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

FORM 10-Q

Quarterly Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 for the quarterly period ended September 30, 2019 or

Transition Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 for the transition period from __ to __.

LUMINEX CORPORATION
(Exact name of registrant as specified in its charter)

Delaware	**000-30109**	**74-2747608**
(State or other jurisdiction of incorporation)	(Commission File Number)	(I.R.S. Employer Identification No.)

12212 Technology Blvd., Austin, Texas	**78727**
(Address of principal executive offices)	(Zip Code)

(512) 219-8020
Registrant's Telephone Number, Including Area Code
None
Former Name, Former Address and Former Fiscal Year, if Changed Since Last Report

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

Title of each class	Trading Symbol(s)	Name of exchange on which registered
Common Stock, $0.001 par value	LMNX	The Nasdaq Global Select Market

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes No

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

Large accelerated filer	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 any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes No

There were 45,051,907 shares of the Company's Common Stock, par value $0.001 per share, outstanding on November 4, 2019.

LUMINEX CORPORATION

FORM 10-Q
FOR THE QUARTER ENDED SEPTEMBER 30, 2019

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ITEM 1. FINANCIAL STATEMENTS

LUMINEX CORPORATION
CONDENSED CONSOLIDATED BALANCE SHEETS
(in thousands, except share amounts)

	September 30, 2019	December 31, 2018
ASSETS	**(unaudited)**	
Current assets:		
Cash and cash equivalents	$ 66,051	$ 76,441
Accounts receivable, net	45,810	53,396
Inventories, net	76,122	63,250
Prepaids and other	10,956	9,657
Total current assets	198,939	202,744
Property and equipment, net	66,527	66,288
Intangible assets, net	93,188	105,148
Deferred income taxes	31,160	21,470
Goodwill	118,145	118,127
Right of use assets	21,554	—
Other	9,365	11,398
Total assets	$ 538,878	$ 525,175
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 18,547	$ 14,504
Accrued liabilities	29,940	26,772
Deferred revenue - current portion	8,053	10,099
Total current liabilities	56,540	51,375
Deferred revenue	2,214	1,079
Lease liabilities	18,380	—
Other long-term liabilities	1,837	5,065
Total liabilities	78,971	57,519
Stockholders' equity:		
Common stock, $.001 par value, 200,000,000 shares authorized; issued and outstanding: 44,222,148 shares at September 30, 2019; 43,899,210 shares at December 31, 2018	44	44
Preferred stock, $.001 par value, 5,000,000 shares authorized; no shares issued and outstanding	—	—
Additional paid-in capital	374,872	365,349
Accumulated other comprehensive loss	(1,623)	(1,127)
Retained earnings	86,614	103,390
Total stockholders' equity	459,907	467,656
Total liabilities and stockholders' equity	$ 538,878	$ 525,175

See the accompanying notes which are an integral part of these Consolidated Financial Statements.

LUMINEX CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(in thousands, except per share amounts)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
	(unaudited)		(unaudited)	
Revenue	$ 78,673	$ 72,445	$ 244,137	$ 234,685
Cost of revenue	36,833	28,189	111,263	87,535
Gross profit	41,840	44,256	132,874	147,150
Operating expenses:				
Research and development	13,262	11,996	43,295	33,994
Selling, general and administrative	31,448	26,340	96,085	79,780
Amortization of acquired intangible assets	2,852	2,166	8,556	6,498
Total operating expenses	47,562	40,502	147,936	120,272
Income (loss) from operations	(5,722)	3,754	(15,062)	26,878
Other income (expense), net	2	8	(96)	465
Income (loss) before income taxes	(5,720)	3,762	(15,158)	27,343
Income tax benefit (expense)	470	(2,025)	7,937	(6,540)
Net income (loss)	$ (5,250)	$ 1,737	$ (7,221)	$ 20,803
Net income (loss) attributable to common stockholders				
Basic	$ (5,224)	$ 1,708	$ (7,187)	$ 20,447
Diluted	(5,224)	1,708	(7,189)	20,449
Net income (loss) per share attributable to common stockholders				
Basic	$ (0.12)	$ 0.04	$ (0.16)	$ 0.47
Diluted	$ (0.12)	$ 0.04	$ (0.16)	$ 0.46
Weighted-average shares used in computing net income per share				
Basic	44,216	43,836	44,109	43,679
Diluted	44,216	44,707	44,109	44,193
Dividends declared per share	$ 0.09	$ 0.06	$ 0.21	$ 0.18
Other comprehensive income:				
Foreign currency translation adjustments	(454)	(102)	(496)	(421)
Other comprehensive income (loss)	(454)	(102)	(496)	(421)
Comprehensive income (loss)	$ (5,704)	$ 1,635	$ (7,717)	$ 20,382

See the accompanying notes which are an integral part of these
Consolidated Financial Statements.

