UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-Q

(Mark One)

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended September 30, 2022

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from____ to ____

Commission File Number: 001-37557

Penumbra, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**05-0605598**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

One Penumbra Place
Alameda, CA 94502
(Address of principal executive offices, including zip code)

(510) 748-3200
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, Par value $0.001 per share	PEN	The New York Stock Exchange

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes: ☒ No: ☐

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

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

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

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

As of October 20, 2022, the registrant had 37,978,504 shares of common stock, par value $0.001 per share, outstanding.

FORM 10-Q

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PART I - FINANCIAL INFORMATION

ITEM 1. CONDENSED CONSOLIDATED FINANCIAL STATEMENTS.

Penumbra, Inc.

Condensed Consolidated Balance Sheets

(unaudited)

(in thousands)

	September 30, 2022	December 31, 2021
Assets		
Current assets:		
Cash and cash equivalents	$ 54,844	$ 59,379
Marketable investments	129,583	195,496
Accounts receivable, net of allowance for credit losses of $656 and $2,092 at September 30, 2022 and December 31, 2021, respectively	189,006	133,940
Inventories	320,304	263,504
Prepaid expenses and other current assets	29,888	29,155
Total current assets	723,625	681,474
Property and equipment, net	64,082	58,856
Operating lease right-of-use assets	174,684	131,955
Finance lease right-of-use assets	34,114	36,276
Intangible assets, net	83,360	90,618
Goodwill	165,426	166,388
Deferred taxes	62,827	65,698
Other non-current assets	13,483	12,985
Total assets	$ 1,321,601	$ 1,244,250
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 25,365	$ 13,421
Accrued liabilities	101,672	99,796
Current operating lease liabilities	9,417	8,267
Current finance lease liabilities	1,878	1,713
Total current liabilities	138,332	123,197
Non-current operating lease liabilities	180,897	137,045
Non-current finance lease liabilities	25,325	26,523
Other non-current liabilities	3,295	3,558
Total liabilities	347,849	290,323
Commitments and contingencies (Note 10)		
Stockholders' equity:		
Common stock	38	37
Additional paid-in capital	947,040	910,614
Accumulated other comprehensive (loss) income	(13,353)	(2,630)
Retained earnings	40,027	45,906
Total stockholders' equity	973,752	953,927
Total liabilities and stockholders' equity	$ 1,321,601	$ 1,244,250

See accompanying notes to the unaudited condensed consolidated financial statements

Penumbra, Inc.

Condensed Consolidated Statements of Operations

(unaudited)

(in thousands, except share and per share amounts)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2021	2022	2021
Revenue	$ 213,678	$ 190,117	$ 625,917	$ 543,579
Cost of revenue	78,351	70,205	229,137	193,644
Gross profit	135,327	119,912	396,780	349,935
Operating expenses:				
Research and development	21,320	16,734	61,443	52,548
Sales, general and administrative	108,573	94,397	334,088	264,831
Total operating expenses	129,893	111,131	395,531	317,379
Income from operations	5,434	8,781	1,249	32,556
Interest (expense) income, net	(43)	138	(162)	917
Other expense, net	(2,356)	(1,137)	(4,323)	(3,021)
Income (loss) before income taxes	3,035	7,782	(3,236)	30,452
Provision for (benefit from) income taxes	5,306	(249)	2,643	3,196
Consolidated net (loss) income	$ (2,271)	$ 8,031	$ (5,879)	$ 27,256
Net loss attributable to non-controlling interest	—	(819)	—	(2,661)
Net (loss) income attributable to Penumbra, Inc.	$ (2,271)	$ 8,850	$ (5,879)	$ 29,917
Net (loss) income attributable to Penumbra, Inc. per share:				
Basic	$ (0.06)	$ 0.24	$ (0.16)	$ 0.82
Diluted	$ (0.06)	$ 0.24	$ (0.16)	$ 0.80
Weighted average shares outstanding:				
Basic	37,918,452	36,617,961	37,778,362	36,532,822
Diluted	37,918,452	37,611,355	37,778,362	37,592,095

See accompanying notes to the unaudited condensed consolidated financial statements

Penumbra, Inc.

Condensed Consolidated Statements of Comprehensive (Loss) Income

(unaudited)

(in thousands)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2021	2022	2021
Consolidated net (loss) income	$ (2,271)	$ 8,031	$ (5,879)	$ 27,256
Other comprehensive loss, net of tax:				
Foreign currency translation adjustments, net of tax	(2,812)	(1,356)	(7,013)	(3,188)
Net change in unrealized losses on available-for-sale securities, net of tax	(383)	(66)	(3,710)	(446)
Total other comprehensive loss, net of tax	(3,195)	(1,422)	(10,723)	(3,634)
Consolidated comprehensive (loss) income	$ (5,466)	$ 6,609	$ (16,602)	$ 23,622
Net loss attributable to non-controlling interest	—	(819)	—	(2,661)
Comprehensive (loss) income attributable to Penumbra, Inc.	$ (5,466)	$ 7,428	$ (16,602)	$ 26,283

See accompanying notes to the unaudited condensed consolidated financial statements

Penumbra, Inc.

Condensed Consolidated Statements of Stockholders' Equity

(unaudited)

(in thousands, except share amounts)

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive (Loss) Income	Retained Earnings	Total Penumbra, Inc. Stockholders' Equity	Non-Controlling Interest	Total Stockholders' Equity
	Shares	Amount						
Balance at December 31, 2021	37,578,483	$ 37	$ 910,614	$ (2,630)	$ 45,906	$ 953,927	$ —	$ 953,927
Issuance of common stock	103,984	1	1,102	—	—	1,103	—	1,103
Shares held for tax withholdings	(14,243)	—	(3,181)	—	—	(3,181)	—	(3,181)
Stock-based compensation	—	—	10,716	—	—	10,716	—	10,716
Other comprehensive loss	—	—	—	(3,342)	—	(3,342)	—	(3,342)
Net income	—	—	—	—	79	79	—	79
Balance at March 31, 2022	37,668,224	$ 38	$ 919,251	$ (5,972)	$ 45,985	$ 959,302	$ —	$ 959,302
Issuance of common stock	158,735	—	3,466	—	—	3,466	—	3,466
Issuance of common stock under employee stock purchase plan	66,098	—	7,998	—	—	7,998	—	7,998
Shares held for tax withholdings	(12,950)	—	(1,900)	—	—	(1,900)	—	(1,900)
Stock-based compensation	—	—	9,022	—	—	9,022	—	9,022
Other comprehensive loss	—	—	—	(4,186)	—	(4,186)	—	(4,186)
Net loss	—	—	—	—	(3,687)	(3,687)	—	(3,687)
Balance at June 30, 2022	37,880,107	$ 38	$ 937,837	$ (10,158)	$ 42,298	$ 970,015	$ —	$ 970,015
Issuance of common stock	99,921	—	1,725			1,725	—	1,725
Shares held for tax withholdings	(11,737)	—	(1,887)	—	—	(1,887)	—	(1,887)
Stock-based compensation	—	—	9,365	—	—	9,365	—	9,365
Other comprehensive loss	—	—	—	(3,195)	—	(3,195)	—	(3,195)
Net loss	—	—	—		(2,271)	(2,271)	—	(2,271)
Balance at September 30, 2022	37,968,291	$ 38	$ 947,040	$ (13,353)	$ 40,027	$ 973,752	$ —	$ 973,752

Penumbra, Inc.

Condensed Consolidated Statements of Stockholders' Equity

(unaudited)

(in thousands, except share amounts

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Retained Earnings	Total Penumbra, Inc. Stockholders' Equity	Non-Controlling Interest	Total Stockholders' Equity
	Shares	Amount						
Balance at December 31, 2020	36,414,732	$ 36	$ 598,299	$ 2,541	$ 40,622	$ 641,498	$ (3,710)	$ 637,788
Issuance of common stock	79,080	—	666	—	—	666	—	666
Shares held for tax withholdings	(11,955)	—	(3,036)	—	—	(3,036)	—	(3,036)
Stock-based compensation	—	—	7,093	—	—	7,093	—	7,093
Other comprehensive loss	—	—	—	(2,966)	—	(2,966)	—	(2,966)
Net income (loss)	—	—	—	—	11,836	11,836	(910)	10,926
Balance at March 31, 2021	36,481,857	$ 36	$ 603,022	$ (425)	$ 52,458	$ 655,091	$ (4,620)	$ 650,471
Issuance of common stock	67,547	—	312	—	—	312	—	312
Issuance of common stock under employee stock purchase plan	35,221	—	7,354	—	—	7,354	—	7,354
Shares held for tax withholdings	(15,023)	—	(3,952)	—	—	(3,952)	—	(3,952)
Stock-based compensation	—	—	10,138	—	—	10,138	—	10,138
Other comprehensive income	—	—	—	754	—	754	—	754
Net income (loss)	—	—	—	—	9,231	9,231	(932)	8,299
Balance at June 30, 2021	36,569,602	$ 36	$ 616,874	$ 329	$ 61,689	$ 678,928	$ (5,552)	$ 673,376
Issuance of common stock	113,760	—	1,178			1,178	35	1,213
Shares held for tax withholdings	(13,459)	—	(3,533)	—	—	(3,533)	—	(3,533)
Stock-based compensation	—	—	6,938	—	—	6,938	—	6,938
Other comprehensive loss	—	—	—	(1,422)	—	(1,422)	—	(1,422)
Net income (loss)	—	—	—		8,850	8,850	(819)	8,031
Balance at September 30, 2021	36,669,903	$ 36	$ 621,457	$ (1,093)	$ 70,539	$ 690,939	$ (6,336)	$ 684,603

See accompanying notes to the unaudited condensed consolidated financial statements

Penumbra, Inc.

Condensed Consolidated Statements of Cash Flows

(unaudited)

(in thousands)

	Nine Months Ended September 30,	
	2022	2021
CASH FLOWS FROM OPERATING ACTIVITIES:		
Consolidated net (loss) income	$ (5,879)	$ 27,256
Adjustments to reconcile consolidated net (loss) income to net cash (used in) provided by operating activities:		
Depreciation and amortization	17,880	10,655
Stock-based compensation	27,381	24,101
Inventory write-downs	2,051	2,309
Deferred taxes	2,804	809
Other	879	1,685
Changes in operating assets and liabilities:		
Accounts receivable	(57,357)	(6,963)
Inventories	(62,317)	(45,812)
Prepaid expenses and other current and non-current assets	(1,958)	(7,096)
Accounts payable	13,090	(1,189)
Accrued expenses and other non-current liabilities	6,165	9,803
Proceeds from lease incentives	263	3,214
Net cash (used in) provided by operating activities	(56,998)	18,772
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchases of marketable investments	—	(107,125)
Proceeds from sales of marketable investments	1,180	2,000
Proceeds from maturities of marketable investments	60,713	97,967
Purchases of property and equipment	(15,736)	(13,088)
Other	—	(150)
Net cash provided by (used in) investing activities	46,157	(20,396)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from exercises of stock options	6,293	2,191
Proceeds from issuance of stock under employee stock purchase plan	7,998	7,354
Payment of employee taxes related to vested stock	(6,968)	(10,521)
Payments of finance lease obligations	(1,299)	(1,056)
Other	(137)	(93)
Net cash provided by (used in) financing activities	5,887	(2,125)
Effect of foreign exchange rate changes on cash and cash equivalents	419	369
NET DECREASE IN CASH AND CASH EQUIVALENTS	(4,535)	(3,380)
CASH AND CASH EQUIVALENTS—Beginning of period	59,379	69,670
CASH AND CASH EQUIVALENTS—End of period	$ 54,844	$ 66,290
NONCASH INVESTING AND FINANCING ACTIVITIES:		
Right-of-use assets obtained in exchange for operating lease obligations	$ 51,495	$ 100,178
Right-of-use assets obtained in exchange for finance lease obligations	$ 278	$ 1,113
Purchase of property and equipment funded through accounts payable and accrued liabilities	$ 1,847	$ 4,839
SUPPLEMENTAL CASH FLOW INFORMATION:		
Cash paid for amounts included in the measurement of operating lease liabilities	$ 13,017	$ 6,214
Cash paid for income taxes	$ 2,503	$ 933

See accompanying notes to the unaudited condensed consolidated financial statements

Penumbra, Inc.

Notes to Condensed Consolidated Financial Statements

(unaudited)

1. Organization and Description of Business

Penumbra, Inc. (the "Company") is a global healthcare company focused on innovative therapies. The Company designs, develops, manufactures and markets novel products and has a broad portfolio that addresses challenging medical conditions in markets with significant unmet need. The Company focuses on developing, manufacturing and marketing novel products for use by specialist physicians and other healthcare providers to drive improved clinical and health outcomes. The Company believes that the cost-effectiveness of our products is attractive to our customers.

