UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 10-Q

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

For the quarterly period ended June 30, 2015

☐ **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	**04-3306140**
(State or Other Jurisdiction of Incorporation or Organization)	**(IRS Employer Identification No.)**
84 October Hill Road, Holliston, MA	**01746**
(Address of Principal Executive Offices)	**(Zip Code)**

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

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

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). ☒ YES ☐ NO

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

Large accelerated filer	☐	Accelerated filer	x
Non-accelerated filer	☐ (Do not check if a smaller reporting company)	Smaller reporting company	☐

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

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date.

As of July 31, 2015, there were 33,925,864 shares of common stock, par value $0.01 per share, outstanding.

HARVARD BIOSCIENCE, INC.

FORM 10-Q
For the Quarter Ended June 30, 2015

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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)

	June 30, 2015	December 31, 2014
Assets		
Current assets:		
Cash and cash equivalents	$ 7,402	$ 14,134
Accounts receivable, net of allowance for doubtful accounts of $320 and $328, respectively	18,542	16,141
Inventories	23,068	20,531
Deferred income tax assets - current	2,608	1,515
Other receivables and other assets	4,922	4,742
Total current assets	56,542	57,063
Property, plant and equipment, net	5,764	5,190
Deferred income tax assets - non-current	11,018	11,056
Amortizable intangible assets, net	22,538	21,153
Goodwill	41,081	39,822
Other indefinite lived intangible assets	1,228	1,252
Other assets	406	380
Total assets	$ 138,577	$ 135,916
Liabilities and Stockholders' Equity		
Current liabilities:		
Current portion, long-term debt	$ 5,000	$ 5,000
Accounts payable	8,834	6,294
Deferred revenue	864	655
Accrued income taxes	159	554
Accrued expenses	4,438	4,452
Deferred income tax liabilities - current	246	121
Other liabilities - current	1,692	1,023
Total current liabilities	21,233	18,099
Long-term debt, less current installments	15,650	16,450
Deferred income tax liabilities - non-current	2,206	1,325
Other long term liabilities	4,675	4,574
Total liabilities	43,764	40,448
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, par value $0.01 per share, 5,000,000 shares authorized	-	-
Common stock, par value $0.01 per share, 80,000,000 shares authorized; 41,661,261 and 40,308,763 shares issued and 33,915,754 and 32,563,256 shares outstanding, respectively	415	397
Additional paid-in-capital	209,793	206,656
Accumulated deficit	(93,736)	(92,684)
Accumulated other comprehensive loss	(10,991)	(8,233)
Treasury stock at cost, 7,745,507 common shares	(10,668)	(10,668)
Total stockholders' equity	94,813	95,468
Total liabilities and stockholders' equity	$ 138,577	$ 135,916

See accompanying notes to unaudited consolidated financial statements.

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

	Three Months Ended June 30,		Six Months Ended June 30,	
	2015	**2014**	**2015**	**2014**
Revenues	$ 28,800	$ 26,958	$ 54,563	$ 52,851
Cost of revenues (exclusive of items shown separately below)	16,205	14,680	30,490	28,812
Gross profit	12,595	12,278	24,073	24,039
Sales and marketing expenses	5,128	4,557	10,327	8,989
General and administrative expenses	4,922	3,997	9,753	8,248
Research and development expenses	1,714	1,284	3,462	2,257
Restructuring charges	54	115	111	252
Amortization of intangible assets	678	587	1,471	1,221
Total operating expenses	12,496	10,540	25,124	20,967
Operating income (loss)	99	1,738	(1,051)	3,072
Other (expense) income:				
Foreign exchange	(134)	(67)	89	(148)
Interest expense	(215)	(248)	(437)	(513)
Interest income	3	12	4	26
Other expense	(180)	(165)	(796)	(148)
Other expense, net	(526)	(468)	(1,140)	(783)
(Loss) income before income taxes	(427)	1,270	(2,191)	2,289
Income tax (benefit) expense	(776)	248	(1,139)	548
Net income (loss)	$ 349	$ 1,022	$ (1,052)	$ 1,741
Earnings (loss) per share:				
Basic earnings (loss) per common share	$ 0.01	$ 0.03	$ (0.03)	$ 0.05
Diluted earnings (loss) per common share	$ 0.01	$ 0.03	$ (0.03)	$ 0.05
Weighted average common shares:				
Basic	33,569	32,045	33,240	31,947
Diluted	35,026	32,946	33,240	32,935
Comprehensive income (loss):				
Net income (loss)	$ 349	$ 1,022	$ (1,052)	$ 1,741
Foreign currency translation adjustments	1,760	369	(2,737)	584
Derivatives qualifying as hedges, net of tax:				
Loss on derivative instruments designated and qualifying as cash flow hedges	(12)	(56)	(71)	(80)
Amounts reclassified from accumulated other comprehensive loss to net income (loss)	24	34	50	69
Unrealized losses on pension benefit obligation, net of tax	-	(484)	-	(484)
Total comprehensive income (loss)	$ 2,121	$ 885	$ (3,810)	$ 1,830

See accompanying notes to unaudited consolidated financial statements.

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

	Six Months Ended June 30, 2015	Six Months Ended June 30, 2014
Cash flows from operating activities:		
Net (loss) income	$ (1,052)	$ 1,741
Adjustments to reconcile net (loss) income to net cash (used in) provided by operating activities:		
Stock compensation expense	1,272	919
Depreciation	769	608
Loss (gain) on disposal of fixed assets	11	(4)
Non-cash restructuring credits	(64)	(118)
Amortization of catalog costs	8	24
Provision for allowance for doubtful accounts	3	(30)
Amortization of intangible assets	1,471	1,221
Amortization of deferred financing costs	30	30
Deferred income taxes	(1,027)	119
Changes in operating assets and liabilities:		
Increase in accounts receivable	(2,136)	(294)
Increase in inventories	(1,242)	(1,312)
Increase in other receivables and other assets	(240)	(864)
Increase in trade accounts payable	2,451	349
Decrease in accrued income taxes	(395)	(7)
(Decrease) increase in accrued expenses	(660)	51
Increase (decrease) in deferred revenue	216	(36)
(Decrease) increase in other liabilities	(396)	89
Net cash (used in) provided by operating activities	(981)	2,486
Cash flows (used in) provided by investing activities:		
Additions to property, plant and equipment	(1,640)	(744)
Proceeds from sales of property, plant and equipment	15	78
Acquisitions, net of cash acquired	(4,545)	-
Net cash used in investing activities	(6,170)	(666)
Cash flows provided by (used in) financing activities:		
Proceeds from issuance of debt	4,050	-
Repayments of debt	(4,850)	(2,500)
Payments of debt issuance costs	(32)	-
Net proceeds from issuance of common stock	1,864	1,001
Net cash provided by (used in) financing activities	1,032	(1,499)
Effect of exchange rate changes on cash	(613)	342
(Decrease) increase in cash and cash equivalents	(6,732)	663
Cash and cash equivalents at the beginning of period	14,134	25,771
Cash and cash equivalents at the end of period	$ 7,402	$ 26,434
Supplemental disclosures of cash flow information:		
Cash paid for interest	$ 427	$ 458
Cash paid for income taxes, net of refunds	$ 312	$ 688

See accompanying notes to unaudited consolidated financial statements.

HARVARD BIOSCIENCE, INC.

NOTES TO UNAUDITED CONSOLIDATED FINANCIAL STATEMENTS

1. Basis of Presentation and Summary of Significant Accounting Policies

Basis of Presentation

The unaudited consolidated financial statements of Harvard Bioscience, Inc. and its wholly-owned subsidiaries (collectively, "Harvard Bioscience" or the "Company") as of June 30, 2015 and for the three and six months ended June 30, 2015 and 2014 have been prepared by the Company pursuant to the rules and regulations of the Securities and Exchange Commission ("SEC"). Certain information and footnote disclosures normally included in financial statements prepared in accordance with U.S. generally accepted accounting principles ("U.S. GAAP") have been condensed or omitted pursuant to such rules and regulations. The December 31, 2014 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, 2014, which was filed with the SEC on March 12, 2015.

In the opinion of management, all adjustments, which include normal recurring adjustments necessary to present a fair statement of financial position as of June 30, 2015, results of operations and comprehensive (loss) income for the three and six months ended June 30, 2015 and 2014 and cash flows for the six months ended June 30, 2015 and 2014, as applicable, have been made. The results of operations for the three and six months ended June 30, 2015 are not necessarily indicative of the operating results for the full fiscal year or any future periods.

Summary of Significant Accounting Policies

The accounting policies underlying the accompanying unaudited consolidated financial statements are those set forth in Note 2 to the consolidated financial statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2014, which was filed with the SEC on March 12, 2015.

2. Recently Issued Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2014-09, *"Revenue from Contracts with Customers,"* a new accounting standard that provides for a comprehensive model to use in the accounting for revenue arising from contracts with customers that will replace most existing revenue recognition guidance in U.S. GAAP. Under this standard, revenue will be recognized to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the Company expects to be entitled in exchange for those goods or services. At its July 2015 meeting, the FASB agreed to defer the mandatory effective date of ASU 2014-09 one year. Under the one year deferral, the standard will take effect in 2018 for calendar year-end public entities. The Company is assessing the new standard and has not yet determined the impact to the consolidated financial statements.

In April 2015, the FASB issued ASU 2015-03, *Interest - Imputation of Interest (Subtopic 835-30): Simplifying the Presentation of Debt Issuance Costs*. The update requires debt issuance costs related to a recognized debt liability to be presented in the balance sheet as a direct deduction from the carrying amount of the related debt liability, instead of being presented as an asset. Debt disclosures will include the face amount of the debt liability and the effective interest rate. The update requires retrospective application and represents a change in accounting principle. The update is effective for fiscal years beginning after December 15, 2015. Early adoption is permitted for financial statements that have not been previously issued. The Company is evaluating the impact of ASU 2015-03 on its consolidated financial statements and the possibility of early adoption by the Company.

In July 2015, the FASB issued ASU 2015-11, *Simplifying Measurement of Inventory*. The update requires measurement of most inventory "at the lower of cost and net realizable value", and applies to all entities that recognize inventory within the scope of ASC 330, except for inventory measured under the last-in, first-out (LIFO) method or the retail inventory method (RIM). ASU 2015-11 requires prospective application and represents a change in accounting principle. The update is effective for fiscal years beginning after December 15, 2016. Early adoption is permitted for financial statements that have not been previously issued. The Company is evaluating the impact of ASU 2015-11 on its consolidated financial statements and the possibility of early adoption by the Company.

2. Accumulated Other Comprehensive Loss

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

(in thousands)	Foreign currency translation adjustments	Derivatives qualifying as hedges	Defined benefit pension plans	Total
Balance at December 31, 2014	$ (4,658)	$ (18)	$ (3,557)	$ (8,233)
Other comprehensive loss before reclassifications	(2,737)	(71)	-	(2,808)
Amounts reclassified from AOCI	-	50	-	50
Other comprehensive loss	(2,737)	(21)	-	(2,758)
Balance at June 30, 2015	$ (7,395)	$ (39)	$ (3,557)	$ (10,991)

4. Acquisitions

The Company completed one acquisition during the six months ended June 30, 2015.

HEKA Elektronik

On January 8, 2015, the Company, through its wholly-owned Ealing Scientific Limited and Multi Channel Systems MCS GmbH subsidiaries, acquired all of the issued and outstanding shares of HEKA Elektronik ("HEKA") for approximately $5.9 million, or $4.5 million, net of cash acquired. Included in the acquisition of HEKA are: HEKA Electronik Dr. Schulze GmbH, based in Lambrecht, Germany ("HEKA Germany"); HEKA Electronics Incorporated, based in Chester, Nova Scotia, Canada ("HEKA Canada"); and HEKA Instruments Incorporated, based in Bellmore, New York. The Company funded the acquisition from its existing cash balances.

HEKA is a developer, manufacturer and marketer of sophisticated electrophysiology instrumentation and software for biomedical and industrial research applications. This acquisition is complementary to the electrophysiology line currently offered by the Company's wholly-owned Warner Instruments and MCS subsidiaries.

The aggregate purchase price for this acquisition was preliminarily allocated to tangible and intangible assets acquired as follows:

	(in thousands)
Tangible assets	$ 4,165
Liabilities assumed	(2,819)
Net assets	1,346
Goodwill and intangible assets:	
Goodwill	2,061
Trade name	774
Customer relationships	1,627
Developed technology	1,338
Non-compete agreements	27
Deferred tax liabilities	(1,245)
Total goodwill and intangible assets, net of tax	4,582
Acquisition purchase price	$ 5,928

The estimated purchase price allocation is preliminary and subject to revision. A valuation of the assets acquired and liabilities assumed is being conducted and the final allocation will be made when completed.

Goodwill recorded as a result of the acquisition of HEKA is not deductible for tax purposes.

The results of operations for HEKA have been included in the Company's consolidated financial statements from the date of acquisition and are not material.

The following consolidated pro forma information is based on the assumption that the acquisition of HEKA occurred on January 1, 2014. Accordingly, the historical results have been adjusted to reflect amortization expense that would have been recognized on such a pro forma basis. The pro forma information is presented for comparative purposes only and is not necessarily indicative of the financial position or results of operations which would have been reported had we completed the acquisition during these periods or which might be reported in the future.

	Three Months Ended June 30, 2014	Six Months Ended June 30, 2014
	(in thousands)	
Pro Forma		
Revenues	$ 28,339	$ 55,612
Net income	1,096	1,889

The Company completed two acquisitions during 2014.

Multi Channel Systems MCS GmbH

On October 1, 2014, the Company, through its wholly-owned Biochrom Limited subsidiary, acquired all of the issued and outstanding shares of Multi Channel Systems MCS GmbH ("MCS"), which has its principal offices in Germany, for approximately $11.2 million, including a working capital adjustment. The Company funded the acquisition from its existing cash balances.

MCS is a developer, manufacturer and marketer of in vitro and in vivo electrophysiology instrumentation for extracellular recording and stimulation. This acquisition is complementary to the in vitro electrophysiology line currently offered by the Company's wholly-owned Warner Instruments subsidiary.

The aggregate purchase price for this acquisition was preliminarily allocated to tangible and intangible assets acquired as follows:

	(in thousands)
Tangible assets	$ 5,442
Liabilities assumed	(1,207)
Net assets	4,235
Goodwill and intangible assets:	
Goodwill	3,745
Trade name	1,008
Customer relationships	1,204
Developed technology	2,452
Non-compete agreements	148
Deferred tax liabilities	(1,603)
Total goodwill and intangible assets, net of tax	6,954
Acquisition purchase price	$ 11,189

Goodwill recorded as a result of the acquisition of MCS is not deductible for tax purposes.

The results of operations for MCS have been included in the Company's consolidated financial statements from the date of acquisition and are not material.

The following consolidated pro forma information is based on the assumption that the acquisition of MCS occurred on January 1, 2014. Accordingly, the historical results have been adjusted to reflect amortization expense that would have been recognized on such a pro forma basis. The pro forma information is presented for comparative purposes only and is not necessarily indicative of the financial position or results of operations which would have been reported had we completed the acquisition during these periods or which might be reported in the future.

