

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 September 30, 2024

☐ 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)

**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

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 ☒

As of October 31, 2024, there were 43,616,621 shares of the registrant's common stock issued and outstanding.

HARVARD BIOSCIENCE, INC.

FORM 10-Q

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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)

	September 30, 2024	December 31, 2023
<b>Assets</b>		
Current assets:		
Cash and cash equivalents	\$ 4,569	\$ 4,283
Accounts receivable, net	12,831	16,099
Inventories	25,990	24,716
Other current assets	3,401	3,940
Total current assets	46,791	49,038
Property, plant and equipment, net	5,221	3,981
Operating lease right-of-use assets	6,523	4,773
Goodwill	57,439	57,065
Intangible assets, net	12,341	16,036
Other long-term assets	2,924	6,473
Total assets	<u>\$ 131,239</u>	<u>\$ 137,366</u>
<b>Liabilities and Stockholders' Equity</b>		
Current liabilities:		
Current portion of long-term debt	\$ 3,606	\$ 5,859
Accounts payable	5,283	5,554
Contract liabilities	3,689	4,508
Other current liabilities	10,173	10,621
Total current liabilities	22,751	26,542
Long-term debt, net	34,252	30,704
Deferred tax liability	707	776
Operating lease liabilities	6,706	4,794
Other long-term liabilities	1,501	1,476
Total liabilities	65,917	64,292
Commitments and contingencies - Note 13		
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: 43,616,621 shares issued and outstanding at September 30, 2024; 43,394,509 shares issued and outstanding at December 31, 2023	436	434
Additional paid-in-capital	235,973	232,435
Accumulated deficit	( 158,028)	( 145,605)
Accumulated other comprehensive loss	( 13,059)	( 14,190)
Total stockholders' equity	65,322	73,074
Total liabilities and stockholders' equity	<u>\$ 131,239</u>	<u>\$ 137,366</u>

See accompanying notes to condensed consolidated financial statements.

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

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2024	2023	2024	2023
Revenues	\$ 21,970	\$ 25,363	\$ 69,579	\$ 84,097
Cost of revenues	9,205	10,636	28,824	34,351
Gross profit	12,765	14,727	40,755	49,746
Sales and marketing expenses	5,518	5,732	16,817	17,888
General and administrative expenses	5,041	5,807	16,690	17,494
Research and development expenses	2,567	2,760	8,078	8,614
Amortization of intangible assets	1,334	1,361	3,998	4,138
Other operating expenses - Note 1	179	-	1,394	-
Total operating expenses	14,639	15,660	46,977	48,134
Operating (loss) income	( 1,874)	( 933)	( 6,222)	1,612
Other income (expense):				
Interest expense	( 856)	( 882)	( 2,356)	( 2,797)
Loss on pension settlement - Note 16	( 1,243)	-	( 1,243)	-
Gain (loss) on equity securities - Note 6	-	1,208	( 1,593)	( 373)
Other (expense) income, net	( 518)	45	( 841)	105
Total other (expense) income	( 2,617)	371	( 6,033)	( 3,065)
Loss before income taxes	( 4,491)	( 562)	( 12,255)	( 1,453)
Income tax expense	311	677	168	144
Net loss	\$ ( 4,802)	\$ ( 1,239)	\$ ( 12,423)	\$ ( 1,597)
Loss per share:				
Basic and diluted	\$ ( 0.11)	\$ ( 0.03)	\$ ( 0.29)	\$ ( 0.04)
Weighted-average common shares:				
Basic and diluted	43,614	42,688	43,499	42,345

See accompanying notes to condensed consolidated financial statements.

**HARVARD BIOSCIENCE, INC.**  
**CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS**  
(Unaudited, in thousands)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2024	2023	2024	2023
Net loss	\$ (4,802)	\$ (1,239)	\$ (12,423)	\$ (1,597)
Other comprehensive income (loss), net of tax:				
Foreign currency translation adjustments	1,596	(1,343)	685	(354)
Defined benefit pension plans	470	-	470	-
Derivative instruments	(257)	117	(24)	126
Other comprehensive income (loss)	1,809	(1,226)	1,131	(228)
Comprehensive loss	<u>\$ (2,993)</u>	<u>\$ (2,465)</u>	<u>\$ (11,292)</u>	<u>\$ (1,825)</u>

See accompanying notes to condensed 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	Total Stockholders' Equity
<b>Balance at June 30, 2024</b>	43,611	\$ 436	\$ 234,905	\$ ( 153,226)	\$ ( 14,868)	\$ 67,247
Stock option exercises	6	-	15	-	-	15
Stock-based compensation	-	-	1,053	-	-	1,053
Net loss	-	-	-	( 4,802)	-	( 4,802)
Other comprehensive income	-	-	-	-	1,809	1,809
<b>Balance at September 30, 2024</b>	<u>43,617</u>	<u>\$ 436</u>	<u>\$ 235,973</u>	<u>\$ ( 158,028)</u>	<u>\$ ( 13,059)</u>	<u>\$ 65,322</u>

	Number of Shares Issued	Common Stock	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
<b>Balance at June 30, 2023</b>	42,688	\$ 457	\$ 231,533	\$ ( 142,548)	\$ ( 14,054)	\$ 75,388
Stock-based compensation	-	-	1,363	-	-	1,363
Net loss	-	-	-	( 1,239)	-	( 1,239)
Other comprehensive loss	-	-	-	-	( 1,226)	( 1,226)
<b>Balance at September 30, 2023</b>	<u>42,688</u>	<u>\$ 457</u>	<u>\$ 232,896</u>	<u>\$ ( 143,787)</u>	<u>\$ ( 15,280)</u>	<u>\$ 74,286</u>

	Number of Shares Issued	Common Stock	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
<b>Balance at December 31, 2023</b>	43,395	\$ 434	\$ 232,435	\$ ( 145,605)	\$ ( 14,190)	\$ 73,074
Stock option exercises	14	-	43	-	-	43
Stock purchase plan	72	1	175	-	-	176
Vesting of restricted stock units	150	1	-	-	-	1
Shares withheld for taxes	( 14)	-	( 59)	-	-	( 59)
Stock-based compensation	-	-	3,379	-	-	3,379
Net loss	-	-	-	( 12,423)	-	( 12,423)
Other comprehensive income	-	-	-	-	1,131	1,131
<b>Balance at September 30, 2024</b>	<u>43,617</u>	<u>\$ 436</u>	<u>\$ 235,973</u>	<u>\$ ( 158,028)</u>	<u>\$ ( 13,059)</u>	<u>\$ 65,322</u>

	Number of Shares Issued	Common Stock	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
<b>Balance at December 31, 2022</b>	42,082	\$ 454	\$ 229,008	\$ ( 142,190)	\$ ( 15,052)	\$ 72,220
Stock option exercises	214	3	506	-	-	509
Stock purchase plan	91	-	215	-	-	215
Vesting of restricted stock units	413	-	-	-	-	-
Shares withheld for taxes	( 112)	-	( 451)	-	-	( 451)
Stock-based compensation	-	-	3,618	-	-	3,618
Net loss	-	-	-	( 1,597)	-	( 1,597)
Other comprehensive loss	-	-	-	-	( 228)	( 228)
<b>Balance at September 30, 2023</b>	<u>42,688</u>	<u>\$ 457</u>	<u>\$ 232,896</u>	<u>\$ ( 143,787)</u>	<u>\$ ( 15,280)</u>	<u>\$ 74,286</u>

See accompanying notes to condensed consolidated financial statements.