2. Summary of Significant Accounting Policies

Basis of Presentation and Consolidation

The accompanying condensed consolidated balance sheet as of September 30, 2022, the condensed consolidated statements of operations, the condensed consolidated statements of comprehensive (loss) income, and the condensed consolidated statements of stockholders' equity for the three and nine months ended September 30, 2022 and 2021, and the condensed consolidated statements of cash flows for the nine months ended September 30, 2022 and 2021 are unaudited. The unaudited condensed consolidated financial statements included herein have been prepared by the Company in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") and the applicable rules and regulations of the U.S. Securities and Exchange Commission (the "SEC") for interim financial information. Accordingly, they do not include all of the information and notes required by U.S. GAAP for complete financial statements. The condensed consolidated balance sheet data as of December 31, 2021 was derived from the audited financial statements as of that date.

The unaudited condensed consolidated financial statements have been prepared on the same basis as the audited consolidated financial statements and, in the opinion of management, reflect all adjustments of a normal recurring nature considered necessary to state fairly the Company's financial position as of September 30, 2022, the results of its operations for the three and nine months ended September 30, 2022 and 2021, the changes in its comprehensive income (loss) and stockholders' equity for the three and nine months ended September 30, 2022 and 2021, and its cash flows for the nine months ended September 30, 2022 and 2021. The results for the three and nine months ended September 30, 2022 are not necessarily indicative of the results that may be expected for the year ending December 31, 2022 or for any other future annual or interim period.

The information included in this Quarterly Report on Form 10-Q should be read in conjunction with the audited consolidated financial statements and notes thereto for the fiscal year ended December 31, 2021, included in the Company's Annual Report on Form 10-K. There have been no changes to the Company's significant accounting policies during the nine months ended September 30, 2022, as compared to the significant accounting policies described in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2021.

The condensed consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities and equity accounts; disclosure of contingent assets and liabilities at the date of the financial statements; and the reported amounts of revenues and expenses during the reporting period. On an ongoing basis, the Company evaluates its estimates, including those related to marketable investments, allowances for credit losses, the amount of variable consideration included in the transaction price, warranty reserve, valuation of inventories, useful lives of property and equipment, intangibles, operating and financing lease right-of-use ("ROU") assets and liabilities, income taxes, contingent consideration and other contingencies, among others. The Company bases its estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other data. Actual results could differ from those estimates.

Segments

The Company determined its operating segment on the same basis that it uses to evaluate its performance internally. The Company has one business activity: the design, development, manufacturing and marketing of innovative medical products, and

operates as one operating segment. The Company's chief operating decision-maker, its Chief Executive Officer, reviews its consolidated operating results for the purpose of allocating resources and evaluating financial performance.

3. Investments and Fair Value of Financial Instruments

Marketable Investments

The Company's marketable investments have been classified and accounted for as available-for-sale. The following table presents the Company's marketable investments as of September 30, 2022 and December 31, 2021 (in thousands):

	September 30, 2022				
		Securities with net gains or losses in accumulated other comprehensive income (loss)			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Allowance for Credit Loss	Fair Value
U.S. treasury	$ 14,477	$ —	$ (569)	$ —	$ 13,908
U.S. agency and government sponsored securities	7,001	—	(223)	—	6,778
U.S. states and municipalities	28,130	—	(679)	—	27,451
Corporate bonds	84,280	—	(2,834)	—	81,446
Total	$ 133,888	$ —	$ (4,305)	$ —	$ 129,583

	December 31, 2021				
		Securities with net gains or losses in accumulated other comprehensive income (loss)			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Allowance for Credit Loss	Fair Value
Commercial paper	$ 20,286	$ —	$ (10)	$ —	$ 20,276
U.S. treasury	14,464	—	(77)	—	14,387
U.S. agency and government sponsored securities	11,553	1	(19)	—	11,535
U.S. states and municipalities	39,436	39	(89)	—	39,386
Corporate bonds	110,354	49	(491)	—	109,912
Total	$ 196,093	$ 89	$ (686)	$ —	$ 195,496

As of September 30, 2022, the total amortized cost basis of the Company's impaired available-for-sale securities exceeded its fair value by $4.3 million, which was primarily attributable to widening credit spreads and rising interest rates since purchase. The Company reviewed its impaired available-for-sale securities and concluded that the decline in fair value was not related to credit losses and that it is more likely than not that the entire amortized cost of each impaired security will be recoverable before the Company is required to sell them or when the security matures. Accordingly, during the three and nine months ended September 30, 2022, no allowance for credit losses was recorded and instead the unrealized losses are reported as a component of accumulated other comprehensive (loss) income.

The following tables present the gross unrealized losses and the fair value for those marketable investments that were in an unrealized loss position for less than twelve months or for twelve months or more as of September 30, 2022 and December 31, 2021 (in thousands):

	September 30, 2022					
	Less than 12 months		12 months or more		Total	
	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
U.S. treasury	$ 13,908	$ (569)	$ —	$ —	$ 13,908	$ (569)
U.S. agency and government sponsored securities	2,866	(129)	3,912	(94)	6,778	(223)
U.S. states and municipalities	20,778	(467)	5,803	(212)	26,581	(679)
Corporate bonds	65,326	(1,895)	16,120	(939)	81,446	(2,834)
Total	$ 102,878	$ (3,060)	$ 25,835	$ (1,245)	$ 128,713	$ (4,305)

	December 31, 2021					
	Less than 12 months		12 months or more		Total	
	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
Commercial paper	$ 16,977	$ (10)	$ —	$ —	$ 16,977	$ (10)
U.S. treasury	14,387	(77)	—	—	14,387	(77)
U.S. agency and government sponsored securities	6,985	(19)	—	—	6,985	(19)
U.S. states and municipalities	21,924	(89)	—	—	21,924	(89)
Corporate bonds	85,513	(491)	—	—	85,513	(491)
Total	$ 145,786	$ (686)	$ —	$ —	$ 145,786	$ (686)

The following table presents the contractual maturities of the Company's marketable investments as of September 30, 2022 (in thousands):

	September 30, 2022	
	Amortized Cost	Fair Value
Due in less than one year	$ 48,276	$ 47,495
Due in one to five years	85,612	82,088
Total	$ 133,888	$ 129,583

Fair Value of Financial Instruments

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability (an exit price) in an orderly transaction between market participants at the measurement date. The accounting guidance establishes a three-tiered hierarchy, which prioritizes the inputs used in the valuation methodologies in measuring fair value:

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

Level 2 - Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3 - Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

The categorization of a financial instrument within the valuation hierarchy is based on the lowest level of input that is significant to the fair value measurement.

The Company classifies its cash equivalents and marketable investments within Level 1 and Level 2, as it uses quoted market prices or alternative pricing sources and models utilizing market observable inputs.

The Company determined the fair value of its Level 1 financial instruments, which are traded in active markets, using quoted market prices for identical instruments.

Marketable investments classified within Level 2 of the fair value hierarchy are valued based on other observable inputs, including broker or dealer quotations or alternative pricing sources. When quoted prices in active markets for identical assets or liabilities are not available, the Company relies on non-binding quotes from its investment managers, which are based on proprietary valuation models of independent pricing services. These models generally use inputs such as observable market data, quoted market prices for similar instruments, historical pricing trends of a security as relative to its peers. To validate the fair value determination provided by its investment managers, the Company reviews the pricing movement in the context of overall market trends and trading information from its investment managers. In addition, the Company assesses the inputs and methods used in determining the fair value in order to determine the classification of securities in the fair value hierarchy.

The Company did not hold any Level 3 marketable investments as of September 30, 2022 or December 31, 2021. During the nine months ended September 30, 2022 and 2021, the Company did not have any transfers between Level 1, Level 2 or Level 3 of the fair value hierarchy. Additionally, the Company did not have any financial assets and liabilities measured at fair value on a non-recurring basis as of September 30, 2022 or December 31, 2021.

The following tables set forth the Company's financial assets measured at fair value by level within the fair value hierarchy as of September 30, 2022 and December 31, 2021 (in thousands):

	As of September 30, 2022			
	Level 1	Level 2	Level 3	Fair Value
Financial Assets				
Cash equivalents:				
Money market funds	$ 8,797	$ —	$ —	$ 8,797
Marketable investments:				
U.S. treasury	13,908	—	—	13,908
U.S. agency and government sponsored securities	—	6,778	—	6,778
U.S. states and municipalities	—	27,451	—	27,451
Corporate bonds	—	81,446	—	81,446
Total	$ 22,705	$ 115,675	$ —	$ 138,380

	As of December 31, 2021			
	Level 1	Level 2	Level 3	Fair Value
Financial Assets				
Cash equivalents:				
Money market funds	$ 10,509	$ —	$ —	$ 10,509
Marketable investments:				
Commercial paper	—	20,276	—	20,276
U.S. treasury	14,387	—	—	14,387
U.S. agency and government sponsored securities	—	11,535	—	11,535
U.S. states and municipalities	—	39,386	—	39,386
Corporate bonds	—	109,912	—	109,912
Total	$ 24,896	$ 181,109	$ —	$ 206,005

4. Balance Sheet Components

Inventories

The following table shows the components of inventories as of September 30, 2022 and December 31, 2021 (in thousands):

	September 30, 2022	December 31, 2021
Raw materials	$ 84,913	$ 68,374
Work in process	29,167	18,678
Finished goods	206,224	176,452
Inventories	$ 320,304	$ 263,504

Accrued Liabilities

The following table shows the components of accrued liabilities as of September 30, 2022 and December 31, 2021 (in thousands):

	September 30, 2022	December 31, 2021
Payroll and employee-related cost	$ 57,310	$ 60,015
Accrued expenses	10,765	12,245
Deferred revenue	9,732	5,671
Other accrued liabilities	23,865	21,865
Total accrued liabilities	$ 101,672	$ 99,796

The following table shows the changes in the Company's estimated product warranty accrual, included in accrued liabilities, for the nine months ended September 30, 2022 and twelve months ended December 31, 2021, respectively (in thousands):

	September 30, 2022	December 31, 2021
Balance at the beginning of the period	$ 4,310	$ 2,896
Accruals of warranties issued	1,986	2,973
Settlements of warranty claims	(1,129)	(1,559)
Balance at the end of the period	$ 5,167	$ 4,310

5. Business Combinations

Acquisition of Sixense Enterprises Inc.

Transaction Overview

On October 1, 2021 (the "Closing Date"), the Company closed the acquisition of Sixense Enterprises Inc. ("Sixense") pursuant to the Agreement and Plan of Merger, dated September 17, 2021, among the Company, Sixense, Seychelles Merger Corporation, a wholly owned subsidiary of the Company, and a stockholders' agent (the "Merger"). Sixense, a privately held company, specializes in enterprise use of virtual reality hardware and software and has been an integral partner on the development of the Company's REAL Immersive System portfolio. The Merger allows the Company to streamline its efforts and collaborate more closely on its immersive healthcare offerings.

The Company and Sixense formed a joint venture, MVI Health Inc. ("MVI"), in 2017 for the purpose of exploring healthcare applications of virtual reality technology. At the time of MVI's formation, the Company contributed cash and in-kind services to MVI and Sixense contributed an exclusive license to use its technology for healthcare applications, each for a 50% equity interest in MVI. In 2018, the Company acquired 40% of the outstanding shares of MVI from Sixense and consolidated the financial results of MVI into the accompanying consolidated financial statements, with the amounts attributable to the non-controlling interest classified separately. As of the Closing Date, the Company and Sixense owned a 90% and 10% equity interest in MVI, respectively.

As a result of the Merger, Sixense became a wholly owned subsidiary of the Company and the Company acquired, among other things, the remaining 10% equity interest in MVI held by Sixense.

The Company accounted for the acquired assets and liabilities assumed from Sixense in accordance with ASC 805 and for its change in ownership interest in MVI as an equity transaction in accordance with ASC 810. The carrying amount of the noncontrolling interest was adjusted to zero, and the difference between the acquisition date fair value of the equity interest acquired of $4.2 million and its carrying amount of $(6.2) million was recognized within additional paid in capital.

Fair Value of Consideration Transferred

The following table summarizes the Closing Date fair value of the consideration transferred (in thousands):

Fair value of common stock issued[1]	$	174,133
Fair value of replacement stock options[2]		80,693
Consideration for settlement of pre-existing liabilities due to Sixense[3]		(3,810)
Total purchase price	$	251,016

[1] The fair value of the 661,877 shares of common stock issued as part of consideration transferred was determined based on the acquisition date closing market price of the Company's common stock of $263.09.