LUMINEX CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
	(unaudited)		(unaudited)	
Cash flows from operating activities:				
Net income (loss)	$ (5,250)	$ 1,737	$ (7,221)	$ 20,803
Adjustments to reconcile net income to net cash provided by operating activities:				
Depreciation and amortization	7,177	5,714	21,170	17,737
Stock-based compensation	3,565	3,652	9,644	8,460
Deferred income tax (benefit) expense	(2,316)	4,889	(10,970)	8,650
Loss on sale or disposal of assets	59	332	231	443
Other	(510)	(159)	(532)	(1,286)
Changes in operating assets and liabilities:				
Accounts receivable, net	13,459	4,570	7,563	9,623
Inventories, net	(6,617)	(2,982)	(12,602)	(5,584)
Other assets	567	(4,187)	3,971	(4,743)
Accounts payable	372	(47)	4,540	(1,708)
Accrued liabilities	600	1,633	(6,956)	(6,440)
Deferred revenue	(1,661)	—	(610)	653
Net cash provided by (used in) operating activities	9,445	15,152	8,228	46,608
Cash flows from investing activities:				
Purchase of property and equipment	(4,993)	(5,228)	(13,115)	(14,264)
Proceeds from net working capital adjustments related to business acquisition	—	—	1,915	—
Issuance of note receivable	—	—	—	(1,000)
Purchase of cost method investment	—	—	—	(1,782)
Acquired technology rights	—	—	—	(4,000)
Net cash used in investing activities	(4,993)	(5,228)	(11,200)	(21,046)
Cash flows from financing activities:				
Proceeds from issuance of common stock	695	566	2,481	3,982
Shares surrendered for tax withholding	(4)	(18)	(2,089)	(2,034)
Dividends paid	(2,703)	(2,676)	(8,098)	(7,978)
Net cash used in financing activities	(2,012)	(2,128)	(7,706)	(6,030)
Effect of foreign currency exchange rate on cash	286	102	288	250
Change in cash and cash equivalents	2,726	7,898	(10,390)	19,782
Cash and cash equivalents, beginning of period	63,325	138,996	76,441	127,112
Cash and cash equivalents, end of period	$ 66,051	$ 146,894	$ 66,051	$ 146,894

See the accompanying notes which are an integral part of these Consolidated Financial Statements.

LUMINEX CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY
(in thousands, except share data)
(unaudited)

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Retained Earnings	Total Stockholders' Equity
	Number of Shares	Amount				
Balance at December 31, 2018	43,899,210	$ 44	$ 365,349	$ (1,127)	$ 103,390	$ 467,656
Exercise of stock options	16,707	—	298	—	—	298
Issuances of restricted stock, net of shares withheld for taxes	204,216	—	(2,072)	—	—	(2,072)
Stock compensation	—	—	2,449	—	—	2,449
Net income	—	—	—	—	2,960	2,960
Foreign currency translation adjustments	—	—	—	(133)	—	(133)
Dividends	—	—	25	—	(2,726)	(2,701)
Balance at March 31, 2019	44,120,133	$ 44	$ 366,049	$ (1,260)	$ 103,624	$ 468,457
Exercise of stock options	28,327	—	499	—	—	499
Issuances of restricted stock, net of shares withheld for taxes	11,033	—	(13)	—	—	(13)
Stock compensation	—	—	3,630	—	—	3,630
Issuance of common shares under ESPP	53,865	—	966	—	—	966
Net income (loss)	—	—	—	—	(4,931)	(4,931)
Foreign currency translation adjustments	—	—	—	91	—	91
Dividends	—	—	27	—	(2,732)	(2,705)
Balance at June 30, 2019	44,213,358	$ 44	$ 371,158	$ (1,169)	$ 95,961	$ 465,994
Exercise of stock options	7,283	—	124	—	—	124
Issuances of restricted stock, net of shares withheld for taxes	1,507	—	(4)	—	—	(4)
Stock compensation	—	—	3,565	—	—	3,565
Net income	—	—	—	—	(5,250)	(5,250)
Foreign currency translation adjustments	—	—	—	(454)	—	(454)
Dividends	—	—	29	—	(4,097)	(4,068)
Balance at September 30, 2019	44,222,148	$ 44	$ 374,872	$ (1,623)	$ 86,614	$ 459,907