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

	<b>Nine Months Ended September 30,</b>	
	<b>2024</b>	<b>2023</b>
Cash flows from operating activities:		
Net loss	\$ ( 12,423)	\$ ( 1,597)
Adjustments to reconcile net loss to net cash (used in) provided by operating activities:		
Depreciation	1,268	1,083
Amortization of intangible assets	4,129	4,138
Amortization of deferred financing costs	229	210
Stock-based compensation	3,379	3,618
Deferred income taxes and other	( 361)	92
Loss on equity securities - Note 6	1,593	373
Loss on pension settlement - Note 16	1,243	-
Gain on sale of product line - Note 14	-	( 403)
Changes in operating assets and liabilities:		
Accounts receivable	3,303	1,751
Inventories	( 2,416)	173
Other assets	873	( 50)
Accounts payable and other liabilities	( 283)	( 298)
Contract liabilities	( 819)	635
Net cash (used in) provided by operating activities	( 285)	9,725
Cash flows from investing activities:		
Additions to property, plant and equipment	( 2,343)	( 958)
Capitalized software development costs	( 454)	( 292)
Proceeds from sale of product line	-	512
Proceeds from sale of marketable equity securities	1,919	-
Net cash used in investing activities	( 878)	( 738)
Cash flows from financing activities:		
Borrowing from revolving line of credit	8,800	3,500
Repayment of revolving line of credit	( 2,550)	( 8,450)
Repayment of term debt	( 5,023)	( 3,341)
Payment of debt issuance costs	( 161)	-
Proceeds from exercise of stock options and employee stock purchase plan	219	724
Taxes paid related to net share settlement of equity awards	( 59)	( 451)
Net cash provided by (used in) financing activities	1,226	( 8,018)
Effect of exchange rate changes on cash	223	( 137)
Increase in cash and cash equivalents	286	832
Cash and cash equivalents at beginning of period	4,283	4,508
Cash and cash equivalents at end of period	\$ 4,569	\$ 5,340
Supplemental disclosures of cash flow information:		
Cash paid for interest	\$ 2,369	\$ 3,006
Cash paid for income taxes, net of refunds	\$ 315	\$ 168

See accompanying notes to condensed consolidated financial statements.

## NOTES TO UNAUDITED CONSOLIDATED FINANCIAL STATEMENTS

### 1. Basis of Presentation and Summary of Significant Accounting Policies

#### *Basis of Presentation and Summary of Significant Accounting Policies*

The unaudited consolidated financial statements of Harvard Bioscience, Inc. and its wholly-owned subsidiaries (collectively, the "Company") as of September 30, 2024 and for the three and nine months ended September 30, 2024 and 2023 have been prepared by the Company pursuant to the rules and regulations of the Securities and Exchange Commission (the "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, 2023 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, 2023.

In the opinion of management, all adjustments, which include normal recurring adjustments necessary to present a fair statement of financial position as of September 30, 2024, results of operations and comprehensive loss for the three and nine months ended September 30, 2024 and 2023, and cash flows for the nine months ended September 30, 2024 and 2023, as applicable, have been made. The results of operations for the three and nine months ended September 30, 2024, are not necessarily indicative of the anticipated operating results for the full year ending December 31, 2024, or any future periods.

The accounting policies underlying the accompanying unaudited consolidated financial statements are 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, 2023. There have been no material changes in the Company's significant accounting policies during the nine months ended September 30, 2024.

#### *Liquidity*

Primarily due to a decline in revenues, the Company experienced a net cash outflow from operations during the nine months ended September 30, 2024. The Company has substantial debt and other financial obligations. Any failure to meet these obligations or maintain compliance with the debt covenants contained in its credit agreement could have a material adverse effect on its business, financial condition and results of operations. As of the date of this report, the Company is unable to make additional borrowings under its revolving credit facility due to net leverage ratio requirements set forth in the Company's credit agreement and will be unable to make any such borrowings until it delivers to the lenders its financial statements for the year ending December 31, 2024 (see note 8).

The Company continues to take actions intended to improve liquidity, including actions related to cost containment and inventory reduction. Based on its current operating plans, the Company expects that its available cash and cash generated from operations will be sufficient to finance operations and capital expenditures and service its debt for at least the next 12 months. The Company's ongoing cash flows and ability to meet its debt covenants are dependent on its revenues and operating performance. If the Company is unable to successfully carry out its operating plans or increase its revenues, its ability to maintain compliance with its debt covenants could be adversely affected.

#### *Use of Estimates*

The preparation of financial statements in conformity with U.S. GAAP requires the use of management estimates. Such estimates include the determination and establishment of certain accruals and provisions, including those for income taxes, credit losses on receivables, and defined benefit pension obligations. Estimates are also required to assess the value for inventories reported at lower of cost or net realizable value, stock-based compensation expense, and the recoverability of long-lived and intangible assets, including goodwill. On an ongoing basis, the Company assesses its previous estimates based upon currently available information. Actual results could differ materially from those estimates.

#### *Other Operating Expenses*

The components of other operating expenses for the three and nine months ended September 30, 2024 were as follows:

(in thousands)	Three Months Ended September 30, 2024	Nine Months Ended September 30, 2024
Restructuring expenses (see Note 15)	\$ 179	\$ 575
Unclaimed property audits expense (see Note 13)	-	347
Employee retention credit fees (see Note 5)	-	472
Total other operating expenses	<u>\$ 179</u>	<u>\$ 1,394</u>



### Recently Issued Accounting Pronouncements Yet to Be Adopted

In November 2023, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2023-07, *Segment Reporting (Topic 280): Improvements to Reportable Segment Disclosures*, which is intended to improve reportable segment disclosure requirements, primarily through enhanced disclosures about significant segment expenses on an annual and interim basis. Entities with a single reportable segment must provide all the disclosures required by this ASU and all existing segment disclosures in Topic 280. ASU 2023-07 is effective for fiscal years beginning after December 15, 2023, and interim periods within fiscal years beginning after December 15, 2024. The adoption of this standard only impacts footnote disclosures and is not expected to have a material impact on the Company's consolidated financial statements.

In December 2023, the FASB issued ASU No. 2023-09, *Income Taxes (Topic 740): Improvements to Income Tax*, which is intended to enhance disclosures related to the effective tax rate reconciliation, income taxes paid, and other disclosures. This new standard impacts footnote disclosures and will be effective for the Company's annual consolidated financial statements for the year ending December 31, 2025. The Company is currently evaluating the impact that adoption of ASU No. 2023-09 will have on the footnote disclosures in its consolidated financial statements.

## 2. Earnings (Loss) per Share

Basic earnings (loss) per share (EPS) is calculated by dividing net income (loss) by the number of weighted average shares of common stock outstanding during the period. The calculation of diluted earnings per share assumes conversion of stock options and restricted stock units into common stock using the treasury method unless the effect is antidilutive.

