 million, or 16%, compared to revenues of \$28.2 million for the three months ended March 31, 2019. The decrease in revenue was primarily due to the impact of COVID-19 and in particular, lower sales to academic labs and other institutions that are temporarily closed as a result of the pandemic.

**Cost of revenues**

Cost of revenues were \$10.8 million for the three months ended March 31, 2020, a decrease of \$1.2 million, or 12% compared with \$12.0 million for the three months ended March 31, 2019. Gross margin as a percentage of revenues decreased to 54.6% for the three months ended March 31, 2020 compared with 57.3% for 2019. The decrease in gross margin was primarily due to reduced fixed cost absorption associated with the reduction in sales to academic labs and institutions.

**Sales and marketing expenses**

Sales and marketing expenses decreased \$0.7 million or 11.5% to \$5.6 million for the three months ended March 31, 2020 compared to \$6.3 million during the same period in 2019. The decrease in these expenses was primarily due to decreased employee-related expenses and variable sales costs and travel related costs as compared to the three months ended March 31, 2019.

**General and administrative expenses**

General and administrative expenses were \$6.8 million for the three months ended March 31, 2020, an increase of \$1.0 million, or 16.5%, compared with \$5.8 million for the three months ended March 31, 2019. The increase was primarily due to higher employee severance costs and increased stock-based compensation which were partially offset by lower bad debt expense, as compared to the three months ended March 31, 2019.

**Research and development expenses**

Research and development expenses were \$2.5 million for the three months ended March 31, 2020, a decrease of \$0.2 million, or 9.6%, compared with \$2.7 million for the three months ended March 31, 2019. The decrease was primarily due to lower employee compensation and related costs.

**Amortization of intangible assets**

Amortization of intangible asset expenses was \$1.4 million for the three months ended March 31, 2020 and did not change materially as compared to the three months ended March 31, 2019.

**Interest expense**

Interest expense was \$1.3 million for the three months ended March 31, 2020, a decrease of \$0.1 million, or 7.5%, compared with \$1.4 million for the three months ended March 31, 2019. The decrease was primarily due to reduced borrowings under our financing agreement.

**Income tax expense**

Income tax expense was approximately \$0.1 million and \$0.6 million for the three months ended March 31, 2020 and 2019, respectively. The effective tax rate was (1.2) % for the three months ended March 31, 2020 compared with (32.1) % for the same period in 2019. The difference between our effective tax rates in 2020 and 2019 compared to the U.S. statutory tax rate of 21% is primarily due to the mix of 2020 forecasted income or losses in the U.S. and foreign tax jurisdictions, the impact of different tax rates in certain foreign jurisdictions and the impact of the inclusion of foreign income in U.S. taxable income under the GILTI (Global Intangible Low-Taxed Income) tax rules. Changes made by the Coronavirus Aid, Relief, and Economic Security Act (the “CARES Act”) to the limitation on interest expense deductions, including a retroactive change to our calendar year 2019 deduction, also impacted the 2020 effective tax rate.

**Liquidity and Capital Resources**

Historically, we have financed our business through cash provided by operating activities, bank borrowings, and the issuance of common stock. Our liquidity requirements arise primarily from investing activities, including funding of acquisitions, and capital expenditures. On January 31, 2018, we and certain of our subsidiaries entered into a financing agreement with Cerberus Business Finance, LLC, as collateral agent and administrative agent for the lenders under the agreement (the “Financing Agreement”), which comprised of a \$64.0 million term loan which was used in connection with the acquisition of DSI in 2018 and a line of credit of up to \$25.0 million.

As of March 31, 2020, we held cash and cash equivalents of \$5.9 million, compared with \$8.3 million at December 31, 2019. As of March 31, 2020, and December 31, 2019, we had \$50.2 million and \$55.0 million of borrowings outstanding under our credit facility, respectively. Total debt, net of cash and cash equivalents was \$44.3 million at March 31, 2020, compared to \$46.7 million at December 31, 2019.

As of March 31, 2020, and December 31, 2019, cash and cash equivalents held by our foreign subsidiaries was \$2.2 million and \$3.5 million, respectively. As a result of the 2017 Tax Act, post-2017 dividends from qualifying Controlled Foreign Corporations are no longer taxed in the U.S. However, any dividends to the U.S. must still be assessed for withholding tax liability as well as income state tax liability. As a result of our assertion, we determined the potential state income tax liability related to available cash balances at our foreign subsidiaries would be immaterial.

**CONDENSED STATEMENTS OF CASH FLOWS**  
(Unaudited, in thousands)

	<b>Three Months Ended March 31,</b>	
	<b>2020</b>	<b>2019</b>
<b>Cash flows from operating activities:</b>		
Net loss	\$ (4,516)	\$ (2,370)
Other adjustments to operating cash flows	2,640	3,002
Changes in assets and liabilities	4,747	1,378
Net cash provided by operating activities	2,871	2,010
<b>Investing activities:</b>		
Additions to property, plant and equipment	\$ (241)	\$ (143)
Other investing activities	-	(9)
Net cash used in investing activities	(241)	(152)
<b>Financing activities:</b>		
Repayments of debt	\$ (4,829)	\$ (4,583)
Taxes paid on issuance on stock	(242)	(421)
Net cash used in financing activities	(5,071)	(5,004)
Effect of exchange rate changes on cash	(12)	3
Decrease in cash and cash equivalents	<u>\$ (2,453)</u>	<u>\$ (3,143)</u>

Our operating activities provided cash of \$2.8 million and \$2.0 million for the three months ended March 31, 2020 and 2019, respectively. The increase in net cash flow from operations was primarily due to reductions in working capital as a result of lower revenue volume due to COVID-19 as well as improved cash management disciplines.