See the accompanying notes which are an integral part of these Consolidated Financial Statements.

LUMINEX CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY (cont.)
(in thousands, except share data)
(unaudited)

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Retained Earnings	Total Stockholders' Equity
	Number of Shares	Amount				
Balance at December 31, 2017	43,404,493	$ 43	$ 350,834	$ (625)	$ 87,655	$ 437,907
Exercise of stock options	40,142	—	697	—	—	697
Issuances of restricted stock, net of shares withheld for taxes	222,534	1	(2,003)	—	—	(2,002)
Stock compensation	—	—	1,235	—	—	1,235
Net income	—	—	—	—	13,397	13,397
Foreign currency translation adjustments	—	—	—	392	—	392
Dividends	—	—	47	—	(2,690)	(2,643)
Other	—	—	—	—	8,023	8,023
Balance at March 31, 2018	43,667,169	$ 44	$ 350,810	$ (233)	$ 106,385	$ 457,006
Exercise of stock options	102,976	—	1,874	—	—	1,874
Issuances of restricted stock, net of shares withheld for taxes	12,670	—	(13)	—	—	(13)
Stock compensation	—	—	3,563	—	—	3,563
Issuance of common shares under ESPP	47,300	—	854	—	—	854
Net income	—	—	—	—	5,669	5,669
Foreign currency translation adjustments	—	—	—	(711)	—	(711)
Dividends	—	—	(12)	—	(2,701)	(2,713)
Balance at June 30, 2018	43,830,115	$ 44	$ 357,076	$ (944)	$ 109,353	$ 465,529
Exercise of stock options	6,935	—	114	—	—	114
Issuances of restricted stock, net of shares withheld for taxes	1,672	—	(18)	—	—	(18)
Stock compensation	—	—	3,627	—	—	3,627
Net income	—	—	—	—	1,737	1,737
Foreign currency translation adjustments	—	—	—	(102)	—	(102)
Dividends	—	—	26	—	(2,702)	(2,676)
Balance at September 30, 2018	43,838,722	$ 44	$ 360,825	$ (1,046)	$ 108,388	$ 468,211

See the accompanying notes which are an integral part of these Consolidated Financial Statements.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

NOTE 1 — BASIS OF PRESENTATION

The accompanying unaudited condensed consolidated financial statements have been prepared by Luminex Corporation (the Company or Luminex) in accordance with United States generally accepted accounting principles (U.S. GAAP) for interim financial information and the rules and regulations of the Securities and Exchange Commission (SEC). Accordingly, they do not include all of the information and footnotes required by U.S. GAAP for complete financial statements. The condensed consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries. All significant intercompany accounts and transactions have been eliminated in consolidation. In the opinion of management, all adjustments (consisting of normal recurring entries) considered necessary for a fair presentation have been included. Operating results for the three and nine months ended September 30, 2019 are not necessarily indicative of the results that may be expected for the year ending December 31, 2019. These financial statements should be read in conjunction with the financial statements and notes thereto included in the Company's Annual Report on Form 10-K for the year ended December 31, 2018 (the 2018 10-K).

NOTE 2 — BUSINESS COMBINATIONS

On December 31, 2018, the Company completed its acquisition (the Acquisition) of EMD Millipore Corporation's flow cytometry portfolio for $75 million, consisting of approximately $69.9 million paid under a Share and Asset Purchase Agreement (the Purchase Agreement) and approximately $5.1 million in committed inventory purchases, both of which were subject to adjustment. A purchase price reconciliation was completed in the quarter ended March 31, 2019 resulting in a decrease of the purchase price by $1.9 million. This adjustment resulted in a revised amount of $68.0 million paid under the Purchase Agreement. We completed the committed inventory purchases in the third quarter of 2019. The Company financed the Acquisition with cash on hand. Luminex acquired 100% of the shares and equity of Amnis Corporation, a Washington corporation (Amnis), a wholly owned subsidiary of EMD Millipore Corporation, a Massachusetts corporation (itself an affiliate of Merck KgaA), and certain other assets owned by other affiliates of Merck KgaA (MilliporeSigma).