The following table summarizes the calculation of basic and diluted net loss per share of common stock:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2024	2023	2024	2023
(in thousands, except per share data)				
Net loss	\$ (4,802)	\$ (1,239)	\$ (12,423)	\$ (1,597)
Weighted average shares outstanding - basic	43,614	42,688	43,499	42,345
Dilutive effect of equity awards	-	-	-	-
Weighted average shares outstanding - diluted	43,614	42,688	43,499	42,345
Basic loss per share	\$ (0.11)	\$ (0.03)	\$ (0.29)	\$ (0.04)
Diluted loss per share	\$ (0.11)	\$ (0.03)	\$ (0.29)	\$ (0.04)
Shares excluded from diluted loss per share due to their anti-dilutive effect	3,988	3,952	3,730	3,847

## 3. Revenues

The following tables represent a disaggregation of revenues from contracts with customers for the three and nine months ended September 30, 2024 and 2023:

Revenues by type were as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2024	2023	2024	2023
(in thousands)				
Instruments, equipment, software and accessories	\$ 20,543	\$ 23,500	\$ 64,594	\$ 79,261
Service, maintenance and warranty contracts	1,427	1,863	4,985	4,836
Total revenues	\$ 21,970	\$ 25,363	\$ 69,579	\$ 84,097

Revenues by timing of recognition were as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2024	2023	2024	2023
(in thousands)				
Goods and services transferred at a point in time	\$ 21,119	\$ 24,668	\$ 66,845	\$ 81,610
Goods and services transferred over time	851	695	2,734	2,487
Total revenues	\$ 21,970	\$ 25,363	\$ 69,579	\$ 84,097

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Revenues by geographic destination were as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2024	2023	2024	2023
(in thousands)				
United States	\$ 9,706	\$ 12,017	\$ 31,495	\$ 36,655
Europe	6,501	7,063	19,613	23,836
Greater China	2,731	3,489	10,426	13,824
Rest of the world	3,031	2,794	8,045	9,782
Total revenues	<u>\$ 21,969</u>	<u>\$ 25,363</u>	<u>\$ 69,579</u>	<u>\$ 84,097</u>

#### Contract Liabilities

The following table provides details of contract liabilities as of the periods indicated:

	September 30, 2024	December 31, 2023	Change	Percentage
(dollars in thousands)				
Service, maintenance and warranty contracts	\$ 2,472	\$ 2,849	\$ ( 377)	- 13.2%
Customer advances	1,217	1,659	( 442)	- 26.6%
Total contract liabilities	<u>\$ 3,689</u>	<u>\$ 4,508</u>	<u>\$ ( 819)</u>	- 18.2%

Changes in the Company's contract liabilities are primarily due to the timing of receipt of payments under service, maintenance and warranty contracts and lower sales volumes. During the three months ended September 30, 2024 and 2023, the Company recognized revenues of \$ 0.4 million and \$ 1.0 million from contract liabilities existing at December 31, 2023 and 2022, respectively. During the nine months ended September 30, 2024 and 2023, the Company recognized revenues of \$ 3.0 million and \$ 2.3 million from contract liabilities existing at December 31, 2023 and 2022, respectively.

#### Provision for Expected Credit Losses on Receivables

Activity in the provision for expected credit losses on receivables was as follows:

	Nine Months Ended September 30,	
	2024	2023
(in thousands)		
Balance, beginning of period	\$ 160	\$ 191
Provision for expected credit losses	13	9
Charge-offs and other	1	( 56)
Balance, end of period	<u>\$ 174</u>	<u>\$ 144</u>

#### Concentrations

No customer accounted for more than 10% of revenues for the three and nine months ended September 30, 2024 and 2023. At September 30, 2024 and December 31, 2023, no customer accounted for more than 10% of net accounts receivable.

#### Warranties

Activity in the product warranties accrual was as follows:

	Nine Months Ended September 30,	
	2024	2023
(in thousands)		
Balance, beginning of period	\$ 336	\$ 268
Provision for warranties	307	254
Warranty claims	( 228)	( 214)
Balance, end of period	<u>\$ 415</u>	<u>\$ 308</u>

#### 4. Goodwill and Intangible Assets

The change in the carrying amount of goodwill for the nine months ended September 30, 2024 was as follows:

(in thousands)		
Carrying amount at December 31, 2023	\$	57,065
Effect of change in currency translation		374
Carrying amount at September 30, 2024	\$	57,439

Intangible assets, net at September 30, 2024 and December 31, 2023 consisted of the following:

	September 30, 2024			December 31, 2023		
(in thousands)						
Amortizable intangible assets:	Gross	Accumulated Amortization	Net	Gross	Accumulated Amortization	Net
Customer relationships	\$ 16,026	\$ ( 10,538)	\$ 5,488	\$ 16,038	\$ ( 9,706)	\$ 6,332
Technology and software development	35,468	( 29,893)	5,575	35,007	( 27,029)	7,978
Trade names and patents	7,606	( 6,536)	1,070	7,613	( 6,094)	1,519
Total amortizable intangible assets	\$ 59,100	\$ ( 46,967)	\$ 12,133	\$ 58,658	\$ ( 42,829)	\$ 15,829
Indefinite-lived intangible assets:			208			207
Total intangible assets			\$ 12,341			\$ 16,036

Intangible asset amortization expense for the three and nine months ended September 30, 2024 and 2023 was as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
(in thousands)	2024	2023	2024	2023
Cost of revenues	\$ 44	\$ -	\$ 131	\$ -
Operating expense	1,334	1,361	3,998	4,138
Total amortization of intangible assets	\$ 1,378	\$ 1,361	\$ 4,129	\$ 4,138

As of September 30, 2024, estimated future amortization expense of amortizable intangible assets is as follows:

(in thousands)	
2024 (remainder of the year)	\$ 1,306
2025	4,201
2026	2,540
2027	1,269
2028	1,476
Thereafter	1,341
Total	\$ 12,133

#### 5. Balance Sheet Information

The following tables provide details of selected balance sheet items as of the periods indicated:

<b>Inventories:</b>	September 30, 2024	December 31, 2023
(in thousands)		
Finished goods	\$ 4,752	\$ 5,120
Work in process	3,471	4,188
Raw materials	17,767	15,408
Total	\$ 25,990	\$ 24,716

**Other Current Liabilities:**

(in thousands)

	September 30, 2024	December 31, 2023
Compensation	\$ 1,856	\$ 3,929
Customer credits	1,123	3,201
Current portion of operating lease liabilities	1,127	1,416
Employee retention tax credit funds	3,154	-
Professional fees	874	499
Warranty costs	415	336
Other	1,624	1,240
Total	\$ 10,173	\$ 10,621

The Coronavirus Aid, Relief, and Economic Security Act of 2020 ("CARES Act") provided an employee retention tax credit ("ERTC") that was a refundable tax credit against certain employer taxes. The Company elected to account for the credit as a government grant. As there is no authoritative guidance under U.S. GAAP on accounting for grants to for-profit business entities from government entities, the Company accounts for government assistance by analogy to International Accounting Standards Topic 20, *Accounting for Government Grants and Disclosure of Government Assistance* ("IAS 20"). Under IAS 20, government grants are recognized when there is reasonable assurance that the grant will be received and that all conditions related to the grant will be met.

The Company received ERTC refunds of \$ 3.2 million during the nine months ended September 30, 2024. Due to the subjectivity of the credit, the Company has included the refunds received in other current liabilities in the consolidated balance sheet as of September 30, 2024, subject to a determination that the refunds are recognizable.

The Company engaged a professional services firm under a commission fee arrangement to assist with determining the Company's eligibility to claim the ERTC refunds and accumulating the necessary support that was used as a basis in the filing. During the nine months ended September 30, 2024, the Company paid fees of \$ 0.5 million for these services, which are included in other operating expenses in the consolidated statement of operations.

**6. Marketable Equity Securities**

In April 2023, the Company received shares of common stock of Harvard Apparatus Regenerative Technology, Inc. ("HRGN", formerly known as Biostage, Inc.) in connection with settlement of indemnification obligations related to litigation which was resolved during the year ended December 31, 2022. As of December 31, 2023, these shares had an estimated fair value \$ 3.5 million and are included in the consolidated balance sheet as a component of other long-term assets. During the nine months ended September 30, 2024, the Company sold its HRGN shares for \$ 1.9 million and recorded a loss on equity securities of \$ 1.6 million. The Company recorded unrealized gains (losses) of \$ 1.2 million and \$( 0.4 ) million during the three and nine months ended September 30, 2023, respectively.

**7. Leases**

The Company has noncancelable operating leases for offices, manufacturing facilities, warehouse space, automobiles and equipment expiring at various dates through 2030.

