

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, 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 April 30, 2024, there were 43,429,626 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)

	March 31, 2024	December 31, 2023
Assets		
Current assets:		
Cash and cash equivalents	\$ 4,255	\$ 4,283
Accounts receivable, net	15,309	16,099
Inventories	24,136	24,716
Other current assets	4,448	3,940
Total current assets	48,148	49,038
Property, plant and equipment, net	4,492	3,981
Operating lease right-of-use assets	4,359	4,773
Goodwill	56,699	57,065
Intangible assets, net	14,678	16,036
Other long-term assets	4,785	6,473
Total assets	\$ 133,161	\$ 137,366
Liabilities and Stockholders' Equity		
Current liabilities:		
Current portion of long-term debt	\$ 3,720	\$ 5,859
Current portion of operating lease liabilities	1,197	1,416
Accounts payable	6,044	5,554
Contract liabilities	4,388	4,508
Other current liabilities	10,328	9,205
Total current liabilities	25,677	26,542
Long-term debt, net	31,890	30,704
Deferred tax liability	772	776
Operating lease liabilities	4,557	4,794
Other long-term liabilities	1,453	1,476
Total liabilities	64,349	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: 43,421,251 shares issued and outstanding at March 31, 2024; 43,394,509 shares issued and outstanding at December 31, 2023	434	434
Additional paid-in-capital	233,451	232,435
Accumulated deficit	(150,299)	(145,605)
Accumulated other comprehensive loss	(14,774)	(14,190)
Total stockholders' equity	68,812	73,074
Total liabilities and stockholders' equity	\$ 133,161	\$ 137,366

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 March 31,	
	2024	2023
Revenues	\$ 24,512	\$ 29,975
Cost of revenues	9,740	11,629
Gross profit	14,772	18,346
Sales and marketing expenses	5,904	5,978
General and administrative expenses	5,963	6,334
Research and development expenses	2,885	2,897
Amortization of intangible assets	1,333	1,388
Other operating expenses	966	-
Total operating expenses	17,051	16,597
Operating (loss) income	(2,279)	1,749
Other (expense) income:		
Interest expense	(751)	(974)
Loss on equity securities - Note 6	(1,312)	-
Other (expense) income, net	(142)	432
Total other (expense) income	(2,205)	(542)
(Loss) income before income taxes	(4,484)	1,207
Income tax expense	210	585
Net (loss) income	\$ (4,694)	\$ 622
(Loss) income per share:		
Basic (loss) income per share	\$ (0.11)	\$ 0.01
Diluted (loss) income per share	\$ (0.11)	\$ 0.01
Weighted-average common shares:		
Basic	43,402	42,119
Diluted	43,402	42,783

See accompanying notes to condensed consolidated financial statements.

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

	Three Months Ended March 31,	
	2024	2023
Net (loss) income	\$ (4,694)	\$ 622
Other comprehensive (loss) income:		
Foreign currency translation adjustments	(783)	837
Derivative instruments qualifying as cash flow hedges, net of tax of \$-0-	199	(440)
Other comprehensive (loss) income	(584)	397
Comprehensive (loss) income	<u>\$ (5,278)</u>	<u>\$ 1,019</u>

See accompanying notes to condensed consolidated financial statements.

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

Three Months Ended March 31, 2024	Number of Shares Issued	Common Stock	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
Balance at December 31, 2023	43,395	\$ 434	\$ 232,435	\$ (145,605)	\$ (14,190)	\$ 73,074
Stock option exercises	4	-	15	-	-	15
Vesting of restricted stock units	34	-	-	-	-	-
Shares withheld for taxes	(12)	-	(47)	-	-	(47)
Stock-based compensation expense	-	-	1,048	-	-	1,048
Net loss	-	-	-	(4,694)	-	(4,694)
Other comprehensive loss	-	-	-	-	(584)	(584)
Balance at March 31, 2024	<u>43,421</u>	<u>\$ 434</u>	<u>\$ 233,451</u>	<u>\$ (150,299)</u>	<u>\$ (14,774)</u>	<u>\$ 68,812</u>