Our investing activities used cash of \$0.2 million for each of the three months ended March 31, 2020 and 2019, primarily consisting of capital expenditures.

Our financing activities consisted of repayments under our term loan and tax payments related to net share settlements of equity awards. During the three months ended March 31, 2020, we repaid \$4.8 million of debt, which included an excess cash flow payment of \$4.0 million and a payment of \$0.8 million as required by the Financing Agreement, and ended the quarter with \$49.1 million of borrowings, net of deferred financing costs of \$1.1 million. During the three months ended March 31, 2019 we repaid \$4.6 million of debt and ended the quarter with \$56.3 million of borrowings, net of deferred financing costs of \$1.5 million.

### ***Borrowing Arrangements***

See Note 12 to the consolidated financial statements for a detailed discussion regarding our Financing Agreement and credit facilities.

As of March 31, 2020, we had borrowings of \$49.1 million, net of deferred financing costs of \$1.1 million and as of December 31, 2019, we had borrowings of \$53.8 million, net of deferred financing costs of \$1.2 million. We had available borrowing capacity under the revolving line of credit of \$4.6 million as of March 31, 2020. As of March 31, 2020, the weighted effective interest rate on our borrowings, net of the impact of our interest rate swap, was 8.4%.

We are compliant with all covenants under the Financing Agreement as of March 31, 2020.

Our covenants include a requirement to maintain a maximum leverage ratio among other financial and non-financial covenants, as defined in the Financing Agreement. The maximum permitted leverage is the ratio of total debt to consolidated EBITDA, as defined in the Financing Agreement, with a maximum ratio of 3.50 as of March 31, 2020, stepping down to 3.25 for the three months ended June 30, 2020 and all quarters thereafter. Due to the negative impact of COVID-19 on revenue and consolidated EBITDA, our leverage ratio has increased, and the gap between the leverage ratio and maximum permitted leverage has reduced.

Based on our current operating plans, including actions taken to mitigate the impact of COVID-19, we expect that our available cash, cash generated from current operations and debt capacity will be sufficient to finance current operations, any costs associated with restructuring activities and capital expenditures for at least the next 12 months. This assessment includes consideration of our best estimates of the impact of the COVID-19 pandemic on our financial results described above. If the negative impact of COVID-19 is more significant than anticipated it may impact our ability to comply with financial covenants in the future, which would require us to seek an amendment or waivers from our lenders, limit access to or require accelerated repayment of the existing credit facilities, or require us to pursue alternative financing. There are no assurances that any such alternative financing, if required, could be obtained at terms acceptable to us, or at all.

Our forecast of the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement that involves risks and uncertainties, and actual results could vary as a result of a number of factors.

### **Critical Accounting Policies**

The critical accounting policies underlying the accompanying unaudited consolidated financial statements are those set forth in Part II, Item 7 included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, which was filed with the SEC on March 16, 2020.

## Impact of Foreign Currencies

Our international operations in some instances operate in a natural hedge as we sell our products in many countries and a substantial portion of our revenues, costs and expenses are denominated in foreign currencies, especially the British pound, the euro, the Canadian dollar and the Swedish krona.

During the three months ended March 31, 2020, changes in foreign currency exchange rates resulted in an unfavorable translation effect on our consolidated revenues and on our consolidated net loss. Changes in foreign currency exchange rates resulted in an unfavorable effect on revenues of approximately \$0.2 million and a favorable effect on expenses of approximately \$0.1 million.

During the three months ended March 31, 2019, changes in foreign currency exchange rates resulted in an unfavorable translation effect on our consolidated revenues and on our consolidated net loss. Changes in foreign currency exchange rates resulted in an unfavorable effect on revenues of approximately \$0.8 million and a favorable effect on expenses of approximately \$0.6 million.

The gain associated with the translation of foreign equity into U.S. dollars included as a component of comprehensive loss during the three months ended March 31, 2020, was approximately \$1.6 million, compared to a gain of less than \$0.1 million for the three months ended March 31, 2019.

Exchange rate fluctuations recorded in other expense, net consist of approximately \$0.2 million of currency gains during the three months ended March 31, 2020 and \$0.2 million of currency losses during the same period in 2019.

## Recently Issued Accounting Pronouncements

For information on recent accounting pronouncements impacting our business, see "Recent Accounting Pronouncements" included under Note 2 to our Condensed Consolidated Financial Statements.

## Item 3. Quantitative and Qualitative Disclosures about Market Risk.

Most of our manufacturing and testing of products occurs in our facilities in the United States, Germany, Sweden and Spain. We sell our products globally through our distributors, direct sales force, websites and catalogs. As a result, our financial results are affected by factors such as changes in foreign currency exchange rates and weak economic conditions in foreign markets.

We collect amounts representing a substantial portion of our revenues and pay amounts representing a substantial portion of our operating expenses in foreign currencies. As a result, changes in currency exchange rates from time to time may affect our operating results.

We are exposed to market risk from changes in interest rates primarily through our financing activities. As of March 31, 2020, we had \$50.2 million outstanding under our Financing Agreement. We entered into an interest rate swap contract with PNC bank with an initial notional amount of \$36.0 million and a termination date of January 31, 2023 in order to hedge a portion of the risk of changes in the effective benchmark interest rate (LIBOR) associated with the Financing Agreement. The notional value of the interest rate swap contract as of March 31, 2020 was \$27.3 million. The swap contract converted specific variable-rate debt into fixed-rate debt and fixed the LIBOR rate associated with a portion of the term loan under the Financing Agreement at 2.72%.