The components of lease expense for the three and nine months ended September 30, 2024 and 2023, were as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
(in thousands)	2024	2023	2024	2023
Operating lease cost	\$ 520	\$ 491	\$ 1,539	\$ 1,517
Short-term lease cost	46	19	148	150
Sublease income	( 17 )	( 25 )	( 68 )	( 76 )
Total lease cost	\$ 549	\$ 485	\$ 1,619	\$ 1,591

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

	Nine Months Ended September 30,	
(in thousands)	2024	2023
Cash paid for amounts included in the measurement of lease liabilities	\$ 1,745	\$ 1,764
Right-of-use assets obtained in exchange for lease obligations	2,945	277

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

(in thousands)	September 30, 2024	December 31, 2023
Operating lease right-of-use assets	\$ 6,523	\$ 4,773
Current portion, operating lease liabilities	\$ 1,127	\$ 1,416
Operating lease liabilities, long-term	6,706	4,794
Total operating lease liabilities	\$ 7,833	\$ 6,210
Weighted average remaining lease term (years)	5	
Weighted average discount rate	8.9%	

Future minimum lease payments for operating leases, with initial terms in excess of one year at September 30, 2024, are as follows:

(in thousands)	
2024 (remainder of the year)	\$ 425
2025	1,808
2026	1,812
2027	1,785
2028	1,774
Thereafter	2,408
Total lease payments	10,012
Less imputed interest	( 2,179)
Total operating lease liabilities	\$ 7,833

## 8. Long-Term Debt

As of September 30, 2024 and December 31, 2023, the Company's long-term debt was as follows:

(in thousands)	September 30, 2024	December 31, 2023
Long-term debt:		
Term loan	\$ 25,700	\$ 30,723
Revolving line	12,650	6,400
Less: unamortized deferred financing costs	( 492)	( 560)
Total debt	37,858	36,563
Less: current portion of long-term debt	( 4,000)	( 6,139)
Current unamortized deferred financing costs	394	280
Long-term debt	\$ 34,252	\$ 30,704

The Company maintains a Credit Agreement (as amended, the "Credit Agreement") with Citizens Bank, N.A., Wells Fargo Bank, National Association, and First Citizens Bank & Trust Company (together, the "Lenders"). The Credit Agreement provides for a term loan of \$ 40.0 million and a \$ 25.0 million revolving credit facility (including a \$ 10.0 million sub-facility for the issuance of letters of credit and a \$ 10.0 million swingline loan sub facility) (collectively, the "Credit Facility"). The Company's obligations under the Credit Agreement are secured by substantially all of the assets of Harvard Bioscience, Inc., including all or a portion of the equity interests in certain of the Company's domestic and foreign subsidiaries. The Company's obligations under the Credit Agreement are guaranteed by certain of the Company's direct, domestic wholly-owned subsidiaries; none of the Company's direct or indirect foreign subsidiaries has guaranteed the Credit Facility. Issuance costs of \$ 1.6 million are amortized over the contractual term to maturity date on a straight-line basis, which approximates the effective interest method. Total revolver borrowing capacity is limited by the consolidated net leverage ratio as defined under the amended Credit Agreement. As of the date of this report, the Company is unable to make additional borrowings under its revolving credit facility and will be unable to make any such borrowings until it delivers to the lenders its financial statements for the year ending December 31, 2024, due to net leverage ratio requirements set forth in the August 6, 2024 amendment to the Credit Agreement (the "August 2024 Amendment"), as described below.

Borrowings under the Credit Facility will, at the option of the Company, bear interest at either (i) a rate per annum based on the Secured Overnight Financing Rate ("SOFR") for an interest period of one, two, three or six months, plus an applicable interest rate margin determined as provided in the Credit Agreement (a "SOFR Loan"), subject to a floor of 0.50 %, or (ii) an alternative base rate plus an applicable interest rate margin, each as determined as provided in the Credit Agreement (an "ABR Loan"). The alternative base rate is based on the Citizens Bank prime rate or the federal funds effective rate of the Federal Reserve Bank of New York and is subject to a floor of 1.0 %. Pursuant to the August 2024 Amendment, the applicable interest rate margin varies from 2.0 % per annum to 3.75 % per annum for SOFR Loans, and from 1.5 % per annum to 3.5 % per annum for ABR Loans, in each case depending on the Company's consolidated net leverage ratio, and is determined in accordance with a pricing grid set forth in the Credit Agreement, as amended. There are no prepayment penalties in the event the Company elects to prepay and terminate the Credit Facility prior to its scheduled maturity date, subject to SOFR Loan breakage and redeployment costs in certain circumstances.

The effective interest rate on the Company's borrowings for the three months ended September 30, 2024 and 2023, was 8.7 % and 8.3 %, respectively, and for the nine months ended September 30, 2024 and 2023, was 8.1 % and 8.2 %, respectively. The weighted average interest rate as of September 30, 2024, net of the effect of the Company's interest rate swap agreement, was 8.6 %. 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 September 30, 2024, the term loan requires quarterly installment payments of \$ 1.0 million with a balloon payment at maturity on December 22, 2025. Furthermore, within ninety days after the end of the Company's fiscal year, the term loan may be permanently reduced pursuant to certain mandatory prepayment events including an annual "excess cash flow sweep", as defined in the Credit Agreement, provided that, in any fiscal year, any voluntary prepayments of the term loan shall be credited against the Company's "excess cash flow" prepayment obligations on a dollar-for-dollar basis for such fiscal year. As of December 31, 2023, the current portion of long-term debt included amounts due under the excess cash flow sweep of \$ 2.0 million which was paid on March 29, 2024. Amounts outstanding under the revolving credit facility can be repaid at any time but are due in full at maturity.

The Credit Agreement includes various customary financial covenants and other affirmative and negative covenants binding on the Company. The negative covenants limit the ability of the Company, among other things, to incur debt, permit liens, make investments, sell assets, or pay dividends on its capital stock. The financial covenants include a maximum consolidated net leverage ratio and a minimum consolidated fixed charge coverage ratio. The Credit Agreement also includes customary events of default.

In March 2024, the Company entered into an amendment to the Credit Agreement pursuant to which the Lenders and administrative agent modified the definition of Consolidated EBITDA used in the calculation of certain financial covenants to adjust for charges related to an abandoned property audit (see Note 13) and commission fees in connection with ERTC filings (see Note 5).

In August 2024, the Company entered into an amendment to the Credit Agreement that, among other things, modified the financial covenants relating to the consolidated net leverage ratio and consolidated fixed charge coverage ratio through the period ended December 31, 2024. The amendment also added a net leverage ratio requirement with respect to additional borrowing under the Company's revolving credit facility and restrictions on certain additional indebtedness and investments, in each case until the Company delivers to the Lenders the Company's financial statements for the fiscal year ending December 31, 2024. In addition, until delivery of such financial statements, the applicable interest rate margin is increased by 50 bps during such time as the Company's consolidated net leverage ratio is greater than 3.0. The Company paid fees of \$ 0.2 million to the Lenders in connection with the amendment. As of September 30, 2024, the Company was in compliance with the financial covenants of the Credit Agreement. As of the date of this report, the Company is unable to make additional borrowings under its revolving credit facility and will be unable to make any such borrowings until it delivers to the lenders its financial statements for the year ending December 31, 2024, due to net leverage ratio requirements set forth in the August 2024 Amendment.