	Three Months Ended June 30, 2014	**Six Months Ended June 30, 2014**
	(in thousands)	
Pro Forma		
Revenues	$ 28,780	$ 56,492
Net income	1,105	1,906

Triangle BioSystems, Inc.

On October 1, 2014, the Company acquired all of the issued and outstanding shares of Triangle BioSystems, Inc. ("TBSI"), which has its principal offices in North Carolina, for approximately $2.2 million, including a working capital adjustment. The Company funded the acquisition from borrowings under its credit facility.

TBSI is a developer, manufacturer and marketer of wireless neural interface equipment to aid in vivo neuroscience research, especially in the fields of electrophysiology, psychology, neurology and pharmacology. This acquisition is complementary to the behavioral neuroscience lines currently offered by the Company's wholly-owned Panlab and Coulbourn subsidiaries.

The aggregate purchase price for this acquisition was preliminarily allocated to tangible and intangible assets acquired as follows:

	(in thousands)
Tangible assets	$ 1,278
Liabilities assumed	(530)
Net assets	748
Goodwill and intangible assets:	
Goodwill	946
Trade name	143
Customer relationships	308
Developed technology	363
Non-compete agreements	30
Deferred tax liabilities	(325)
Total goodwill and intangible assets, net of tax	1,465
Acquisition purchase price	$ 2,213

The results of operations for TBSI have been included in the Company's consolidated financial statements from the date of acquisition and are not material. The Company considers this acquisition immaterial for the purposes of proforma financial statement disclosures. Goodwill recorded as a result of the acquisition of TBSI is not deductible for tax purposes.

Direct acquisition costs recorded in other expense, net in the Company's consolidated statements of operations were $0.2 million and $0.8 million for the three and six months ended June 30, 2015, respectively, and $0.2 million for both the three and six months ended June 30, 2014, respectively.

5. Goodwill and Other Intangible Assets

Intangible assets consist of the following:

	June 30, 2015		December 31, 2014		Weighted Average Life (a)	
	(in thousands)					
	Gross	Accumulated Amortization	Gross	Accumulated Amortization		
Amortizable intangible assets						
Existing technology	$ 16,399	$ (11,508)	$ 15,538	$ (11,198)	7.6	Years
Trade names	7,698	(2,826)	7,114	(2,557)	9.5	Years
Distribution agreements/customer relationships	23,830	(11,238)	22,730	(10,681)	10.4	Years
Patents	259	(76)	256	(49)	3.7	Years
Total amortizable intangible assets	48,186	$ (25,648)	45,638	$ (24,485)		
Indefinite-lived intangible assets:						
Goodwill	41,081		39,822			
Other indefinite-lived intangible assets	1,228		1,252			
Total goodwill and other indefinite-lived intangible assets	42,309		41,074			
Total intangible assets	$ 90,495		$ 86,712			

(a) Weighted average life as of June 30, 2015.

The change in the carrying amount of goodwill for the six months ended June 30, 2015 is as follows:

	(in thousands)
Balance at December 31, 2014	$ 39,822
Goodwill arising from business combinations	2,061
Effect of change in currency translation	(802)
Balance at June 30, 2015	$ 41,081

Intangible asset amortization expense was $0.7 million and $0.6 million for the three months ended June 30, 2015 and 2014, respectively. Intangible asset amortization expense was $1.5 million and $1.2 million for the six months ended June 30, 2015 and 2014, respectively. Amortization expense of existing amortizable intangible assets is currently estimated to be $2.8 million for the year ending December 31, 2015, $2.8 million for the year ending December 31, 2016, $2.5 million for the year ending December 31, 2017, $2.4 million for the year ending December 31, 2018 and $2.2 million for the year ending December 31, 2019.

6. Inventories

Inventories consist of the following:

	June 30, 2015	December 31, 2014
	(in thousands)	
Finished goods	$ 10,607	$ 10,138
Work in process	1,256	946
Raw materials	11,205	9,447
Total	$ 23,068	$ 20,531

7. Property, Plant and Equipment

Property, plant and equipment consist of the following:

	June 30, 2015	December 31, 2014
	(in thousands)	
Land, buildings and leasehold improvements	$ 2,619	$ 2,595
Machinery and equipment	10,172	10,102
Computer equipment and software	7,300	6,322
Furniture and fixtures	1,324	1,125
Automobiles	54	56
	21,469	20,200
Less: accumulated depreciation	(15,705)	(15,010)
Property, plant and equipment, net	$ 5,764	$ 5,190

8. Restructuring and Other Exit Costs

Q2 2015 Restructuring Plan

During the second quarter of 2015, management of Harvard Bioscience initiated a plan to consolidate the manufacturing operations of HEKA Canada to HEKA Germany in order to create organizational efficiencies. For the three and six months ended June 30, 2015, the Company recorded restructuring charges of approximately $13,000 representing severance costs. Additional charges related to this plan are expected to be incurred through the third quarter of 2015, and include, but are not limited to, contract termination costs, as well as site moving and employee relocation costs. Payments related to this plan are expected to be made through the end of 2015. Activity and liability balances related to these charges were as follows:

	Severance Costs
	(in thousands)
Restructuring charges	$ 13
Cash payments	-
Restructuring balance at June 30, 2015	$ 13

Q1 2015 Restructuring Plan

During the first quarter of 2015, management of Harvard Bioscience initiated a plan to relocate certain manufacturing operations in order to create organizational efficiencies and reduce operating expenses. The 2015 restructuring plan included plans to consolidate the manufacturing operations of its Coulbourn subsidiary to its headquarters in Holliston, MA. During the six months ended June 30, 2015, the Company recorded restructuring charges of approximately $0.1 million representing severance costs. Additional charges related to this plan are expected to be incurred through the third quarter of 2015, and include, but are not limited to, contract termination costs, as well as site moving and employee relocation costs. Payments related to this plan are expected to be made through the end of 2015. Activity and liability balances related to these charges were as follows:

	Severance Costs
	(in thousands)
Restructuring charges	$ 88
Non-cash reversal of restructuring charges	(6)
Cash payments	-
Restructuring balance at June 30, 2015	$ 82

2014 Restructuring Plan

During the fourth quarter of 2014, management of Harvard Bioscience initiated a plan to relocate certain distribution and manufacturing operations in order to create organizational efficiencies and reduce operating expenses. The 2014 restructuring plan included plans to relocate the distribution operations of the Company's Denville subsidiary from New Jersey to North Carolina, as well as consolidating the manufacturing operations of its Biochrom subsidiary to its headquarters in Holliston, MA. During the six months ended June 30, 2015, the Company recorded restructuring charges of approximately $16,000. Additional charges related to this plan are expected to be incurred through the third quarter of 2015, and include, but are not limited to, contract termination costs, as well as site moving and employee relocation costs. Payments related to this plan are expected to be made through the end of 2015. Activity and liability balances related to these charges were as follows:

	Severance Costs	Other	Total
		(in thousands)	
Restructuring balance at December 31, 2014	$ 626	$ -	$ 626
Restructuring charges	39	35	74
Non-cash reversal of restructuring charges	(58)	-	(58)
Cash payments	(129)	(35)	(164)
Effect of change in currency translation	3	-	3
Restructuring balance at June 30, 2015	$ 481	$ -	$ 481

2013 Restructuring Plan

During the fourth quarter of 2013, the management of Harvard Bioscience initiated a plan to realign global operations to improve organizational efficiencies and reduce operating expenses throughout the Company. The plan included an approximately 13% reduction in the workforce, as well as the elimination of the position of Chief Operating Officer. No further charges are expected to be incurred on this matter. At December 31, 2014 and June 30, 2015, the Company had no remaining liability related to this plan on its balance sheet. Activity and liability balances related to these charges in 2014 were as follows:

	Severance and Related Costs	Other	Total
		(in thousands)	
Restructuring balance at December 31, 2013	$ 1,434	$ -	$ 1,434
Restructuring charges	195	175	370
Non-cash reversal of restructuring charges	(115)	-	(115)
Cash payments	(1,184)	(159)	(1,343)
Restructuring balance at June 30, 2014	$ 330	$ 16	$ 346

2012 Restructuring Plan

During 2012, the management of Harvard Bioscience initiated a plan to reduce operating expenses at one of its foreign subsidiaries. No further charges are expected to be incurred on this matter. At December 31, 2014 and June 30, 2015, the Company had no remaining liability related to this plan on its balance sheet. Activity and liability balances related to these charges in 2014 were as follows:

	Severance and Related Costs
	(in thousands)
Restructuring balance at December 31, 2013	$ 3
Non-cash reversal of restructuring charges	(3)
Restructuring balance at June 30, 2014	$ -

Aggregate net restructuring charges for the three and six months ended June 30, 2015 and 2014 were as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2015	2014	2015	2014
	(in thousands)			
Restructuring charges	$ 54	$ 115	$ 111	$ 252

9. Related Party Transactions

On November 1, 2013, the spin-off of Harvard Apparatus Regenerative Technology, Inc. ("HART") from the Company was completed. In connection with the HART spin-off, the Company entered into various commercial agreements with HART. These agreements included: (i) a Separation and Distribution Agreement; (ii) an Intellectual Property Matters Agreement; (iii) a Product Distribution Agreement; (iv) a Tax Sharing Agreement; (v) a Transition Services Agreement; and (vi) a Sublease.

The Company recorded revenues of approximately $101,000 and $149,000 for the three and six months ended June 30, 2015, respectively, and $31,000 and $109,000 for the three and six months ended June 30, 2014, respectively, as a result of the exclusive distribution rights pursuant to the Product Distribution Agreement. The Company's operating expenses were reduced by $41,000 and $101,000 for the three and six months ended June 30, 2014, respectively, as a result of the fees the Company charged to HART for services provided pursuant to the Transition Services Agreement. In addition, the Company's rent expense was reduced by $44,000 and $86,000 for the three and six months ended June 30, 2015, respectively, and $41,000 and $81,000 for the three and six months ended June 30, 2014, respectively, as a result of sublease rent charged to HART pursuant to the Sublease.

David Green, who is currently a Director of the Company and was also formerly the Company's President and interim CEO, was the Chairman and CEO of HART until his resignation on April 17, 2015. Mr. Green remains a member of HART's Board of Directors. Following Mr. Green's resignation from HART, the Company has determined that it is no longer a related party with HART.

As part of the acquisitions of MCS and TBSI, the Company signed lease agreements with the former owners of the acquired companies. The principals of such former owners were employees of the Company as of June 30, 2015. Pursuant to the lease agreement, the Company incurred rent expense of approximately $58,000 and $113,000 to the former owners of MCS for the three and six months ended June 30, 2015, respectively. Pursuant to the lease agreement, the Company incurred rent expense of approximately $11,000 and $21,000 to the former owner of TBSI for the three and six months ended June 30, 2015, respectively.

10. Warranties

Warranties are estimated and accrued at the time revenues are recorded. A rollforward of the Company's product warranty accrual is as follows:

	Beginning Balance	Payments	Additions/ (Credits)	Other	Ending Balance
			(in thousands)		
Year ended December 31, 2014	$ 305	(102)	49	-	$ 252
Six months ended June 30, 2015	$ 252	(25)	(73)	3	$ 157

11. Employee Benefit Plans

Certain of the Company's subsidiaries in the United Kingdom, or UK, Harvard Apparatus Limited and Biochrom Limited, maintain contributory, defined benefit or defined contribution pension plans for substantially all of their employees. As of the quarter ended September 30, 2014, the principal employer of the Harvard Apparatus Limited pension plan was changed from Harvard Apparatus Limited to Biochrom Limited. As of the quarter ended June 30, 2014, these defined benefit pension plans were closed to new employees, as well as closed to the future accrual of benefits for existing employees. The components of the Company's defined benefit pension expense were as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2015	**2014**	**2015**	**2014**
	(in thousands)			
Components of net periodic benefit cost:				
Service cost	$ -	$ (8)	$ -	$ -
Interest cost	190	227	367	448
Expected return on plan assets	(179)	(167)	(345)	(330)
Net amortization loss	81	46	156	91
Net periodic benefit cost	$ 92	$ 98	$ 178	$ 209

For the three months ended June 30, 2015 and 2014, the Company contributed $0.2 million, for both periods, to its defined benefit pension plans. For the six months ended June 30, 2015 and 2014, the Company contributed $0.4 million, for both periods, to its defined benefit pension plans. The Company expects to contribute approximately $0.4 million to its defined benefit pension plans during the remainder of 2015.

During the three months ended June 30, 2014 the Company wrote down its Level 3 investment in a longevity fund by an additional $0.6 million, which reduced its value to $0. The impact on accumulated other comprehensive loss was $0.5 million, net of tax. The longevity fund invests in a portfolio of physical life insurance settlements that had been historically valued using the net asset values provided by the fund. Since June 2011, the fund has been closed to all activity. The write down during the three months ended June 30, 2014 was due, in part, to communication from the longevity fund regarding its continued illiquidity and inactivity. There has been no change in the status of the longevity fund since the quarter ended June 30, 2014.

As of June 30, 2015 and December 31, 2014, the Company had an underfunded pension liability of approximately $4.6 million and $4.4 million, respectively, included in the other liabilities – non-current line item in the consolidated balance sheets.

12. Leases

The Company has noncancelable operating leases for office and warehouse space expiring at various dates through 2020 and thereafter. Rent expense, which is recorded on a straight-line basis, is estimated to be $2.2 million for the year ended December 31, 2015. Rent expense was approximately $0.6 million and $1.2 million for the three and six months ended June 30, 2015, respectively. Rent expense was approximately $0.4 million and $0.8 million for the three and six months ended June 30, 2014, respectively.

Future minimum lease payments for operating leases, with initial or remaining terms in excess of one year at June 30, 2015, are as follows:

	Operating Leases
	(in thousands)
2016	$ 1,631
2017	1,539
2018	1,511
2019	1,315
2020	1,315
Thereafter	4,502
Net minimum lease payments	$ 11,813

13. Capital Stock

Common Stock

On February 5, 2008, the Company's Board of Directors adopted a Shareholder Rights Plan and declared a dividend distribution of one preferred stock purchase right for each outstanding share of the Company's common stock to shareholders of record as of the close of business on February 6, 2008. Initially, these rights will not be exercisable and will trade with the shares of the Company's common stock. Under the Shareholder Rights Plan, the rights generally will become exercisable if a person becomes an "acquiring person" by acquiring 20% or more of the common stock of the Company or if a person commences a tender offer that could result in that person owning 20% or more of the common stock of the Company. If a person becomes an acquiring person, each holder of a right (other than the acquiring person) would be entitled to purchase, at the then-current exercise price, such number of shares of preferred stock which are equivalent to shares of the Company's common stock having a value of twice the exercise price of the right. If the Company is acquired in a merger or other business combination transaction after any such event, each holder of a right would then be entitled to purchase, at the then-current exercise price, shares of the acquiring company's common stock having a value of twice the exercise price of the right.

Preferred Stock

The Company's Board of Directors has the authority to issue up to 5.0 million shares of preferred stock and to determine the price privileges and other terms of the shares. The Board of Directors may exercise this authority without any further approval of stockholders. As of June 30, 2015, the Company had no preferred stock issued or outstanding.