The Acquisition expands Luminex's existing offering of flow-based detection systems, which is centered around its innovative xMAP® multiplexing technology, with approximately 16,700 xMAP Systems sold worldwide (some of which may be retired or otherwise not in use). MilliporeSigma's flow cytometry portfolio included Amnis®, a family of imaging flow cytometry products for cell-based analysis, as well as their Guava® and Muse® portfolio of products, which are economical systems based on microcapillary technologies. The purchase price was in excess of the fair value of the net assets acquired and, as a result, the Company recorded goodwill. A portion of the goodwill is deductible for tax purposes. The Company recorded approximately $2.7 million of acquisition-related costs during fiscal 2018. The impact of the Acquisition on our liquidity, and the Company's committed inventory purchases is more fully described under "Liquidity and Capital Resources."

The following table summarizes the estimated fair values of assets acquired and liabilities assumed in connection with the Acquisition at December 31, 2018 and adjusted as of September 30, 2019 (in thousands):

Net tangible assets assumed as of December 31, 2018	$	8,922
Intangible assets subject to amortization		30,094
Deferred tax liabilities		(3,702)
Goodwill		32,664
Total purchase price	$	67,978

The Company finalized the purchase price allocation for the Acquisition in the quarter ended September 30, 2019. If information later becomes available which would indicate adjustments are required to the purchase price allocation, such adjustments will be recognized in the Consolidated Statements of Comprehensive Income. Such adjustments have been included in the purchase price allocations retrospectively through revisions to the net tangible assets assumed, fair values of the intangible assets, deferred tax assets and liabilities and resulting goodwill recorded. The excess of the purchase price over the fair value of the tangible net assets, liabilities and intangible assets acquired was recorded to goodwill.

NOTE 3 — INVESTMENTS AND OTHER ASSETS

Marketable Securities

The Company determines the appropriate classification of any investments in debt and equity securities at the time of purchase and re-evaluates such determinations at each balance sheet date. As of September 30, 2019, the Company had no short or long-term investments, since those funds were used to pay for acquisitions.

Available-for-sale securities consisted of the following as of September 30, 2019 (in thousands):

	Amortized Cost	Gains in Accumulated Other Comprehensive Income	Losses in Accumulated Other Comprehensive Income	Estimated Fair Value
Current:				
Money market funds	$ 707	$ —	$ —	$ 707
Total current securities	707	—	—	707
Total available-for-sale securities	$ 707	$ —	$ —	$ 707

Available-for-sale securities consisted of the following as of December 31, 2018 (in thousands):

	Amortized Cost	Gains in Accumulated Other Comprehensive Income	Losses in Accumulated Other Comprehensive Income	Estimated Fair Value
Current:				
Money market funds	$ 704	$ —	$ —	$ 704
Total current securities	704	—	—	704
Total available-for-sale securities	$ 704	$ —	$ —	$ 704

There were no proceeds from the sales of available-for-sale securities for the three and nine months ended September 30, 2019 and the year ended December 31, 2018. Realized gains and losses on sales of investments are determined using the specific identification method and are included in Other income, net in the Condensed Consolidated Statements of Comprehensive Income. There were no available-for-sale debt securities as of September 30, 2019 or December 31, 2018. All of the Company's available-for-sale securities with gross unrealized losses as of September 30, 2019 had been in a loss position for less than 12 months.

Non-Marketable Securities and Other-Than-Temporary Impairment

During the year ended December 31, 2018, the Company made a $1.8 million investment in a private company. Based in the U.S., this minority investment is included at cost in other long-term assets of the Company's Consolidated Balance Sheets. As of September 30, 2019, the Company does not have significant influence over the investee, since the Company owns less than 20% of the voting equity in the investee. Further, the Company does not participate in policy-making processes or interchange managerial personnel. See Note 15 - Subsequent Events for a discussion of an additional investment made in this private company in October 2019.