## 9. Derivatives

In February 2023, the Company entered into an interest rate swap contract to improve the predictability of cash flows from interest payments related to its variable, SOFR-based debt. The swap contract had a notional amount of \$ 23.1 million as of September 30, 2024 and matures on December 22, 2025. This swap contract effectively converts the SOFR-based variable portion of the interest payable under the Credit Agreement into fixed-rate debt at an annual rate of 4.75 %. The swap contract does not impact the additional interest related to the applicable interest rate margin as discussed above in Note 8, Long-Term Debt. The swap contract is considered an effective cash flow hedge, and as a result, net gains or losses are reported as a component of other comprehensive income ("OCI") in the consolidated financial statements and are reclassified when the underlying hedged interest impacts earnings. An assessment is performed quarterly to evaluate the ongoing hedge effectiveness.

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The following table presents the notional amount and fair value of the Company's derivative instruments as of September 30, 2024 and December 31, 2023:

(in thousands)		September 30, 2024		December 31, 2023	
Derivatives Instruments	Balance Sheet Classification	Notional Amount	Fair Value (a)	Notional Amount	Fair Value (a)
Interest rate swap	Other long-term liabilities	\$ 23,062	\$ ( 223)	\$ 27,375	\$ ( 199)

(a) See Note 10 for the fair value measurements related to these financial instruments.

The effect of the cash flow hedge on other comprehensive income (loss) and earnings for the periods presented was as follows:

Derivatives Qualifying as Hedges, net of tax (in thousands)	Three Months Ended		Nine Months Ended	
	September 30, 2024	September 30, 2023	September 30, 2024	September 30, 2023
(Loss) gain recognized in OCI on derivatives (effective portion)	\$ ( 257)	\$ 117	\$ ( 24)	\$ 126
Gain reclassified from accumulated OCI to interest expense	42	46	133	72

## 10. Fair Value Measurements

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

Assets (Liabilities) (in thousands)	Fair Value as of September 30, 2024			
	Level 1	Level 2	Level 3	Total
Interest rate swap agreement	\$ -	\$ ( 223)	\$ -	\$ ( 223)

	Fair Value as of December 31, 2023			
	Level 1	Level 2	Level 3	Total
Equity securities - common stock	\$ 3,511	\$ -	\$ -	\$ 3,511
Interest rate swap agreement	\$ -	\$ ( 199)	\$ -	\$ ( 199)

The Company uses the market approach technique to value its financial liabilities. The Company's financial assets and liabilities carried at fair value include, when applicable, investments in common stock and derivative instruments used to hedge the Company's interest rate risks. The fair value of the Company's interest rate swap agreement was based on SOFR yield curves at the reporting date. The fair value of the Company's investment in HRGN common stock (see Note 6) was based on the closing price per the OTCQB Marketplace at the reporting date.

## 11. Stock-Based Compensation

Stock-based compensation expense for the three and nine months ended September 30, 2024 and 2023 was allocated as follows:

(in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2024	2023	2024	2023
Cost of revenues	\$ (30)	\$ 58	\$ 88	\$ 222
Sales and marketing expenses	164	193	453	533
General and administrative expenses	795	1,012	2,493	2,585
Research and development expenses	124	100	345	278
Total stock-based compensation	\$ 1,053	\$ 1,363	\$ 3,379	\$ 3,618

As of September 30, 2024, the total compensation costs related to unvested awards not yet recognized was \$ 5.7 million and the weighted average period over which it is expected to be recognized is approximately 1.8 years. The Company did not capitalize any stock-based compensation.

Restricted stock unit ("RSU") activity for the nine months ended September 30, 2024 was as follows:

	Time-Based Restricted Stock Units	Grant Date Fair Value	Market- Based Restricted Stock Units	Grant Date Fair Value	Performance- Based Restricted Stock Units	Grant Date Fair Value
Balance at December 31, 2023	1,164,996	\$ 3.28	801,845	\$ 3.37	-	\$ -
Granted	1,002,520	3.98	-	-	375,895	4.19
Vested	(150,383)	4.95	-	-	-	-
Forfeited	(120,892)	3.64	-	-	-	-
Balance at September 30, 2024	1,896,241	\$ 3.49	801,845	\$ 3.37	375,895	\$ 4.19

Unvested shares related to market-based and performance-based vesting conditions are reflected at 100 % of their target vesting amount in the table above. Actual vesting could range from zero up to 150 % of their target amounts.

Performance-based RSU awards are contingent on the achievement of certain performance metrics. Compensation cost associated with performance-based RSUs are recognized based on the estimated number of shares that the Company ultimately expects will be earned. If the estimated number of shares to be earned is revised in the future, then stock-based compensation expense will be adjusted accordingly.

Stock option activity for the nine months ended September 30, 2024 was as follows:

	Number of Options	Weighted- Average Exercise Price	Weighted- Average Remaining Contractual Term	Aggregate Intrinsic Value (in thousands)
Outstanding and exercisable at December 31, 2023	924,067	\$ 3.37		
Exercised	(13,586)	3.18		
Cancelled/Forfeited	(23,766)	4.54		
Outstanding and exercisable at September 30, 2024	886,715	\$ 3.34	2.7	\$ 28

The aggregate intrinsic value in the preceding table represents the total pre-tax intrinsic value, based on the Company's closing stock price of \$ 2.69 as of the last trading day of the reporting period, which would have been received by the option holders had all option holders exercised their options as of that date. The aggregate intrinsic value of options exercised during the nine months ended September 30, 2024, was not significant.



## 12. Income Tax

The determination of the annual effective tax rate is based upon a number of significant estimates and judgments, including the estimated annual pretax income in each tax jurisdiction in which the Company operates and the development of tax planning strategies during the year. In addition, as a global commercial enterprise, the Company's tax expense can be impacted by changes in tax rates or laws, the finalization of tax audits and reviews and other factors that cannot be predicted with certainty. As such, there can be significant volatility in interim tax provisions.

Income tax expense was \$ 0.3 million and \$ 0.7 million for the three months ended September 30, 2024 and 2023, respectively, and was \$ 0.2 million and \$ 0.1 million for the nine months ended September 30, 2024 and 2023, respectively. The Company's effective tax rates of ( 6.9 )% and ( 1.4 )% for the three and nine months ended September 30, 2024, respectively, were different than the U.S. statutory rate primarily due to the inclusion of non-deductible executive compensation and changes in valuation allowances associated with the Company's assessment of the likelihood of the recoverability of deferred tax assets. The Company's effective tax rates of ( 120.5 )% and ( 9.9 )% for the three and nine months ended September 30, 2023, respectively, were different than the U.S. statutory rate primarily due to the mix of forecasted income or losses in the U.S. and foreign tax jurisdictions and a Global Intangible Low-Taxed Income ("GILTI") inclusion to taxable income. The effective tax rates in both the three and nine months ended September 30, 2023, were also impacted by changes in valuation allowances associated with the Company's assessment of the likelihood of the recoverability of deferred tax assets.

## 13. Commitments and Contingent Liabilities

The Company is involved in various claims and legal proceedings arising in the ordinary course of business. After consultation with legal counsel, the Company has determined that the ultimate disposition of such proceedings is not likely to have a material adverse effect on its business, financial condition, results of operations or cash flows. Although unfavorable outcomes in the proceedings are possible, the Company has not accrued loss contingencies relating to any such matters as they are not considered 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 the Company's business, financial condition, results of operations and cash flows could be material.

In addition, the Company has entered into indemnification agreements with its directors and officers. It is not possible to determine the maximum potential liability amount under these indemnification agreements due to the limited history of prior indemnification claims and the unique facts and circumstances involved in each particular agreement. The Company has not recorded any liability for costs related to contingent indemnification obligations as of September 30, 2024.