As of March 31, 2020, the weighted effective interest rates, net of the impact of our interest rate swaps, on our Term Loan was 8.40%. Assuming no other changes which would affect the margin of the interest rate, the estimated effect of interest rate fluctuations on outstanding borrowings under our Financing Agreement as of March 31, 2020 is quantified and summarized as follows:

If compared to the rate as of March 31, 2020	Interest expense increase	
	(in thousands)	
Interest rates increase by 1%	\$	277
Interest rates increase by 2%	\$	554

**Item 4. Controls and Procedures.**

*Evaluation of Disclosure Controls and Procedures*

As of March 31, 2020, the end of the period covered by this report, our management, including our Chief Executive Officer and our Chief Financial Officer, reviewed and evaluated the effectiveness of our disclosure controls and procedures (as defined in Rule 13a-15(e) or 15d-15(e) of the Exchange Act). Based upon management's review and evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that, as of the end of the period covered by this Quarterly Report on Form 10-Q, our disclosure controls and procedures were effective to provide reasonable assurance that information required to be disclosed in our Exchange Act reports is recorded, processed, summarized and reported within the time periods specified by the SEC and is accumulated and communicated to management, including the Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

*Changes in Internal Control over Financial Reporting*

There were no changes in our internal control over financial reporting during the first quarter of fiscal 2020 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

*Limitations on Effectiveness of Controls and Procedures*

In designing and evaluating our controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and management is required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures. 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 within the Company have been detected.

## PART II. OTHER INFORMATION

### Item 1. Legal Proceedings.

The information included in Note 18 to the Condensed Consolidated Financial Statements (Unaudited) included in Part I, Item 1 of this quarterly report is incorporated herein by reference.

### Item 1A. Risk Factors.

You should carefully consider the factors discussed in Part I, “Item 1A. Risk Factors” in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, which could materially affect our business, financial position, or future results of operations. The risks described in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, are not the only risks we face. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially adversely affect our business, financial position, or future results of operations. The risk factors set forth below update, and should be read together with, the risk factors described in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019.

***The novel coronavirus (COVID-19) outbreak has significantly impacted worldwide economic conditions and has negatively impacted our business, financial condition and results of operations.***

Our operations expose us to risks associated with pandemics, epidemics or other public health emergencies, such as the recent outbreak of COVID-19. In March 2020, the World Health Organization categorized COVID-19 as a pandemic, and the President of the United States declared the COVID-19 outbreak a national emergency. The outbreak has resulted in governments around the world implementing increasingly stringent measures to help combat the spread of the virus, including quarantines, “shelter in place” and “stay at home” orders, travel restrictions, business curtailments, school closures, and other measures.

Many of our products and services are considered to be essential under federal, state and local guidelines. Accordingly, we currently continue to operate across our global footprint; however, given recent government regulations, many of our global facilities are not able to operate at optimal capacity. Notwithstanding our continued operations, COVID-19 has begun to have and may have further negative impacts on our operations, supply chain, transportation networks and customers, which may compress our margins, including as a result of preventative and precautionary measures that we, other businesses and governments are taking. The COVID-19 outbreak is a widespread public health crisis that is adversely affecting the economies and financial markets of many countries which may result in a period of regional, national, and global economic slowdown or regional, national, or global recessions. Any resulting economic downturn or slowdown could curtail or delay spending, adversely affect demand for our products and contribute to volatile supply and demand conditions affecting prices and volumes in the markets for our products, services and raw materials. The progression of this matter could also negatively impact our business or results of operations through the temporary closure of our operating locations or those of our customers or suppliers, disrupting raw materials to our factories and assembly plants, inhibiting the manufacture and assembly of products at our plants and distribution centers, delaying or preventing deliveries to our customers, and interruption of our ability to provide servicing and installations of equipment due to travel restrictions, among others.

In addition, the ability of our employees and employees of our suppliers and customers to work may be significantly impacted by individuals contracting or being exposed to COVID-19, or as a result of the control measures noted above, which may significantly hamper our production throughout the supply chain and constrict sales channels. Our customers may be directly impacted by business curtailments or weak market conditions and may not be willing or able to fulfill their contractual obligations or open letters of credit and may seek to modify or terminate their contracts with us. We may also experience delays in obtaining letters of credit or processing letter of credit payments due to the impacts of COVID-19 on foreign issuing and U.S. intermediary banks. In addition, the COVID-19 pandemic may create an increased risk of customer defaults or delays in payments. Our customers may terminate or amend their agreements for the purchase or service of our products due to bankruptcy, lack of liquidity, lack of funding, operational failures, or other reasons.

Further, while we currently do not anticipate issues under our credit agreements, events resulting from the effects of the COVID-19 pandemic may negatively impact our ability to comply with our financial covenants in the future, which could lead us to seek an amendment or waivers from our lenders, limit access to or require accelerated repayment of our existing credit facilities, or require us to pursue alternative financing. We have no assurance that any such alternative financing, if required, could be obtained at terms acceptable to us, or at all, including because of the effects of COVID-19 on financial markets at such time.

The extent to which COVID-19 may adversely impact our business depends on future developments, which are highly uncertain and unpredictable, including new information concerning the severity of the outbreak and the effectiveness of actions globally to contain or mitigate its effects. As we cannot predict the duration or scope of the COVID-19 pandemic, the estimated negative impact to our results of operations, cash flows and financial position cannot be reasonably estimated but might be material and last for an extended period of time.

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

There were no unregistered sales of equity securities during the period covered by this report.

**Item 3. Defaults Upon Senior Securities.**

None.

**Item 4. Mine Safety Disclosure.**

Not applicable.

**Item 5. Other Information.**

None.