In August 2018, the Company exercised its purchase option on a second private company and acquired 100% of its capital stock in a non-cash transaction involving (i) a prior investment of $2.0 million being applied to the purchase option, (ii) the forgiveness and application of a $2.4 million note and related interest receivable to the purchase option and (iii) a tax impact of $0.1 million. This acquisition was accounted for as an asset acquisition rather than a business combination, as substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset, a next generation technology. The Company has recorded the $4.3 million asset acquisition as a defensive, in-process research and development (IP R&D) intangible asset. There were no gains or losses recognized as part of this transaction.

The Company owns a minority interest in another private company based in the U.S. through its initial investment of $1.0 million in the third quarter of 2012. We have been informed that this private company will be dissolving and ceasing operations in the short-term and that Luminex can expect to have the majority of its investment returned, although we cannot be certain of this. We recorded an impairment of $160,000 in Other income, net in the Consolidated Statements of Comprehensive Income during the second quarter of 2019 based upon these circumstances and communication from this private company. This minority interest is included at cost in other short-term assets on the Company's Consolidated Balance Sheets as the Company does not have significant influence over the investee, as the Company owns less than 20% of the voting equity and the investee is not publicly traded.

These investments do not have readily determinable fair values. Therefore, the Company has elected the measurement alternative for its minority interests and the investments are recorded at cost, less any impairment, including changes resulting from observable price changes. The Company regularly evaluates the carrying value of its investment for impairment and whether any events or circumstances are identified that would significantly harm the fair value of the investment. The primary indicators the Company utilizes to identify these events and circumstances are the investee's ability to remain in business, such as the investee's liquidity and rate of cash use, and the investee's ability to secure additional funding and the value of that additional funding. In the event a decline in fair value is less than the investment's carrying value, the Company will record an impairment charge in Other income, net in the Consolidated Statements of Comprehensive Income. Other than the $160,000 impairment in the second quarter of 2019 discussed above, the Company has not recorded any impairment charges related to these non-marketable investments.

As the inputs utilized for the Company's periodic impairment assessment are not based on observable market data, the determination of fair value of its investments is classified within Level 3 of the fair value hierarchy. See Note 5 - Fair Value Measurement to our Condensed Consolidated Financial Statements for further information on the fair value hierarchy and the three classification levels. To determine the fair value of these investments, the Company uses all available financial information related to the entities, including information based on recent or pending third-party equity investments in these entities. In certain instances, an investment's fair value is not estimated as there are no identified events or changes in the circumstances. There have been no unrealized gains or losses related to these Level 3 minority interest investments.

Other long-term assets consisted of the following (in thousands):

	September 30, 2019	December 31, 2018
Purchased technology rights (net of accumulated amortization of $8,133 and $7,633 in September 30, 2019 and December 31, 2018, respectively)	$ 6,153	$ 6,653
Minority interest investments	1,782	2,782
Other	1,430	1,963
	$ 9,365	$ 11,398

For the nine months ended September 30, 2019 and 2018, the Company recognized amortization expenses related to the amortization of purchased technology rights of approximately $500,000 and $459,000, respectively. Future amortization expenses are estimated to be $166,000 in the remaining three months of 2019, $565,000 in 2020, $533,000 in 2021, $515,000 in 2022, $499,000 in 2023 and $3,875,000 thereafter.

NOTE 4 — INVENTORIES, NET

Inventories are stated at the lower of cost or net realizable value, with cost determined according to the standard cost method, which approximates the first-in, first-out method. Net realizable value is defined as the estimated selling price in the ordinary course of business, less reasonably predictable costs of completion, disposal and transportation. The Company routinely assesses its on-hand inventory for timely identification and measurement of obsolete, slow-moving or otherwise impaired inventory. Net inventories consisted of the following (in thousands):

	September 30, 2019	December 31, 2018
Parts and supplies	$ 44,589	$ 39,873
Work-in-progress	14,982	11,847
Finished goods	16,551	11,530
	$ 76,122	$ 63,250