Employee Stock Purchase Plan (as amended, the "ESPP")

In 2000, the Company approved the ESPP. Under this ESPP, participating employees can authorize the Company to withhold a portion of their base pay during consecutive six-month payment periods for the purchase of shares of the Company's common stock. At the conclusion of the period, participating employees can purchase shares of the Company's common stock at 85% of the lower of the fair market value of the Company's common stock at the beginning or end of the period. Shares are issued under the ESPP for the six-month periods ending June 30 and December 31. Under this plan, 750,000 shares of common stock are authorized for issuance of which 611,369 shares were issued as of June 30, 2015. During the three months ended June 30, 2015 and 2014, the Company issued 26,181 shares and 31,116 shares, respectively, of the Company's common stock under the ESPP.

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

The Second Amendment to the Third A&R Plan (the "Amendment") was adopted by the Board of Directors on April 3, 2015. Such Amendment was approved by the stockholders at the Company's 2015 Annual Meeting. The Amendment made the following change to the Third A&R Plan:

- The aggregate number of shares authorized for issuance under the Third A&R Plan was increased by 2,500,000 shares to 17,508,929.

Stock-Based Payment Awards

The Company accounts for stock-based payment awards in accordance with the provisions of FASB ASC 718, which requires it to recognize compensation expense for all stock-based payment awards made to employees and directors including stock options, restricted stock units and employee stock purchases related to the ESPP.

Stock option and restricted stock unit activity under the Company's Third A&R Plan for the six months ended June 30, 2015 was as follows:

	Stock Options		Restricted Stock Units	
	Stock Options Outstanding	**Weighted Average Exercise Price**	**Restricted Stock Units Outstanding**	**Grant Date Fair Value**
Balance at December 31, 2014	6,263,112	$ 3.42	306,397	$ 4.3
Granted	863,000	5.51	254,685	5.56
Exercised	(1,710,681)	3.04	-	-
Vested (RSUs)	-	-	(237,188)	-
Cancelled / forfeited	(246,055)	4.01	-	-
Balance at June 30, 2015	5,169,376	$ 3.87	323,894	$ 5.3

The weighted average fair value of the options granted under the Third A&R Plan during the three months ended June 30, 2015 and 2014 was $2.08 and $2.20, respectively. The weighted average fair value of the options granted under the Third A&R Plan during the six months ended June 30, 2015 and 2014 was $2.21 and $2.19, respectively. The following assumptions were used to estimate the fair value of stock options granted during the three and six months ended June 30, 2015 and 2014:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2015	2014	2015	2014
Volatility	39.35 %	57.16 %	41.08 %	56.83 %
Risk-free interest rate	1.70 %	1.80 %	1.72 %	1.78 %
Expected holding period (in years)	5.28 years	5.79 years	5.52 years	5.75 years
Dividend yield	- %	- %	- %	- %

The Company used historical volatility to calculate the expected volatility as of June 30, 2015 and 2014. Historical volatility was determined by calculating the mean reversion of the daily adjusted closing stock price. The risk-free interest rate assumption is based upon observed U.S. Treasury bill interest rates (risk-free) appropriate for the term of the Company's stock options. The expected holding period of stock options represents the period of time options are expected to be outstanding and is based on historical experience. The vesting period ranges from one to four years and the contractual life is ten years.

Stock-based compensation expense related to stock options, restricted stock units and the ESPP for the three and six months ended June 30, 2015 and 2014 was allocated as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2015	2014	2015	2014
	(in thousands)			
Cost of revenues	$ 15	$ 30	$ 36	$ 58
Sales and marketing	107	74	194	144
General and administrative	548	356	997	697
Research and development	22	12	45	20
Total stock-based compensation	$ 692	$ 472	$ 1,272	$ 919

On April 28, 2015, the Company announced the appointment of James Green to its Board of Directors and the retirement of Robert Dishman from our Board of Directors. As part of Dr. Dishman's retirement, the Company (i) awarded an unrestricted stock award to Dr. Dishman on April 28, 2015, having an aggregate cash value of $80,000, (ii) accelerated the vesting of all outstanding stock options and restricted stock units that were unvested as of April 28, 2015, and (iii) extended the post-retirement option exercise period for each option to the earlier to occur of the respective scheduled expiration date or April 28, 2016. Total compensation expense recognized as part of general and administrative expenses for the three and six months ended June 30, 2015, as part of these modifications, was approximately $0.1 million.

The Company did not capitalize any stock-based compensation.

Earnings per share

Basic earnings per share is based upon net income divided by the number of weighted average common shares 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 weighted average number of shares used to compute basic and diluted earnings per share consists of the following:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2015	2014	2015	2014
Basic	33,569,180	32,045,314	33,240,467	31,946,654
Effect of assumed conversion of employee and director stock options and restricted stock units	1,456,470	900,618	-	988,801
Diluted	35,025,650	32,945,932	33,240,467	32,935,455

Excluded from the shares used in calculating the diluted earnings per common share in the above table are options to purchase approximately 1,264,875 and 2,477,884 shares of common stock for the three months ended June 30, 2015 and 2014, respectively, as the impact of these shares would be anti-dilutive. Excluded from the shares used in calculating the diluted earnings per common share in the above table are options to purchase approximately 5,169,376 and 2,578,743 shares of common stock for the six months ended June 30, 2015 and 2014, respectively, as the impact of these shares would be anti-dilutive.

14. Long Term Debt

On August 7, 2009, the Company entered into an Amended and Restated Revolving Credit Loan Agreement related to a $20.0 million revolving credit facility with Bank of America, as agent, and Bank of America and Brown Brothers Harriman & Co as lenders (as amended, the “2009 Credit Agreement”). On September 30, 2011, the Company entered into the First Amendment to the Amended and Restated Revolving Credit Loan Agreement (the “First Amendment”) with Bank of America as agent, and Bank of America and Brown Brothers Harriman & Co as lenders. The First Amendment extended the maturity date of the credit facility to August 7, 2013 and reduced the interest rate to the London Interbank Offered Rate plus 3.0%. On October 4, 2012, the Company entered into the Second Amendment to the Amended and Restated Revolving Credit Loan Agreement (the “Second Amendment”) with Bank of America as agent, and Bank of America and Brown Brothers Harriman & Co as lenders. The Second Amendment extended the maturity date of the credit facility to August 7, 2014.

On March 29, 2013, the Company entered into a Second Amended and Restated Revolving Credit Agreement (as amended, the “Credit Agreement”) with Bank of America, as agent, and Bank of America and Brown Brothers Harriman & Co as lenders, that amended and restated the 2009 Credit Agreement. The Credit Agreement converted the Company’s existing outstanding revolving advances into a term loan in the principal amount of $15.0 million (the “Term Loan”), provides a revolving credit facility in the maximum principal amount of $25.0 million (“Revolving Line”) and provides a delayed draw term loan of up to $15.0 million (the “DDTL”) to fund capital contributions to the Company’s former subsidiary, HART. The maximum amount available under the Credit Agreement is $50.0 million as borrowings against the DDTL in excess of $10.0 million results in a dollar for dollar reduction in the Revolving Line capacity. The Revolving Line, Term Loan and DDTL each have a maturity date of March 29, 2018 (the maturity date of the Revolving Line was extended from March 29, 2016 in connection with the Third Amendment discussed below).

On October 31, 2013, the Company amended the Credit Agreement to reduce the DDTL from up to $15.0 million to up to $10.0 million and allow for an additional $5.0 million to be available for drawing as advances under the Revolving Line.

On April 24, 2015, the Company entered into the Third Amendment to the Second Amended and Restated Credit Agreement (the “Third Amendment”). The Third Amendment extended the maturity date of the Revolving Line to March 29, 2018 and reduced the interest rates on the Revolving Line, Term Loan and DDTL. Borrowings under the Term Loan and the DDTL accrued interest at a rate based on either the effective London Interbank Offered Rate (LIBOR) for certain interest periods selected by the Company, or a daily floating rate based on the British Bankers’ Association (BBA) LIBOR as published by Reuters (or other commercially available source providing quotations of BBA LIBOR), plus in either case, a margin of 2.75%. Additionally, the Revolving Line accrued interest at a rate based on either the effective LIBOR for certain interest periods selected by the Company, or a daily floating rate based on the BBA LIBOR, plus in either case, a margin of 2.25%. The Company was required to fix the rate of interest on at least 50% of the Term Loan and the DDTL through the purchase of interest rate swaps. The Term Loan and DDTL each have interest payments due at the end of the applicable LIBOR period, or monthly with respect to BBA LIBOR borrowings, and principal payments due quarterly. The Revolving Line has interest payments due at the end of the applicable LIBOR period, or monthly with respect to BBA LIBOR borrowings.

On June 30, 2015, the Company entered into the Fourth Amendment to the Second Amended and Restated Credit Agreement (the “Fourth Amendment”), which amended the Company’s quarterly minimum fixed charge coverage financial covenant.

The loans evidenced by the Credit Agreement, or the Loans, are guaranteed by all of the Company’s direct and indirect domestic subsidiaries, and secured by substantially all of the assets of the Company and the guarantors. The Loans are subject to restrictive covenants under the Credit Agreement, and financial covenants that require the Company and its subsidiaries to maintain certain financial ratios on a consolidated basis, including a maximum leverage, minimum fixed charge coverage and minimum working capital. Prepayment of the Loans is allowed by the Credit Agreement at any time during the terms of the Loans. The Loans also contain limitations on the Company’s ability to incur additional indebtedness and requires lender approval for acquisitions funded with cash, promissory notes and/or other consideration in excess of $6.0 million and for acquisitions funded solely with equity in excess of $10.0 million.

As of June 30, 2015 and December 31, 2014, the Company had borrowings of $20.7 million and $21.5 million, respectively, outstanding under its Credit Agreement. As of June 30, 2015, the Company was in compliance with all financial covenants contained in the Credit Agreement, was subject to covenant and working capital borrowing restrictions and had available borrowing capacity under its Credit Agreement of $8.5 million.

As of June 30, 2015, the weighted effective interest rates on the Company's Term Loan, DDTL and Revolving Line borrowings were 3.96%, 3.43% and 2.44%, respectively.

As of June 30, 2015 and December 31, 2014, the Company's borrowings were comprised of:

	June 30, 2015	December 31, 2014
	(in thousands)	
Long-term debt:		
Term loan	$ 8,250	$ 9,750
DDTL	6,500	7,500
Revolving line	5,900	4,200
Total debt	20,650	21,450
Less: current installments	(5,000)	(5,000)
Long-term debt	$ 15,650	$ 16,450

15. Derivatives

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

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

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

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

The Company uses variable-rate London Interbank Offered Rate (LIBOR) debt to finance its operations. The debt obligations expose the Company to variability in interest payments due to changes in interest rates. Management believes that it is prudent to limit the variability of a portion of its interest payments. To meet this objective, management enters into LIBOR based interest rate swap agreements to manage fluctuations in cash flows resulting from changes in the benchmark interest rate of LIBOR. These swaps change the variable-rate cash flow exposure on the debt obligations to fixed cash flows. Under the terms of the interest rate swaps, the Company receives LIBOR based variable interest rate payments and makes fixed interest rate payments, thereby creating the equivalent of fixed-rate debt for the notional amount of its debt hedged. In accordance with its Credit Agreement, the Company was required to fix the rate of interest on at least 50% of its Term Loan and the DDTL through the purchase of interest rate swaps. On June 5, 2013, the Company entered into an interest rate swap contract with an original notional amount of $15.0 million and a maturity date of March 29, 2018 in order to hedge the risk of changes in the effective benchmark interest rate (LIBOR) associated with the Company's Term Loan. On November 29, 2013, the Company entered into a second interest rate swap contract with an original notional amount of $5.0 million and a maturity date of March 29, 2018 in order to hedge the risk of changes in the effective benchmark interest rate (LIBOR) associated with the DDTL. The notional amount of the Company's derivative instruments as of June 30, 2015 was $11.5 million. The Term Loan swap contract converted specific variable-rate debt into fixed-rate debt and fixed the LIBOR rate associated with the Term Loan at 0.96% plus a bank margin of 3.0%. The DDTL swap contract converted specific variable-rate debt into fixed-rate debt and fixed the LIBOR rate associated with the Term Loan at 0.93% plus a bank margin of 3.0%.The interest rate swaps were designated as cash flow hedges in accordance with ASC 815, *Derivatives and Hedging*.

The following table presents the notional amount and fair value of the Company's derivative instruments as of June 30, 2015 and December 31, 2014.

Derivatives designated as hedging instruments under ASC 815	Balance sheet classification	June 30, 2015 Notional Amount	June 30, 2015 Fair Value (a)
		(in thousands)	
Interest rate swap	Other liabilities-non current	$ 11,500	$ (39)

Derivatives designated as hedging instruments under ASC 815	Balance sheet classification	December 31, 2014 Notional Amount	December 31, 2014 Fair Value (a)
		(in thousands)	
Interest rate swap	Other liabilities-non current	$ 13,500	$ (18)

(a) See Note 16 for the fair value measurements related to these financial instruments.

All of the Company's derivative instruments are designated as hedging instruments.

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

The following table summarizes the effect of derivatives designated as cash flow hedging instruments and their classification within comprehensive income for the three and six months ended June 30, 2015 and 2014:

Derivatives in Hedging Relationships	Amount of gain or (loss) recognized in OCI on derivative (effective portion)			
	Three Months Ended June 30,		Six Months Ended June 30,	
	2015	2014	2015	2014
	(in thousands)			
Interest rate swaps	$ (12)	$ (56)	$ (71)	$ (80)

The following table summarizes the reclassifications out of accumulated other comprehensive (loss) income for the three and six months ended June 30, 2015 and 2014:

Details about AOCI Components	Amount reclassified from AOCI into income (effective portion)				Location of amount reclassified from AOCI into income (effective portion)
	Three Months Ended June 30,		Six Months Ended June 30,		
	2015	2014	2015	2014	
	(in thousands)				
Interest rate swaps	$ 24	$ 34	$ 50	$ 69	Interest expense

As of June 30, 2015, $0.1 million of deferred losses on derivative instruments accumulated in AOCI are expected to be reclassified to earnings during the next twelve months. Transactions and events expected to occur over the next twelve months that will necessitate reclassifying these derivatives' losses to earnings include the repricing of variable-rate debt. There were no cash flow hedges discontinued during 2015 or 2014.

16. Fair Value Measurements

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

Level 1—Quoted prices in active markets for identical assets or liabilities.
Level 2—Inputs, other than the quoted prices in active markets, that are observable either directly or indirectly.
Level 3—Unobservable inputs based on the Company's own assumptions.

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

	Fair Value as of June 30, 2015			
(In thousands)	Level 1	Level 2	Level 3	Total
Liabilities:				
Interest rate swap agreements	$ -	$ 39	$ -	$ 39

	Fair Value as of December 31, 2014			
(In thousands)	Level 1	Level 2	Level 3	Total
Liabilities:				
Interest rate swap agreements	$ -	$ 18	$ -	$ 18

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

17. Income Tax

Income tax was an approximately $0.8 million benefit and $0.2 million expense for the three months ended June 30, 2015 and 2014, respectively. The increased tax benefit for the three months ended June 30, 2015 reflects the incremental benefit recorded for the six months ended June 30, 2015 associated with actual results for the six-month period, as described below. The effective income tax rate was 19.5% for the three months ended June 30, 2014. Discrete items included in the tax benefit for the three months ended June 30, 2015 included incentive stock option exercises partially offset by acquisition costs, the net of which was not material. Tax expense for the three months ended June 30, 2014 included a discrete item for the exercise of incentive stock options.