**Item 6. Exhibits**

- [10.1](#) [Consulting Agreement, dated as of March 2, 2020, by and between Harvard Bioscience, Inc. and Chane Graziano \(previously filed as an exhibit to the Company's Current Report on Form 8-K \(filed March 6, 2020\) and incorporated by reference thereto\).](#)
- [10.2](#) [Form of Director Indemnification Agreement](#)
- [31.1](#) [Certification of Chief Financial Officer of Harvard Bioscience, Inc., pursuant to Rules 13a-14\(a\) and 15d-14\(a\), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.](#)
- [31.2](#) [Certification of Chief Executive Officer of Harvard Bioscience, Inc., pursuant to Rules 13a-14\(a\) and 15d-14\(a\), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.](#)
- [32.1\\*](#) [Certification of Chief Financial Officer of Harvard Bioscience, Inc., pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.](#)
- [32.2\\*](#) [Certification of Chief Executive Officer of Harvard Bioscience, Inc., pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.](#)
- 101.INS XBRL Instance Document
- 101.SCH XBRL Taxonomy Extension Schema Document
- 101.CAL XBRL Taxonomy Extension Calculation Linkbase Document
- 101.LAB XBRL Taxonomy Extension Labels Linkbase Document
- 101.PRE XBRL Taxonomy Extension Presentation Linkbase Document
- 101.DEF XBRL Taxonomy Extension Definition Linkbase Document

\* This certification shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, or otherwise subject to the liability of that section, nor shall it be deemed to be incorporated by reference into any filing under the Securities Act of 1933 or the Securities Exchange Act of 1934.

**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 undersigned thereunto duly authorized.

Date: May 8, 2020

HARVARD BIOSCIENCE, INC.

By:           /S/ JAMES GREEN            
**James Green**  
**Chief Executive Officer**

By:           /S/ MICHAEL A. ROSSI            
**Michael Rossi**  
**Chief Financial Officer**

## INDEMNIFICATION AGREEMENT

This Indemnification Agreement ("Agreement") is made and entered into this \_\_\_\_ day of \_\_\_\_\_ 20\_\_, by and between Harvard Bioscience, Inc., a Delaware corporation (the "Company," which term shall include, where appropriate, any Entity (as hereinafter defined) controlled directly or indirectly by the Company) and \_\_\_\_\_ ("Indemnitee");

WHEREAS, it is essential to the Company that it be able to retain and attract as directors the most capable persons available;

WHEREAS, increased corporate litigation has subjected directors and officers of public companies to litigation risks and expenses, and the limitations on the availability of directors and officers liability insurance have made it increasingly difficult for the Company to attract and retain such persons;

WHEREAS, the Company's Certificate of Incorporation, as amended from time to time, and By-laws, as amended from time to time, require it to indemnify its directors to the fullest extent permitted by law and permit it to make other indemnification arrangements and agreements;

WHEREAS, the Company desires to provide Indemnitee with specific contractual assurance of Indemnitee's rights to full indemnification against litigation risks and expenses (regardless, among other things, of any amendment to or revocation of any such Certificate of Incorporation or By-laws or any change in the ownership of the Company or the composition of its Board of Directors);

WHEREAS, the Company intends that this Agreement provide Indemnitee with greater protection than that which is provided by the Company's Certificate of Incorporation or Bylaws; and

WHEREAS, Indemnitee is relying upon the rights afforded under this Agreement in continuing as a director of the Company;

NOW, THEREFORE, in consideration of the promises and the covenants contained herein, the Company and Indemnitee do hereby covenant and agree as follows:

1. DEFINITIONS.

(a) "Corporate Status" describes the status of a person who is serving or has served (i) as a director or officer of the Company, (ii) in any capacity with respect to any employee benefit plan of the Company, or (iii) as a director, partner, trustee, officer, employee, or agent of any other Entity at the request of the Company. For purposes of subsection (iii) of this Section 1(a), if Indemnitee is serving or has served as a director, partner, trustee, officer, employee or agent of a Subsidiary or a predecessor corporation of the Company or of another enterprise at the request of such predecessor corporation, Indemnitee shall be deemed to be serving at the request of the Company.

(b) "Entity" shall mean any corporation, partnership, limited liability company, joint venture, trust, foundation, association, organization or other legal entity, whether domestic or foreign.

(c) "Expenses" shall mean all fees, costs and expenses incurred by Indemnitee in connection with any Proceeding (as defined below), including, without limitation, attorneys' fees, disbursements and retainers (including, without limitation, any such fees, disbursements and retainers incurred by Indemnitee pursuant to Sections 10 and 11(c) of this Agreement), fees and disbursements of expert witnesses, private investigators and professional advisors (including, without limitation, accountants and investment bankers), court costs, transcript costs, costs and expenses of being a witness, fees of experts, travel expenses, duplicating, printing and binding costs, telephone and fax transmission charges, postage, delivery services, secretarial services, and other disbursements and expenses.

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(d) “Indemnifiable Expenses,” “Indemnifiable Liabilities” and “Indemnifiable Amounts” shall have the meanings ascribed to those terms in Section 3(a) below.

(e) “Liabilities” shall mean judgments, damages, liabilities, losses, penalties, excise taxes, any federal, state, local or foreign taxes imposed as a result of the actual or deemed receipt of any payments under this Agreement, fines and amounts paid in settlement.

(f) “Proceeding” shall mean any threatened, pending or completed claim, action, suit, arbitration, alternate dispute resolution process, investigation, inquiry, administrative hearing, appeal, or any other proceeding, whether civil, criminal, administrative, arbitral or investigative, whether formal or informal, including a proceeding initiated by Indemnitee pursuant to Section 10 of this Agreement to enforce Indemnitee’s rights hereunder.