Three Months Ended March 31, 2023	Number of Shares Issued	Common Stock	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
Balance at December 31, 2022	42,082	\$ 454	\$ 229,008	\$ (142,190)	\$ (15,052)	\$ 72,220
Stock option exercises	39	1	103	-	-	104
Vesting of restricted stock units	125	-	-	-	-	-
Shares withheld for taxes	(56)	-	(156)	-	-	(156)
Stock-based compensation expense	-	-	1,153	-	-	1,153
Net income	-	-	-	622	-	622
Other comprehensive income	-	-	-	-	397	397
Balance at March 31, 2023	<u>42,190</u>	<u>\$ 455</u>	<u>\$ 230,108</u>	<u>\$ (141,568)</u>	<u>\$ (14,655)</u>	<u>\$ 74,340</u>

See accompanying notes to condensed consolidated financial statements.

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

	Three Months Ended March 31,	
	2024	2023
Cash flows from operating activities:		
Net (loss) income	\$ (4,694)	\$ 622
Adjustments to reconcile net (loss) income to net cash provided by operating activities:		
Depreciation	404	333
Amortization of intangible assets	1,377	1,388
Amortization of deferred financing costs	70	70
Stock-based compensation expense	1,048	1,153
Deferred income taxes and other	178	(55)
Loss on equity securities - Note 6	1,312	-
Gain on sale of product line - Note 14	-	(403)
Changes in operating assets and liabilities:		
Accounts receivable	704	(923)
Inventories	(617)	(292)
Other assets	(298)	(308)
Accounts payable and other current liabilities	2,469	(150)
Contract liabilities	(120)	741
Other liabilities	(430)	(364)
Net cash provided by operating activities	<u>1,403</u>	<u>1,812</u>
Cash flows from investing activities:		
Additions to property, plant and equipment	(645)	(224)
Capitalized software development costs	(75)	-
Proceeds from sale of product line	-	512
Proceeds from sale of marketable equity securities	495	-
Net cash (used in) provided by investing activities	<u>(225)</u>	<u>288</u>
Cash flows from financing activities:		
Borrowing from revolving line of credit	2,500	1,500
Repayment of revolving line of credit	(500)	(2,500)
Repayment of term debt	(3,023)	(1,841)
Proceeds from exercise of stock options and employee stock purchase plan	15	104
Taxes paid related to net share settlement of equity awards	(47)	(156)
Net cash used in financing activities	<u>(1,055)</u>	<u>(2,893)</u>
Effect of exchange rate changes on cash	(151)	74
Decrease in cash and cash equivalents	(28)	(719)
Cash and cash equivalents at beginning of period	4,283	4,508
Cash and cash equivalents at end of period	<u>\$ 4,255</u>	<u>\$ 3,789</u>
Supplemental disclosures of cash flow information:		
Cash paid for interest	<u>\$ 768</u>	<u>\$ 1,172</u>
Cash paid for income taxes, net of refunds	<u>\$ 26</u>	<u>\$ (134)</u>

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 March 31, 2024 and for the three months ended March 31, 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 March 31, 2024, results of operations and comprehensive income (loss) and cash flows for the three months ended March 31, 2024 and 2023, as applicable, have been made. The results of operations for the three months ended March 31, 2024, are not necessarily indicative of the operating results for the full fiscal year 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 three months ended March 31, 2024.

Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles in the United States 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 evaluate 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 reviews its estimates based upon currently available information. Actual results could differ materially from those estimates.

Other Operating Expenses

Other operating expenses for the three months ended March 31, 2024 included a fee of \$0.5 million in connection with the receipt of employee retention credits (See Note 5) and an estimated loss of \$0.5 million related to an unclaimed property audit (See Note 13).