Income tax was an approximately $1.1 million benefit and $0.5 million expense for the six months ended June 30, 2015 and 2014, respectively. The effective income tax rate was 53.1% for the six months ended June 30, 2015, compared with 23.9% for the same period in 2014. The tax benefit for the six months ended June 30, 2015 was based on the actual results for the six-month period rather than an effective tax rate estimated for the entire year. The Company determined that using a year-to-date approach resulted in a better estimate of income tax expense based on its revised 2015 forecast of pre-tax income, mix of income across several jurisdictions with different statutory tax rates as well as the impact of permanent differences on its revised forecast of pre-tax income. The difference between the Company's effective tax rate year over year was primarily attributable the use of a year-to-date approach at June 30, 2015, the impact of increased research and development tax incentives and incentive stock option exercises on lower pre-tax earnings in 2015 as well as the mix of earnings between its domestic and foreign businesses, partially offset by nondeductible acquisition costs incurred versus 2014.

18. Subsequent Events

On August 3, 2015, the Compensation Committee of the Board of Directors of the Company approved and granted deferred stock awards of restricted stock units with performance based vesting conditions, to members of the Company's management team under the Third A&R Plan. The vesting of these restricted stock units is cliff-based and linked to the achievement of a relative total shareholder return of the Company's common stock from August 3, 2015 to the earlier of (i) August 3, 2018 or (ii) upon a change of control (measured relative to the Russell 3000 index and based on the 20-day trading average price before each such date). The target number of these restricted stock units that may be earned is 196,782 shares; the maximum amount is 150% of the target number.

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

Forward-Looking Statements

This Quarterly Report on Form 10-Q contains statements that are not statements of historical fact and are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 (the "Exchange Act"). The forward-looking statements are principally, but not exclusively, contained in "Item 2: Management's Discussion and Analysis of Financial Condition and Results of Operations." These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. Forward-looking statements include, but are not limited to, statements about management's confidence or expectations, and our plans, objectives, expectations and intentions that are not historical facts. In some cases, you can identify forward-looking statements by terms such as "may," "will," "should," "could," "would," "seek," "expects," "plans," "aim," "anticipates," "believes," "estimates," "projects," "predicts," "intends," "think," "potential," "objectives," "optimistic," "strategy," "goals," "sees," "new," "guidance," "future," "continue," "drive," "growth," "long-term," "projects," "develop," "possible," "emerging," "opportunity," "pursue" and similar expressions intended to identify forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Factors that may cause our actual results to differ materially from those in the forward-looking statements include sustained uncertainty concerning government spending; economic and political conditions generally and those affecting pharmaceutical and biotechnology industries; economic, political and other risks associated with international revenues and operations; the seasonal nature of purchasing in Europe; currency exchange rate fluctuations; failure of any banking institution in which we deposit our funds or its failure to provide services; our substantial debt and our ability to meet the financial covenants contained in our credit facility; our failure to raise or generate capital necessary to implement our acquisition and expansion strategy; the failure of our spin-off of Harvard Apparatus Regenerative Technology, Inc., or HART, to qualify as a transaction that is generally tax-free for U.S. federal income tax purposes; the failure of HART to indemnify us for any liabilities associated with HART's business; unanticipated costs relating to acquisitions, unanticipated costs arising in connection with our consolidation of business functions and any restructuring initiatives; our failure to expand in Asia and other emerging markets; our inability to manage our growth; competition from our competitors; our failure to expand our product offerings, introduce new products or commercialize new technologies; technological changes resulting in our products becoming obsolete; our failure to identify potential acquisition candidates and successfully close such acquisitions with favorable pricing or integrate acquired businesses or technologies; impact of any impairment of our goodwill or intangible assets; our ability to retain key personnel; failure or inadequacy or our information technology structure; rising commodity and precious metals costs; our ability to protect our intellectual property and operate without infringing on others' intellectual property; exposure to product and other liability claims; plus other factors described under the heading "Item 1A. Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2014, or described in our other public filings. Our results may also be affected by factors of which we are not currently aware. We may not update these forward-looking statements, even though our situation may change in the future, unless we have obligations under the federal securities laws to update and disclose material developments related to previously disclosed information.

Overview

Harvard Bioscience, Inc., a Delaware corporation, is a global developer, manufacturer and marketer of a broad range of scientific instruments, systems and lab consumables used to advance life science for basic research, drug discovery, clinical and environmental testing. Our products are sold to thousands of researchers in over 100 countries through our global sales organization, websites, catalogs, and through distributors including Thermo Fisher Scientific Inc., VWR, GE Healthcare, and other specialized distributors. We have sales and manufacturing operations in the United States, the United Kingdom, Germany, Sweden, Spain, France, Canada, and China.

From 2009 through November 1, 2013, Harvard Bioscience's operations included two main businesses, the Life Science Research Tools business and the Regenerative Medicine Device business. In 2013, we formed and consummated the spin-off of Harvard Apparatus Regenerative Technology, Inc. ("HART") to our existing shareholders by means of a distribution of the shares we owned in HART.

At the end of 2013 we began a multiple year restructuring program to reduce costs, align global functions, consolidate facilities, and reinvest in key areas such as sales and IT. As part of the reinvestment, we initiated a plan in 2014 to invest in and implement a new global ERP platform. During 2014, as part of the restructuring program, we initiated plans to relocate and consolidate the distribution, finance and marketing operations of our Denville Scientific facility and manufacturing operations of our Biochrom facility. During the first quarter 2015, we initiated plans to relocate the operations of our Coulbourn subsidiary to our corporate headquarters. Additionally, during the second quarter 2015, we initiated plans to relocate the operations of HEKA Electronics Incorporated, our HEKA Canada subsidiary ("HEKA Canada"), to HEKA Electronik Dr. Schulze GmbH, our HEKA Germany subsidiary ("HEKA Germany"). We believe the restructuring program positions the Company to stabilize, focus on, and grow the life science business.

Our Strategy

Our vision is to be a world leading life science company that excels in meeting the needs of our customers by providing a wide breath of innovative products and solutions, while providing exemplary customer service.

To achieve our vision, grow our top-line and bottom-line, and build shareholder value our business strategy is built on four pillars:

- commercial excellence and organic growth;
- new product development;
- acquisitions; and
- operational efficiencies.

Components of Operating Income

Revenues. We generate revenues by selling apparatus, instruments, devices and consumables through our catalogs, our distributors, our direct sales force and our websites. Our websites and catalogs serve as the primary sales tools for our Physiology and Fluidics related product lines. These product lines include both proprietary manufactured products and complementary products from various suppliers. Our reputation as a leading producer in many of our manufactured products creates traffic to our website, enables cross-selling and facilitates the introduction of new products. We have field sales teams in the U.S., Canada, the United Kingdom, Germany, France, Spain and China. In those regions where we do not have a direct sales team, we use distributors. Revenues from direct sales to end users represented approximately 63% and 60% of our revenues for the three months ended June 30, 2015 and 2014, respectively. For the six months ended June 30, 2015 and 2014, revenues from direct sales to end users represented approximately 62% and 59% of our revenues, respectively.

Products in our Molecular and Cell analysis product lines are generally sold by distributors, and are typically priced in the range of $5,000-$15,000. They are mainly scientific instruments like spectrophotometers and plate readers that analyze light to detect and quantify a wide range of molecular and cellular processes, or apparatus like gel electrophoresis units. We also use distributors for both our catalog products and our higher priced products, for sales in locations where we do not have subsidiaries or where we have existing distributors in place from acquired businesses. For the three months ended June 30, 2015 and 2014, approximately 37% and 40% of our revenues, respectively, were derived from sales to distributors. For the six months ended June 30, 2015 and 2014, approximately 38% and 41% of our revenues, respectively, were derived from sales to distributors.

For the three and six months ended June 30, 2015, approximately 59% and 62% of our revenues, respectively, were derived from products we manufacture, approximately 16% and 13%, respectively, were derived from complementary products we distribute in order to provide the researcher with a single source for all equipment needed to conduct a particular experiment, and approximately 25%, for both periods, were derived from distributed products sold under our brand names. For the three and six months ended June 30, 2014, approximately 63% and 64% of our revenues, respectively, were derived from products we manufacture, approximately 11%, for both periods, were derived from complementary products we distribute in order to provide the researcher with a single source for all equipment needed to conduct a particular experiment, and approximately 26% and 25%, respectively, were derived from distributed products sold under our brand names.

For the three months ended June 30, 2015 and 2014, approximately 42% and 39% of our revenues, respectively, were derived from sales made by our non-U.S. operations. For the six months ended June 30, 2015 and 2014, approximately 42% and 41% of our revenues, respectively, were derived from sales made by our non-U.S. operations.

Changes in the relative proportion of our revenue sources between catalog or website sales, direct sales and distribution sales are primarily the result of a different sales proportion of acquired companies.

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

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

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

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

Restructuring charges. Restructuring charges consist of severance, other personnel-related charges and exit costs related to plans to create organizational efficiencies and reduce operating expenses.

Stock-based compensation expenses. Stock-based compensation expense for the three months ended June 30, 2015 and 2014 was $0.7 million and $0.5 million, respectively. Stock-based compensation expense for the six months ended June 30, 2015 and 2014 was $1.3 million and $0.9 million, respectively. The stock-based compensation expense related to stock options, restricted stock units, and the employee stock purchase plan and was recorded as a component of cost of revenues, sales and marketing expenses, general and administrative expenses and research and development expenses.

Currently, we intend to retain all of our earnings to finance the expansion and development of our business and do not anticipate paying any cash dividends to holders of our common stock in the near future. As a result, capital appreciation, if any, of our common stock will be a stockholder's sole source of gain for the near future.

Bookings and Backlog

We monitor bookings and backlog as these are indicators of future revenues and business activity levels.

Bookings were $27.6 million and $27.4 million for the three months ended June 30, 2015 and 2014, respectively. Excluding the effects of currency translation, our bookings increased $1.3 million, or 4.8% quarter over quarter. Bookings were $54.3 million and $53.7 million for the six months ended June 30, 2015 and 2014, respectively. Excluding the effects of currency translation, our bookings increased $2.8 million, or 5.1% from the same period in the prior year.

Our order backlog was approximately $6.6 million and $6.0 million as of June 30, 2015 and 2014, respectively. Excluding the effects of currency translation, our backlog increased $0.9 million, or 14.8% from the previous year. The increase in backlog was primarily the result of our acquisitions of MCS, TBSI and HEKA and the timing of customer orders and shipments. We include in backlog only those orders for which we have received valid purchase orders. Purchase orders may be cancelled at any time prior to shipment. Our backlog as of any particular date may not be representative of actual sales for any succeeding period.

Selected Results of Operations

Three Months Ended June 30, 2015 compared to Three Months Ended June 30, 2014

	Three Months Ended June 30, 2015	Three Months Ended June 30, 2014	Dollar Change	% Change
	(dollars in thousands)			
Revenues	$ 28,800	$ 26,958	1,842	6.8%
Cost of revenues	16,205	14,680	1,525	10.4%
Gross margin percentage	43.7%	45.5%	N/A	-4.0%
Sales and marketing expenses	5,128	4,557	571	12.5%
General and administrative expenses	4,922	3,997	925	23.1%
Research and development expenses	1,714	1,284	430	33.5%
Restructuring charges	54	115	(61)	-53.0%
Amortization of intangible assets	678	587	91	15.5%

Each reporting period, we face currency exposure that arises from translating the results of our worldwide operations to the U.S. dollar at exchange rates that fluctuate from the beginning of such period. We evaluate our results of operations on both a reported and a foreign currency-neutral basis, which excludes the impact of fluctuations in foreign currency exchange rates. We believe that disclosing this non-GAAP financial information provides investors with an enhanced understanding of the underlying operations of the business. This non-GAAP financial information approximates information used by our management to internally evaluate our operating results. The non-GAAP financial information provided below should be considered in addition to, not as a substitute for, the financial information provided and presented in accordance with GAAP.

Revenues

Revenues for the three months ended June 30, 2015 were $28.8 million, an increase of approximately 6.8%, or $1.8 million compared to revenues of $27.0 million for the three months ended June 30, 2014. Revenues for the three months ended June 30, 2015 include the acquisitions of MCS, TBSI and HEKA.

Revenues from acquisitions were offset by a negative impact of currency translation. Excluding the impact of the strengthening of the U.S. dollar, revenues increased approximately 11.5%.

Reconciliation of Changes In Revenues Compared to the Same Period of the Prior Year

	For the Three Months Ended June 30, 2015
Growth	11.50%
Foreign exchange effect	-4.70%
Net revenue growth	6.80%

Cost of revenues

Cost of revenues increased $1.5 million, or 10.4%, to $16.2 million for the three months ended June 30, 2015 compared with $14.7 million for the three months ended June 30, 2014. Gross profit margin as a percentage of revenues decreased to 43.7% for the three months ended June 30, 2015 compared with 45.5% for the same quarter in 2014. The decrease in gross profit margin was due primarily to purchase accounting charges related to the fair value step-up of inventory, costs to relocate and consolidate certain facilities, less favorable product mix and unfavorable currency translation, partially offset by higher revenues and the contributions from MCS, TBSI and HEKA.

Sales and marketing expenses

Sales and marketing expenses increased $0.5 million, or 12.5%, to $5.1 million for the three months ended June 30, 2015 compared with $4.6 million for the three months ended June 30, 2014. The increase was primarily due to our acquisitions and higher payroll related costs, partially offset by favorable currency translation.

General and administrative expenses

General and administrative expenses were $4.9 million for the three months ended June 30, 2015, an increase of $0.9 million, or 23.1%, compared with $4.0 million for the three months ended June 30, 2014. The increase was primarily due to our acquisitions, costs to relocate and consolidate certain facilities and higher stock compensation expense, partially offset by lower unpaid incentive bonus costs and favorable currency translation.

Research and development expenses

Research and development expenses were $1.7 million for the three months ended June 30, 2015, an increase of $0.4 million, or 33.5%, compared with $1.3 million for the three months ended June 30, 2014. The increase was primarily due to our acquisitions, partially offset by lower unpaid incentive bonus costs and favorable currency translation.

Restructuring

Restructuring charges were $54,000 for three months ended June 30, 2015 compared with $115,000 for the three months ended June 30, 2014. Restructuring charges during the three months ended June 30, 2014 included additional charges related to the company-wide restructuring plan we implemented during the year ended December 31, 2013. The 2013 restructuring plan realigned global operations and included a reduction of our workforce of approximately 13%.

Restructuring charges recorded during the three months ended June 30, 2015 related to plans commenced during the fourth quarter of 2014 and the six months ended June 30, 2015. The 2014 restructuring plan realigned global operations and included actions to move the Biochrom and Denville operations to Holliston, MA and Charlotte, NC, respectively. The 2015 restructuring plans included actions to move the Coulbourn and operations to Holliston, MA and the HEKA Canada operations to HEKA Germany.

Amortization of intangible assets

Amortization of intangible asset expenses was $0.7 million for the three months ended June 30, 2015 compared with $0.6 million for the three months ended June 30, 2014.