(g) “Recovery Proceeding” shall have the meanings ascribed to such term in Section 6 below.

(h) “Subsidiary” shall mean any corporation, partnership, limited liability company, joint venture, trust or other Entity of which the Company owns (either directly or through or together with another Subsidiary of the Company) either (i) a general partner, managing member or other similar interest or (ii) (A) 50% or more of the voting power of the voting capital equity interests of such corporation, partnership, limited liability company, joint venture or other Entity, or (B) 50% or more of the outstanding voting capital stock or other voting equity interests of such corporation, partnership, limited liability company, joint venture or other Entity.

2. SERVICES OF INDEMNITEE. In consideration of the Company’s covenants and commitments hereunder, Indemnitee agrees to serve or continue to serve as a director of the Company. However, this Agreement shall not impose any obligation on Indemnitee or the Company to continue Indemnitee’s service to the Company beyond any period otherwise required by law or by other agreements or commitments of the parties, if any.

3. AGREEMENT TO INDEMNIFY. Subject to the exceptions contained in Section 4(a) and 4(b) below, if Indemnitee was or is a party or is threatened to be made a party to any Proceeding by reason of Indemnitee’s Corporate Status (whether relating to events or occurrences that took place either prior to or after the earliest point in time the Indemnitee had such Corporate Status), Indemnitee shall be indemnified by the Company against all Expenses and Liabilities incurred or paid by Indemnitee in connection with such Proceeding (referred to herein as “Indemnifiable Expenses” and “Indemnifiable Liabilities,” respectively, and collectively as “Indemnifiable Amounts”).

4. EXCEPTIONS TO INDEMNIFICATION.

Indemnitee shall be entitled to indemnification under Section 3 in all circumstances, other than the following:

(a) If indemnification is requested under Section 3 and it has been adjudicated finally by a court of competent jurisdiction that, in connection with the subject of the Proceeding out of which the claim for indemnification has arisen, Indemnitee failed to act (i) in good faith and (ii) in a manner Indemnitee reasonably believed to be in or not opposed to the best interests of the Company, or, with respect to any criminal action or proceeding, Indemnitee had reasonable cause to believe that Indemnitee's conduct was unlawful, Indemnitee shall not be entitled to payment of Indemnifiable Amounts hereunder.

(b) If indemnification is requested under Section 3 in connection with any claim against the Indemnitee for an accounting of profits arising from the purchase or sale by Indemnitee of securities of the Company in violation of Section 16(b) of the Securities and Exchange Act of 1934, as amended, or any similar successor statute or similar provisions of state statutory law or common law.

(c) Indemnitee shall not be entitled to indemnification pursuant to this Agreement in connection with any Proceeding initiated by Indemnitee against the Company or any director or officer of the Company unless (i) the Company has joined in or the Board has consented to the initiation of such Proceeding; or (ii) the Proceeding was initiated by Indemnitee pursuant to Section 10 of this Agreement to enforce Indemnitee's rights hereunder, or (iii) the Company provides the indemnification, in its sole discretion, pursuant to the powers vested in the Company under applicable law.

5. PROCEDURE FOR APPLICATION AND PAYMENT OF INDEMNIFIABLE AMOUNTS. Indemnitee shall submit to the Company a written request specifying the Indemnifiable Amounts for which Indemnitee seeks payment under Section 3 of this Agreement and the basis for the claim. Subject to Section 4, the Company shall pay such Indemnifiable Amounts to Indemnitee within sixty (60) calendar days of receipt of the request. At the request of the Company, Indemnitee shall furnish such documentation and information as are reasonably available to Indemnitee and necessary to establish that Indemnitee is entitled to indemnification hereunder.

6. INDEMNIFICATION FOR EXPENSES OF A PARTY WHO IS WHOLLY OR PARTLY SUCCESSFUL. Notwithstanding any other provision of this Agreement, and without limiting any such provision, to the extent that Indemnitee is, by reason of Indemnitee's Corporate Status, a party to and is successful, on the merits or otherwise, in (i) any Proceeding and/or (ii) a proceeding initiated by Indemnitee for recovery under director's liability insurance policies maintained by the Company ("Recovery Proceeding"), Indemnitee shall be indemnified against all Expenses reasonably incurred by Indemnitee or on Indemnitee's behalf in connection therewith. If Indemnitee is not wholly successful in such Proceeding or Recovery Proceeding but is successful, on the merits or otherwise, as to one or more but less than all claims, issues or matters in such Proceeding or Recovery Proceeding, the Company shall indemnify Indemnitee against all Expenses reasonably incurred by Indemnitee or on Indemnitee's behalf in connection with each successfully resolved claim, issue or matter. For purposes of this Agreement, the termination of any claim, issue or matter in such a Proceeding or Recovery Proceeding by dismissal, with or without prejudice, shall be deemed to be a successful result as to such claim, issue or matter.

7. EFFECT OF CERTAIN RESOLUTIONS. Neither the settlement nor termination of any Proceeding nor the failure of the Company to award indemnification or to determine that indemnification is payable shall create an adverse presumption that Indemnitee is not entitled to indemnification hereunder. In addition, the termination of any proceeding by judgment, order, settlement, conviction, or upon a plea of nolo contendere or its equivalent shall not create a presumption that Indemnitee did not act in good faith and in a manner which Indemnitee reasonably believed to be in or not opposed to the best interests of the Company or, with respect to any criminal action or proceeding, had reasonable cause to believe that Indemnitee's action was unlawful.