Recently Issued Accounting Pronouncements Yet to Be Adopted

In December 2023, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update (“ASU”) No. 2023-09, *Income Taxes (Topic 740): Improvements to Income Tax*, which enhances disclosures related to the effective tax rate reconciliation, income taxes paid, as well as other disclosures. The new standard impacts footnote disclosures and is effective for the Company’s annual financial statements for the year ended December 31, 2025. The Company is currently evaluating the potential impact of adopting ASU No. 2023-09 will have on the 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.

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

(in thousands, except per share data)	Three Months Ended March 31,	
	2024	2023
Net (loss) income	\$ (4,694)	\$ 622
Weighted average shares outstanding - basic	43,402	42,119
Dilutive effect of equity awards	-	664
Weighted average shares outstanding - diluted	43,402	42,783
Basic (loss) income per share	\$ (0.11)	\$ 0.01
Diluted (loss) income per share	\$ (0.11)	\$ 0.01
Shares excluded from diluted (loss) income per share due to their anti-dilutive effect	3,207	1,167

3. Revenues

The following tables represent a disaggregation of revenue from contracts with customers for the three months ended March 31, 2024 and 2023:

Revenues by type were as follows:

(in thousands)	Three Months Ended March 31,	
	2024	2023
Instruments, equipment, software and accessories	\$ 22,759	\$ 28,493
Service, maintenance and warranty contracts	1,753	1,482
Total revenues	\$ 24,512	\$ 29,975

Revenues by timing of recognition were as follows:

(in thousands)	Three Months Ended March 31,	
	2024	2023
Goods and services transferred at a point in time	\$ 23,743	\$ 29,306
Goods and services transferred over time	769	669
Total revenues	\$ 24,512	\$ 29,975

Revenue by geographic destination were as follows:

(in thousands)	Three Months Ended March 31,	
	2024	2023
United States	\$ 10,983	\$ 12,302
Europe	6,578	7,441
Greater China	4,382	6,505
Rest of the world	2,569	3,727
Total revenues	\$ 24,512	\$ 29,975

Contract Liabilities

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

(dollars in thousands)	March 31, 2024	December 31, 2023	Change	Percentage
Service, maintenance and warranty contracts	\$ 2,748	\$ 2,849	\$ (101)	-3.5%
Customer advances	1,640	1,659	(19)	-1.1%
Total contract liabilities	\$ 4,388	\$ 4,508	\$ (120)	-2.7%

Changes in the Company's contract liabilities are primarily due to the timing of receipt of payments under service, maintenance and warranty contracts. During the three months ended March 31, 2024 and 2023, the Company recognized revenue of \$1.6 million and \$1.0 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 losses on receivables was as follows:

(in thousands)	Three Months Ended March 31,	
	2024	2023
Balance, beginning of period	\$ 160	\$ 191
Provision for expected credit losses	1	(3)
Charge-offs and other	(34)	(21)
Balance, end of period	<u>\$ 127</u>	<u>\$ 167</u>

Concentrations

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

Warranties

Activity in the product warranty accrual was as follows:

(in thousands)	Three Months Ended March 31,	
	2024	2023
Balance, beginning of period	\$ 336	\$ 268
Expense	105	83
Warranty claims	(82)	(72)
Balance, end of period	<u>\$ 359</u>	<u>\$ 279</u>

4. Goodwill and Intangible Assets

The change in the carrying amount of goodwill for the three months ended March 31, 2024 was as follows:

(in thousands)	
Carrying amount at December 31, 2023	\$ 57,065
Effect of change in currency translation	(366)
Carrying amount at March 31, 2024	<u>\$ 56,699</u>

Intangible assets at March 31, 2024 and December 31, 2023 consisted of the following:

(in thousands)	March 31, 2024			December 31, 2023		
	Gross	Accumulated Amortization	Net	Gross	Accumulated Amortization	Net
Amortizable intangible assets:						
Distribution agreements/customer relationships	\$ 15,816	\$ (9,798)	\$ 6,018	\$ 16,038	\$ (9,706)	\$ 6,332
Technology and software development	34,987	(27,891)	7,096	35,007	(27,029)	7,978
Trade names and patents	7,530	(6,166)	1,364	7,613	(6,094)	1,519
Total amortizable intangible assets	\$ 58,333	\$ (43,855)	\$ 14,478	\$ 58,658	\$ (42,829)	\$ 15,829
Indefinite-lived intangible assets:			200			207
Total intangible assets			\$ 14,678			\$ 16,036