The Company is subject to unclaimed property laws in the ordinary course of its business. State escheat laws generally require entities to report and remit abandoned and unclaimed property to the state. Failure to timely report and remit the property can result in assessments that could include interest and penalties, in addition to the payment of the escheat liability itself. The Company recorded an expense of \$ 0.3 million during the nine months ended September 30, 2024 related to unclaimed property audits which have been included in other operating expenses in the consolidated statement of operations.

## 14. Product Line Disposition

In February 2023, the Company sold its Hoefer product line for \$ 0.5 million. The carrying value of assets sold was \$ 0.1 million resulting in a gain on disposition of \$ 0.4 million which was recorded in other income (expense), net in the consolidated statement of operations for the nine months ended September 30, 2023. Revenues and gross profit of this disposed product line included in the condensed consolidated statement of operations for the nine months ended September 30, 2023 were not significant.

## 15. Restructuring and Other Exit Costs

On an ongoing basis, the Company reviews the global economy, the life sciences industry, and the markets in which it competes to identify operational efficiencies, enhance commercial capabilities and align its cost base and infrastructure with customer needs and its strategic plans. In order to realize these opportunities, the Company undertakes activities from time to time to transform its business. A portion of these transformation activities are considered restructuring costs under ASC 420, *Exit or Disposal Cost Obligations*, and are discussed below.

During the nine months ended September 30, 2024, the Company completed restructurings and incurred expenses of \$ 0.6 million, primarily consisting of severance incurred in connection with headcount reductions in Europe and North America. The changes in the accrued liability for restructuring and other charges for the nine months ended September 30, 2024 were as follows:

(in thousands)	Inventory-Related	Severance	Total
Balance at December 31, 2023	\$ 84	\$ -	\$ 84
Restructuring and other exit costs	43	575	618
Non-cash charges	( 27)	-	( 27)
Cash payments	( 100)	( 470)	( 570)
Balance at September 30, 2024	\$ -	\$ 105	\$ 105

The inventory-related costs are included in cost of revenues and the severance costs have been included as a component of other operating expenses (see Note 1).

## 16. Defined Benefit Plan Settlement

During the three months ended September 30, 2024, the Company terminated its obligations under a defined benefit plan that was maintained by its subsidiary in the United Kingdom. This plan had been closed to new employees, as well as closed to the future accrual of benefits for existing employees since 2014 and represented approximately 11 % percent of the Company's total pension liabilities as of December 31, 2023. The Company used \$ 2.3 million of plan assets to purchase non-participating annuity contracts resulting in the full settlement of the benefit obligations. The Company recorded a non-cash charge of \$ 1.2 million, including the immediate recognition of the portion of the accumulated OCI balances related to this plan. This charge has been presented as a component of other income (expense), net, for the three and nine months ended September 30, 2024.

**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. We discuss many of these risks in detail in our Annual Report on Form 10-K for the year ended December 31, 2023 and our other filings with the SEC. You should carefully review all of these factors, as well as other risks described in our public filings, and you should be aware that there may be other factors, including factors of which we are not currently aware, that could cause these differences. Also, these forward-looking statements represent our estimates and assumptions only as of the date of this report. 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. Harvard Bioscience, Inc. is referred to herein as "we," "our," "us," and "the Company."*

**Overview**

Harvard Bioscience, Inc., a Delaware corporation, is a leading developer, manufacturer and seller of technologies, products and services that enable fundamental advances in life science applications, including research, pharmaceutical and therapy discovery, bioproduction and preclinical testing for pharmaceutical and therapy development. Our products and services are sold globally to customers ranging from renowned academic institutions and government laboratories to the world's leading pharmaceutical, biotechnology and contract research organizations ("CROs"). With operations in the United States, Europe and China, we sell through a combination of direct and distribution channels to customers around the world.

**Trends and Developments**

Our business, results of operations, and cash flows have been impacted by macroeconomic trends affecting the life sciences industry and the global economy. These trends include inflationary and interest rate pressures, fluctuations in exchange rates, economic conditions in China, and the events in Ukraine and the Middle East. Our business has also been affected by the softening of certain international markets, especially in China and the Asia-Pacific region, as well as by delays in government funding for certain customers. Our business has also been affected by reduced demand from our biotechnology and pharmaceutical company customers, principally due to the increased cost of capital and a reduction in spending following the COVID-19 pandemic. We expect that any continuation of these trends, or any further delay in market recovery, would continue to impact our business, results of operations, and cash flows.

## Selected Results of Operations

Three months ended September 30, 2024, compared to three months ended September 30, 2023

(dollars in thousands)	Three Months Ended September 30,			
	2024	% of revenue	2023	% of revenue
Revenues	\$ 21,970		\$ 25,363	
Gross profit	12,765	58.1%	14,727	58.1%
Sales and marketing expenses	5,518	25.1%	5,732	22.6%
General and administrative expenses	5,041	22.9%	5,807	22.9%
Research and development expenses	2,567	11.7%	2,760	10.9%
Amortization of intangible assets	1,334	6.1%	1,361	5.4%
Other operating expenses	179	0.8%	-	-
Interest expense	856	3.9%	882	3.5%
Loss on pension settlement	1,243	5.7%	-	0.0%
Gain on equity securities	-	-	(1,208)	(4.8)%
Income tax expense	311	1.4%	677	2.7%

### Revenues

Revenues decreased \$3.4 million, or 13.4%, to \$22.0 million for the three months ended September 30, 2024, compared to \$25.4 million for the three months ended September 30, 2023. The decrease in revenues was primarily due to continued softening of worldwide demand primarily from CRO's and academic medical research institutions.

### Gross profit

Gross profit decreased \$1.9 million, or 13.3%, to \$12.8 million for the three months ended September 30, 2024, compared with \$14.7 million for the three months ended September 30, 2023, primarily due to the decrease in revenues. Gross margin was 58.1% for both the three months ended September 30, 2024, and September 30, 2023. Gross margin was unfavorably impacted by the under-absorption of fixed manufacturing overhead costs due to the decrease in revenues which was offset by a better mix of high margin products and lower labor costs.

### Sales and marketing expenses

Sales and marketing expenses decreased \$0.2 million, or 3.7%, to \$5.5 million for the three months ended September 30, 2024, compared with \$5.7 million for the three months ended September 30, 2023.

### General and administrative expenses

General and administrative expenses decreased \$0.8 million, or 13.2%, to \$5.0 million for the three months ended September 30, 2024, compared with \$5.8 million for the three months ended September 30, 2023. The decrease was primarily due to lower compensation costs and increased capitalization of costs for internal-use software.

### Research and development expenses

Research and development expenses remained relatively unchanged and decreased \$0.2 million, or 7.0%, to \$2.6 million for the three months ended September 30, 2024, compared with \$2.8 million for the three months ended September 30, 2023.

### Amortization of intangible assets

Amortization of intangible assets included in operating expenses was \$1.3 million for the three months ended September 30, 2024, compared with \$1.4 million for the three months ended September 30, 2023.

***Other operating expenses***

Other operating expenses for the three months ended September 30, 2024 were \$0.2 million and included restructuring costs in connection with headcount reductions in North America and Europe.

***Interest expense***

Interest expense was \$0.9 million for both the three months ended September 30, 2024 and September 30, 2023. During the three months ended September 30, 2024, lower average borrowings were offset by increased interest rates under our Credit Facility.

***Loss on pension settlement***

During the three months ended September 30, 2024, we settled our obligations under one of our defined benefit plans by using plan assets to purchase non-participating annuity contracts. The settlement resulted in the recognition of a non-cash charge of \$1.2 million, which has been presented as a component of other income (expense), net. This amount includes the immediate recognition of the portion of the accumulated other comprehensive income ("AOCI") balance related to this plan.