[2] Per ASC 805, the replacement of stock options or other share-based payment awards in conjunction with a business combination represents a modification of share-based payment awards that must be accounted for in accordance with ASC 718. As a result of the Company's obligation to issue replacement awards, a portion of the fair-value-based measure of replacement awards is included in measuring the purchase consideration transferred in the business combination. To determine the portion of the replacement awards that is part of the purchase consideration, the Company measured the fair value of both the replacement awards and the historical awards as of the Closing Date, in accordance with ASC 718. The fair value of the replacement awards, whether vested or unvested, was included in the purchase consideration to the extent that pre-acquisition services had been rendered. The fair value of replacement stock options assumed for which pre-acquisition services were rendered of $80.7 million was allocated to the purchase consideration and $25.8 million was recognized immediately in the post-combination financial statements during the three months ended December 31, 2021, as pre-acquisition services were not rendered but the vesting of all stock options was accelerated in connection with the Merger.

[3] In the connection with the Merger, the Company effectively settled pre-existing liabilities due to or on behalf of Sixense.

The purchase price measurement period was closed as of September 30, 2022. The following table presents the allocation of the purchase price, reflecting immaterial measurement period adjustments recorded during the three months ended September 30, 2022 (in thousands):

	Acquisition-Date Fair Value	Estimated Useful Life of Finite-Lived Intangible Assets
Tangible assets acquired and (liabilities) assumed:		
Cash and cash equivalents	$ 2,919	
Prepaid expenses and other current and non-current assets	1,971	
Deferred tax assets	20,678	
Deferred tax liabilities	(19,398)	
Accrued liabilities and other current liabilities	(1,341)	
Intangible assets acquired:		
Developed technology	62,466	8.75 years
In-process research and development	20,823	
Net assets acquired	88,118	
Fair value of subsidiary stock indirectly acquired through the Merger	4,161	
Total net assets acquired	92,279	
Goodwill	158,737	
Total purchase price	$ 251,016	

The intangible assets acquired and the fair value of the privately-held subsidiary stock indirectly acquired are Level 3 fair value measurements for which fair value is derived from valuations using inputs that are unobservable and significant to the overall fair value measurement.

6. Intangible Assets

Acquired Intangible Assets

The following tables present details of the Company's acquired finite-lived intangible assets as of September 30, 2022 and December 31, 2021 (in thousands, except weighted-average amortization period):

As of September 30, 2022	Weighted-Average Amortization Period	Gross Carrying Amount	Accumulated Amortization	Net
Finite-lived intangible assets:				
Developed technology	8.8 years	$ 83,289	$ (7,734)	$ 75,555
Customer relationships	15.0 years	5,841	(2,044)	3,797
Trade secrets and processes	20.0 years	5,256	(1,248)	4,008
Other	5.0 years	1,506	(1,506)	—
Total intangible assets	9.6 years	$ 95,892	$ (12,532)	$ 83,360

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As of December 31, 2021	Weighted-Average Amortization Period	Gross Carrying Amount	Accumulated Amortization	Net
Finite-lived intangible assets:				
Developed technology	8.8 years	$ 62,466	$ (1,784)	$ 60,682
Customer relationships	15.0 years	6,762	(2,029)	4,733
Trade secrets and processes	20.0 years	5,256	(1,051)	4,205
Other	5.0 years	1,744	(1,569)	175
Total intangible assets subject to amortization	9.8 years	$ 76,228	$ (6,433)	$ 69,795
Indefinite-lived intangible assets:				
In-process research and development		$ 20,823	$ —	$ 20,823
Total intangible assets		$ 97,051	$ (6,433)	$ 90,618

The customer relationships and intangible assets classified as “Other” relate to the acquisition of Crossmed S.p.A., the Company’s wholly-owned subsidiary in Italy, during the third quarter of 2017. The gross carrying amount and accumulated amortization of these intangible assets are subject to foreign currency translation effects.

The Company reviews indefinite-lived intangible assets for impairment annually during the fourth quarter or more frequently if events or circumstances indicate that an impairment loss may have occurred. During the three months ended September 30, 2022, the Company reclassified a $20.8 million in-process research and development (“IPR&D”) asset from the Sixense acquisition to a finite-lived developed technology intangible asset upon the completion of the IPR&D project and began amortizing the intangible asset over its useful life of 8.8 years. Prior to reclassifying the IPR&D asset to a finite-lived intangible asset during the three months ended September 30, 2022, the Company performed an impairment analysis and determined that the IPR&D asset was not impaired.

The following table presents the amortization expense recorded related to the Company’s finite-lived intangible assets for the three and nine months ended September 30, 2022 and 2021 (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2021	2022	2021
Cost of revenue	$ 66	$ 66	$ 197	$ 197
Sales, general and administrative	2,481	207	6,436	633
Total	$ 2,547	$ 273	$ 6,633	$ 830

7. Goodwill

The following table presents the changes in goodwill during the nine months ended September 30, 2022 (in thousands):

	Total Company
Balance as of December 31, 2021	$ 166,388
Foreign currency translation and other adjustments[1]	(962)
Balance as of September 30, 2022	$ 165,426

(1) Other adjustments represent measurement period adjustments to the preliminary purchase price allocation in connection with the Sixense acquisition. Please see Note “5. Business Combinations” for more information.

Goodwill Impairment Review

The Company reviews goodwill for impairment annually during the fourth quarter or more frequently if events or circumstances indicate that an impairment loss may have occurred. The Company determined there were no impairment indicators as of September 30, 2022.

8. Indebtedness

Credit Agreement

On April 24, 2020, the Company entered into a Credit Agreement (the "Credit Agreement") with JPMorgan Chase Bank, N.A., as administrative agent and lender, and Bank of America, N.A. and Citibank, N.A. as lenders. The Credit Agreement is secured and provides for up to $100 million in available revolving borrowing capacity with an option, subject to certain conditions, for the Company to increase the aggregate borrowing capacity to up to $150 million, and was set to mature on April 23, 2021. The Company entered into an amended one-year credit agreement with JPMorgan Chase Bank, N.A., as administrative agent and lender, and Bank of America, N.A. and Citibank, N.A. as lenders during the three months ended March 31, 2021, which extended the maturity date from April 23, 2021 to February 21, 2022 and had substantially the same terms and conditions as the prior credit agreement with certain changes including the exclusion of certain one-time charges and expenses incurred during the fiscal quarters ended September 30, 2020 and December 31, 2020 from the calculation of the financial covenants, reductions in interest rate floors applicable to revolving loans and other changes to borrowing mechanics under the Credit Agreement.

In the first quarter of 2022, the Company entered into a further amended one-year credit agreement with JPMorgan Chase Bank, N.A., as administrative agent and lender, and Bank of America, N.A. and Citibank, N.A. as lenders. The amended Credit Agreement extended the maturity date from February 21, 2022 to February 17, 2023 and has substantially the same terms and conditions as the prior credit agreement with certain changes to the reference benchmark interest rates, applicable margins and borrowing mechanics under the Credit Agreement, having the overall effect of lowering the interest rates payable by the Company on amounts borrowed under the Credit Agreement, and a reduction of the commitment fee payable on the average daily unused amount under the Credit Agreement to 0.25% per annum.

The Credit Agreement requires the Company to maintain a minimum fixed charge coverage ratio and to not exceed a maximum leverage ratio. As of September 30, 2022, the Company was in compliance with these requirements.

As of September 30, 2022 and December 31, 2021, there were no borrowings outstanding under the amended Credit Agreement.

9. Leases

Lease Overview

As of December 31, 2021 and September 30, 2022, the Company's contracts that contained a lease consisted of real estate, equipment and vehicle leases.

The Company leases real estate for office and warehouse space under non-cancelable operating and finance leases that expire at various dates through 2036, subject to the Company's option to renew certain leases for an additional five to 15 years. The Company also leases other equipment and vehicles under noncancelable operating and finance leases that expire at various dates through 2027.

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The following table presents the components of the Company's lease cost, lease term and discount rate during the three and nine months ended September 30, 2022 and 2021 (in thousands, except years and percentages):

	Three Months Ended		Nine Months Ended	
	September 30, 2022	September 30, 2021	September 30, 2022	September 30, 2021
Lease Cost				
Operating lease cost	$ 5,132	$ 3,586	$ 15,048	$ 7,465
Finance lease cost:				
Amortization of right-of-use assets	815	776	2,431	2,283
Interest on lease liabilities	360	376	1,083	1,120
Variable lease cost[1]	2,541	1,601	7,472	4,427
Total lease costs	$ 8,848	$ 6,339	$ 26,034	$ 15,295
Weighted Average Remaining Lease Term				
Operating leases			13.6 years	13.4 years
Finance leases			11.6 years	12.5 years
Weighted Average Discount Rate				
Operating leases			4.61 %	4.94 %
Finance leases			5.30 %	5.31 %

[1] Variable lease costs represent payments that are dependent on usage, a rate or index. Variable lease cost primarily relates to common area maintenance charges for the Company's real estate leases.

During the third quarter of 2021, the Company signed a lease for approximately thirteen years for additional space located at 620 Roseville Parkway, Roseville, California (the "620 Roseville Parkway Lease"). Per the terms of the lease, improvements will be constructed and permanently affixed to the property in two phases. The first phase ("Phase 1") of the 620 Roseville Parkway Lease commenced once the Phase 1 premises were made ready and available for their intended use, which occurred during the first quarter of 2022. The Company determined that the 620 Roseville Parkway Lease is a non-cancelable operating lease which will expire in 2035. Upon completion of the second phase ("Phase 2") of improvements, the Phase 2 premises will

be added to the 620 Roseville Parkway Lease. Phase 2 is not anticipated to be completed in 2022 and has not yet commenced as of September 30, 2022.

Additionally, during the nine months ended September 30, 2022, the Company modified existing leases for certain properties that resulted in an increase of right-of-use ("ROU") assets in exchange for operating leases liabilities.

The following table is a schedule, by years, of maturities of the Company's operating and finance lease liabilities as of September 30, 2022 (in thousands):

	Operating Lease Payments	Finance Lease Payments
2022 (excluding the nine months ended September 30, 2022)	$ 4,517	$ 806
2023	17,876	3,270
2024	17,764	3,281
2025	17,570	3,209
2026	17,681	2,842
Thereafter	186,184	23,539
Total undiscounted lease payments	261,592	36,947
Less imputed interest	(71,278)	(9,744)
Present value of lease liabilities	$ 190,314	$ 27,203

Supplemental cash flow information related to leases during the nine months ended September 30, 2022 and 2021 are as follows (in thousands):

	Nine Months Ended	
	September 30, 2022	September 30, 2021
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows from operating leases	$ 13,017	$ 6,214
Financing cash flows from finance leases	$ 1,299	$ 1,056
Right-of-use assets obtained in exchange for lease obligations:		
Operating leases	$ 51,495	$ 100,178
Finance leases	$ 278	$ 1,113

10. Commitments and Contingencies

Royalty Obligations

In March 2005, the Company entered into a license agreement that requires the Company to make minimum royalty payments to the licensor on a quarterly basis. In July 2019, the Company amended the license agreement to extend its term for an additional ten years and to increase the required minimum annual royalty payments by $0.2 million. As of both September 30, 2022 and December 31, 2021, the amended license agreement required minimum quarterly royalty payments of $0.3 million. Unless terminated earlier, the term of the amended license agreement shall expire June 30, 2029.

In April 2012, the Company entered into an agreement that requires the Company to pay, on a quarterly basis, a 5% royalty on sales of products covered under applicable patents. The first commercial sale of covered products occurred in April 2014. Unless terminated earlier, the royalty term for each applicable product shall continue for fifteen years following the first commercial sale of such patented product, or when the applicable patent covering such product has expired, whichever is sooner.

Royalty expense included in cost of revenue for the three months ended September 30, 2022 and 2021 was $0.7 million and $0.6 million, respectively, and for the nine months ended September 30, 2022 and 2021, was $1.9 million and $1.7 million, respectively.

Contingencies

From time to time, the Company may have certain contingent liabilities that arise in the ordinary course of business. The Company accrues a liability for such matters when it is probable that future expenditures will be made and such expenditures can be reasonably estimated.

Indemnification

The Company enters into standard indemnification arrangements in the ordinary course of business. In many such arrangements, the Company agrees to indemnify, hold harmless, and reimburse the indemnified parties for losses suffered or incurred by the indemnified parties in connection with any trade secret, copyright, patent or other intellectual property infringement claim by any third-party with respect to the Company's technology. The Company also agrees to indemnify many indemnified parties for product defect and similar claims. The term of these indemnification agreements is generally perpetual. The maximum potential amount of future payments the Company could be required to make under these agreements is not determinable because it involves claims that may be made against the Company in the future, but have not yet been made.