Intangible asset amortization expense for the three months ended March 31, 2024 and 2023 was as follows:

(in thousands)	Three Months Ended March 31,	
	2024	2023
Cost of revenues	\$ 44	\$ -
Operating expense	1,333	1,388
Total amortization of intangible assets	\$ 1,377	\$ 1,388

As of March 31, 2024, estimated future amortization expense of amortizable intangible assets is as follows:

(in thousands)	
2024 (remainder of the year)	\$ 4,051
2025	4,197
2026	2,536
2027	1,264
2028	1,093
Thereafter	1,337
Total	\$ 14,478

5. Balance Sheet Information

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

<i>Inventories:</i>	March 31,	December 31,
(in thousands)	2024	2023
Finished goods	\$ 5,917	\$ 5,120
Work in process	2,865	4,188
Raw materials	15,354	15,408
Total	\$ 24,136	\$ 24,716

<i>Other Current Liabilities:</i>	March 31,	December 31,
(in thousands)	2024	2023
Compensation	\$ 3,215	\$ 3,929
Customer credits	1,548	3,201
Employee retention credit funds	3,154	-
Professional fees	514	499
Warranty costs	359	336
Other	1,538	1,240
Total	\$ 10,328	\$ 9,205

The Coronavirus Aid, Relief, and Economic Security Act of 2020 (“CARES Act”) provided an employee retention credit (“ERC”) that was a refundable tax credit against certain employer taxes. The Company has 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 an ERC refund of \$3.2 million during the quarter ended March 31, 2024. Due to the subjectivity of the credit, the Company has included the refund received in other current liabilities in the consolidated balance sheet as of March 31, 2024, subject to a determination that the refund is recognizable under IAS 20.

The Company engaged a professional services firm under a commission fee arrangement to assist with determining program eligibility and in accumulating the necessary support that was used as a basis in the filing. During the three months ended March 31, 2024, the Company paid a fee of \$0.5 million for these services, which is included in other operating expenses in the consolidated statement of operations.

6. Marketable Equity Securities

In April 2023, the Company obtained shares of common stock of Harvard Apparatus Regenerative Technologies, Inc. (“HRGN” formerly known as Biostage, Inc.) in connection with settlement of indemnification obligations related to litigation which occurred during the year ended December 31, 2022. These shares had an estimated fair value of \$1.7 million and \$3.5 million, as of March 31, 2024, and December 31, 2023, respectively, and are included in the consolidated balance sheets as a component of other long-term assets.

The Company received cash proceeds of \$0.5 million from the sale of HRGN shares sold during the three months ended March 31, 2024, which resulted in a realized loss on sale of \$0.3 million. The Company incurred an unrealized loss of \$1.0 million on HRGN shares held during the three months ended March 31, 2024. The Company determines the fair value of its HRGN common stock based on the closing price as quoted on the OTCQB Marketplace at the reporting date. Due to HRGN’s limited operating history, its overall financial condition and the limited trading volumes and liquidity of its common stock, the value of the Company’s investment in this common stock could fluctuate considerably or become worthless.

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 months ended March 31, 2024 and 2023, were as follows:

(in thousands)	Three Months Ended March 31,	
	2024	2023
Operating lease cost	\$ 511	\$ 543
Short-term lease cost	50	67
Sublease income	(25)	(25)
Total lease cost	<u>\$ 536</u>	<u>\$ 585</u>

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

(in thousands)	Three Months Ended March 31,	
	2024	2023
Cash paid for amounts included in the measurement of lease liabilities	\$ 597	\$ 653