***Gain on equity securities***

During the three months ended September 30, 2023 we recorded an unrealized gain of \$1.2 million related to shares of common stock of Harvard Apparatus Regenerative Technology Inc. ("HRGN"). These shares were received in connection with settlement of indemnification obligations related to litigation and were all sold during the six months ended June 30, 2024.

***Income tax expense (benefit)***

The income tax expense was \$0.3 million and \$0.7 million for the three months ended September 30, 2024 and 2023, respectively. The effective tax rates for the three months ended September 30, 2024 and 2023 were (6.9)% and (120.5)%, respectively. The higher effective tax rate during the three months ended September 30, 2024 compared to the three months ended September 30, 2023 was related to a change in the mix of forecasted income and losses in the U.S. and foreign tax jurisdictions. The Company's effective tax rate for the three months ended September 30, 2024, was different than the U.S. statutory rate primarily due to the inclusion of non-deductible executive compensation and changes in valuation allowances associated with the Company's assessment of the likelihood of the recoverability of deferred tax assets. The Company's effective tax rate for the three months ended September 30, 2023, was different than the U.S. statutory rate primarily due to the mix of forecasted income or losses in the U.S. and foreign tax jurisdictions and a Global Intangible Low-Taxed Income ("GILTI") inclusion to taxable income. The effective tax rate for the three months ended September 30, 2023, was also impacted by changes in valuation allowances associated with the Company's assessment of the likelihood of the recoverability of deferred tax assets.

**Nine months ended September 30, 2024, compared to nine months ended September 30, 2023**

(dollars in thousands)	Nine Months Ended September 30,			
	2024	% of revenue	2023	% of revenue
Revenues	\$ 69,579		\$ 84,097	
Gross profit	40,755	58.6%	49,746	59.2%
Sales and marketing expenses	16,817	24.2%	17,888	21.3%
General and administrative expenses	16,690	24.0%	17,494	20.8%
Research and development expenses	8,078	11.6%	8,614	10.2%
Amortization of intangible assets	3,998	5.7%	4,138	4.9%
Other operating expenses	1,394	2.0%	-	-
Interest expense	2,356	3.4%	2,797	3.3%
Loss on pension settlement	1,243	1.8%	-	-
Loss on equity securities	1,593	2.3%	373	0.4%
Income tax expense	168	0.2%	144	0.2%

**Revenues**

Revenues decreased \$14.5 million, or 17.3%, to \$69.6 million for the nine months ended September 30, 2024, compared to \$84.1 million for the nine months ended September 30, 2023. The decrease in revenues was primarily due to continued softening of worldwide demand primarily from distributors, CRO's and academic medical research institutions.

**Gross profit**

Gross profit decreased \$8.9 million, or 18.1%, to \$40.8 million for the nine months ended September 30, 2024 compared with \$49.7 million for the nine months ended September 30, 2023, primarily due to the decrease in revenues. Gross margin decreased to 58.6% for the nine months ended September 30, 2024, compared with 59.2% for the nine months ended September 30, 2023. Gross margin was unfavorably impacted by a lower mix of high margin products and the under-absorption of fixed manufacturing overhead costs due to the decrease in revenues, which was partially offset by lower labor costs.

**Sales and marketing expenses**

Sales and marketing expenses decreased \$1.1 million, or 6.0%, to \$16.8 million for the nine months ended September 30, 2024, compared with \$17.9 million for the nine months ended September 30, 2023. The decrease was primarily due to lower compensation and travel costs.

**General and administrative expenses**

General and administrative expenses decreased \$0.8 million, or 4.6%, to \$16.7 million for the nine months ended September 30, 2024, compared with \$17.5 million for the nine months ended September 30, 2023. The decrease was primarily due to lower compensation costs and increased capitalization of costs for internal-use software.

**Research and development expenses**

Research and development expenses decreased \$0.5 million, or 6.2%, to \$8.1 million for the nine months ended September 30, 2024, compared with \$8.6 million for the nine months ended September 30, 2023. The decrease was primarily due to lower compensation costs and higher capitalized software development costs.

**Amortization of intangible assets**

Amortization of intangible assets included in operating expenses remained relatively unchanged and was \$4.0 million for the nine months ended September 30, 2024, compared with \$4.1 million for the nine months ended September 30, 2023.

***Other operating expenses***

Other operating expenses for the nine months ended September 30, 2024, were \$1.4 million and included restructuring costs of \$0.6 million in connection with headcount reductions, a fee of \$0.5 million in connection with the receipt of employee retention tax credits, and \$0.3 million related to settlement of an unclaimed property audit.

***Interest expense***

Interest expense decreased \$0.4 million, or 15.8%, to \$2.4 million for the nine months ended September 30, 2024, compared with \$2.8 million for the nine months ended September 30, 2023. The decrease was primarily due to lower average borrowings during the period.

***Loss on pension settlement***

During the nine months ended September 30, 2024, we settled our obligations under one of our defined benefit plans by using plan assets to purchase non-participating annuity contracts. The settlement resulted in the recognition of a non-cash charge of \$1.2 million which has been presented as a component of other income (expense), net. This amount included the immediate recognition of the portion of the AOCI balances related to this plan.

***Loss on equity securities***

As of December 31, 2023, we held shares of common stock of HRGN with an estimated fair value of \$3.5 million. These shares were received in connection with settlement of indemnification obligations related to litigation which was resolved during the year ended December 31, 2022. During the nine months ended September 30, 2024, we sold all of our HRGN shares for \$1.9 million and recorded a loss on sale of \$1.6 million. During the nine months ended September 30, 2023, we recorded unrealized losses \$0.4 million related to these shares.

***Income tax benefit***

The income tax expense was \$0.2 million and \$0.1 million for the nine months ended September 30, 2024 and 2023, respectively. The effective tax rates for the nine months ended September 30, 2024 and 2023 were (1.4)% and (9.9)%, respectively. The higher effective tax rate during the nine months ended September 30, 2024, compared to the nine months ended September 30, 2023, was related to a change in the mix of forecasted income and losses in the U.S. and foreign tax jurisdictions and changes to uncertain tax positions. The Company's effective tax rate for the nine months ended September 30, 2024, was different than the U.S. statutory rate primarily due to the inclusion of non-deductible executive compensation and changes in valuation allowances associated with the Company's assessment of the likelihood of the recoverability of deferred tax assets. The Company's effective tax rate for the nine months ended September 30, 2023, was different than the U.S. statutory rate primarily due to the mix of forecasted income or losses in the U.S. and foreign tax jurisdictions and a GILTI inclusion to taxable income. The effective tax rate for the nine months ended September 30, 2023, was also impacted by changes in valuation allowances associated with the Company's assessment of the likelihood of the recoverability of deferred tax assets.

## **Liquidity and Capital Resources**

Our primary sources of liquidity are cash and cash equivalents, internally generated cash flow from operations and our revolving credit facility. Our expected cash outlays relate primarily to cash payments due under our Credit Agreement described below as well as salaries, inventory, and capital expenditures.

We held cash and cash equivalents of \$4.6 million and \$4.3 million as of September 30, 2024 and December 31, 2023, respectively. Borrowings outstanding were \$38.3 million and \$37.1 million as of September 30, 2024 and December 31, 2023, respectively.

We maintain a Credit Agreement that provides for a term loan of \$40.0 million and a \$25.0 million revolving credit facility both maturing on December 22, 2025. On March 28, 2024, we entered into an amendment to the Credit Agreement pursuant to which the Lenders and administrative agent modified the definition of Consolidated EBITDA used in the calculation of certain financial covenants to adjust for charges related to an abandoned property audit and commission fees in connection with our employee retention tax credit filings.