8. AGREEMENT TO ADVANCE EXPENSES; UNDERTAKING. The Company shall advance all Expenses incurred by or on behalf of Indemnitee in connection with (i) any Proceeding, including a Proceeding by or in the right of the Company, in which Indemnitee is involved by reason of such Indemnitee's Corporate Status, and/or (ii) a Recovery Proceeding, within ten (10) days after the receipt by the Company of a written statement from Indemnitee requesting such advance or advances from time to time, whether prior to or after final disposition of such Proceeding or Recovery Proceeding. All advances shall be unsecured and interest free. Indemnitee hereby undertakes to repay the amount of Expenses paid to Indemnitee if it is finally determined by a court of competent jurisdiction that Indemnitee is not entitled under this Agreement, the Bylaws, the Certificate of Incorporation, applicable law or otherwise, to indemnification with respect to such Expenses. This undertaking is an unlimited general obligation of Indemnitee. This Section 8 shall not apply to any claim made by Indemnitee which is excluded pursuant to Section 4.

9. PROCEDURE FOR ADVANCE PAYMENT OF EXPENSES. Indemnitee shall submit to the Company a written request specifying the Indemnifiable Expenses for which Indemnitee seeks an advancement under Section 8 of this Agreement, together with documentation evidencing that Indemnitee has incurred such Indemnifiable Expenses. Payment of Indemnifiable Expenses under Section 8 shall be made no later than ten (10) calendar days after the Company's receipt of such request.

10. REMEDIES OF INDEMNITEE.

(a) RIGHT TO PETITION COURT. In the event that Indemnitee makes a request for payment of Indemnifiable Amounts under Sections 3 and 5 above or a request for an advancement of Indemnifiable Expenses under Sections 8 and 9 above and the Company fails to make such payment or advancement in a timely manner pursuant to the terms of this Agreement, Indemnitee may petition the Court of Chancery to enforce the Company's obligations under this Agreement.

(b) BURDEN OF PROOF. In any judicial proceeding brought under Section 10(a) above, the Company shall have the burden of proving that Indemnitee is not entitled to payment of Indemnifiable Amounts hereunder.

(c) EXPENSES. If Indemnitee is successful in whole or in part in connection with any action brought by Indemnitee under Section 10(a) above, to the extent not already advanced in accordance with Section 8 above in relation to such enforcement action, the Company agrees to reimburse Indemnitee in full for any Expenses incurred by Indemnitee in connection with investigating, preparing for, litigating, defending or settling any such action, or in connection with any claim or counterclaim brought by the Company in connection therewith.

(d) **VALIDITY OF AGREEMENT.** The Company shall be precluded from asserting in any Proceeding, including, without limitation, an action under Section 10(a) above, that the provisions of this Agreement are not valid, binding and enforceable or that there is insufficient consideration for this Agreement and shall stipulate in court that the Company is bound by all the provisions of this Agreement.

(e) **FAILURE TO ACT NOT A DEFENSE.** The failure of the Company (including its Board of Directors or any committee thereof, independent legal counsel, or stockholders) to make a determination concerning the permissibility of the payment of Indemnifiable Amounts or the advancement of Indemnifiable Expenses under this Agreement shall not be a defense in any action brought under Section 10(a) above, and shall not create a presumption that such payment or advancement is not permissible.

11. **DEFENSE OF THE UNDERLYING PROCEEDING.**

(a) **NOTICE BY INDEMNITEE.** Indemnitee agrees to notify the Company promptly upon being served with any summons, citation, subpoena, complaint, indictment, information, or other document relating to any Proceeding which may result in the payment of Indemnifiable Amounts or the advancement of Indemnifiable Expenses hereunder; provided, however, that the failure to give any such notice shall not disqualify Indemnitee from the right to receive payments of Indemnifiable Amounts or advancements of Indemnifiable Expenses unless the Company's ability to defend in such Proceeding is materially and adversely prejudiced thereby.

(b) **DEFENSE BY COMPANY.** Subject to the provisions of the last sentence of this Section 11(b) and of Section 11(c) below, the Company shall have the right to defend Indemnitee in any Proceeding which may give rise to the payment of Indemnifiable Amounts hereunder; provided, however that the Company shall notify Indemnitee of any such decision to defend within ten (10) days of receipt of notice of any such Proceeding under Section 11(a) above. The Company shall not, without the prior written consent of Indemnitee, consent to the entry of any judgment against Indemnitee or enter into any settlement or compromise which (i) includes an admission of fault of Indemnitee or (ii) does not include, as an unconditional term thereof, the full release of Indemnitee from all liability in respect of such Proceeding, which release shall be in form and substance reasonably satisfactory to Indemnitee. This Section 11(b) shall not apply to a Proceeding brought by Indemnitee under Section 10(a), above, or pursuant to Section 20, below.

(c) **INDEMNITEE'S RIGHT TO COUNSEL.** Notwithstanding the provisions of Section 11(b) above, if in a Proceeding to which Indemnitee is a party by reason of Indemnitee's Corporate Status, Indemnitee reasonably concludes that it may have separate defenses or counterclaims to assert with respect to any issue which may not be consistent with the position of other defendants in such Proceeding, or if the Company fails to assume the defense of such proceeding in a timely manner, Indemnitee shall be entitled to be represented by separate legal counsel of Indemnitee's choice at the expense of the Company. In addition, if the Company fails to comply with any of its obligations under this Agreement or in the event that the Company or any other person takes any action to declare this Agreement void or unenforceable, or institutes any action, suit or proceeding to deny or to recover from Indemnitee the benefits intended to be provided to Indemnitee hereunder, Indemnitee shall have the right to retain counsel of Indemnitee's choice, at the expense of the Company, to represent Indemnitee in connection with any such matter.