The Company has entered into indemnification agreements with its directors and officers that may require the Company to indemnify its directors and officers against liabilities that may arise by reason of their status or service as directors or officers, other than liabilities arising from willful misconduct of the individual.

The Company has not incurred costs to defend lawsuits or settle claims related to these indemnification agreements. No liability associated with any of these indemnification requirements has been recorded to date.

Litigation

From time to time, the Company is subject to other claims and assessments in the ordinary course of business. The Company is not currently a party to any such litigation matter that, individually or in the aggregate, is expected to have a material adverse effect on the Company's business, financial condition, results of operations or cash flows.

11. Stockholders' Equity

Equity Incentive Plans

Stock Options

Activity of stock options under the Company's 2005 Stock Plan, 2011 Equity Incentive Plan and Amended and Restated 2014 Equity Incentive Plan (collectively, the "Plans") during the nine months ended September 30, 2022 is set forth below:

	Number of Shares	Weighted-Average Exercise Price
Balance at December 31, 2021	1,141,814	$ 27.02
Granted	10,120	197.74
Exercised	(253,787)	24.80
Canceled/Forfeited	(1,157)	22.04
Balance at September 30, 2022	896,990	29.59

Restricted Stock Units

Activity of unvested restricted stock units under the Plans during the nine months ended September 30, 2022 is set forth below:

	Number of Shares	Weighted -Average Grant Date Fair Value
Unvested at December 31, 2021	409,482	$ 210.41
Granted	198,030	178.81
Released/Vested	(108,853)	180.60
Canceled/Forfeited	(27,341)	219.69
Unvested at September 30, 2022	471,318	203.48

As of September 30, 2022, 445,152 restricted stock units are expected to vest.

Stock-based Compensation

The following table sets forth the stock-based compensation expense included in the Company's condensed consolidated statements of operations for the three and nine months ended September 30, 2022 and 2021 (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2021	2022	2021
Cost of revenue	$ 1,020	$ 766	$ 2,756	$ 2,107
Research and development	1,385	1,118	4,285	3,368
Sales, general and administrative	7,297	6,019	20,340	18,626
Total	$ 9,702	$ 7,903	$ 27,381	$ 24,101

As of September 30, 2022, total unrecognized compensation cost was $73.4 million related to unvested share-based compensation arrangements which is expected to be recognized over a weighted average period of 3.0 years.

The total stock-based compensation cost capitalized in inventory was $2.2 million and $1.8 million as of September 30, 2022 and December 31, 2021, respectively.

12. Accumulated Other Comprehensive (Loss) Income

Other comprehensive loss consists of two components: unrealized gains or losses on the Company's available-for-sale marketable investments and gains or losses from foreign currency translation adjustments. Until realized and reported as a component of consolidated net (loss) income, these comprehensive (loss) income items accumulate and are included within accumulated other comprehensive (loss) income. Unrealized gains and losses on the Company's marketable investments are reclassified from accumulated other comprehensive (loss) income into earnings when realized upon sale, and are determined based on specific identification of securities sold. Gains and losses from the translation of assets and liabilities denominated in non-U.S. dollar functional currencies are included in accumulated other comprehensive (loss) income.

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The following table summarizes the changes in the accumulated balances during the period and includes information regarding the manner in which the reclassifications out of accumulated other comprehensive (loss) income into earnings affect the Company's condensed consolidated statements of operations and condensed consolidated statements of comprehensive (loss) income (in thousands):

	Three Months Ended September 30, 2022			Three Months Ended September 30, 2021		
	Marketable Investments	Currency Translation Adjustments	Total	Marketable Investments	Currency Translation Adjustments	Total
Balance, beginning of the period	$ (3,922)	$ (6,236)	$ (10,158)	$ 267	$ 62	$ 329
Other comprehensive (loss) income before reclassifications:						
Unrealized (loss) — marketable investments	(383)	—	(383)	(86)	—	(86)
Foreign currency translation (losses) gains	—	(2,812)	(2,812)	—	(1,356)	(1,356)
Income tax effect — expense	—	—	—	20	—	20
Net of tax	(383)	(2,812)	(3,195)	(66)	(1,356)	(1,422)
Net current-year other comprehensive (loss) income	(383)	(2,812)	(3,195)	(66)	(1,356)	(1,422)
Balance, end of the period	$ (4,305)	$ (9,048)	$ (13,353)	$ 201	$ (1,294)	$ (1,093)

	Nine Months Ended September 30, 2022			Nine Months Ended September 30, 2021		
	Marketable Investments	Currency Translation Adjustments	Total	Marketable Investments	Currency Translation Adjustments	Total
Balance, beginning of the period	$ (595)	$ (2,035)	$ (2,630)	$ 647	$ 1,894	$ 2,541
Other comprehensive (loss) income before reclassifications:						
Unrealized (loss) gain — marketable investments	(3,710)	—	(3,710)	(581)	—	(581)
Foreign currency translation gains (losses)	—	(7,013)	(7,013)	—	(3,188)	(3,188)
Income tax effect — expense	—	—	—	135	—	135
Net of tax	(3,710)	(7,013)	(10,723)	(446)	(3,188)	(3,634)
Net current-year other comprehensive (loss) income	(3,710)	(7,013)	(10,723)	(446)	(3,188)	(3,634)
Balance, end of the period	$ (4,305)	$ (9,048)	$ (13,353)	$ 201	$ (1,294)	$ (1,093)

13. Income Taxes

The Company's income tax expense (benefit), deferred tax assets and liabilities, and reserves for unrecognized tax benefits reflect management's best assessment of estimated current and future taxes to be paid. The Company is subject to income taxes in both the United States and foreign jurisdictions. Significant judgment and estimates are required in determining the consolidated income tax expense.

During interim periods, the Company generally utilizes the estimated annual effective tax rate ("AETR") method which involves the use of forecasted information. Under the AETR method, the provision is calculated by applying the estimated AETR for the full fiscal year to "ordinary" income or loss (pretax income or loss excluding unusual or infrequently occurring discrete items) for the reporting period. Jurisdictions with tax assets for which the Company believes a tax benefit cannot be realized are excluded from the computation of its AETR. However, for the three and nine months ended September 30, 2022, the estimated AETR method yielded unconventional results and would not provide a reliable estimate of income taxes. Therefore, the Company determined that using the discrete effective tax rate method, which involves the use of year-to-date information, would provide a more reliable estimate of income taxes for the current period.

The Company's provision for income taxes for the three months ended September 30, 2022 was $5.3 million, which was primarily due to tax expenses attributable to its worldwide profits during the period, combined with tax deficiencies (shortfalls) expenses from stock-based compensation attributable to its U.S. jurisdiction as a result of stock price fluctuation. The Company's benefit from income taxes for the three months ended September 30, 2021 was $0.2 million, which was primarily due to tax expenses attributable to its worldwide profits during the period, offset by excess tax benefits from stock-based compensation attributable to its U.S. jurisdiction.

The Company's provision for income taxes for the nine months ended September 30, 2022 was $2.6 million, which was primarily due to tax expenses attributable to its foreign profits during the period, combined with tax deficiencies (shortfalls) expenses from stock-based compensation attributable to its U.S. jurisdiction as a result of stock price fluctuation. The Company's provision for income taxes for the nine months ended September 30, 2021 was $3.2 million, which was primarily due to tax expenses attributable to its worldwide profits during the period, offset by excess tax benefits from stock-based compensation attributable to its U.S. jurisdiction.

The Company's effective tax rate was 174.8% for the three months ended September 30, 2022, compared to (3.2)% for the three months ended September 30, 2021. The Company's change in effective tax rate was primarily attributable to large tax expenses over relatively smaller worldwide profits for the three months ended September 30, 2022, when compared to small tax benefits over relatively larger worldwide profits for the three months ended September 30, 2021. The Company's effective tax rate was (81.7)% for the nine months ended September 30, 2022, compared to 10.5% for the nine months ended September 30, 2021. The Company's change in effective tax rate was primarily attributable to tax expenses over small worldwide losses for the nine months ended September 30, 2022, when compared to tax expenses over large worldwide profits for the nine months ended September 30, 2021.

Significant domestic deferred tax assets ("DTAs") were generated in recent years, primarily due to excess tax benefits from stock option exercises and vesting of restricted stock units. The Company evaluates all available positive and negative evidence, objective and subjective in nature, in each reporting period to determine if sufficient taxable income will be generated to realize the benefits of its DTAs and, if not, a valuation allowance to reduce the DTAs is recorded. As of September 30, 2022 and 2021, the Company maintains a valuation allowance against its Federal Research and Development Tax Credit and California DTAs as the Company could not conclude at the required more-likely-than-not level of certainty, that the benefit of these tax attributes would be realized prior to expiration.

The Company maintains that all foreign earnings, with the exception of a portion of the earnings of its German subsidiary, are permanently reinvested outside the United States and therefore deferred taxes attributable to such are not provided for in the Company's condensed consolidated financial statements as of September 30, 2022.

14. Net (Loss) Income Attributable to Penumbra, Inc.

The Company computed basic net (loss) income attributable to Penumbra, Inc. per share based on the weighted average number of shares of common stock outstanding during the period. The Company computed diluted net (loss) income attributable to Penumbra, Inc. per share based on the weighted average number of shares of common stock outstanding plus potentially dilutive common stock equivalents outstanding during the period using the treasury stock method. For the purposes of this calculation, stock options, restricted stock units and stock sold through the Company's employee stock purchase plan are considered common stock equivalents.

A reconciliation of the numerator and denominator used in the calculation of the basic and diluted net (loss) income attributable to Penumbra, Inc. per share is as follows (in thousands, except share and per share amounts):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2021	2022	2021
Numerator:				
Net (loss) income attributable to Penumbra, Inc.	$ (2,271)	$ 8,850	$ (5,879)	$ 29,917
Denominator:				
Weighted average shares used to compute net (loss) income attributable to common stockholders:				
Basic	37,918,452	36,617,961	37,778,362	36,532,822
Potential dilutive stock-based options and awards	—	993,394	—	1,059,273
Diluted	37,918,452	37,611,355	37,778,362	37,592,095
Net (loss) income attributable to Penumbra, Inc. per share:				
Basic	$ (0.06)	$ 0.24	$ (0.16)	$ 0.82
Diluted	$ (0.06)	$ 0.24	$ (0.16)	$ 0.80

For the three months ended September 30, 2022 and 2021, outstanding stock-based awards of 1.6 million and 6 thousand shares, respectively, and for the nine months ended September 30, 2022 and 2021, outstanding stock-based awards of 1.9 million and 27 thousand shares, respectively, were excluded from the computation of diluted net (loss) income attributable to Penumbra, Inc. per share because their effect would have been anti-dilutive.

15. Revenues

Revenue Recognition

Revenue is recognized in an amount that reflects the consideration the Company expects to be entitled to in exchange for goods or services. All revenue recognized in the condensed consolidated statements of operations is considered to be revenue from contracts with customers.

The following table presents the Company's revenues disaggregated by geography, based on the destination to which the Company ships its products, for the three and nine months ended September 30, 2022 and 2021 (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2021	2022	2021
United States	$ 148,819	$ 134,834	$ 434,583	$ 383,306
International	64,859	55,283	191,334	160,273
Total	$ 213,678	$ 190,117	$ 625,917	$ 543,579

The following table presents the Company's revenues disaggregated by product category for the three and nine months ended September 30, 2022 and 2021 (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2021	2022	2021
Vascular	$ 123,361	$ 105,465	$ 369,712	$ 295,314
Neuro	90,317	84,652	256,205	248,265
Total	$ 213,678	$ 190,117	$ 625,917	$ 543,579

China Distribution and Technology Licensing Agreement

In December 2020, the Company entered into a distribution and technology licensing arrangement with its existing distribution partner in China. In addition to modifying the Company's standard distribution agreement with its partner in China, the Company agreed to license the technology for certain products to its partner in China to permit the manufacturing and commercialization of such products in China as well as provide certain regulatory support. During the three months ended March 31, 2022, the Company further amended the distribution agreement and entered into an additional license agreement,

pursuant to which the Company agreed to license the technology for additional products to its partner in China on substantially the same terms as the existing license agreement. Apart from the standard distribution agreement, the Company will receive fixed payments upon transferring its distinct licensed technology and providing related regulatory support and royalty payments on the down-stream sale of the licensed products.

Performance Obligations

Delivery of products - The Company's contracts with customers typically contain a single performance obligation, delivery of the Company's products. Satisfaction of that performance obligation occurs when control of the promised goods transfers to the customer, which is generally upon shipment for non-consignment sale agreements and upon utilization for consignment sale agreements.