On August 6, 2024, we entered into an amendment to the Credit Agreement that, among other things, modified the financial covenants relating to the consolidated net leverage ratio and consolidated fixed charge coverage ratio through the period ended December 31, 2024. The amendment also added a net leverage ratio requirement with respect to additional borrowing under our revolving credit facility and restrictions on certain additional indebtedness and investments, which remains in effect until we deliver to the Lenders our financial statements for the fiscal year ending December 31, 2024. In addition, until delivery of such financial statements, the applicable interest rate margin is increased by 50bps during such time as the consolidated net leverage ratio is greater than 3.0. We paid fees of \$0.2 million to the Lenders in connection with the amendment. As of September 30, 2024, we were in compliance with the financial covenants of the Credit Agreement (see Note 8 to the Consolidated Condensed Financial Statements included in Part I, Item 1. of this report).

As of September 30, 2024, the weighted average interest rate on our borrowings, net of the effect of the interest rate swap, was 8.6%. Total revolver borrowing capacity is limited by our consolidated net leverage ratio as defined under the Credit Agreement. As of September 30, 2024, there was no available and unused borrowing capacity under our revolving line of credit, as amended on August 6, 2024 (see Note 8 to the Consolidated Condensed Financial Statements included in Part I, Item 1. of this report).

Primarily due to a decline in revenues, we experienced a net cash outflow from operations during the nine months ended September 30, 2024. We have substantial debt and other financial obligations. Any failure to meet these obligations or maintain compliance with the debt covenants contained in our Credit Agreement could have a material adverse effect on our business, financial condition and results of operations. As of the date of this report, we are unable to make additional borrowings under our revolving credit facility and will be unable to make any such borrowings until we deliver to the lenders our financial statements for the year ending December 31, 2024, due to net leverage ratio requirements set forth in the August 2024 Amendment.

We continue to take actions intended to improve liquidity, including actions related to cost containment and inventory reduction. Based on our current operating plans, we expect that our available cash and cash generated from operations will be sufficient to finance operations and capital expenditures and service our debt for at least the next 12 months. Our ongoing cash flows and ability to meet our debt covenants are dependent on our revenues and operating performance. If we are unable to successfully carry out our operating plans or increase our revenues, our ability to maintain compliance with our debt covenants could be adversely affected.



## CONDENSED CONSOLIDATED CASH FLOW STATEMENTS

(in thousands)	Nine Months Ended September 30,	
	2024	2023
Cash (used in) provided by operating activities	(285)	\$ 9,725
Cash used in investing activities	(878)	(738)
Cash provided by (used in) financing activities	1,226	(8,018)
Effect of exchange rate changes on cash	223	(137)
Increase in cash and cash equivalents	286	\$ 832

Cash (used in) provided by operating activities was \$(0.3) million and \$9.7 million for the nine months ended September 30, 2024 and 2023, respectively. Cash flow from operations for the nine months ended September 30, 2024 was negatively impacted as a result of the decline in net income for the period adjusted for non-cash items and was positively impacted by the receipt of \$3.2 million of employee retention tax credits.

Cash used in investing activities was \$0.9 million for the nine months ended September 30, 2024, and consisted of \$2.8 million of capital expenditures for manufacturing and information technology infrastructure and software development, offset by \$1.9 million in proceeds from the sale of marketable equity securities. Cash used in investing activities was \$0.7 million for the nine months ended September 30, 2023, and consisted of \$1.2 million of capital expenditures in manufacturing, information technology infrastructure, and software development, partially offset by \$0.5 million from proceeds of the sale of our Hoefer product line.

Cash provided by (used in) financing activities was \$1.2 million and \$(8.0) million for the nine months ended September 30, 2024 and 2023, respectively. During the nine months ended September 30, 2024, debt outstanding under our credit facility increased by \$1.2 million, due to net borrowings under our revolver of \$6.2 million and payments of \$5.0 million against the term loan. During the nine months ended September 30, 2023, debt outstanding under our credit facility decreased by \$8.3 million, due to net payments against our revolver of \$5.0 million and payments of \$3.3 million against the term loan.

### 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, primarily the euro and British pound.

During the three and nine months ended September 30, 2024, changes in foreign currency exchange rates had an insignificant effect on our revenues and expenses.

The gain (loss) associated with the translation of our foreign equity into U.S. dollars included as a component of other comprehensive loss was \$1.6 million and \$(1.3) million for the three months ended September 30, 2024 and 2023, respectively, and \$0.7 million and \$(0.4) million for the nine months ended September 30, 2024 and 2023, respectively.

Currency exchange rate fluctuations included as a component of net loss resulted in losses of \$(0.4) million and gains of \$0.2 million for the three months ended September 30, 2024 and 2023, respectively, and losses of \$(0.5) million and gains of \$0.1 million for the nine months ended September 30, 2024 and 2023, respectively.

### Critical Accounting Policies

There have been no material changes to the critical accounting policies underlying the accompanying unaudited consolidated financial statements and as set forth in Part II, Item 7 included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2023.

### Recent Accounting Pronouncements

For information on recent accounting pronouncements impacting our business, see "Recently Issued Accounting Pronouncements Yet to Be Adopted" included in Note 1 to our Condensed Consolidated Financial Statements included in Part I, Item 1. of this report.

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

Not Applicable.

**Item 4. Controls and Procedures.**

*Evaluation of Disclosure Controls and Procedures*

As of September 30, 2024, 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 second quarter of fiscal 2024 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 13 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 risk factors discussed in Part I, "Item 1A. Risk Factors" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2023, which could materially affect our business, financial position, or future results of operations. The risks described in our Annual Report on Form 10-K are not the only risks we face. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial may also materially adversely affect our business, financial position, or future results of operations. The risk factor set forth below updates, 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, 2023.

***Our inability to make additional borrowings under our revolving credit facility could materially affect our ability to fund our existing operations or execute our current business strategy.***

As of September 30, 2024, we had outstanding borrowings of \$38.4 million under the Credit Agreement. Primarily due to a decline in revenues, we are currently unable to make additional borrowings under our revolving credit facility due to the amended net leverage ratio requirements in the Credit Agreement as amended in August 2024, and we will be unable to make any such borrowings until we deliver to the lenders our financial statements for the year ending December 31, 2024. Depending on our revenues and operating performance, our inability to make such additional borrowings could materially affect our ability to fund our existing operations or execute our current business strategy.

**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 Disclosures.**

Not applicable.

**Item 5. Other Information.**

None.

**Item 6. Exhibits**

<a href="#"><u>31.1</u></a>	<a href="#"><u>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.</u></a>
<a href="#"><u>31.2</u></a>	<a href="#"><u>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.</u></a>
<a href="#"><u>32.1*</u></a>	<a href="#"><u>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.</u></a>
<a href="#"><u>32.2*</u></a>	<a href="#"><u>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.</u></a>
101.INS	Inline XBRL Instance Document
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Labels Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (formatted in Inline XBRL and contained in Exhibit 101)

\* 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: November 8, 2024

HARVARD BIOSCIENCE, INC.

By:                   /s/ JAMES GREEN                    
James Green  
Chief Executive Officer

By:                   /s/ JENNIFER COTE                    
Jennifer Cote  
Chief Financial Officer

**Certification**

I, Jennifer Cote, 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: November 8, 2024

/s/ JENNIFER COTE

Jennifer Cote  
Chief Financial Officer

**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: November 8, 2024

/s/ JAMES GREEN

James Green  
Chief Executive Officer

**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 her knowledge that the Company's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2024 (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: November 8, 2024

/s/ JENNIFER COTE

Name: Jennifer Cote  
Title: Chief Financial Officer

**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 September 30, 2024 (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: November 8, 2024

/s/ JAMES GREEN

Name: James Green

Title: Chief Executive Officer