12. REPRESENTATIONS AND WARRANTIES OF THE COMPANY. The Company hereby represents and warrants to Indemnitee as follows:

(a) AUTHORITY. The Company has all necessary power and authority to enter into, and be bound by the terms of, this Agreement, and the execution, delivery and performance of the undertakings contemplated by this Agreement have been duly authorized by the Company.

(b) ENFORCEABILITY. This Agreement, when executed and delivered by the Company in accordance with the provisions hereof, shall be a legal, valid and binding obligation of the Company, enforceable against the Company in accordance with its terms, except as such enforceability may be limited by applicable bankruptcy, insolvency, moratorium, reorganization or similar laws affecting the enforcement of creditors' rights generally.

13. INSURANCE. The Company shall use commercially reasonable efforts (taking into account the scope and amount of coverage available relative to the cost thereof) to continue to maintain in effect policies of directors' liability insurance with a reputable insurance company providing the Indemnitee with coverage for losses from wrongful acts, and to ensure the Company's performance of its indemnification obligations under this Agreement. In all policies of director and officer liability insurance, Indemnitee shall be named as an insured in such a manner as to provide Indemnitee the same rights and benefits as are accorded to the most favorably insured of the Company's officers and directors. The Company shall provide to Indemnitee copies of all directors' liability insurance applications, binders, policies, declarations, endorsements and other related materials upon request, and shall promptly notify Indemnitee of any good faith determination not to provide such coverage.

14. CONTRIBUTION. To the fullest extent permissible under applicable law, if the indemnification provided for in this Agreement is unavailable to Indemnitee for any reason whatsoever, the Company, in lieu of indemnifying Indemnitee, shall contribute to the amount incurred by Indemnitee, whether for judgments, fines, penalties, excise taxes, amounts paid or to be paid in settlement and/or for Expenses, in connection with any Proceeding in such proportion as is deemed fair and reasonable in light of all of the circumstances in order to reflect (i) the relative benefits received by the Company and Indemnitee in connection with the event(s) and/or transaction(s) giving rise to such Proceeding; and/or (ii) the relative fault of the Company (and its directors, officers, employees and agents) and Indemnitee in connection with such event(s) and/or transactions.

15. CONTRACT RIGHTS NOT EXCLUSIVE. The rights to payment of Indemnifiable Amounts and advancement of Indemnifiable Expenses provided by this Agreement shall be in addition to, but not exclusive of, any other rights which Indemnitee may have at any time under applicable law, the Company's By-laws or Certificate of Incorporation, or any other agreement, vote of stockholders or directors (or a committee of directors), or otherwise, both as to action in Indemnitee's official capacity and as to action in any other capacity as a result of Indemnitee's serving as a director of the Company.

16. SUCCESSORS. This Agreement shall be (a) binding upon all successors and assigns of the Company (including any transferee of all or a substantial portion of the business, stock and/or assets of the Company and any direct or indirect successor by merger or consolidation or otherwise by operation of law) and (b) binding on and shall inure to the benefit of the heirs, personal representatives, executors and administrators of Indemnitee. This Agreement shall continue for the benefit of Indemnitee and such heirs, personal representatives, executors and administrators after Indemnitee has ceased to have Corporate Status. The Company shall require and cause any successor (whether direct or indirect by purchase, merger, consolidation, or otherwise) to all, substantially all, or a substantial part, of the business and/or assets of the Company, by written agreement in form and substance satisfactory to Indemnitee, expressly to assume and agree to perform this Agreement in the same manner and to the same extent that the Company would be required to perform if no such succession had taken place.

17. SUBROGATION. In the event of any payment of Indemnifiable Amounts under this Agreement, the Company shall be subrogated to the extent of such payment to all of the rights of contribution or recovery of Indemnatee against other persons, and Indemnatee shall take, at the request of the Company, all reasonable action necessary to secure such rights, including the execution of such documents as are necessary to enable the Company to bring suit to enforce such rights.

18. CHANGE IN LAW. To the extent that a change in Delaware law (whether by statute or judicial decision) shall permit broader indemnification or advancement of expenses than is provided under the terms of the by-laws of the Company and this Agreement, Indemnatee shall be entitled to such broader indemnification and advancements, and this Agreement shall be deemed to be amended to such extent.

19. SEVERABILITY. Whenever possible, each provision of this Agreement shall be interpreted in such a manner as to be effective and valid under applicable law, but if any provision of this Agreement, or any clause thereof, shall be determined by a court of competent jurisdiction to be illegal, invalid or unenforceable, in whole or in part, such provision or clause shall be limited or modified in its application to the minimum extent necessary to make such provision or clause valid, legal and enforceable, and the remaining provisions and clauses of this Agreement shall remain fully enforceable and binding on the parties.

20. INDEMNITEE AS PLAINTIFF. Except as provided in Section 10(c) of this Agreement and in the next sentence, Indemnatee shall not be entitled to payment of Indemnifiable Amounts or advancement of Indemnifiable Expenses with respect to any Proceeding brought by Indemnatee against the Company, any Entity which it controls, any director or officer thereof, or any third party, unless the Board of Directors of the Company has consented to the initiation of such Proceeding. This Section shall not apply to counterclaims or affirmative defenses asserted by Indemnatee in an action brought against Indemnatee.

21. MODIFICATIONS AND WAIVER. Except as provided in Section 18 above with respect to changes in Delaware law which broaden the right of Indemnatee to be indemnified by the Company, no supplement, modification or amendment of this Agreement shall be binding unless executed in writing by each of the parties hereto. No waiver of any of the provisions of this Agreement shall be deemed or shall constitute a waiver of any other provisions of this Agreement (whether or not similar), nor shall such waiver constitute a continuing waiver.