Payment terms - The Company's payment terms vary by the type and location of our customer. The timing between fulfillment of performance obligations and when payment is due is not significant and does not give rise to financing transactions. The Company did not have any contracts with significant financing components as of September 30, 2022.

Product returns - The Company may allow customers to return products purchased at the Company's discretion. The Company estimates the amount of its product sales that may be returned by its customers and records this estimate as a reduction of revenue in the period in which the related product revenue is recognized. The Company currently estimates product return liabilities using its own historic sales information, trends, industry data, and other relevant data points.

Warranties - The Company offers its standard warranty to all customers and it is not available for sale on a standalone basis. The Company's standard warranty represents its guarantee that its products function as intended, are free from defects, and comply with agreed-upon specifications and quality standards. This assurance does not constitute a service and is not a separate performance obligation.

Transaction Price

Revenue is recorded at the net sales price, which includes estimates of variable consideration such as product returns utilizing historical return rates, rebates, discounts, and other adjustments to net revenue. To the extent the transaction price includes variable consideration, the Company estimates the amount of variable consideration that should be included in the transaction price. When determining if variable consideration should be constrained, management considers whether there are factors that could result in a significant reversal of revenue and the likelihood of a potential reversal. Variable consideration is included in revenue only to the extent that it is probable that a significant reversal of the revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. These estimates are reassessed each reporting period. During the three and nine months ended September 30, 2022, the Company made no material changes in estimates for variable consideration. When the Company performs shipping and handling activities after control of goods is transferred to the customer, they are considered as fulfillment activities, and costs are accrued for when the related revenue is recognized. Taxes collected from customers relating to product sales and remitted to governmental authorities are excluded from revenues.

Contract liabilities, net

The following information summarizes the Company's contract assets and liabilities, net as of September 30, 2022 and December 31, 2021 (in thousands):

	September 30, 2022	December 31, 2021
Contract liabilities, net	$ 9,393	$ 5,671

Contract liabilities represents amounts that the Company has already invoiced and are ultimately expected to be recognized as revenue, but for which not all revenue recognition criteria have been met and is recognized as the associated performance obligations are satisfied. Contract assets for the periods presented primarily represent the difference between the revenue that was recognized based on the relative standalone selling price of the related performance obligations satisfied and the contractual billing terms in the arrangements. Revenue recognized during the three and nine months ended September 30, 2022 relating to contract liabilities as of June 30, 2022 and December 31, 2021 was $9.6 million and $5.7 million, respectively.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS.

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with the unaudited condensed consolidated financial statements and the related notes thereto included elsewhere in this Quarterly Report on Form 10-Q and the audited consolidated financial statements and notes thereto and management's discussion and analysis of financial condition and results of operations for the year ended December 31, 2021, included in our Annual Report on Form 10-K filed with the Securities and Exchange Commission ("SEC") on February 22, 2022.

This Quarterly Report on Form 10-Q contains "forward-looking statements" within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). In some cases, you can identify these statements by forward-looking words such as "may," "will," "expect," "believe," "anticipate," "intend," "could," "should," "estimate," or "continue," and similar expressions or variations, but these words are not the exclusive means for identifying such statements. Such forward-looking statements are subject to risks, uncertainties and other factors that could cause actual results and the timing of certain events to differ materially from future results and timing expressed or implied by such forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those identified below, and those discussed in the section titled "Risk Factors" in Part I, Item 1A of our Annual Report on Form 10-K for the year ended December 31, 2021. The forward-looking statements in this Quarterly Report on Form 10-Q represent our views as of the date of this Quarterly Report on Form 10-Q. Except as may be required by law, we assume no obligation to update these forward-looking statements or the reasons that results could differ from these forward-looking statements. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this Quarterly Report on Form 10-Q.

Overview

Penumbra is a global healthcare company focused on innovative therapies. We design, develop, manufacture and market novel products and have a broad portfolio that addresses challenging medical conditions in markets with significant unmet need. Our team focuses on developing, manufacturing and marketing novel products for use by specialist physicians and other healthcare providers to drive improved clinical and health outcomes. We believe that the cost-effectiveness of our products is attractive to our customers.

Since our founding in 2004, we have had a strong track record of organic product development and commercial expansion that has established the foundation of our global organization. We have successfully developed, obtained regulatory clearance or approval for, and introduced products into the neurovascular market since 2007, vascular market since 2013, neurosurgical market since 2014, and immersive healthcare market since 2020.

We expect to continue to develop and build our portfolio of products, including our thrombectomy, embolization, access and immersive healthcare technologies, while iterating on our currently available products. Generally, when we introduce a next generation product or a new product designed to replace a current product, sales of the earlier generation product or the product replaced decline. Our research and development activities are centered around the development of new products and clinical activities designed to support our regulatory submissions and demonstrate the effectiveness of our products.

To address the challenging and significant clinical needs of our key markets, we have developed products that fall into the following broad product families:

Our neuro products fall into four broad product families:

- Neuro thrombectomy - Penumbra System, including Penumbra RED, JET, ACE and the 3D Revascularization Device, Penumbra ENGINE and other components and accessories
- Neuro embolization - Penumbra SMART COIL, Penumbra Coil 400, POD400 and PAC400
- Neuro access - delivery catheters, consisting of Neuron, Neuron MAX, Select, BENCHMARK, BMX96, DDC and PX SLIM
- Neurosurgical - Artemis Neuro Evacuation Device

Our vascular products fall into two broad product families:

- Vascular thrombectomy - INDIGO System designed for mechanical thrombectomy, including aspiration catheters, separators, aspiration pump and accessories and Lightning, our next-generation aspiration system for peripheral thrombectomy

- Peripheral embolization - RUBY Coil System, Ruby LP, LANTERN Delivery Microcatheter and the POD System (POD and POD Packing Coil)

Our immersive healthcare products fall into one broad product family:

- REAL Immersive System - portfolio of products that leverages immersive computer-based technologies to deliver engaging, immersive therapeutics to promote better health, motor function and cognition

We support healthcare providers, hospitals and clinics in more than 100 countries. In the nine months ended September 30, 2022 and 2021, 30.6% and 29.5% of our revenue, respectively, was generated from customers located outside of the United States. Our sales outside of the United States are denominated principally in the euro and Japanese yen, with some sales being denominated in other currencies. As a result, we have foreign exchange exposure but do not currently engage in hedging.

We generated revenue of $625.9 million and $543.6 million for the nine months ended September 30, 2022 and 2021, respectively, an increase of $82.3 million. We generated operating income of $1.2 million and $32.6 million for the nine months ended September 30, 2022 and 2021, respectively.

COVID-19 Pandemic

In March 2020, the World Health Organization declared the outbreak of COVID-19 as a pandemic, which continues to spread throughout the U.S. and the world. In response, governments have issued orders restricting certain activities, and while our business falls within the category of healthcare operations, which are essential businesses permitted to continue operating during the COVID-19 pandemic, we have experienced, and expect to continue to experience, disruptions to our operations as a result of the pandemic. For example, hospital resources have been diverted to fight the pandemic, and many government agencies in conjunction with healthcare systems have recommended the deferral of elective and semi-elective medical procedures during the pandemic. Some of Penumbra's medical devices are used in certain procedures that the United States Centers for Medicare & Medicaid Services ("CMS") has indicated are "high-acuity" procedures that should not be postponed during the pandemic in its March 18, 2020 recommendations, while other Penumbra devices are used in elective procedures that physicians may consider postponing. Many of the procedures in which our vascular products are used are elective in nature, whereas procedures in which our neuro products are used, such as stroke, tend to be more emergent in nature.

The impact of COVID-19 on our business remains fluid, and we continue to actively monitor the dynamic situation. We will continue to undertake the following specific actions and strategic priorities to navigate the pandemic:

- We have made changes to how we manufacture, inspect and ship our products to prioritize the health and safety of our employees and to operate under the protocols mandated by our local and state governments. While we are committed to continue to meet demand for our essential devices, we have implemented social distancing and other measures to protect the health and safety of our employees, which have reduced, and may continue to reduce, our manufacturing capacity.
- We further strengthened our liquidity position by entering into a Credit Agreement (the "Credit Agreement") on April 24, 2020, with JPMorgan Chase Bank, N.A., as administrative agent and lender, and Bank of America, N.A. and Citibank, N.A. as lenders. The Credit Agreement is secured and provides for up to $100 million in available revolving borrowing capacity with an option, subject to certain conditions, for us to increase the aggregate borrowing capacity to up to $150 million. This revolving line of credit provides access to capital beyond the $184.4 million in cash, cash equivalents and marketable investments on our balance sheet as of September 30, 2022, and we believe this will allow us to both navigate the current environment and emerge in a strong liquidity position after the pandemic. During the three months ended March 31, 2021, we entered into an amended one-year credit agreement with JPMorgan Chase Bank, N.A., as administrative agent and lender, and Bank of America, N.A. and Citibank, N.A. as lenders. The amended Credit Agreement extended the maturity date from April 23, 2021 to February 21, 2022 and had substantially the same terms and conditions as the prior credit agreement with certain changes including the exclusion of certain one-time charges and expenses incurred during the fiscal quarters ended September 30, 2020 and December 31, 2020 from the calculation of the financial covenants, reductions in interest rate floors applicable to revolving loans and other changes to borrowing mechanics under the Credit Agreement. In the first quarter of 2022, we entered into a further amended one-year credit agreement with JPMorgan Chase Bank, N.A., as administrative agent and lender, and Bank of America, N.A. and Citibank, N.A. as lenders. The amended Credit Agreement extended the maturity date from February 21, 2022 to February 17, 2023 and has substantially the same terms and conditions as the prior credit agreement with certain changes to the reference benchmark interest rates, applicable margins and borrowing mechanics under the Credit Agreement, having the overall effect of lowering the interest rates payable by the Company on amounts borrowed under the Credit Agreement, and a reduction of the commitment fee payable on the average daily unused amount under the Credit Agreement to 0.25% per annum. As of September 30, 2022, the

Company was in compliance with the requirements in the amended Credit Agreement. As of September 30, 2022, there were no borrowings outstanding under the Credit Agreement.

- We will continue to prioritize investments in our production capacity and flexibility, commercial channels, preparation for new product launches, and new product developments to help patients.

While we began to see positive trends in certain areas of our business in May 2020, we remain mindful of the negative impacts on business trends we experienced in April 2020 due to the COVID-19 pandemic. The general impact of COVID-19 on our business has been negative and we are unable to reliably predict the full impact that the COVID-19 pandemic will have on our business due to numerous uncertainties, including the severity and duration of the pandemic, the global resurgences of cases, particularly as new variants of the virus spread, additional actions that may be taken by governmental authorities in response to the pandemic, the impact of the pandemic on the business of our customers, distributors and suppliers, other businesses and worldwide economies in general, our ability to have access to our customers to provide training and case support, and other factors identified in Part I, Item 1A “Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2021. We will continue to evaluate the nature and extent of the impact of COVID-19 on our business, consolidated results of operations, and financial condition.

Factors Affecting Our Performance

There are a number of factors that have impacted, and we believe will continue to impact, our results of operations and growth. These factors include:

- The COVID-19 pandemic and measures taken in response thereto, which have negatively affected, and we expect will continue to negatively affect, our revenues and results of operations. Due to these impacts and measures, we may experience significant and unpredictable fluctuations in demand for certain of our products as hospital customers re-prioritize the treatment of patients and distributors adjust their operations to support the current demand level.

- The rate at which we grow our salesforce and the speed at which newly hired salespeople become fully effective can impact our revenue growth or our costs incurred in anticipation of such growth.

- Our industry is intensely competitive and, in particular, we compete with a number of large, well-capitalized companies. We must continue to successfully compete in light of our competitors’ existing and future products and their resources to successfully market to the specialist physicians and other healthcare providers who use our products.

- We must continue to successfully introduce new products that gain acceptance with specialist physicians and other healthcare providers and successfully transition from existing products to new products, ensuring adequate supply. In addition, as we introduce new products and expand our production capacity, we anticipate additional personnel will be hired and trained to build our inventory of components and finished goods in advance of sales, which may cause quarterly fluctuations in our operating results and financial condition.

- Publications of clinical results by us, our competitors and other third parties can have a significant influence on whether, and the degree to which, our products are used by specialist physicians and other healthcare providers and the procedures and treatments those physicians and other healthcare providers choose to administer for a given condition.

- The specialist physicians who use our interventional products may not perform procedures during certain times of the year, such as those periods when they are at major medical conferences or are away from their practices for other reasons, the timing of which occurs irregularly during the year and from year to year.