NOTE 5 — FAIR VALUE MEASUREMENT

Accounting Standards Codification (ASC) 820 "Fair Value Measurement" (ASC 820) defines fair value, establishes a framework for measuring fair value under U.S. GAAP and enhances disclosures about fair value measurements. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. ASC 820 describes a fair value hierarchy based on the following three levels of inputs that may be used to measure fair value, of which the first two are considered observable and the last unobservable:

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 for similar assets or liabilities; 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 Company determines the fair value of its investment portfolio assets by obtaining non-binding market prices from its third-party portfolio managers on the last day of the quarter, whose sources may use quoted prices in active markets for identical assets (Level 1 inputs) or inputs other than quoted prices that are observable either directly or indirectly (Level 2 inputs) in determining fair value. There were no transfers between Level 1, Level 2 or Level 3 measurements for the nine-month period ended September 30, 2019.

The following table represents the Company's fair value hierarchy for its financial assets and liabilities measured at fair value on a recurring basis as of September 30, 2019 and December 31, 2018 (in thousands):

	Fair Value Measurements as of September 30, 2019 Using			
	Level 1	Level 2	Level 3	Total
Assets:				
Money market funds	$ 707	$ —	$ —	$ 707
Minority interest investments - short-term	$ —	$ —	$ 840	$ 840
Minority interest investments - long-term	$ —	$ —	$ 1,782	$ 1,782

	Fair Value Measurements as of December 31, 2018 Using			
	Level 1	Level 2	Level 3	Total
Assets:				
Money market funds	$ 704	$ —	$ —	$ 704
Minority interest investments - long-term	$ —	$ —	$ 2,782	$ 2,782

NOTE 6 — GOODWILL AND OTHER INTANGIBLE ASSETS

On December 31, 2018, the Company completed the Acquisition. As a result of the Acquisition, the Company recorded approximately $32.7 million of goodwill and $30.1 million of other identifiable intangible assets. The goodwill is derived from expected synergies from combining operations of the Company and the business acquired in connection with the Acquisition. The
Company has finalized the purchase price allocation for the Acquisition. A portion of the Company's goodwill is not expected to be deductible for tax purposes. The changes in the carrying amount of goodwill during the period are as follows (in thousands):

	September 30, 2019	December 31, 2018
Balance at beginning of period	$ 118,127	$ 85,481
Flow cytometry acquisition	$ 18	$ 32,646
Balance at end of period	$ 118,145	$ 118,127

The Company's intangible assets are reflected in the table below (in thousands, except weighted average lives):

	Finite-lived			Indefinite-lived	
	Technology, trade secrets and know-how	Customer lists and contracts	Other identifiable intangible assets	IP R&D	Total
2018					
Balance as of December 31, 2017	$ 81,385	$ 19,097	$ 5,664	$ 12,982	$ 119,128
Flow cytometry acquisition	17,084	4,722	4,991	6,703	33,500
Asset acquisition	—	—	—	4,328	4,328
Balance as of December 31, 2018	98,469	23,819	10,655	24,013	156,956
Less: accumulated amortization:					
Accumulated amortization balance as of December 31, 2017	(34,414)	(7,037)	(1,692)	—	(43,143)
Amortization expense	(6,087)	(1,999)	(579)	—	(8,665)
Accumulated amortization balance as of December 31, 2018	(40,501)	(9,036)	(2,271)	—	(51,808)
Net balance as of December 31, 2018	$ 57,968	$ 14,783	$ 8,384	$ 24,013	$ 105,148
Weighted average life (in years)	11	10	10		
2019					
Balance as of December 31, 2018	$ 98,469	$ 23,819	$ 10,655	$ 24,013	$ 156,956
Flow cytometry acquisition purchase price allocation adjustments	(116)	(428)	1,154	(4,016)	(3,406)
Balance as of September 30, 2019	98,353	23,391	11,809	19,997	$ 153,550
Less: accumulated amortization:					
Accumulated amortization balance as of December 31, 2018	(40,501)	(9,036)	(2,271)	—	(51,808)
Amortization expense	(5,838)	(1,820)	(896)	—	(8,554)
Accumulated amortization balance as of September 30, 2019	(46,339)	(10,856)	(3,167)	—	(60,362)
Net balance as of September 30, 2019	$ 52,014	$ 12,535	$ 8,642	$ 19,997	$ 93,188
Weighted average life (in years)	11	10	10		