Other expense, net

Other expense, net, was $0.5 million for both three month periods ended June 30, 2015 and 2014. Included in both periods was interest expense of $0.2 million and acquisition related costs of $0.2 million.

Income taxes

Income tax was an approximately $0.8 million benefit and $0.2 million expense for the three months ended June 30, 2015 and 2014, respectively. The increased tax benefit for the three months ended June 30, 2015 reflects the incremental benefit recorded for the six months ended June 30, 2015 associated with actual results for the six-month period. Refer to the selected results of operations for the six months ended June 30, 2015 for further details. The effective income tax rate from continuing operations was 19.5% for the three months ended June 30, 2014. Discrete items included in the tax benefit for the three months ended June 30, 2015 included incentive stock option exercises partially offset by acquisition costs, the net of which was not material. Tax expense for the three months ended June 30, 2014 included a discrete item for the exercise of incentive stock options.

Six Months Ended June 30, 2015 compared to Six Months Ended June 30, 2014

	Six Months Ended June 30, 2015	Six Months Ended June 30, 2014	Dollar Change	% Change
	(dollars in thousands)			
Revenues	$ 54,563	$ 52,851	$ 1,712	3.2%
Cost of product revenues	30,490	28,812	1,678	5.8%
Gross margin percentage	44.1%	45.5%	N/A	-3.0%
Sales and marketing expenses	10,327	8,989	1,338	14.9%
General and administrative expenses	9,753	8,248	1,505	18.2%
Research and development expenses	3,462	2,257	1,205	53.4%
Restructuring charges	111	252	(141)	-56.0%
Amortization of intangible assets	1,471	1,221	250	20.5%

Each reporting period, we face currency exposure that arises from translating the results of our worldwide operations to the U.S. dollar at exchange rates that fluctuate from the beginning of such period. We evaluate our results of operations on both a reported and a foreign currency-neutral basis, which excludes the impact of fluctuations in foreign currency exchange rates. We believe that disclosing this non-GAAP financial information provides investors with an enhanced understanding of the underlying operations of the business. This non-GAAP financial information approximates information used by our management to internally evaluate our operating results. The non-GAAP financial information provided below should be considered in addition to, not as a substitute for, the financial information provided and presented in accordance with GAAP.

Revenues

Revenues for the six months ended June 30, 2015 were $54.6 million, an increase of approximately 3.2%, or $1.7 million compared to revenues of $52.9 million for the six months ended June 30, 2014. Revenues for the six months ended June 30, 2015 include the acquisitions of MCS, TBSI and HEKA.

Revenues from acquisitions were offset by a negative impact of currency translation. Excluding the impact of the strengthening of the U.S. dollar, revenues increased approximately 7.7%.

Reconciliation of Changes In Revenues Compared to the Same Period of the Prior Year

	For the Six Months Ended June 30, 2015
Growth	7.70%
Foreign exchange effect	-4.50%
Net revenue growth	3.20%

Cost of revenues

Cost of revenues increased $1.7 million, or 5.8%, to $30.5 million for the six months ended June 30, 2015 compared with $28.8 million for the six months ended June 30, 2014. Gross profit margin as a percentage of revenues decreased to 44.1% for the six months ended June 30, 2015 compared with 45.4% for the same period in 2014. The decrease in gross profit margin was due primarily to purchase accounting charges related to the fair value step-up of inventory, costs to relocate and consolidate certain facilities, less favorable product mix and unfavorable currency translation, partially offset by higher revenues and the contributions from MCS, TBSI and HEKA.

Sales and marketing expenses

Sales and marketing expenses increased $1.3 million, or 14.9%, to $10.3 million for the six months ended June 30, 2015 compared with $9.0 million for the six months ended June 30, 2014. The increase was primarily due to our acquisitions and higher payroll related costs, partially offset by favorable currency translation.

General and administrative expenses

General and administrative expenses were $9.8 million for the six months ended June 30, 2015, an increase of $1.6 million, or 18.2%, compared with $8.2 million for the six months ended June 30, 2014. The increase was primarily due to our acquisitions and higher stock compensation expense, partially offset by lower unpaid incentive bonus costs and favorable currency translation.

Research and development expenses

Research and development expenses were $3.5 million for the six months ended June 30, 2015, an increase of $1.2 million, or 53.4%, compared with $2.3 million for the six months ended June 30, 2014. The increase was primarily due to our acquisitions, partially offset by lower unpaid incentive bonus costs and favorable currency translation.

Restructuring

Restructuring charges were $0.1 million for six months ended June 30, 2015 compared with $0.3 million for the six months ended June 30, 2014. Restructuring charges during the six months ended June 30, 2014 included additional charges related to the company-wide restructuring plan we implemented during the year ended December 31, 2013. The 2013 restructuring plan realigned global operations and included a reduction of our workforce of approximately 13%.

Restructuring charges recorded during the six months ended June 30, 2015 related to plans commenced during the fourth quarter of 2014 and the six months ended June 30, 2015. The 2014 restructuring plan realigned global operations and included actions to move the Biochrom and Denville operations to Holliston, MA and Charlotte, NC, respectively. The 2015 restructuring plans included actions to move the Coulbourn and operations to Holliston, MA and the HEKA Canada operations to HEKA Germany.

Amortization of intangible assets

Amortization of intangible asset expenses was $1.5 million for the six months ended June 30, 2015 compared with $1.2 million for the six months ended June 30, 2014.

Other expense, net

Other expense, net, was $1.1 million and $0.8 million for the six months ended June 30, 2015 and 2014, respectively. Interest expense was $0.4 million for the six months ended June 30, 2015 compared to $0.5 million for the six months ended June 30, 2014. The increase in other expense, net was primarily due to $0.8 million in acquisition related costs incurred during the six months ended June 30, 2015 compared to $0.2 million for the six months ended June 30, 2014, partially offset by currency exchange rate fluctuations. Currency exchange rate fluctuations included as a component of net income (loss) resulted in approximately $0.1 million in currency gains during the six months ended June 30, 2015, compared to $0.1 million in foreign currency losses during the six months ended June 30, 2014.

Income taxes

Income tax was an approximately $1.1 million benefit and $0.5 million expense for the six months ended June 30, 2015 and 2014, respectively. The effective income tax rate was 53.1% for the six months ended June 30, 2015, compared with 23.9% for the same period in 2014. The tax benefit for the six months ended June 30, 2015 was based on the actual results for the six-month period rather than an effective tax rate estimated for the entire year. We determined that using a year-to-date approach resulted in a better estimate of income tax expense based on our revised 2015 forecast of pre-tax income, mix of income across several jurisdictions with different statutory tax rates as well as the impact of permanent differences on our revised forecast of pre-tax income. The difference between our effective tax rate year over year was primarily attributable the use of a year-to-date approach at June 30, 2015, the impact of increased research and development tax incentives and incentive stock option exercises on lower pre-tax earnings in 2015 as well as the mix of earnings between its domestic and foreign businesses, partially offset by nondeductible acquisition costs incurred versus 2014.

Liquidity and Capital Resources

Historically, we have financed our business through cash provided by operating activities, the issuance of common stock, and bank borrowings. Our liquidity requirements arise primarily from investing activities, including funding of acquisitions, and other capital expenditures. As previously discussed, on October 1, 2014, we acquired all of the issued and outstanding shares of two life science companies, MCS and TBSI, for approximately $12.7 million, net of cash acquired. We funded the acquisitions of MCS and TBSI from our existing cash balances and borrowings under our credit facility, respectively. Additionally, on January 8, 2015, we acquired all of the issued and outstanding shares of HEKA for approximately $4.5 million, net of cash acquired. We funded the acquisition from our existing cash balances.

As of June 30, 2015, we held cash and cash equivalents of $7.4 million, compared with $14.1 million at December 31, 2014. As of June 30, 2015 and December 31, 2014, we had $20.7 million and $21.5 million, respectively, of borrowings outstanding under our credit facility. Total debt, net of cash and cash equivalents was $13.2 million at June 30, 2015, compared to $7.3 million at December 31, 2014. In addition, we had an underfunded U.K. pension liability of approximately $4.6 million and $4.4 million at June 30, 2015 and December 31, 2014, respectively.

As of June 30, 2015 and December 31, 2014, cash and cash equivalents held by our foreign subsidiaries was $6.0 million and $12.7 million, respectively. These funds are not available for domestic operations unless the funds are repatriated. If we planned to or did repatriate these funds, then U.S. federal and state income taxes would have to be recorded on such amounts. We currently have no plans and do not intend to repatriate any of our undistributed foreign earnings. These balances are considered permanently reinvested and will be used for foreign items including foreign acquisitions, capital investments, pension obligations and operations. It is impracticable to estimate the total tax liability, if any, which would be created by the future distribution of these earnings. In January 2015, we acquired all the issued and outstanding shares of HEKA, and utilized approximately $5.9 million of our foreign cash on hand.

Condensed Cash Flow Statements
(unaudited)

	Six Months Ended June 30, 2015	Six Months Ended June 30, 2014
	(in thousands)	
Cash flows from operations:		
Net (loss) income	$ (1,052)	$ 1,741
Changes in assets and liabilities	(2,402)	(2,024)
Other adjustments to operating cash flows	2,473	2,769
Net cash (used in) provided by operating activities	(981)	2,486
Investing activities:		
Additions to property, plant and equipment	(1,640)	(744)
Acquisitions, net of cash acquired	(4,545)	-
Other investing activities	15	78
Net cash used in investing activities	(6,170)	(666)
Financing activities:		
Net repayments of debt	(800)	(2,500)
Net proceeds from issuance of common stock	1,864	1,001
Other financing activities	(32)	-
Net cash provided by (used in) financing activities	1,032	(1,499)
Effect of exchange rate changes on cash	(613)	342
(Decrease) increase in cash and cash equivalents	$ (6,732)	$ 663

Our operating activities used cash of $1.0 million for the six months ended June 30, 2015, compared with cash provided by operating activities of $2.5 million for the six months ended June 30, 2014. The decrease in cash flows from operations was primarily due to lower net income year over year.

Our investing activities used cash of $6.2 million during the six months ended June 30, 2015, compared to $0.7 million for the six months ended June 30, 2014. Investing activities during six months ended June 30, 2015 included cash used for acquisitions net of cash acquired, purchases of property, plant and equipment, and proceeds from the sale of property, plant and equipment. Investing activities during six months ended June 30, 2014 included purchases of property, plant and equipment and proceeds from the sale of property, plant and equipment. In January 2015, we acquired HEKA for approximately $4.5 million, net of cash acquired. We spent $1.6 million and $0.7 million on capital expenditures during the six months ended June 30, 2015 and 2014, respectively. The increase in capital expenditures year over year was due to the year-to-date investment in implementing a new enterprise resource planning ("ERP") platform, as well as capital spend to relocate our Denville distribution business and UK manufacturing operations to North Carolina and Holliston, MA, respectively.

Our financing activities have historically consisted of borrowings and repayments under our revolving credit facility and term loans, payments of debt issuance costs and the issuance of common stock. During the six months ended June 30, 2015, financing activities provided cash of $1.0 million, compared with $1.5 million of cash used by financing activities for the six months ended June 30, 2014. During the six months ended June 30, 2015, we borrowed $4.1 million under our credit facility, repaid $4.9 million of debt under our credit facility and term loans and ended the quarter with $20.7 million of borrowings. Net proceeds from the issuance of common stock for the six months ended June 30, 2015 was $1.9 million, which related to the exercise of stock options. During the six months ended June 30, 2014, we repaid $2.5 million of debt under our credit facility and term loans, and ended the quarter with $22.3 million of borrowings. Net proceeds from the issuance of common stock for the six months ended June 30, 2014 was $1.0 million, which related to the exercise of stock options.

Borrowing Arrangements

On August 7, 2009, we entered into an Amended and Restated Revolving Credit Loan Agreement related to a $20.0 million revolving credit facility with Bank of America, as agent, and Bank of America and Brown Brothers Harriman & Co as lenders (as amended, the "2009 Credit Agreement"). On September 30, 2011, we entered into the First Amendment to the Amended and Restated Revolving Credit Loan Agreement (the "First Amendment") with Bank of America as agent, and Bank of America and Brown Brothers Harriman & Co as lenders. The First Amendment extended the maturity date of our credit facility to August 7, 2013 and reduced the interest rate to the London Interbank Offered Rate plus 3.0%. On October 4, 2012, we entered into the Second Amendment to the Amended and Restated Revolving Credit Loan Agreement (the "Second Amendment") with Bank of America as agent, and Bank of America and Brown Brothers Harriman & Co as lenders. The Second Amendment extended the maturity date of our credit facility to August 7, 2014.

On March 29, 2013, we entered into a Second Amended and Restated Revolving Credit Agreement (as amended, the "Credit Agreement") with Bank of America, as agent, and Bank of America and Brown Brothers Harriman & Co as lenders, that amended and restated the 2009 Credit Agreement. The Credit Agreement converted our existing outstanding revolving advances into a term loan in the principal amount of $15.0 million (the "Term Loan"), provided a revolving credit facility in the maximum principal amount of $25.0 million ("Revolving Line") and provided a delayed draw term loan of up to $15.0 million (the "DDTL") to fund our capital contributions to HART. The maximum amount available under the Credit Agreement is $50.0 million as borrowings against the DDTL in excess of $10.0 million result in a dollar for dollar reduction in the Revolving Line capacity. The Revolving Line, Term Loan and DDTL each have a maturity date of March 29, 2018 (the maturity date of the Revolving Line was extended from March 29, 2016 in connection with the Third Amendment discussed below.

On October 31, 2013, we amended the Credit Agreement to reduce the DDTL from up to $15.0 million to up to $10.0 million and allow for an additional $5.0 million to be available for drawing as advances under the Revolving Line.

On April 24, 2015, we entered into the Third Amendment to the Second Amended and Restated Credit Agreement (the "Third Amendment"), which extended the maturity date of the Revolving Line to March 29, 2018 and reduced the interest rates on the Revolving Line, Term Loan and DDTL. Borrowings under the Term Loan and the DDTL accrued interest at a rate based on either the effective London Interbank Offered Rate (LIBOR) for certain interest periods selected by us, or a daily floating rate based on the British Bankers' Association (BBA) LIBOR as published by Reuters (or other commercially available source providing quotations of BBA LIBOR), plus in either case, a margin of 2.75%. Prior to the Third Amendment, the Revolving Line accrued interest at a rate based on either the effective LIBOR for certain interest periods selected by us, or a daily floating rate based on the BBA LIBOR, plus in either case, a margin of 2.25%. We were required to fix the rate of interest on at least 50% of the Term Loan and the DDTL through the purchase of interest rate swaps. The Term Loan and DDTL each have interest payments due at the end of the applicable LIBOR period, or monthly with respect to BBA LIBOR borrowings, and principal payments due quarterly. The Revolving Line has interest payments due at the end of the applicable LIBOR period, or monthly with respect to BBA LIBOR borrowings.

On June 30, 2015, we entered into the Fourth Amendment to the Second Amended and Restated Credit Agreement (the "Fourth Amendment"), which amended our quarterly minimum fixed charge coverage financial covenant.