22. GENERAL NOTICES. All notices, requests, demands and other communications hereunder shall be in writing and shall be deemed to have been duly given (a) when delivered by hand, (b) when transmitted by facsimile and receipt is acknowledged, or (c) if mailed by certified or registered mail with postage prepaid, on the third business day after the date on which it is so mailed:

(i) If to Indemnatee, to:

[Name]  
[Address]  
Facsimile: [\_\_\_\_\_]

(ii) If to the Company, to:

Harvard Bioscience, Inc.  
84 October Hill Road  
Holliston, Massachusetts 01746-1371  
Facsimile: (508) 429-8478  
Attention: President

With a copy to:

Burns & Levinson LLP  
125 High Street  
Boston, MA 02110  
Facsimile: (617) 345-3299  
Attention: Josef B. Volman, Esq.

or to such other address as may have been furnished in the same manner by any party to the others.

23. GOVERNING LAW; CONSENT TO JURISDICTION; SERVICE OF PROCESS. This Agreement shall be governed by and construed in accordance with the laws of the State of Delaware without regard to its rules of conflict of laws. Each of the Company and the Indemnitee hereby irrevocably and unconditionally consents to submit to the exclusive jurisdiction of the Court of Chancery of the State of Delaware and the courts of the United States of America located in the State of Delaware (the "Delaware Courts") for any litigation arising out of or relating to this Agreement and the transactions contemplated hereby (and agrees not to commence any litigation relating thereto except in such courts), waives any objection to the laying of venue of any such litigation in the Delaware Courts and agrees not to plead or claim in any Delaware Court that such litigation brought therein has been brought in an inconvenient forum. Each of the parties hereto agrees, (a) to the extent such party is not otherwise subject to service of process in the State of Delaware, to appoint and maintain an agent in the State of Delaware as such party's agent for acceptance of legal process, and (b) that service of process may also be made on such party by prepaid certified mail with a proof of mailing receipt validated by the United States Postal Service constituting evidence of valid service. Service made pursuant to (a) or (b) above shall have the same legal force and effect as if served upon such party personally within the State of Delaware. For purposes of implementing the parties' agreement to appoint and maintain an agent for service of process in the State of Delaware, each such party does hereby appoint The Corporation Trust Company, as such agent and each such party hereby agrees to complete all actions necessary for such appointment.

24. COUNTERPARTS. This Agreement may be executed in one or more counterparts, each of which shall for all purposes be deemed an original, but all of which together shall constitute one and the same document.

25. AMENDMENT AND RESTATEMENT; OTHER AGREEMENTS. Any other prior or contemporaneous oral or written understandings or agreements with respect to the matters covered hereby are superseded by this Agreement, and this Agreement shall be deemed an amendment and restatement of any prior indemnification agreements with the Company and the Indemnitee with respect to matters covered hereby, provided that this Agreement is a supplement to and in furtherance of the Certificate of Incorporation or By-laws of the Company and applicable law, and shall not be deemed a substitute therefor, nor to diminish or abrogate any rights of Indemnitee thereunder.

[Remainder of page intentionally left blank.]

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

HARVARD BIOSCIENCE, INC.

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

INDEMNITEE

\_\_\_\_\_  
Name: \_\_\_\_\_

**Certification**

I, Michael A. Rossi, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Harvard Bioscience, Inc.
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)), 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(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: May 8, 2020

/s/ MICHAEL A. ROSSI

Michael A. Rossi  
Chief Financial Officer

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**Certification**

I, James Green, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Harvard Bioscience, Inc.
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)), 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(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: May 8, 2020

/s/ JAMES GREEN

James Green  
Chief Executive Officer

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## CERTIFICATION OF PERIODIC FINANCIAL REPORT

## PURSUANT TO 18 U.S.C. SECTION 1350

The undersigned officer of Harvard Bioscience, Inc. (the Company) hereby certifies to his knowledge that the Company's Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2020 (the Report) to which this certification is being furnished as an exhibit, as filed with the Securities and Exchange Commission on the date hereof, fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended (the Exchange Act), and that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company. This certification is provided solely pursuant to 18 U.S.C. Section 1350 and Item 601(b)(32) of Regulation S-K (Item 601(b)(32)) promulgated under the Securities Act of 1933, as amended (the Securities Act), and the Exchange Act. In accordance with clause (ii) of Item 601(b)(32), this certification (A) shall not be deemed "filed" for purposes of Section 18 of the Exchange Act, or otherwise subject to the liability of that section, and (B) shall 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 Company specifically incorporates it by reference.

Date: May 8, 2020

/s/ MICHAEL A. ROSSI

Name: Michael A. Rossi  
Title: Chief Financial Officer

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## CERTIFICATION OF PERIODIC FINANCIAL REPORT

## PURSUANT TO 18 U.S.C. SECTION 1350

The undersigned officer of Harvard Bioscience, Inc. (the Company) hereby certifies to his knowledge that the Company's Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2020 (the Report) to which this certification is being furnished as an exhibit, as filed with the Securities and Exchange Commission on the date hereof, fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended (the Exchange Act), and that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company. This certification is provided solely pursuant to 18 U.S.C. Section 1350 and Item 601(b)(32) of Regulation S-K (Item 601(b)(32)) promulgated under the Securities Act of 1933, as amended (the Securities Act), and the Exchange Act. In accordance with clause (ii) of Item 601(b)(32), this certification (A) shall not be deemed "filed" for purposes of Section 18 of the Exchange Act, or otherwise subject to the liability of that section, and (B) shall 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 Company specifically incorporates it by reference.

Date: May 8, 2020

/s/ JAMES GREEN

Name: James Green  
Title: Chief Executive Officer

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