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

(in thousands)	March 31, 2024	December 31, 2023
Operating lease right-of-use assets	\$ 4,359	\$ 4,773
Current portion, operating lease liabilities	\$ 1,197	\$ 1,416
Operating lease liabilities, long-term	4,557	4,794
Total operating lease liabilities	\$ 5,754	\$ 6,210
Weighted average remaining lease term (years)	6	
Weighted average discount rate	9.5%	

Future minimum lease payments for operating leases, with initial terms in excess of one year at March 31, 2024, are as follows:

(in thousands)	
2024 (remainder of the year)	\$ 1,377
2025	1,172
2026	1,069
2027	1,057
2028	1,057
Thereafter	1,867
Total lease payments	7,599
Less imputed interest	(1,845)
Total operating lease liabilities	\$ 5,754

8. Long-Term Debt

As of March 31, 2024 and December 31, 2023, the Company's borrowings were as follows:

(in thousands)	March 31, 2024	December 31, 2023
Long-term debt:		
Term loan	\$ 27,700	\$ 30,723
Revolving line	8,400	6,400
Less: unamortized deferred financing costs	(490)	(560)
Total debt	35,610	36,563
Less: current portion of long-term debt	(4,000)	(6,139)
Current unamortized deferred financing costs	280	280
Long-term debt	\$ 31,890	\$ 30,704

The aggregate amounts of debt maturities are as follows:

(in thousands)	
2024	\$ 4,000
2025	32,100
	\$ 36,100

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 senior 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 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. The Company’s obligations under the Credit Agreement are secured by substantially all of the assets of Harvard Bioscience, Inc., and each guarantor (including all or a portion of the equity interests in certain of the Company’s domestic and foreign subsidiaries). The Credit Facility matures on December 22, 2025. Issuance costs of \$1.4 million are amortized over the contractual term to maturity date on a straight-line basis, which approximates the effective interest method. Available and unused borrowing capacity under the revolving line of credit was \$4.4 million as of March 31, 2024 based on the Credit Agreement, as amended pursuant to the March 2024 Amendment as described below. Total revolver borrowing capacity is limited by the consolidated net leverage ratio as defined under the amended Credit Agreement.

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”), or (ii) an alternative base rate plus an applicable interest rate margin, each as determined as provided in the Credit Agreement (an “ABR Loan”). SOFR interest under the Credit Agreement is subject to applicable market rates and a floor of 0.50%. 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%. The applicable interest rate margin varies from 2.0% per annum to 3.25% per annum for SOFR Loans, and from 1.5% per annum to 3.0% 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. 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 borrowings for the three months ended March 31, 2024 and 2023, was 7.7% and 7.9%, respectively, and the weighted average interest rate as of March 31, 2024, net of the effect of the Company’s interest rate swaps, was 7.4%. 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, 2024, the term loan requires quarterly installments of \$1.0 million with a balloon payment at maturity. 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 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 customary affirmative, negative, and financial covenants binding on the Company. The negative covenants limit the ability of the Company, among other things, to incur debt, incur liens, make investments, sell assets and 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 (the “March 2024 Amendment”) 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 the ongoing abandoned property audit (See Note 13) and commission fees expected to be paid in connection with the employee retention credit filings (See Note 5). The Company was in compliance with the covenants of the Credit Agreement, as amended, as of March 31, 2024.

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 \$25.9 million as of March 31, 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 as net income when the underlying hedged interest impacts earnings. An assessment is performed quarterly to evaluate the ongoing hedge effectiveness.

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

(in thousands)	Derivatives Instruments	Balance Sheet Classification	March 31, 2024		December 31, 2023	
			Notional Amount	Fair Value (a)	Notional Amount	Fair Value (a)
	Interest rate swap	Other long-term liabilities	\$ 25,920	\$ *	\$ 27,375	\$ (199)

* Amount not significant.