- Most of our sales outside of the United States are denominated in the local currency of the country in which we sell our products. As a result, our revenue from international sales can be significantly impacted by fluctuations in foreign currency exchange rates.

- The availability and levels of reimbursement within the relevant healthcare payment system for healthcare providers for procedures in which our products are used.

In addition, we have experienced and expect to continue to experience meaningful variability in our quarterly revenue, gross profit and gross margin percentage as a result of a number of factors, including, but not limited to: the impact of COVID-19, the number of available selling days, which can be impacted by holidays; the mix of products sold; the geographic mix of where products are sold; the demand for our products and the products of our competitors, which can be impacted by

hospitals' ability to maintain sufficient staffing to treat patients; the timing of or failure to obtain regulatory approvals or clearances for products; increased competition; the timing of customer orders; inventory write-offs due to obsolescence; costs, benefits and timing of new product introductions; costs, benefits and timing of the acquisition and integration of businesses and product lines we may acquire; the availability and cost of components and raw materials; and fluctuations in foreign currency exchange rates. Additionally, certain unique macroeconomic and geopolitical factors, including those as a result of the Russian invasion of Ukraine, may cause instability and volatility in the global financial markets and disruptions within the healthcare industry that may negatively impact our business. We may experience quarters in which we have significant revenue growth sequentially followed by quarters of moderate or no revenue growth. Additionally, we may experience quarters in which operating expenses, in particular research and development expenses, fluctuate depending on the stage and timing of product development.

Components of Results of Operations

Revenue. We sell our interventional products directly to hospitals and other healthcare providers and through distributors for use in procedures performed by specialist physicians to treat patients in two key markets: neuro and vascular disease. We sell our products through purchase orders, and we do not have long term purchase commitments from our customers. Revenue from product sales is recognized either on the date of shipment or the date of receipt by the customer, but is deferred for certain transactions when control has not yet transferred. With respect to products that we consign to hospitals, which primarily consist of coils, we recognize revenue at the time hospitals utilize products in a procedure. Revenue also includes shipping and handling costs that we charge to customers.

Cost of Revenue. Cost of revenue consists primarily of the cost of raw materials and components, personnel costs, including stock-based compensation, inbound freight charges, receiving costs, inspection and testing costs, warehousing costs, royalty expense, shipping and handling costs, and other labor and overhead costs incurred in the manufacturing of products. In addition, we record write-downs or write-offs of inventory in the event that a portion of our inventory becomes excess or obsolete.

We manufacture substantially all of our products in our manufacturing facilities in Alameda and Roseville, California.

Operating Expenses

Research and Development ("R&D"). R&D expenses primarily consist of product development, clinical and regulatory expenses, materials, depreciation and other costs associated with the development of our products. R&D expenses also include salaries, benefits and other related costs, including stock-based compensation, for personnel and consultants. We generally expense R&D costs as they are incurred, with the exception of certain costs incurred for the development of computer software for internal use related to our REAL Immersive System offerings. We capitalize certain costs when it is determined that it is probable that the project will be completed and the software will be used to perform the function intended, and the preliminary project stage is completed. Capitalized internal use software development costs are included in property and equipment, net within the condensed consolidated balance sheets.

Sales, General and Administrative ("SG&A"). SG&A expenses primarily consist of salaries, benefits and other related costs, including stock-based compensation, for personnel and consultants engaged in sales, marketing, finance, legal, compliance, administrative, facilities, information technology and human resource activities. Our SG&A expenses also include marketing trials, medical education, training, commissions, generally based on sales, to direct sales representatives, amortization of acquired intangible assets and acquisition-related costs.

(Benefit from) Provision For Income Taxes

We are taxed at the rates applicable within each jurisdiction in which we operate. The composite income tax rate, tax provisions, deferred tax assets ("DTAs") and deferred tax liabilities will vary according to the jurisdiction in which profits arise. Tax laws are complex and subject to different interpretations by management and the respective governmental taxing authorities, and require us to exercise judgment in determining our income tax provision, our deferred tax assets and deferred tax liabilities and the potential valuation allowance recorded against our net DTAs. Deferred tax assets and liabilities are determined using the enacted tax rates in effect for the years in which those tax assets are expected to be realized. A valuation allowance is established when it is more likely than not that the future realization of all or some of the DTAs will not be achieved.

Results of Operations

The following table sets forth the components of our condensed consolidated statements of operations in dollars and as a percentage of revenue for the periods presented:

	Three Months Ended September 30,				Nine Months Ended September 30,			
	2022		2021		2022		2021	
	(in thousands, except for percentages)				(in thousands, except for percentages)			
Revenue	$ 213,678	100.0 %	$ 190,117	100.0 %	$ 625,917	100.0 %	$ 543,579	100.0 %
Cost of revenue	78,351	36.7	70,205	36.9	229,137	36.6	193,644	35.6
Gross profit	135,327	63.3	119,912	63.1	396,780	63.4	349,935	64.4
Operating expenses:								
Research and development	21,320	10.0	16,734	8.8	61,443	9.8	52,548	9.7
Sales, general and administrative	108,573	50.8	94,397	49.7	334,088	53.4	264,831	48.7
Total operating expenses	129,893	60.8	111,131	58.5	395,531	63.2	317,379	58.4
Income from operations	5,434	2.5	8,781	4.6	1,249	0.2	32,556	6.0
Interest (expense) income, net	(43)	0.0	138	0.1	(162)	—	917	0.2
Other expense, net	(2,356)	(1.1)	(1,137)	(0.6)	(4,323)	(0.7)	(3,021)	(0.6)
Income (loss) before income taxes	3,035	1.4	7,782	4.1	(3,236)	(0.5)	30,452	5.6
Provision for (benefit from) income taxes	5,306	2.5	(249)	(0.1)	2,643	0.4	3,196	0.6
Consolidated net (loss) income	$ (2,271)	(1.1)%	$ 8,031	4.2 %	$ (5,879)	(0.9)%	$ 27,256	5.0 %
Net loss attributable to non-controlling interest	—	—	(819)	(0.4)	—	—	(2,661)	(0.5)
Net (loss) income attributable to Penumbra, Inc.	$ (2,271)	(1.1)%	$ 8,850	4.7 %	$ (5,879)	(0.9)%	$ 29,917	5.5 %

Three Months Ended September 30, 2022 Compared to the Three Months Ended September 30, 2021

Revenue

	Three Months Ended September 30,		Change	
	2022	2021	$	%
	(in thousands, except for percentages)			
Vascular	$ 123,361	$ 105,465	$ 17,896	17.0 %
Neuro	90,317	84,652	5,665	6.7 %
Total	$ 213,678	$ 190,117	$ 23,561	12.4 %

Revenue increased $23.6 million, or 12.4%, to $213.7 million in the three months ended September 30, 2022, from $190.1 million in the three months ended September 30, 2021. Overall revenue growth is primarily due to an increase in sales of new and existing products within our vascular and neuro businesses.

Revenue from our vascular products increased $17.9 million, or 17.0%, to $123.4 million in the three months ended September 30, 2022, from $105.5 million in the three months ended September 30, 2021. This increase was primarily attributable to increased revenue in China and the United States, sales of new products and further market penetration of our existing products. The increase in product sales was driven by sales of our vascular thrombectomy products and peripheral embolization products, which globally increased by 19.8% and 12.4%, respectively in the three months ended September 30, 2022. Prices for our vascular products remained substantially unchanged during the period.

Revenue from our neuro products increased $5.7 million, or 6.7%, to $90.3 million in the three months ended September 30, 2022, from $84.7 million in the three months ended September 30, 2021. This increase in revenue was primarily attributable to China and sales of new products. The increase in sales of new products was driven by an increase in sales of our neuro thrombectomy products and neuro access products, which globally increased by 16.0% and 1.2%, respectively, in the three months ended September 30, 2022, partially offset by a decrease in sales of our neuro embolization products, which decreased by 21.0% in the three months ended September 30, 2022. Prices for our neuro products remained substantially unchanged during the period.

Revenue by Geographic Area

The following table presents revenue by geographic area, based on our customers' shipping destinations, for the three months ended September 30, 2022 and 2021:

	Three Months Ended September 30,				Change	
	2022		2021		$	%
	(in thousands, except for percentages)					
United States	$ 148,819	69.6 %	$ 134,834	70.9 %	$ 13,985	10.4 %
International	64,859	30.4 %	55,283	29.1 %	9,576	17.3 %
Total	$ 213,678	100.0 %	$ 190,117	100.0 %	$ 23,561	12.4 %

Revenue from product sales in international markets increased $9.6 million, or 17.3%, to $64.9 million in the three months ended September 30, 2022, from $55.3 million in the three months ended September 30, 2021. Revenue from international sales represented 30.4% and 29.1% of our total revenue for the three months ended September 30, 2022 and 2021, respectively.

Gross Margin

	Three Months Ended September 30,		Change	
	2022	2021	$	%
	(in thousands, except for percentages)			
Cost of revenue	$ 78,351	$ 70,205	$ 8,146	11.6 %
Gross profit	$ 135,327	$ 119,912	$ 15,415	12.9 %
Gross margin %	63.3 %	63.1 %		

Gross margin remained relatively flat, increasing by 0.2 percentage points to 63.3% in the three months ended September 30, 2022, from 63.1% in the three months ended September 30, 2021. Gross margin is impacted by our ability to scale production capacity to support our expanding portfolio of products, which enabled us to navigate through some macroeconomic factors such as labor shortage, inflation and supply chain headwinds in the three months ended September 30, 2022, as well as our continued investments in COVID-19 related safety measures. We may see continued productivity improvements to offset higher inflation and supply chain pressures resulting in expansion of our gross margin in the future.

Research and Development ("R&D")

	Three Months Ended September 30,		Change	
	2022	2021	$	%
	(in thousands, except for percentages)			
R&D	$ 21,320	$ 16,734	$ 4,586	27.4 %
R&D as a percentage of revenue	*10.0 %*	*8.8 %*		

R&D expenses increased by $4.6 million, or 27.4%, to $21.3 million in the three months ended September 30, 2022, from $16.7 million in the three months ended September 30, 2021. The increase was primarily due to a $3.5 million increase in personnel-related expenses driven by an increase in headcount and a $0.4 million increase in infrastructure costs to support our growth.

We have continued to make investments, and plan to continue to make investments, in the development of our products. As part of our ongoing investment in the development of our products, we are anticipating future payments related to research and development milestones. As a result of being more disciplined with spending, we anticipate a reduction in our ongoing quarterly immersive healthcare related R&D expenses of approximately $1.5 million beginning in the fourth quarter of 2022. In addition, we have experienced in the past, and may continue to experience in the future, variability in expenses incurred due to the timing and costs of clinical trials and product development, which may include additional personnel-related expenses in conjunction with the launch of new products.

Sales, General and Administrative ("SG&A")

	Three Months Ended September 30,		Change	
	2022	2021	$	%
	(in thousands, except for percentages)			
SG&A	$ 108,573	$ 94,397	$ 14,176	15.0 %
SG&A as a percentage of revenue	*50.8 %*	*49.7 %*		

SG&A expenses increased by $14.2 million, or 15.0%, to $108.6 million in the three months ended September 30, 2022, from $94.4 million in the three months ended September 30, 2021. The increase was primarily due to a $7.6 million increase in personnel-related expenses driven by an increase in headcount and related expenses to support our growth, a $2.7 million increase in infrastructure costs, and a $2.3 million amortization expense of finite lived intangible assets acquired in connection with the Sixense acquisition.

As we continue to invest in our growth, we have expanded and may continue to expand our sales, marketing, and general and administrative teams through the hiring of additional employees in critical roles that support our strategic initiatives. As a result of being more disciplined with spending, we anticipate a reduction in our ongoing quarterly immersive healthcare related SG&A expenses of approximately $1.0 million beginning in the fourth quarter of 2022. In addition, we have experienced in the past, and may continue to experience in the future, variability in expenses incurred due to the timing and costs of investments in infrastructure to support the business.