At June 30, 2015, the weighted effective interest rates on the Term Loan, DDTL and Revolving Line borrowings were 3.96%, 3.43% and 2.44%, respectively. The Credit Agreement includes covenants relating to income, debt coverage and cash flow, as well as minimum working capital requirements. The Credit Agreement also contains limitations on our ability to incur additional indebtedness and requires lender approval for acquisitions funded with cash, promissory notes and/or other consideration in excess of $6.0 million and for acquisitions funded solely with equity in excess of $10.0 million. As of June 30, 2015, we were in compliance with all financial covenants contained in the Credit Agreement; we were subject to covenant and working capital borrowing restrictions, and had available borrowing capacity under the Credit Agreement of $8.5 million.

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. Based on our current operations and current operating plans, we expect that our available cash, cash generated from current operations and debt capacity will be sufficient to finance current operations, any potential future acquisitions and capital expenditures for the next 12 months and beyond. This may involve incurring additional debt or raising equity capital for our business. Additional capital raising activities will dilute the ownership interests of existing stockholders to the extent we raise capital by issuing equity securities and we cannot guarantee that we will be successful in raising additional capital on favorable terms or at all.

Critical Accounting Policies

The critical accounting policies underlying the accompanying unaudited consolidated financial statements are those set forth in Part II, Item 7 included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2014, which was filed with the SEC on March 12, 2015.

Impact of Foreign Currencies

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

For the six months ended June 30, 2015, the U.S dollar’s strengthening in relation to those currencies resulted in an unfavorable translation effect on our consolidated revenues and on our consolidated net loss. Changes in foreign currency exchange rates resulted in an unfavorable effect on revenues of approximately $2.4 million and a favorable effect on expenses of approximately $2.1 million. Conversely, changes in foreign currency exchange rates resulted in a favorable effect on revenues of approximately $1.2 million and an unfavorable effect on expenses of approximately $1.0 million for the six months ended June 30, 2014.

The gain and loss associated with the translation of foreign equity into U.S. dollars included as a component of comprehensive income, was approximately $1.8 million and $2.7 million for the three and six months ended June 30, 2015, respectively, compared to a gain of $0.4 million and $0.6 million for the three and six months ended June 30, 2014, respectively.

In addition, currency exchange rate fluctuations included as a component of net income (loss) resulted in approximately $134,000 million in currency losses and $89,000 in currency gains during the three and six months ended June 30, 2015, respectively, compared to $67,000 and $148,000 in foreign currency losses during the three and six months ended June 30, 2014, respectively.

Recently Issued Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2014-09, *“Revenue from Contracts with Customers,”* a new accounting standard that provides for a comprehensive model to use in the accounting for revenue arising from contracts with customers that will replace most existing revenue recognition guidance in U.S. GAAP. Under this standard, revenue will be recognized to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which we expect to be entitled in exchange for those goods or services. At its July 2015 meeting, the FASB agreed to defer the mandatory effective date of ASU 2014-09 one year. Under the one year deferral, the standard will take effect in 2018 for calendar year-end public entities. We are assessing the new standard and have not yet determined the impact to our consolidated financial statements.

In April 2015, the FASB issued ASU 2015-03, *Interest - Imputation of Interest (Subtopic 835-30): Simplifying the Presentation of Debt Issuance Costs*. The update requires debt issuance costs related to a recognized debt liability to be presented in the balance sheet as a direct deduction from the carrying amount of the related debt liability, instead of being presented as an asset. Debt disclosures will include the face amount of the debt liability and the effective interest rate. The update requires retrospective application and represents a change in accounting principle. The update is effective for fiscal years beginning after December 15, 2015. Early adoption is permitted for financial statements that have not been previously issued. We are evaluating the impact of ASU 2015-03 on our consolidated financial statements and the possibility of early adoption thereof.

In July 2015, the FASB issued ASU 2015-11, *Simplifying Measurement of Inventory*. The update requires measurement of most inventory “at the lower of cost and net realizable value”, and applies to all entities that recognize inventory within the scope of ASC 330, except for inventory measured under the last-in, first-out (LIFO) method or the retail inventory method (RIM). ASU 2015-11 requires prospective application and represents a change in accounting principle. The update is effective for fiscal years beginning after December 15, 2016. Early adoption is permitted for financial statements that have not been previously issued. We are evaluating the impact of ASU 2015-11 on our consolidated financial statements and the possibility of early adoption thereof.

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

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

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

We are exposed to market risk from changes in interest rates primarily through our financing activities. As of June 30, 2015, we had $20.7 million outstanding under our Credit Agreement. The purpose of the Credit Agreement was to convert our existing outstanding revolving advances into a Term Loan in the principal amount of $15.0 million, provide a Revolving Line facility in the maximum principal amount of $25.0 million, and provide a DDTL of up to $10.0 million, reduced from $15.0 million as discussed below, to fund capital contributions to our subsidiary, HART. The Revolving Line has a maturity date of March 29, 2016, while the Term Loan and DDTL have a maturity date of March 29, 2018. On October 31, 2013, we amended the Credit Agreement to reduce the DDTL from up to $15.0 million to up to $10.0 million and allow for an additional $5.0 million to be available for drawing as advances under the Revolving Line.

Prior to the Third Amendment, borrowings under the Term Loan and the DDTL accrued interest at a rate based on either the effective London Interbank Offered Rate (LIBOR) for certain interest periods selected by us, or a daily floating rate based on the BBA LIBOR as published by Reuters (or other commercially available source providing quotations of BBA LIBOR), plus in either case, a margin of 3.0%. Prior to the Third Amendment, the Revolving Line accrued interest at a rate based on either the effective LIBOR for certain interest periods selected by us, or a daily floating rate based on the BBA LIBOR, plus in either case, a margin of 2.5%. We were required to fix the rate of interest on at least 50% of the Term Loan and the DDTL through the purchase of an interest rate swap. The Term Loan and DDTL each have interest payments due at the end of the applicable LIBOR period, or monthly with respect to BBA LIBOR borrowings, and principal payments are due quarterly. The Revolving Line has interest payments due at the end of the applicable LIBOR period, or monthly with respect to BBA LIBOR borrowings. Effective June 5, 2013, we entered into an interest rate swap contract with an original notional amount of $15.0 million and a maturity date of March 29, 2018 in order to hedge the risk of changes in the effective benchmark interest rate (LIBOR) associated with our Term Loan. The swap contract converted specific variable-rate debt into fixed-rate debt and fixed LIBOR associated with the Term Loan at 0.96% plus a bank margin of 3.0%. Effective November 29, 2013, we entered into a second interest rate swap contract with an original notional amount of $5.0 million and a maturity date of March 29, 2018 in order to hedge the risk of changes in LIBOR associated with a portion of our DDTL. The swap contract converted specific variable-rate debt into fixed rate debt and fixed LIBOR associated with half of the DDTL amount at 0.93% plus a bank margin of 3.0%. The notional amount of our derivative instruments as of June 30, 2015 was $11.5 million. These swap contracts were associated with reducing or eliminating interest rate risk and were designated as cash flow hedge instruments in accordance with ASC 815. We use interest-rate-related derivative instruments to manage our exposure related to changes in interest rates on our variable-rate debt instruments. We do not enter into derivative instruments for any purpose other than cash flow hedging and we do not speculate using derivative instruments.

On April 24, 2015, we entered the Third Amendment which extended the maturity date of the Revolving Line to March 29, 2018 and reduced the interest rate to the London Interbank Offered Rate plus 2.25%, 2.75% and 2.75% on the Revolving Line, Term Loan and DDTL, respectively.

As of June 30, 2015, the weighted effective interest rates on our Term Loan , DDTL and Revolving Line borrowings were 3.96%, 3.43% and 2.44%, respectively. Assuming no other changes which would affect the margin of the interest rate under our Term Loan, DDTL and Revolving Line, the effect of interest rate fluctuations on outstanding borrowings under our Credit Agreement as of June 30, 2015 over the next twelve months is quantified and summarized as follows:

If compared to the rate as of June 30, 2015	Interest expense increase
	(in thousands)
Interest rates increase by 1%	$ 92
Interest rates increase by 2%	$ 183

Item 4. ***Controls and Procedures.***

Disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) are designed to ensure that information required to be disclosed in reports filed or submitted under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in SEC rules and forms and that such information is accumulated and communicated to management, including the Chief Executive Officer and the Chief Financial Officer, to allow timely decisions regarding required disclosures.

As required by Rules 13a-15(e) and 15d-15(e) under the Exchange Act, our management, under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, conducted an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures as of June 30, 2015. Our disclosure controls and procedures are designed to provide reasonable assurance that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms, and our management necessarily was required to apply its judgment in evaluating and implementing our disclosure controls and procedures. Based upon the evaluation described above, our Chief Executive Officer and Chief Financial Officer have concluded that they believe that our disclosure controls and procedures were effective, as of the end of the period covered by this Quarterly Report on Form 10-Q, in providing reasonable assurance that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, to allow timely decisions regarding required disclosures, and is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms.

We continue to review our internal controls over financial reporting, and may from time to time make changes aimed at enhancing their effectiveness and to ensure that our systems evolve with our business. These efforts have led to various changes in our internal controls over financial reporting. There were no changes in our internal controls over financial reporting that occurred during the six months ended June 30, 2015 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. During six months ended June 30, 2015, we launched the first live phase of our Enterprise Resource Planning, or ERP, system implementation. In subsequent periods, the remaining phases of the ERP system implementation will be launched. While the implementation automated certain manual internal controls, it did not materially affect our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1A. ***Risk Factors.***

To our knowledge, and except to the extent additional factual information disclosed in this Quarterly Report on Form 10-Q relates to such risk factors, there has been no material changes in the risk factors described in “Item 1A. Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2014, which was filed with the SEC on March 12, 2015.

Item 6. Exhibits

Exhibit Index	
10.1	Third Amendment to Second Amended and Restated Credit Agreement between Harvard Bioscience, Inc., Bank of America N.A. and Brown Brothers Harriman & Co., dated April 24, 2015.
10.2	Fourth Amendment to Second Amended and Restated Credit Agreement between Harvard Bioscience, Inc., Bank of America N.A. and Brown Brothers Harriman & Co., dated June 30, 2015.
31.1	Certification of Chief Financial Officer of Harvard Bioscience, Inc., pursuant to Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of Chief Executive Officer of Harvard Bioscience, Inc., pursuant to Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certification of Chief Financial Officer of Harvard Bioscience, Inc., pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2*	Certification of Chief Executive Officer of Harvard Bioscience, Inc., pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.LAB	XBRL Taxonomy Extension Labels Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document

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

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by undersigned thereunto duly authorized.

Date: August 6, 2015

HARVARD BIOSCIENCE, INC.

By: /S/ JEFFREY A. DUCHEMIN
Jeffrey A. Duchemin
Chief Executive Officer

By: /S/ ROBERT E. GAGNON
Robert E. Gagnon
Chief Financial Officer

INDEX TO EXHIBITS

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EXHIBIT 10.1

EXECUTION

THIRD AMENDMENT TO SECOND AMENDED AND RESTATED CREDIT AGREEMENT

This THIRD AMENDMENT TO SECOND AMENDED AND RESTATED CREDIT AGREEMENT (this “Third Amendment”) is entered into on April 24, 2015 and made by and among HARVARD BIOSCIENCE, INC. (the “Borrower”), BANK OF AMERICA N.A., as Administrative Agent (“Agent”) L/C Issuer and Lender, and BROWN BROTHERS HARRIMAN & CO. (“BBH”).

Background

The Borrower, the Agent and BBH entered into a Second Amended and Restated Credit Agreement dated as of March 29, 2013, as amended by First Amendment to Second Amended and Restated Credit Agreement dated May 30, 2013 with an effective date as of April 30, 2013, as amended by Second Amendment to Second Amended and Restated Credit Agreement and Waiver dated October 31, 2013 (collectively, the “Original Credit Agreement”). Capitalized terms used herein but not defined herein will have the meaning given such term in the Original Credit Agreement. The Borrower has requested that the Agent and the Lenders extend the stated maturity date of the revolver and amend certain pricing. The Original Credit Agreement, as amended by this Third Amendment, as further amended, modified or supplemented from time to time, the “Credit Agreement”.

NOW, THEREFORE, in consideration of the promises and the agreements, provisions and covenants herein contained, the Borrower, the Agent and the Lenders hereby agree as follows:

1. Amendment. Subject to the terms and conditions herein contained and in reliance on the representations and warranties of the Borrower herein contained, effective upon satisfaction of the conditions precedent contained in section 3 below, the following amendments shall be incorporated into the Original Credit Agreement:

(A) Section 1.01, “Defined Terms” of the Original Credit Agreement is hereby amended by deleting the text in the definitions of “Applicable Rate”, “Assignment and Assumption”, “Committed Loan Notice”, “Eurodollar Rate”, “Excluded Taxes”, “Indemnified Taxes”, “Maturity Date” and “Obligations” in their entirety and replacing them with the following in lieu thereof:

“ “Applicable Rate” means (a) in respect of the Term Facility and the Amortizing Revolver Borrowings, 2.75% per annum and (b) in respect of the Revolving Credit Facility, 2.25% per annum.

"Assignment and Assumption" means an assignment and assumption entered into by a Lender and an Eligible Assignee (with the consent of any party whose consent is required by Section 11.06(b)), and accepted by the Administrative Agent, in substantially the form of Exhibit E-1 or any other form (including electronic documentation generated by use of an electronic platform) approved by the Administrative Agent.

"Committed Loan Notice" means a notice of (a) a Term Borrowing, (b) a Revolving Credit Borrowing, (c) a conversion of Loans from one Type to the other, or (d) a continuation of Eurodollar Rate Loans, pursuant to Section 2.02(a), which shall be substantially in the form of Exhibit A or such other form as may be approved by the Administrative Agent (including any form on an electronic platform or electronic transmission system as shall be approved by the Administrative Agent), appropriately completed and signed by a Responsible Officer of the Borrower.

"Eurodollar Rate" means:

(a) for any Interest Period with respect to a Eurodollar Rate Loan, the rate per annum equal to the London Interbank Offered Rate ("LIBOR") or a comparable or successor rate, which rate is approved by the Administrative Agent, as published on the applicable Bloomberg screen page (or such other commercially available source providing such quotations as may be designated by the Administrative Agent from time to time) at approximately 11:00 a.m., London time, two Business Days prior to the commencement of such Interest Period, for Dollar deposits (for delivery on the first day of such Interest Period) with a term equivalent to such Interest Period; and if the Eurodollar Rate shall be less than zero, such rate shall be deemed zero for purposes of this Agreement; and

(b) for any interest calculation with respect to a Base Rate Loan on any date, the rate per annum equal to LIBOR, at or about 11:00 a.m., London time determined two Business Days prior to such date for U.S. Dollar deposits with a term of one month commencing that day;

provided that to the extent a comparable or successor rate is approved by the Administrative Agent in connection herewith, the approved rate shall be applied in a manner consistent with market practice; provided, further that to the extent such market practice is not administratively feasible for the Administrative Agent, such approval rate shall be applied in a manner as otherwise reasonably determined by the Administrative Agent.

"Indemnified Taxes" means (a) Taxes other than Excluded Taxes, imposed on or with respect to any payment made by or on account of any obligation of any Loan Party under any Loan Document and (b) to the extent not otherwise described in (a), Other Taxes.