(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	Three Months Ended
	March 31, 2024	March 31, 2023
Gain (loss) recognized in OCI on derivatives (effective portion)	\$ 199	\$ (440)
Gain (loss) reclassified from OCI to interest expense	47	(1)

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 March 31, 2024			
	Level 1	Level 2	Level 3	Total
Equity securities - common stock	\$ 1,704	\$ -	\$ -	\$ 1,704
Interest rate swap agreements	\$ -	\$ *	\$ -	\$ -

Assets (Liabilities) (in thousands)	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 agreements	\$ -	\$ (199)	\$ -	\$ (199)

* Amount not significant.

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 investment in HRGN common stock (See Note 6) was based on the closing price per the OTCQB Marketplace at the reporting date. The fair value of the Company's interest rate swap agreements was based on SOFR yield curves at the reporting date.

11. Stock-Based Compensation

Stock-based compensation expense for the three months ended March 31, 2024 and 2023 was allocated as follows:

(in thousands)	Three Months Ended March 31,	
	2024	2023
Cost of revenues	\$ 52	\$ 69
Sales and marketing expenses	130	145
General and administrative expenses	771	869
Research and development expenses	95	70
Total stock-based compensation expense	\$ 1,048	\$ 1,153

As of March 31, 2024, the total compensation costs related to unvested awards not yet recognized was \$8.4 million and the weighted average period over which it is expected to be recognized is approximately 2.3 years. The Company did not capitalize any stock-based compensation.

Restricted stock unit (“RSU”) activity for the three months ended March 31, 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	779,629	4.19	-	-	375,895	4.19
Vested	(33,979)	2.58	-	-	-	-
Forfeited	(16,083)	3.27	-	-	-	-
Balance at March 31, 2024	<u>1,894,563</u>	<u>\$ 3.67</u>	<u>801,845</u>	<u>\$ 3.37</u>	<u>375,895</u>	<u>\$ 4.19</u>

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 three months ended March 31, 2024 was as follows:

	Number of Options	Weighted- Average Exercise Price	Weighted- Average Remaining Contractual Term	Aggregate Intrinsic Value (in thousands)
Outstanding and Exerciseable at December 31, 2023	924,067	\$ 3.37		
Exercised	(3,899)	3.96		
Outstanding and Exerciseable at March 31, 2024	<u>920,168</u>	<u>\$ 3.37</u>	<u>3.2 years</u>	<u>\$ 964</u>

The aggregate intrinsic value in the preceding table represents the total pre-tax intrinsic value, based on the Company’s closing stock price of \$4.24 as of the end 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 three months ended March 31, 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 \$0.2 million and \$0.6 million for the three months ended March 31, 2024 and 2023, respectively. The Company’s effective tax rate of (4.7%) for the three months ended March 31, 2024 was lower 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 of 48.5% for the three months ended March 31, 2023 was higher than the U.S. statutory rate primarily due to a Global Intangible Low-Taxed Income (“GILTI”) inclusion to taxable income and changes in valuation allowances. The Company has valuation allowances against substantially all of its tax credit carryforwards.

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 March 31, 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 is currently undergoing an unclaimed property audit. Based on the Company's evaluation of the current stage of the audit, the Company accrued \$0.5 million of loss contingencies during the three months ended March 31, 2024, which has been included in other operating expenses in the consolidated statement of operations.

14. Product Line Disposition

In February 2023, the Company sold its Hoefler 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, net in the consolidated statement of operations for the three months ended March 31, 2023. Revenue and gross profit of this disposed product line included in the condensed consolidated statement of operations for the three months ended March 31, 2023 were not significant.

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 is affected by global and regional economic trends and uncertainties. The global economy has recently experienced increasing uncertainty as a result of developments including inflationary pressure, higher interest rates, 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 been affected by a reduced demand from our biotechnology and pharmaceutical company customers, due principally to the increased cost of capital and a reduction in spending following the COVID-19 pandemic.

If these trends are prolonged or are more severe, or if the recovery is less robust or takes longer than anticipated, our business, results of operations, and cash flow may be materially impacted.