Provision for (benefit from) income taxes

	Three Months Ended September 30,		Change	
	2022	2021	$	%
	(in thousands, except for percentages)			
Provision for (benefit from) income taxes	$ 5,306	$ (249)	$ 5,555	(2,230.9)%
Effective tax rate	*174.8 %*	*(3.2)%*		

Generally during interim periods, including the three months ended September 30, 2021, we utilize the estimated annual effective tax rate ("AETR") method to calculate our provision for (benefit from) income taxes, which involves the use of forecasted information. However, for the three months ended September 30, 2022, we used the discrete effective tax rate method, which involved the use of year-to-date information, as it provided a more reliable estimate of income taxes for the current period than the estimated AETR method. Our provision for income taxes was $5.3 million for the three months ended September 30, 2022, which was primarily due to tax expenses attributable to our worldwide profits during the period, combined with tax deficiencies (shortfalls) expenses from stock-based compensation attributable to our U.S. jurisdiction as a result of stock price fluctuation. Our benefit from income taxes was $0.2 million for the three months ended September 30, 2021, which was primarily due to tax expenses attributable to our worldwide profits during the period, offset by excess tax benefit from stock-based compensation attributable to our U.S. jurisdiction. The effective tax rate was 174.8% for the three months ended September 30, 2022, compared to (3.2)% for the three months ended September 30, 2021. Our change in effective tax rate was primarily attributable to large tax expenses over relatively smaller worldwide profits for the three months ended September 30, 2022, when compared to small tax benefits over relatively larger worldwide profits for the three months ended September 30, 2021.

Nine Months Ended September 30, 2022 Compared to the Nine Months Ended September 30, 2021

Revenue

	Nine Months Ended September 30,		Change	
	2022	2021	$	%
	(in thousands, except for percentages)			
Vascular	$ 369,712	$ 295,314	$ 74,398	25.2 %
Neuro	256,205	248,265	7,940	3.2 %
Total	$ 625,917	$ 543,579	$ 82,338	15.1 %

Revenue increased $82.3 million, or 15.1%, to $625.9 million in the nine months ended September 30, 2022, from $543.6 million in the nine months ended September 30, 2021. Overall revenue growth is primarily due to an increase in sales of new and existing products within our vascular and neuro businesses.

Revenue from our vascular products increased $74.4 million, or 25.2%, to $369.7 million in the nine months ended September 30, 2022, from $295.3 million in the nine months ended September 30, 2021.This increase in revenue from our vascular products was primarily attributable to increased revenue in China and the United States and was driven by sales of our vascular thrombectomy products and peripheral embolization products, which globally increased by 30.4% and 17.1%, respectively, in the nine months ended September 30, 2022. These increases were primarily due to higher sales volume as a result of sales of new products and further market penetration of our existing products. Prices for our vascular products remained substantially unchanged during the period.

Revenue from our neuro products increased $7.9 million, or 3.2%, to $256.2 million in the nine months ended September 30, 2022, from $248.3 million in the nine months ended September 30, 2021. This increase in revenue from our neuro products was primarily attributable to increased revenue in the United States, sales of new products, and further market penetration of our existing products. This increase was driven by an increase in sales of our neuro thrombectomy products and neuro access products, which globally increased by 5.9% and 5.3%, respectively, in the nine months ended September 30, 2022, partially offset by a decrease in sales of our neuro embolization products of 17.0% in the nine months ended September 30, 2022. Prices for our neuro products remained substantially unchanged during the period.

Revenue by Geographic Area

The following table presents revenue by geographic area, based on our customer's shipping destination, for the nine months ended September 30, 2022 and 2021:

	Nine Months Ended September 30,				Change	
	2022		2021		$	%
	(in thousands, except for percentages)					
United States	$ 434,583	69.4 %	$ 383,306	70.5 %	$ 51,277	13.4 %
International	191,334	30.6 %	160,273	29.5 %	31,061	19.4 %
Total	$ 625,917	100.0 %	$ 543,579	100.0 %	$ 82,338	15.1 %

Revenue from sales in international markets increased $31.1 million, or 19.4%, to $191.3 million in the nine months ended September 30, 2022, from $160.3 million in the nine months ended September 30, 2021. Revenue from international sales represented 30.6% and 29.5% of our total revenue for the nine months ended September 30, 2022 and 2021, respectively.

Gross Margin

	Nine Months Ended September 30,		Change	
	2022	2021	$	%
	(in thousands, except for percentages)			
Cost of revenue	$ 229,137	$ 193,644	$ 35,493	18.3 %
Gross profit	$ 396,780	$ 349,935	$ 46,845	13.4 %
Gross margin %	63.4 %	64.4 %		

Gross margin decreased 1.0 percentage point to 63.4% in the nine months ended September 30, 2022, from 64.4% in the nine months ended September 30, 2021, primarily due to higher labor and logistics costs as a result of manufacturing transfer activities and higher labor absenteeism due to the Omicron variant during the three months ended March 31, 2022. Gross margin is impacted by our ability to scale production capacity to support our expanding portfolio of products as well as our continued investments in COVID-19 related safety measures. We may see continued productivity improvements to offset higher inflation and supply chain pressures resulting in expansion of our gross margin in the future.

Research and Development ("R&D")

	Nine Months Ended September 30,		Change	
	2022	2021	$	%
	(in thousands, except for percentages)			
R&D	$ 61,443	$ 52,548	$ 8,895	16.9 %
R&D as a percentage of revenue	*9.8 %*	*9.7 %*		

R&D expenses increased by $8.9 million, or 16.9%, to $61.4 million in the nine months ended September 30, 2022, from $52.5 million in the nine months ended September 30, 2021. The increase was primarily due to a $11.4 million increase in personnel-related expenses driven by an increase in headcount, and a $1.8 million increase in infrastructure costs to support our growth, partially offset by a $5.7 million decrease in product development and testing costs.

We have continued to make investments, and plan to continue to make investments, in the development of our products. As part of our ongoing investment in the development of our products, we are anticipating future payments related to research and development milestones. As a result of being more disciplined with spending, we anticipate a reduction in our ongoing quarterly immersive healthcare related R&D expenses of approximately $1.5 million beginning in the fourth quarter of 2022. In addition, we have experienced in the past, and may continue to experience in the future, variability in expenses incurred due to the timing and costs of clinical trials and product development, which may include additional personnel-related expenses in conjunction with the launch of new products.

Sales, General and Administrative (SG&A)

	Nine Months Ended September 30,		Change	
	2022	2021	$	%
	(in thousands, except for percentages)			
SG&A	$ 334,088	$ 264,831	$ 69,257	26.2 %
SG&A *as a percentage of revenue*	*53.4 %*	*48.7 %*		

SG&A expenses increased by $69.3 million, or 26.2%, to $334.1 million in the nine months ended September 30, 2022, from $264.8 million in the nine months ended September 30, 2021. The increase was primarily due to a $30.9 million increase in personnel-related expense driven by an increase in headcount and related expenses to support our growth, a $10.4 million increase in infrastructure costs, a $8.4 million increase in travel and other in-person expenses, a $7.9 million increase in cost related to marketing events, a $5.8 million amortization expense of finite lived intangible assets acquired in connection with the Sixense acquisition, and a $5.1 million increase in information technology expenses and other professional services primarily associated with our ERP system implementation.

As we continue to invest in our growth, we have expanded and may continue to expand our sales, marketing, and general and administrative teams through the hiring of additional employees in critical roles that support our strategic initiatives. As a result of being more disciplined with spending, we anticipate a reduction in our ongoing quarterly immersive healthcare related SG&A expenses of approximately $1.0 million beginning in the fourth quarter of 2022. In addition, we have experienced in the past, and may continue to experience in the future, variability in expenses incurred due to the timing and costs of investments in infrastructure to support the business.

Provision for income taxes

	Nine Months Ended September 30,		Change	
	2022	2021	$	%
	(in thousands, except for percentages)			
Provision for income taxes	$ 2,643	$ 3,196	$ (553)	(17.3)%
Effective tax rate	*(81.7)%*	*10.5 %*		

Generally during interim periods, including the nine months ended September 30, 2021, we utilize the AETR method to calculate our provision for (benefit from) income taxes, which involves the use of forecasted information. However, for the nine months ended September 30, 2022, we used the discrete effective tax rate method, which involved the use of year-to-date information, as it provided a more reliable estimate of income taxes for the current period than the estimated AETR method. Our provision for income taxes was $2.6 million for the nine months ended September 30, 2022, which was primarily due to tax expenses attributable to our foreign profits during the periods, combined with tax deficiencies (shortfalls) expenses from stock-based compensation attributable to our U.S. jurisdiction as a result of stock price fluctuation. Our provision for income taxes was $3.2 million for the nine months ended September 30, 2021, which was primarily due to tax expenses attributable to our worldwide profits during the period, offset by excess tax benefits from stock-based compensation attributable to our U.S. jurisdiction. The effective tax rate was (81.7)% for the nine months ended September 30, 2022, compared to 10.5% for the nine months ended September 30, 2021. Our change in effective tax rate was primarily attributable to tax expenses over small worldwide losses for the nine months ended September 30, 2022, when compared to tax expenses over large worldwide profits for the nine months ended September 30, 2021.

Prospectively, our effective tax rate will likely be driven by (1) permanent differences in taxable income for tax and financial reporting purposes, (2) tax expense or benefit attributable to our worldwide financial results, and (3) discrete tax adjustments such as excess tax expenses or benefits related to stock-based compensation. Our income tax provision can be volatile as the amount of excess tax expenses or benefits can fluctuate from period to period due to the price of our stock, the volume of share-based grants exercised or vested, and the fair value assigned to equity awards under U.S. GAAP. In addition, changes in tax law or our interpretation thereof, and changes to our valuation allowance could result in fluctuations in our effective tax rate.

Liquidity and Capital Resources

As of September 30, 2022, we had $585.3 million in working capital, which included $54.8 million in cash and cash equivalents and $129.6 million in marketable investments. As of September 30, 2022, we held approximately 23.3% of our cash and cash equivalents in foreign entities.

In addition to our existing cash and cash equivalents and marketable investment balances, our principal source of liquidity is our accounts receivable. In order to further strengthen our liquidity position and financial flexibility during the COVID-19 pandemic, on April 24, 2020 we entered into a Credit Agreement (the "Credit Agreement") with JPMorgan Chase Bank, N.A., as administrative agent and lender, and Bank of America, N.A. and Citibank, N.A. as lenders. The Credit Agreement is secured and provides for up to $100 million in available revolving borrowing capacity with an option, subject to certain conditions, for us to increase the aggregate borrowing capacity to up to $150 million, and was set to mature on April 23, 2021. During the three months ended March 31, 2021, we entered into an amended one-year credit agreement with JPMorgan Chase Bank, N.A., as administrative agent and lender, and Bank of America, N.A. and Citibank, N.A. as lenders. The amended Credit Agreement extended the maturity date from April 23, 2021 to February 21, 2022 and had substantially the same terms and conditions as the prior credit agreement with certain changes including the exclusion of certain one-time charges and expenses incurred during the fiscal quarters ended September 30, 2020 and December 31, 2020 from the calculation of the financial covenants, reductions in interest rate floors applicable to revolving loans and other changes to borrowing mechanics under the Credit Agreement. In the first quarter of 2022, the Company entered into a further amended one-year credit agreement with JPMorgan Chase Bank, N.A., as administrative agent and lender, and Bank of America, N.A. and Citibank, N.A. as lenders. The amended Credit Agreement extended the maturity date from February 21, 2022 to February 17, 2023 and has substantially the same terms and conditions as the prior credit agreement with certain changes to the reference benchmark interest rates, applicable margins and borrowing mechanics under the Credit Agreement, having the overall effect of lowering the interest rates payable by the Company on amounts borrowed under the Credit Agreement, and a reduction of the commitment fee payable on the average daily unused amount under the Credit Agreement to 0.25% per annum. See Note "8. Indebtedness" to our condensed consolidated financial statements in Part I, Item 1 of this Quarterly Report on Form 10-Q for more information.

We believe our sources of liquidity will be sufficient to meet our liquidity requirements for at least the next 12 months. Our principal liquidity requirements are to fund our operations, expand manufacturing operations which includes, but is not limited to, maintaining sufficient levels of inventory to meet the anticipated demand of our customers, fund research and development activities and fund our capital expenditures. We may also lease or purchase additional facilities to facilitate our growth. We expect to continue to make investments as we launch new products, expand our manufacturing operations and information technology infrastructures and further expand into international markets. We may, however, require or elect to secure additional financing as we continue to execute our business strategy. If we require or elect to raise additional funds, we may do so through equity or debt financing, which may not be available on favorable terms, could result in dilution to our stockholders, could result in changes to our capital structure, and could require us to agree to covenants that limit our operating flexibility.

While we have strengthened our liquidity position, we cannot reliably estimate the extent to which the COVID-19 pandemic and other macroeconomic factors may impact our cash flow from operations in the fourth quarter and beyond.

The following table summarizes our cash and cash equivalents, marketable investments and selected working capital data as of September 30, 2022 and December 31, 2021:

	September 30, 2022	December 31, 2021
	(in thousands)	
Cash and cash equivalents	$ 54,844	$ 59,379
Marketable investments	129,583	195,496
Accounts receivable, net	189,006	133,940
Accounts payable	25,365	13,421
Accrued liabilities	101,672	99,796
Working capital[1]	585,293	558,277

[1] Working capital consists of total current assets less total current liabilities.