"Maturity Date" means (a) with respect to the Revolving Credit Facility, March 29, 2018 and (b) with respect to the Term Facility, March 29, 2018 and (c) with respect to the Amortizing Revolver Borrowings, March 29, 2018; provided, however, that, in each case, if such date is not a Business Day, the Maturity Date shall be the next preceding Business Day.

"Obligations" means all advances to, and debts, liabilities, obligations, covenants and duties of, any Loan Party arising under any Loan Document or otherwise with respect to any Loan, Letter of Credit, Secured Cash Management Agreement or Secured Hedge Agreement, in each case whether direct or indirect (including those acquired by assumption), absolute or contingent, due or to become due, now existing or hereafter arising and including interest and fees that accrue after the commencement by or against any Loan Party or any Affiliate thereof of any proceeding under any Debtor Relief Laws naming such Person as the debtor in such proceeding, regardless of whether such interest and fees are allowed claims in such proceeding; provided that the Obligations shall exclude any Excluded Swap Obligations."

(B) Section 1.01, "Defined Terms" of the Original Credit Agreement is hereby amended to add the following defined terms:

" "Base Rate" means for any day a fluctuating rate per annum equal to the highest of (a) the Federal Funds Rate plus 1/2 of 1% (b) the rate of interest in effect for such day as publicly announced from time to time by Bank of America as its "prime rate", and (c) the Eurodollar Rate plus 1.00%; and if Base Rate shall be less than zero, such rate shall be deemed zero for purposes of this Agreement. The "prime rate" is a rate set by Bank of America based upon various factors including Bank of America's costs and desired return, general economic conditions and other factors, and is used as a reference point for pricing some loans, which may be priced at, above, or below such announced rate. Any change in such rate announced by Bank of America shall take effect at the opening of business on the day specified in the public announcement of such change.

"Base Rate Loan" means a Revolving Credit Loan, a Term Loan or an Amortizing Revolver Borrowing that bears interest based on the Base Rate.

"Commodity Exchange Act" means the Commodity Exchange Act (7 U.S.C. § 1 *et seq.*), as amended from time to time, and any successor statute.

"Designated Jurisdiction" means any country or territory to the extent that such country or territory itself is the subject of any Sanction.

"Excluded Swap Obligation" means, with respect to any Guarantor, any Swap Obligation if, and to the extent that, all or a portion of the Guaranty of such Guarantor of, or the grant by such Guarantor of a security interest to secure, such Swap Obligation (or any Guaranty thereof) is or becomes illegal under the Commodity Exchange Act or any rule, regulation or order of the Commodity Futures Trading Commission (or the application or official interpretation of any thereof) by virtue of such Guarantor's failure for any reason to constitute an "eligible contract participant" as defined in the Commodity Exchange Act (determined after giving effect to Section 11.20(b) and any other "keepwell, support or other agreement" for the benefit of such Guarantor and any and all guarantees of such Guarantor's Swap Obligations by other Loan Parties) at the time the Guaranty of such Guarantor, or a grant by such Guarantor of a security interest, becomes effective with respect to such Swap Obligation. If a Swap Obligation arises under a master agreement governing more than one swap, such exclusion shall apply only to the portion of such Swap Obligation that is attributable to swaps for which such Guaranty or security interest is or becomes excluded in accordance with the first sentence of this definition.

"LIBOR Daily Floating Rate" means:

(a) the fluctuating rate of interest, which can change on each Business Day, equal to the London Interbank Offered Rate ("LIBOR"), or a comparable or successor rate which is approved by the Administrative Agent, as published on the applicable Bloomberg screen page (or such other commercially available source providing such quotations as may be designated by the Administrative Agent from time to time) at or about 11:00 a.m., London time, two (2) Business Days prior to the date in question, for Dollar deposits with a term equivalent to one (1) month term beginning on that date (in such case, the "LIBOR Rate"); and

(b) for any interest calculation with respect to a Base Rate Loan on any date, the rate per annum equal to the LIBOR Rate;

provided that: (i) to the extent a comparable or successor rate is approved by the Administrative Agent in connection herewith, the approved rate shall be applied in a manner consistent with market practice; provided, further that to the extent such market practice is not administratively feasible for the Administrative Agent, such approved rate shall be applied in a manner as otherwise reasonably determined by the Administrative Agent and (ii) if the LIBOR Daily Floating Rate shall be less than zero, such rate shall be deemed zero for purposes of this Agreement.

"London Banking Day" means any day on which dealings in Dollar deposits are conducted by and between banks in the London interbank eurodollar market.

"OFAC" means the Office of Foreign Assets Control of the United States Department of Treasury.

"Other Connection Taxes" means, with respect to any Recipient, Taxes imposed as a result of a present or former connection between such Recipient and the jurisdiction imposing such Tax (other than connections arising from such Recipient having executed, delivered, become a party to, performed its obligations under, received payment under, received or perfected a security interest under, engaged in any other transaction pursuant to or enforced any Loan Document, or sold or assigned an interest in any Loan or Loan Documents).

“Qualified ECP Guarantor” shall mean, at any time, each Loan Party with total assets exceeding $10,000,000 or that qualifies at such time as an “eligible contract participant” under the Commodity Exchange Act and can cause another person to qualify as an “eligible contract participant” at such time under §1a(18)(A)(v)(II) of the Commodity Exchange Act.

“Sanction(s)” means any sanction administered or enforced by the United States Government (including without limitation, OFAC), the United Nations Security Council, the European Union, Her Majesty’s Treasury (“HMT”) or other relevant sanctions authority.

“Specified Loan Party” means any Loan Party that is not an “eligible contract participant” under the Commodity Exchange Act (determined prior to giving effect to Section 11.20(b)).

“Swap Obligations” means with respect to any Guarantor any obligation to pay or perform under any agreement, contract or transaction that constitutes a “swap” within the meaning of Section 1a(47) of the Commodity Exchange Act.”

(C) Section 1.01, “Defined Terms” of the Original Credit Agreement is hereby amended by deleting the definition of “BBA LIBOR Daily Floating Rate”. The Original Credit Agreement is amended by deleting the term “BBA LIBOR Daily Floating Rate” each place it appears and replacing it with “LIBOR Daily Floating Rate” each place it appears.

(D) Section 2.02(a), “Borrowing, Conversions and Continuations of Loans” of the Original Credit Agreement is hereby amended by deleting the text therein contained in its entirety and replacing it with the following in lieu thereof:

“2.02 Borrowings, Conversions and Continuations of Loans. (a) Each Term Borrowing, each Revolving Credit Borrowing, each conversion of Term Loans or Revolving Credit Loans from one Type to the other, and each continuation of Eurodollar Rate Loans shall be made upon the Borrower’s irrevocable notice to the Administrative Agent, which may be given by (A) telephone, or (B) a Committed Loan Notice; provided that any telephone notice must be confirmed immediately by delivery to the Administrative Agent of a Committed Loan Notice. Each such Committed Loan Notice must be received by the Administrative Agent not later than 11:00 a.m. (i) three Business Days prior to the requested date of any Borrowing of, conversion to or continuation of Eurodollar Rate Loans or of any conversion of Eurodollar Rate Loans to Base Rate Loans, and (ii) on the requested date of any Borrowing of Base Rate Loans; provided, however, that if the Borrower wishes to request Eurodollar Rate Loans having an Interest Period other than one, two, three or six months in duration as provided in the definition of “Interest Period,” the applicable notice must be received by the Administrative Agent not later than 11:00 a.m. four Business Days prior to the requested date of such Borrowing, conversion or continuation, whereupon the Administrative Agent shall give prompt notice to the Appropriate Lenders of such request and determine whether the requested Interest Period is acceptable to all of them. Not later than 11:00 a.m., three Business Days before the requested date of such Borrowing, conversion or continuation, the Administrative Agent shall notify the Borrower (which notice may be by telephone) whether or not the requested Interest Period has been consented to by all the Lenders. Each Borrowing of, conversion to or continuation of Eurodollar Rate Loans shall be in a principal amount of $1,000,000 or a whole multiple of $100,000 in excess thereof. Except as provided in Sections 2.03(c), each Borrowing of or conversion to Base Rate Loans shall be in a principal amount of $500,000 or a whole multiple of $100,000 in excess thereof. Each Committed Loan Notice shall specify (i) whether the Borrower is requesting a Term Borrowing, a Revolving Credit Borrowing, a conversion of Term Loans or Revolving Credit Loans from one Type to the other, or a continuation of Eurodollar Rate Loans, (ii) the requested date of the Borrowing, conversion or continuation, as the case may be (which shall be a Business Day), (iii) the principal amount of Loans to be borrowed, converted or continued, (iv) the Type of Loans to be borrowed or to which existing Term Loans or Revolving Credit Loans are to be converted, and (v) if applicable, the duration of the Interest Period with respect thereto. If the Borrower fails to specify a Type of Loan in a Committed Loan Notice or if the Borrower fails to give a timely notice requesting a conversion or continuation, then the applicable Term Loans or Revolving Credit Loans shall be made as, or converted to, LIBOR Daily Floating Rate Loans. Any such automatic conversion to LIBOR Daily Floating Rate Loans shall be effective as of the last day of the Interest Period then in effect with respect to the applicable Eurodollar Rate Loans. If the Borrower requests a Borrowing of, conversion to, or continuation of Eurodollar Rate Loans in any such Committed Loan Notice, but fails to specify an Interest Period, it will be deemed to have specified an Interest Period of one month.”

(E) A new Section 6.20, "Anti-Corruption Laws" is hereby added to the Original Credit Agreement as follows:

"6.20 Anti-Corruption Laws. Conduct its business in compliance with the United States Foreign Corrupt Practices Act of 1977, the UK Bribery Act 2010, and other similar anti-corruption legislation in other jurisdictions, and maintain policies and procedures designed to promote and achieve compliance with such laws."

(F) A new Section 7.16, "Sanctions" and a new Section 7.17, "Anti-Corruption Laws" are hereby added to the Original Credit Agreement as follows:

"7.16 Sanctions. Directly or indirectly, use the proceeds of any Credit Extension, or lend, contribute or otherwise make available such proceeds to any Subsidiary, joint venture partner or other individual or entity, to fund any activities of or business with any individual or entity, or in any Designated Jurisdiction, that, at the time of such funding, is the subject of Sanctions, or in any other manner that will result in a violation by any individual or entity (including any individual or entity participating in the transaction, whether as Lender, Arranger, Administrative Agent, L/C Issuer, or otherwise) of Sanctions.

7.17 Anti-Corruption Laws. Directly or indirectly use the proceeds of any Credit Extension for any purpose which would breach the United States Foreign Corrupt Practices Act of 1977, the UK Bribery Act 2010, and other similar anti-corruption legislation in other jurisdictions."

(G) Section 11.20, "Eligible Contract Participant" of the Original Credit Agreement is hereby amended by adding an "(a)" before the paragraph therein contained and adding the following as paragraph (b) to such section:

"(b) Each Loan Party that is a Qualified ECP Guarantor at the time the Guaranty, in each case, by any Specified Loan Party, becomes effective with respect to any Swap Obligation, hereby jointly and severally, absolutely, unconditionally and irrevocably undertakes to provide such funds or other support to each Specified Loan Party with respect to such Swap Obligation as may be needed by such Specified Loan Party from time to time to honor all of its obligations under its Guaranty and the other Loan Documents in respect of such Swap Obligation (but, in each case, only up to the maximum amount of such liability that can be hereby incurred without rendering such Qualified ECP Guarantor's obligations and undertakings under this Section 11.20(b) voidable under applicable law relating to fraudulent conveyance or fraudulent transfer, and not for any greater amount). The obligations and undertakings of each Qualified ECP Guarantor under this Section shall remain in full force and effect until the Obligations have been indefeasibly paid and performed in full. Each Qualified ECP Guarantor intends this Section to constitute, and this Section shall be deemed to constitute, a guarantee of the obligations of, and a "keepwell, support, or other agreement" for the benefit of, each Specified Loan Party for all purposes of the Commodity Exchange Act."

(H) A new Section 11.21, "Electronic Execution of Assignments and Certain Other Documents" is hereby added to the Original Credit Agreement as follows:

"11.21 Electronic Execution of Assignments and Certain Other Documents. The words "execution," "execute," "signed," "signature," and words of like import in or related to any document to be signed in connection with this Agreement and the transactions contemplated hereby (including without limitation Assignment and Assumptions, amendments or other Committed Loan Notices, waivers and consents) shall be deemed to include electronic signatures, the electronic matching of assignment terms and contract formations on electronic platforms approved by the Administrative Agent, or the keeping of records in electronic form, each of which shall be of the same legal effect, validity or enforceability as a manually executed signature or the use of a paper-based recordkeeping system, as the case may be, to the extent and as provided for in any applicable law, including the Federal Electronic Signatures in Global and National Commerce Act, the New York State Electronic Signatures and Records Act, or any other similar state laws based on the Uniform Electronic Transactions Act; provided that notwithstanding anything contained herein to the contrary the Administrative Agent is under no obligation to agree to accept electronic signatures in any form or in any format unless expressly agreed to by the Administrative Agent pursuant to procedures approved by it."

2. <u>Conditions Precedent</u>. The provisions of this Third Amendment shall be effective as of the date on which all of the following conditions shall be satisfied:

(a) the Borrower shall have delivered to the Agent a fully executed counterpart of this Third Amendment;

(b) the Borrower shall have paid all fees, costs and expenses owing to the Agent and its counsel on or before the date hereof; and

(c) the Lenders shall have indicated their consent and agreement by executing this Third Amendment.

3. <u>Miscellaneous</u>.

(a) *Ratification*. The terms and provisions set forth in this Third Amendment shall modify and supersede all inconsistent terms and provisions set forth in the Original Credit Agreement and except as expressly modified and superseded by this Third Amendment, the terms and provisions of the Original Credit Agreement and the other Loan Documents are ratified and confirmed and shall continue in full force and effect. The Borrower and the Agent agree that the Original Credit Agreement as amended hereby and the other Loan Documents shall continue to be legal, valid, binding and enforceable in accordance with their respective terms. For all matters arising prior to the effective date of this Third Amendment, the Original Credit Agreement (as unmodified by this Amendment) shall control. The Borrower hereby acknowledges that, as of the date hereof, the security interests and liens granted to the Agent and the Lender under the Credit Agreement and the other Loan Documents are in full force and effect, are properly perfected and are enforceable in accordance with the terms of the Credit Agreement and the other Loan Documents.

(b) *Representations and Warranties*. The Borrower hereby represents and warrants to the Agent and the Lenders that the representations and warranties set forth in the Loan Documents, after giving effect to this Third Amendment, are true and correct in all material respects on and as of the date hereof, with the same effect as though made on and as of such date except with respect to any representations and warranties limited by their terms to a specific date. The Borrower further represents and warrants to the Agent and the Lenders that the execution, delivery and performance by the Borrower of this consent letter (i) are within the Borrower’s power and authority; (ii) have been duly authorized by all necessary corporate and shareholder action; (iii) are not in contravention of any provision of the Borrower’s certificate or articles of incorporation or bylaws or other organizational documents; (iv) do not violate any law or regulation, or any order or decree of any Governmental Authority; (v) do not conflict with or result in the breach or termination of, constitute a default under or accelerate any performance required by, any indenture, mortgage, deed of trust, lease, agreement or other instrument to which the Borrower is a party or by which the Borrower or any of its property is bound; (vi) do not result in the creation or imposition of any Lien upon any of the property of the Borrower other than in favor of Agent; (vii) do not require the consent or approval of any Governmental Authority. All representations and warranties made in this Third Amendment shall survive the execution and delivery of this Third Amendment, and no investigation by the Agent shall affect the representations and warranties or the right of the Agent to rely upon them.