Selected Results of Operations*Three months ended March 31, 2024 compared to three months ended March 31, 2023*

(dollars in thousands)	Three Months Ended March 31,			
	2024	% of revenue	2023	% of revenue
Revenues	\$ 24,512		\$ 29,975	
Gross profit	14,772	60.3%	18,346	61.2%
Sales and marketing expenses	5,904	24.1%	5,978	19.9%
General and administrative expenses	5,963	24.3%	6,334	21.1%
Research and development expenses	2,885	11.8%	2,897	9.7%
Amortization of intangible assets	1,333	5.4%	1,388	4.6%
Other operating expenses	966	3.9%	-	-
Interest expense	751	3.1%	974	3.2%
Loss on equity securities	1,312	5.4%	-	-
Income tax expense	210	0.9%	585	2.0%

Revenues

Revenues decreased \$5.5 million, or 18.2%, to \$24.5 million for the three months ended March 31, 2024, compared to \$30.0 million for the three months ended March 31, 2023. The decrease in revenue was primarily due to the softening of worldwide demand, in particular in the Asia-Pacific region compared to a strong first quarter in 2023.

Gross profit

Gross profit decreased \$3.5 million, or 19.5%, to \$14.8 million for the three months ended March 31, 2024 compared with \$18.3 million for the three months ended March 31, 2023, primarily due to the decrease in revenues. Gross margin decreased to 60.3% for the three months ended March 31, 2024, compared with 61.2% for the three months ended March 31, 2023. The decrease in gross margin was primarily the result of under-absorption of manufacturing overhead costs due to the decrease in revenues.

Sales and marketing expenses

Sales and marketing expenses of \$5.9 million for the three months ended March 31, 2024, were comparable to the \$6.0 million during the same period in 2023. Reduced variable compensation was offset by increased investments in personnel to support our growth strategy, product launches and travel costs related to industry trade shows.

General and administrative expenses

General and administrative expenses decreased \$0.3 million, or 5.9%, to \$6.0 million for the three months ended March 31, 2024, compared with \$6.3 million for the three months ended March 31, 2023. The decrease was primarily due to reduced variable compensation.

Research and development expenses

Research and development expenses were \$2.9 million for both the three months ended March 31, 2024, and March 31, 2023.

Amortization of intangible assets

Amortization of intangible assets included in operating expenses remained relatively unchanged and decreased to \$1.3 million for the three months ended March 31, 2024, compared with \$1.4 million for the three months ended March 31, 2023.

Other operating expenses

Other operating expenses for the three months ended March 31, 2023 included a fee of \$0.5 million in connection with the receipt of employee retention credits and an estimated loss of \$0.5 million related to an unclaimed property audit.

Interest expense

Interest expense decreased \$0.2 million, or 22.9%, to \$0.8 million for the three months ended March 31, 2024, compared with \$1.0 million for the three months ended March 31, 2023. The decrease was primarily due to lower average borrowings during the period.

Loss on equity securities

As of March 31, 2024 and December 31, 2023 we held shares of common stock of HRGN with an estimated fair value of \$1.7 million and \$3.5 million, respectively. These shares were received in April 2023 in connection with settlement of indemnification obligations related to litigation which occurred during the year ended December 31, 2022. During the three months ended March 31, 2024, we recorded a loss of \$1.3 million consisting of a realized loss of \$0.3 million for shares sold and an unrealized loss of \$1.0 million for shares held. We determine the fair value of our HRGN common stock based on the closing price as quoted on the OTCQB Marketplace at the reporting date. Due to HRGN's limited operating history, its overall financial condition and the limited trading volumes and liquidity of its common stock, the value of our investment in this common stock could fluctuate considerably or become worthless.

Income tax expense

Income tax expense was \$0.2 million and \$0.6 million for the three months ended March 31, 2024 and 2023, respectively. The effective tax rates for the three months ended March 31, 2024 and 2023 were (4.7)% and 48.5%, respectively. The effective tax rate decreased in the first quarter of 2024 compared to 2023 due to a decrease in the GILTI inclusion. The effective tax rate for both the first quarters of 2024 and 2023 differed from the U.S. statutory rate primarily due to the inclusion of non-deductible executive compensation and changes in valuation allowances associated with our 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 capital expenditures, salaries, inventory, and capital expenditures.