The following table sets forth, for the periods indicated, our beginning balance of cash and cash equivalents, net cash flows provided by (used in) operating, investing and financing activities and our ending balance of cash and cash equivalents:

	Nine Months Ended September 30,	
	2022	2021
	(in thousands)	
Cash and cash equivalents and restricted cash at beginning of period	$ 59,379	$ 69,670
Net cash (used in) provided by operating activities	(56,998)	18,772
Net cash provided by (used in) investing activities	46,157	(20,396)
Net cash provided by (used in) financing activities	5,887	(2,125)
Cash and cash equivalents and restricted cash at end of period	54,844	66,290

Net Cash (Used In) Provided By Operating Activities

Net cash (used in) provided by operating activities consists primarily of consolidated net income adjusted for certain non-cash items (including depreciation and amortization, stock-based compensation expense, inventory write-downs, and changes in deferred tax balances), and the effect of changes in working capital and other activities.

Net cash used in operating activities was $57.0 million during the nine months ended September 30, 2022 and consisted of consolidated net loss of $5.9 million and non-cash items of $51.0 million, offset by net changes in operating assets and liabilities of $102.1 million. The change in operating assets and liabilities includes an increase in inventories of $62.3 million to support our growth, an increase in accounts receivable of $57.4 million due to timing of receipt of payment, and an increase in prepaid expenses and other current and non-current assets of $2.0 million. This was partially offset by an increase in accounts payable of $13.1 million, an increase in accrued expenses and other non-current liabilities of $6.2 million, and proceeds of $0.3 million received related to lease incentives from operating leases.

Net cash provided by operating activities was $18.8 million during the nine months ended September 30, 2021 and consisted of consolidated net income of $27.3 million and non-cash items of $39.6 million, offset by net changes in operating assets and liabilities of $48.0 million. The change in operating assets and liabilities includes an increase in inventories of $45.8 million to support our growth, an increase in prepaid expenses and other current and non-current assets of $7.1 million, an increase in accounts receivable of $7.0 million, and a decrease in accounts payable of $1.2 million. This was partially offset by an increase in accrued expenses and other non-current liabilities of $9.8 million and proceeds of $3.2 million received related to lease incentives from operating leases.

Net Cash Provided By (Used In) Investing Activities

Net cash provided by (used in) investing activities relates primarily to proceeds from maturities of marketable investments, net of purchases, and capital expenditures.

Net cash provided by investing activities was $46.2 million during the nine months ended September 30, 2022 and primarily consisted of proceeds from maturities and sales of marketable investments of $61.9 million, partially offset by capital expenditures of $15.7 million.

Net cash used in investing activities was $20.4 million during the nine months ended September 30, 2021 and primarily consisted of purchases of marketable investments, net of proceeds from maturities and sales, of $7.2 million, and capital expenditures of $13.1 million.

Net Cash Provided By (Used In) Financing Activities

Net cash provided by (used in) financing activities primarily relates to payments of employee taxes related to vested restricted stock units, payments towards the reduction of our finance lease obligations, and proceeds from exercises of stock options and issuance of common stock under our employee stock purchase plan.

Net cash provided by financing activities was $5.9 million during the nine months ended September 30, 2022 and primarily consisted of proceeds from the issuance of common stock under our employee stock purchase plan of $8.0 million and proceeds from exercises of stock options of $6.3 million. This was partially offset by $7.0 million of payments of employee taxes related to vested restricted stock units and $1.3 million in payments towards finance leases.

Net cash used in financing activities was $2.1 million during the nine months ended September 30, 2021 and primarily consisted of $10.5 million of payments of employee taxes related to vested restricted stock and restricted stock units and $1.1 million in payments towards finance leases. This was partially offset by proceeds from the issuance of common stock under our employee stock purchase plan of $7.4 million and proceeds from exercises of stock options of $2.2 million.

Contractual Obligations and Commitments

During the nine months ended September 30, 2022, the Company entered into new leases and modified existing leases for certain properties. See Note “9. Leases” to our condensed consolidated financial statements in Part I, Item 1 of this Quarterly Report on Form 10-Q for more information regarding our future lease obligations.

There have been no other material changes to our contractual obligations and commitments as of September 30, 2022 from those disclosed in our Annual Report on Form 10-K for the year ended December 31, 2021.

Critical Accounting Policies and Estimates

We have prepared our financial statements in accordance with U.S. GAAP. Our preparation of these financial statements requires us to make estimates, assumptions, and judgments that affect the reported amounts of assets, liabilities, expenses, and related disclosures at the date of the financial statements, as well as revenue and expenses recorded during the reporting periods. We evaluate our estimates and judgments on an ongoing basis. We base our estimates on historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results could therefore differ materially from these estimates under different assumptions or conditions.

There have been no material changes to our critical accounting policies from those described in “Management’s Discussion and Analysis of Financial Condition and Results of Operations” included in our Annual Report on Form 10-K for the year ended December 31, 2021.

Recently Issued Accounting Standards

For information with respect to recently issued accounting standards and the impact of these standards on our condensed consolidated financial statements, see Note “2. Summary of Significant Accounting Policies” to our condensed consolidated financial statements in Part I, Item 1 of this Quarterly Report on Form 10-Q.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

We are exposed to various market risks, which may result in potential losses arising from adverse changes in market rates, such as interest rates and foreign exchange rates. We do not enter into derivatives or other financial instruments for trading or speculative purposes and do not believe we are exposed to material market risk with respect to our cash and cash equivalents and/or our marketable investments.

Interest Rate Risk. We had cash and cash equivalents of $54.8 million as of September 30, 2022, which consisted of funds held in money market funds, general checking and savings accounts. In addition, we had marketable investments of $129.6 million, which consisted primarily of corporate bonds, U.S. agency and government sponsored securities, and U.S. states and municipalities. Our investment policy is focused on the preservation of capital and supporting our liquidity needs. Under the policy, we invest in highly rated securities, while limiting the amount of credit exposure to any one issuer other than the U.S. government. We do not invest in financial instruments for trading or speculative purposes, nor do we use leveraged financial instruments. We utilize external investment managers who adhere to the guidelines of our investment policy. The revolving loans under our Credit Agreement bear interest at: (1) the adjusted EURIBOR rate, plus an applicable rate, for euro currency revolving borrowing; or (2) an alternate base rate, daily simple SOFR, or adjusted term SOFR rate, as applicable, plus an applicable rate, for revolving borrowing in U.S. dollars. As of September 30, 2022, there were no borrowings outstanding under the Credit Agreement. A hypothetical 100 basis point change in interest rates would not have a material impact on the value of our cash and cash equivalents or marketable investments.

Foreign Exchange Risk Management. We operate in countries other than the United States, and, therefore, we are exposed to foreign currency risks. We bill most sales outside of the United States in local currencies, primarily euro and Japanese yen, with some sales being denominated in other currencies. We expect that the percentage of our sales denominated

in foreign currencies may increase in the foreseeable future as we continue to expand into international markets. When sales or expenses are not denominated in U.S. dollars, a fluctuation in exchange rates could affect our net income. For example, changes in exchange rates negatively affected our revenue as expressed in U.S. dollars for the three and nine months ended September 30, 2022, and we expect our revenues as expressed in U.S. dollars to be negatively affected by changes in exchange rates for our fiscal year ending December 31, 2022 as well. Additionally, changes in exchange rates reduced our expenses as expressed in U.S. dollars for the three and nine months ended September 30, 2022, which largely offset the impact to net income for those periods resulting from changes in exchange rates that reduced revenue as expressed in U.S. dollars. We do not currently hedge our exposure to foreign currency exchange rate fluctuations; however, we may choose to hedge our exposure in the future.

While our gross margin for the nine months ended September 30, 2022 was primarily impacted by higher labor and logistics costs as a result of manufacturing transfer activities and higher labor absenteeism due to the Omicron variant during the three months ended March 31, 2022, changes in prices did not have a significant impact on our results of operations for any periods presented on our consolidated financial statements.

ITEM 4. CONTROLS AND PROCEDURES.

Evaluation of Disclosure Controls and Procedures

An evaluation as of September 30, 2022 was carried out under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, of the effectiveness of our "disclosure controls and procedures," which are defined in Rule 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as controls and other procedures of a company that are designed to ensure that the information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to the company's management, including its principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure. Based upon that evaluation, our principal executive officer and principal financial officer concluded that our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) were effective at September 30, 2022.

Changes in Internal Control Over Financial Reporting

During the quarterly period ended June 30, 2022, we began a multi-stage implementation of a new Enterprise Resource Planning ("ERP") system, which will replace our existing core financial systems. The ERP system is designed to accurately maintain the Company's financial records, enhance the flow of financial information, improve data management, and provide timely information to our management team. Accordingly, as the phased implementation occurs, we continue to rely upon a combination of our existing and new ERP systems for financial statement reporting purposes. Except for the implementation of the new ERP system and related controls, there was no change in our internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) that occurred during the quarterly period ended September 30, 2022 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Limitations on the Effectiveness of Controls

A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Because of inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues, if any, within a company have been detected. Accordingly, our disclosure controls and procedures are designed to provide reasonable, not absolute, assurance that the objectives of our disclosure control system are met and, as set forth above, our principal executive officer and principal financial officer have concluded, based on their evaluation as of the end of the period covered by this report, that our disclosure controls and procedures were effective to provide reasonable assurance that the objectives of our disclosure control system were met.

PART II - OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS.

For information with respect to Legal Proceedings, see Note “10. Commitments and Contingencies” to our condensed consolidated financial statements in Part I, Item 1 of this Quarterly Report on Form 10-Q.

ITEM 1A. RISK FACTORS.

There have been no material changes to our risk factors reported in, or new factors identified since the filing of, our Annual Report on Form 10-K for the year ended December 31, 2021, which was filed with the SEC on February 22, 2022.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS.

None.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES.

None.

ITEM 4. MINE SAFETY DISCLOSURE.

None.

ITEM 5. OTHER INFORMATION.

None.

ITEM 6. EXHIBITS.

Exhibit Number	Description	Form	File No.	Exhibit(s)	Filing Date
3.1	Second Amended and Restated Bylaws of Penumbra,Inc.	8-K	001-37557	3.1	August 5, 2022
31.1*	Certification of Principal Executive Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.				
31.2*	Certification of Principal Financial Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.				
32.1**	Certification of Principal Executive Officer and Principal Financial Officer Required Under Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. §1350.				
101*	The following materials from the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2022 formatted in Inline Extensible Business Reporting Language (iXBRL) includes: (i) Condensed Consolidated Balance Sheets as of September 30, 2022 and December 31, 2021, (ii) Condensed Consolidated Statements of Operations for the three and nine months ended September 30, 2022 and 2021, (ii) Condensed Consolidated Statements of Comprehensive (Loss) Income for the three and nine months ended September 30, 2022 and 2021, (iii) Condensed Consolidated Statements of Stockholders' Equity for the three and nine months ended September 30, 2022 and 2021, (iv) Condensed Consolidated Statements of Cash Flows for the nine months ended September 30, 2022 and 2021, and (v) Notes to Condensed Consolidated Financial Statements.				
104*	Cover Page Interactive Data File (formatted as iXBRL with applicable taxonomy extension information contained in Exhibit 101).				

* Filed herewith.

** Furnished herewith.

SIGNATURES

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

PENUMBRA, INC.

Date: November 3, 2022

By: /s/ Maggie Yuen

Maggie Yuen
Chief Financial Officer
(Principal Financial Officer)

Exhibit 31.1

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

I, Adam Elsesser, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Penumbra, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

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

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

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

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 3, 2022
/s/ Adam Elsesser
Adam Elsesser
Chairman, Chief Executive Officer and President

Exhibit 31.2

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

I, Maggie Yuen, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Penumbra, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

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

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

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

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 3, 2022
/s/ Maggie Yuen
Maggie Yuen
Chief Financial Officer

Exhibit 32.1

PENUMBRA, INC.

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

In connection with the Quarterly Report of Penumbra, Inc. (the "Company") on Form 10-Q for the fiscal quarter ended September 30, 2022, as filed with the Securities and Exchange Commission (the "Report"), Adam Elsesser, Chairman, Chief Executive Officer and President of the Company, and Maggie Yuen, Chief Financial Officer of the Company, respectively, do each hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company at the dates and for the periods presented.

/s/ Adam Elsesser
Adam Elsesser
Chairman, Chief Executive Officer and President

/s/ Maggie Yuen
Maggie Yuen
Chief Financial Officer

Date: November 3, 2022