(c) *Reference to Agreement*. Each of the Loan Documents, including the Original Credit Agreement and any and all other agreements, documents, or instruments now or hereafter executed and delivered pursuant to the terms hereof or pursuant to the terms of the Original Credit Agreement as amended hereby, are hereby amended so that any reference in such Loan Documents to the Original Credit Agreement shall mean a reference to the Original Credit Agreement as amended hereby.

(d) *Expenses of the Agent*. As provided in the Credit Agreement, the Borrower agrees to pay all reasonable costs and expenses incurred by the Agent in connection with the preparation, negotiation, and execution of this Third Amendment, including without limitation, the reasonable costs and fees of the Agent's legal counsel.

(e) *Severability*. Any provision of this Third Amendment held by a court of competent jurisdiction to be invalid or unenforceable shall not impair or invalidate the remainder of this Third Amendment and the effect thereof shall be confined to the provision so held to be invalid or unenforceable.

(f) *Applicable Law*. This Amendment shall be governed by and construed in accordance with the laws of The Commonwealth of Massachusetts and the applicable laws of the United States of America.

(g) *Successors and Assigns*. This Third Amendment is binding upon and shall inure to the benefit of the Agent, the Lender and the Borrower, and their respective successors and assigns, except the Borrower may not assign or transfer any of its rights or obligations hereunder without the prior written consent of the Agent.

(h) *Counterparts*. This Third Amendment may be executed in one or more counterparts and on facsimile counterparts, each of which when so executed shall be deemed to be an original, but all of which when taken together shall constitute one and the same agreement.

(i) *Effect of Waiver*. No consent or waiver, express or implied, by the Agent to or for any breach of or deviation from any covenant, condition or duty by the Borrower shall be deemed a consent or waiver to or of any other breach of the same or any other covenant, condition or duty.

(j) *Headings*. The headings, captions, and arrangements used in this Third Amendment are for convenience only and shall not affect the interpretation of this Third Amendment.

(k) *FATCA*. For purposes of determining withholding Taxes imposed under FATCA, from and after the effective date of the Amendment, the Borrower and the Administrative Agent shall treat (and the Lenders hereby authorize the Administrative Agent to treat) the Loans as not qualifying as a "grandfathered obligation" within the meaning of Treasury Regulation Section 1.1471-2(b)(2)(i)).

(l) *ENTIRE AGREEMENT*. THIS THIRD AMENDMENT EMBODIES THE ENTIRE AGREEMENT AMONG THE PARTIES HERETO WITH RESPECT TO THE SUBJECT MATTER THEREOF, AND SUPERSEDES ANY AND ALL PRIOR REPRESENTATIONS AND UNDERSTANDINGS, WHETHER WRITTEN OR ORAL, RELATING TO THIS AMENDMENT. THERE ARE NO ORAL AGREEMENTS AMONG THE PARTIES HERETO WITH RESPECT TO THE SUBJECT MATTER HEREOF.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the parties hereto have executed this Third Amendment as of the date first above written.

BORROWER

HARVARD BIOSCIENCE, INC.

By: /s/ Robert E. Gagnon
Name: Robert E. Gagnon
Title: EVP & Chief Financial Officer

AGENT

BANK OF AMERICA, N.A., as Agent

By: /s/ Renee' Marion
Name: Renee' Marion
Title: Assistant Vice President

LENDERS

BANK OF AMERICA, N.A., as a Lender

By: /s/ Peter McCarthy
Name: Peter McCarthy
Title: SVP

BROWN BROTHERS HARRIMAN & CO., as a Lender

By: /s/ Daniel G. Head, Jr.
Name: Daniel G. Head, Jr.
Title: SVP

EXHIBIT 10.2

EXECUTION

**FOURTH AMENDMENT TO SECOND AMENDED
AND RESTATED CREDIT AGREEMENT**

This FOURTH AMENDMENT TO SECOND AMENDED AND RESTATED CREDIT AGREEMENT (this "Fourth Amendment") is entered into as of June 30, 2015 and made by and among HARVARD BIOSCIENCE, INC. (the "Borrower"), BANK OF AMERICA N.A., as Administrative Agent ("Agent") L/C Issuer and Lender, and BROWN BROTHERS HARRIMAN & CO. ("BBH").

Background

The Borrower, the Agent and BBH entered into a Second Amended and Restated Credit Agreement dated as of March 29, 2013, as amended by First Amendment to Second Amended and Restated Credit Agreement dated May 30, 2013 with an effective date as of April 30, 2013, as amended by Second Amendment to Second Amended and Restated Credit Agreement and Waiver dated October 31, 2013, as amended by Third Amendment to Second Amended and Restated Credit Agreement dated April 24, 2015 (collectively, the "Original Credit Agreement"). Capitalized terms used herein but not defined herein will have the meaning given such term in the Original Credit Agreement. The Borrower has requested that the Agent and the Lenders amend the definition of "Change of Control" and to amend the Minimum Fixed Charge Coverage Ratio. The Original Credit Agreement, as amended by this Fourth Amendment, as further amended, modified or supplemented from time to time, is referred to herein as the "Credit Agreement"

NOW, THEREFORE, in consideration of the promises and the agreements, provisions and covenants herein contained, the Borrower, the Agent and the Lenders hereby agree as follows:

1. Amendment. Subject to the terms and conditions herein contained and in reliance on the representations and warranties of the Borrower herein contained, effective upon satisfaction of the conditions precedent contained in section 3 below, the following amendments shall be incorporated into the Original Credit Agreement:

(A) Section 1.01, "Defined Terms" of the Original Credit Agreement is hereby amended by deleting the text subsection (b) of the definition of "Change of Control" in its entirety and replacing it with the following in lieu thereof:

> "(b) during any period of 12 consecutive months, a majority of the members of the board of directors or other equivalent governing body of the Borrower cease to be composed of individuals (i) who were members of that board or equivalent governing body on the first day of such period, (ii) whose election or nomination to that board or equivalent governing body was approved by individuals referred to in clause (i) above constituting at the time of such election or nomination at least a majority of that board or equivalent governing body or (iii) whose election or nomination to that board or other equivalent governing body was approved by individuals referred to in clauses (i) and (ii) above constituting at the time of such election or nomination at least a majority of that board or equivalent governing body;"

(B) Section 7.11(b), "Financial Covenants; Minimum Fixed Charge Coverage Ratio" of the Original Credit Agreement is hereby amended by deleting the text therein contained in its entirety and replacing it with the following in lieu thereof:

"Minimum Fixed Charge Coverage Ratio. As of the last day of any fiscal quarter, the ratio of (i) consolidated Adjusted EBITDA of the Borrower and its Subsidiaries (for the avoidance of doubt, excluding HART) for the four-quarter period ending on the last day of such fiscal quarter, minus, (x) aggregate cash capital expenditures, minus (y) cash taxes paid, each of (x) and (y) for the four-quarter period ending on the last day such fiscal quarter, to (ii) the current portion of Funded Debt other than the Total Revolving Credit Outstandings, as of the last day of such fiscal quarter, plus (without duplication) Interest Expense during such trailing four (4) fiscal quarters, to be less than 1.10:1.00 for each of the trailing four fiscal quarters ending June 30, 2015 and September 30, 2015, to be less than 1.25:1.00 for each of the trailing four fiscal quarters ending December 31, 2015 and March 31, 2016 and to be less than 1.50:1.00 for each of the trailing four quarters thereafter."

(C) Section 11.17 "Electronic Execution of Assignments and Certain Other Documents" is hereby deleted and replaced with "11.17 Reserved."

(D) Section 11.21 "Electronic Execution of Assignments and Certain Other Documents" is hereby amended to delete the period after the last word thereof, "it", and to add the following after such word:

"provided, further, without limiting the foregoing, upon the request of the Administrative Agent, any electronic signature shall be promptly followed by such manually executed counterparts."

2. Conditions Precedent. The provisions of this Fourth Amendment shall be effective as of the date on which all of the following conditions shall be satisfied:

(a) the Borrower shall have delivered to the Agent a fully executed counterpart of this Fourth Amendment;

(b) the Borrower shall have paid all fees, costs and expenses owing to the Agent and its counsel on or before the date hereof;

(c) the Borrower shall have paid to the Agent for the pro rata account of the Lenders an amendment fee in the aggregate amount of $32,000 and

(d) the Lenders shall have indicated their consent and agreement by executing this Fourth Amendment.

3. Miscellaneous.

(a) *Ratification.* The terms and provisions set forth in this Fourth Amendment shall modify and supersede all inconsistent terms and provisions set forth in the Original Credit Agreement and except as expressly modified and superseded by this Fourth Amendment, the terms and provisions of the Original Credit Agreement and the other Loan Documents are ratified and confirmed and shall continue in full force and effect. The Borrower and the Agent agree that the Original Credit Agreement as amended hereby and the other Loan Documents shall continue to be legal, valid, binding and enforceable in accordance with their respective terms. For all matters arising prior to the effective date of this Fourth Amendment, the Original Credit Agreement (as unmodified by this Amendment) shall control. The Borrower hereby acknowledges that, as of the date hereof, the security interests and liens granted to the Agent and the Lender under the Credit Agreement and the other Loan Documents are in full force and effect, are properly perfected and are enforceable in accordance with the terms of the Credit Agreement and the other Loan Documents.

(b) *Representations and Warranties.* The Borrower hereby represents and warrants to the Agent and the Lenders that the representations and warranties set forth in the Loan Documents, after giving effect to this Fourth Amendment, are true and correct in all material respects on and as of the date hereof, with the same effect as though made on and as of such date except with respect to any representations and warranties limited by their terms to a specific date. The Borrower further represents and warrants to the Agent and the Lenders that the execution, delivery and performance by the Borrower of this consent letter (i) are within the Borrower's power and authority; (ii) have been duly authorized by all necessary corporate and shareholder action; (iii) are not in contravention of any provision of the Borrower's certificate or articles of incorporation or bylaws or other organizational documents; (iv) do not violate any law or regulation, or any order or decree of any Governmental Authority; (v) do not conflict with or result in the breach or termination of, constitute a default under or accelerate any performance required by, any indenture, mortgage, deed of trust, lease, agreement or other instrument to which the Borrower is a party or by which the Borrower or any of its property is bound; (vi) do not result in the creation or imposition of any Lien upon any of the property of the Borrower other than in favor of Agent; (vii) do not require the consent or approval of any Governmental Authority. All representations and warranties made in this Fourth Amendment shall survive the execution and delivery of this Fourth Amendment, and no investigation by the Agent shall affect the representations and warranties or the right of the Agent to rely upon them.

(e) *Reference to Agreement.* Each of the Loan Documents, including the Original Credit Agreement and any and all other agreements, documents, or instruments now or hereafter executed and delivered pursuant to the terms hereof or pursuant to the terms of the Original Credit Agreement as amended hereby, are hereby amended so that any reference in such Loan Documents to the Original Credit Agreement shall mean a reference to the Original Credit Agreement as amended hereby.

(d) *Expenses of the Agent.* As provided in the Credit Agreement, the Borrower agrees to pay all reasonable costs and expenses incurred by the Agent in connection with the preparation, negotiation, and execution of this Fourth Amendment, including without limitation, the reasonable costs and fees of the Agent's legal counsel.

(e) *Severability.* Any provision of this Fourth Amendment held by a court of competent jurisdiction to be invalid or unenforceable shall not impair or invalidate the remainder of this Fourth Amendment and the effect thereof shall be confined to the provision so held to be invalid or unenforceable.

(f) *Applicable Law.* This Amendment shall be governed by and construed in accordance with the laws of The Commonwealth of Massachusetts and the applicable laws of the United States of America.

(g) *Successors and Assigns.* This Fourth Amendment is binding upon and shall inure to the benefit of the Agent, the Lender and the Borrower, and their respective successors and assigns, except the Borrower may not assign or transfer any of its rights or obligations hereunder without the prior written consent of the Agent.

(h) *Counterparts.* This Fourth Amendment may be executed in one or more counterparts and on facsimile counterparts, each of which when so executed shall be deemed to be an original, but all of which when taken together shall constitute one and the same agreement.

(i) *Effect of Waiver.* No consent or waiver, express or implied, by the Agent to or for any breach of or deviation from any covenant, condition or duty by the Borrower shall be deemed a consent or waiver to or of any other breach of the same or any other covenant, condition or duty.

(j) *Headings.* The headings, captions, and arrangements used in this Fourth Amendment are for convenience only and shall not affect the interpretation of this Fourth Amendment.

(k) *FATCA.* For purposes of determining withholding Taxes imposed under FATCA, from and after the effective date of the Amendment, the Borrower and the Administrative Agent shall treat (and the Lenders hereby authorize the Administrative Agent to treat) the Loans as not qualifying as a "grandfathered obligation" within the meaning of Treasury Regulation Section 1.1471-2(b)(2)(i)).

(l) *ENTIRE AGREEMENT.* THIS FOURTH AMENDMENT EMBODIES THE ENTIRE AGREEMENT AMONG THE PARTIES HERETO WITH RESPECT TO THE SUBJECT MATTER THEREOF, AND SUPERSEDES ANY AND ALL PRIOR REPRESENTATIONS AND UNDERSTANDINGS, WHETHER WRITTEN OR ORAL, RELATING TO THIS AMENDMENT. THERE ARE NO ORAL AGREEMENTS AMONG THE PARTIES HERETO WITH RESPECT TO THE SUBJECT MATTER HEREOF.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the parties hereto have executed this Fourth Amendment as of the date first above written.

BORROWER

HARVARD BIOSCIENCE, INC.

By: /s/ Jeffrey A. Duchemin
Name: Jeffrey A. Duchemin
Title: President & CEO

AGENT

BANK OF AMERICA, N.A., as Agent

By: /s/ Denise Jones
Name: Denise Jones
Title: Assistant Vice President

LENDERS

BANK OF AMERICA, N.A., as a Lender

By: /s/ Pauline J. Mozzone
Name: Pauline J. Mozzone
Title: Vice President

BROWN BROTHERS HARRIMAN & CO., as a Lender

By: /s/ Daniel G. Head, Jr.
Name: Daniel G. Head, Jr.
Title: SVP

EXHIBIT 31.1

Certification

I, Robert E. Gagnon, 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: August 6, 2015

/s/ ROBERT E. GAGNON

Robert E. Gagnon
Chief Financial Officer

EXHIBIT 31.2

Certification

I, Jeffrey A. Duchemin, 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: August 6, 2015

/s/ JEFFREY A. DUCHEMIN

Jeffrey A. Duchemin
Chief Executive Officer

EXHIBIT 32.1

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 June 30, 2015 (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: August 6, 2015

/s/ ROBERT E. GAGNON

Name: Robert E. Gagnon
Title: Chief Financial Officer

EXHIBIT 32.2

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 June 30, 2015 (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: August 6, 2015

/s/ JEFFREY A. DUCHEMIN

Name: Jeffrey A. Duchemin
Title: Chief Executive Officer