We held cash and cash equivalents of \$4.3 million at both March 31, 2024, and December 31, 2023. Borrowings outstanding were \$36.1 million and \$37.1 million as of March 31, 2024 and December 31, 2023, respectively.

We maintain a Credit Agreement which provides for a term loan of \$40.0 million and a \$25.0 million senior 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 the ongoing abandoned property audit and commission fees expected to be paid in connection with our employee retention credit filings. We were in compliance with the covenants of the Credit Agreement, as amended, as of March 31, 2024. (See Note 8 to the Consolidated Condensed Financial Statements included in Part I, Item 1. of this report).

As of March 31, 2024, the weighted average interest rate on our borrowings, net of the effect of the interest rate swaps, was 7.4%, and the available and unused borrowing capacity was \$4.4 million. Total revolver borrowing capacity is limited by our consolidated net leverage ratio as defined under the Credit Agreement, as amended.

Based on our current operating plans, we expect that our available cash, cash generated from current operations and debt capacity will be sufficient to finance current operations and capital expenditures for at least the next 12 months. This assessment includes consideration of our best estimates of the impact of macroeconomic conditions on our financial results described above. 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.

CONDENSED CONSOLIDATED CASH FLOW STATEMENTS

(in thousands)	Three Months Ended March 31,	
	2024	2023
Cash provided by operating activities	\$ 1,403	\$ 1,812
Cash (used in) provided by investing activities	(225)	288
Cash used in financing activities	(1,055)	(2,893)
Effect of exchange rate changes on cash	(151)	74
Decrease in cash and cash equivalents	<u>\$ (28)</u>	<u>\$ (719)</u>

Cash provided by operating activities was \$1.4 million and \$1.8 million for the three months ended March 31, 2024 and 2023, respectively. Cash flow from operations for the three months ended March 31, 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 credits.

Cash used in investing activities was \$0.2 million for the three months ended March 31, 2024 and primarily consisted of capital expenditures in manufacturing and information technology infrastructure of \$0.7 million partially offset by \$0.5 million from the proceeds from the sale of marketable equity securities. Cash provided by investing activities was \$0.3 million for the three months ended March 31, 2023 and primarily consisted of \$0.5 million from proceeds of the sale our Hoefer product line partially offset by \$0.2 million of capital expenditures.

Cash used in financing activities was \$1.1 million and \$2.9 million for the three months ended March 31, 2024 and 2023, respectively. During the three months ended March 31, 2024, debt outstanding under our credit facility decreased by \$1.0 million, consisting of net borrowings under our revolver of \$2.0 million, and payments of \$3.0 million against the term loan. During the three months ended March 31, 2023, debt outstanding under our credit facility decreased by \$2.8 million, consisting of net payments against our revolver of \$1.0 million, and payments of \$1.8 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 months ended March 31, 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 income (loss) during the three months ended March 31, 2024 was a loss of \$(0.8) million, compared to a gain of \$0.8 million for the three months ended March 31, 2023. Currency exchange rate fluctuations included as a component of net income (loss) during the three months ended March 31, 2024, and March 31, 2023 were not significant.

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 March 31, 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 first 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.

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.

The information included in Part II, Item 9B in our Annual Report on Form 10-K for the fiscal year ended December 31, 2023 is incorporated herein by reference.

Item 6. Exhibits

10.1	Third Amendment to Credit Agreement dated March 28, 2024, among Harvard Bioscience, Inc., Citizen Bank, N. A., as the administrative agent, and the lenders party thereto. (previously filed as an exhibit to the Company’s Current Report on Form 8-K on April 3, 2024 and incorporated by reference thereto).
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	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

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 May 7, 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: May 7, 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 March 31, 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: May 7, 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 March 31, 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: May 7, 2024

/s/ JAMES GREEN

Name: James Green
Title: Chief Executive Officer