The Company currently has three IP R&D projects. The first relates to the development of the next generation VERIGENE® System, VERIGENE II, on which the Company began clinical trials in May 2018. The Company believes the VERIGENE II will launch commercially in 2020. The second is a defensive IP R&D project related to the Company's next generation xMAP® System, SENSIPLEX™, which the Company believes will launch commercially in 2020. The third relates to the development of the next generation Guava System, acquired as part of the Acquisition (Guava Next Gen System). The fair value of the Guava Next Gen System IP R&D project was determined using the income approach. The discount rate applied to the projected cash flows was 13.0%, which reflects the engineering and technical risks related to the projects. The Company believes the Guava Next Gen System will launch in the first quarter of 2020.

The estimated aggregate amortization expense for the next five fiscal years and thereafter is as follows (in thousands):

2019 (three months)	$ 2,852
2020	11,406
2021	11,048
2022	9,801
2023	9,452
Thereafter	28,632
	$ 73,191

NOTE 7 — OTHER COMPREHENSIVE LOSS

Other comprehensive loss represents a measure of all changes in equity that result from recognized transactions and other economic events other than those resulting from investments by, and distributions to, shareholders. Other comprehensive loss for the Company includes foreign currency translation adjustments and net unrealized holding gains and losses on available-for-sale investments.

The following table presents the changes in each component of accumulated other comprehensive loss, net of tax (in thousands):

	Accumulated Other Comprehensive Loss Items - Foreign Currency
Balance as of December 31, 2018	$ (1,127)
Other comprehensive loss	(496)
Net current-period other comprehensive loss	(496)
Balance as of September 30, 2019	$ (1,623)

There are no material tax benefits or expenses related to the other comprehensive loss for the three and nine months ended September 30, 2019.

NOTE 8 — EARNINGS (LOSS) PER SHARE

A reconciliation of the denominators used in computing per share net income (EPS) is as follows (in thousands, except per share amounts):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Basic:				
Net income (loss)	$ (5,250)	$ 1,737	$ (7,221)	$ 20,803
Less: allocation to participating securities	26	(29)	34	(356)
Net income (loss) attributable to common stockholders	$ (5,224)	$ 1,708	$ (7,187)	$ 20,447
Weighted average common stock outstanding	44,216	43,836	44,109	43,679
Net income (loss) per share attributable to common stockholders	$ (0.12)	$ 0.04	$ (0.16)	$ 0.47
Diluted:				
Net income (loss)	$ (5,250)	$ 1,737	$ (7,221)	$ 20,803
Less: allocation to participating securities	26	(29)	32	(354)
Net income (loss) attributable to common stockholders	$ (5,224)	$ 1,708	$ (7,189)	$ 20,449
Weighted average common stock outstanding	44,216	43,836	44,109	43,679
Effect of dilutive securities: stock options and awards	—	871	—	514
Weighted-average shares used in computing net income per share	44,216	44,707	44,109	44,193
Net income (loss) per share attributable to common stockholders	$ (0.12)	$ 0.04	$ (0.16)	$ 0.46

Basic net income (loss) per share is computed by dividing the net income (loss) for the period by the weighted average number of common shares outstanding during the period. Diluted net income (loss) per share is computed by dividing the net income (loss) for the period by the weighted average number of common and common equivalent shares outstanding during the period. Restricted stock awards (RSAs) and stock options to acquire 2,123,497 and 9,424 shares for the three months ended September 30, 2019 and 2018, respectively, and 1,502,841 and 565,213 shares for the nine months ended September 30, 2019 and 2018, respectively, were excluded from the computations of diluted earnings per share because the effect of including the RSAs and stock options would have been anti-dilutive.

We apply the two-class method of computing earnings per share, which requires the calculation of separate earnings per share amounts for our non-vested, time-based restricted stock awards with non-forfeitable dividends and for our common stock. Our non-vested, time-based restricted stock awards with non-forfeitable dividends are considered securities which participate in undistributed earnings with common stock. Under the two-class computation method, net losses are not allocated to participating securities unless the holder of the security has a contractual obligation to share in the losses. Our non-vested, time-based restricted stock awards with non-forfeitable dividends do not have such an obligation so they are not allocated losses.

NOTE 9 — STOCKHOLDERS' EQUITY AND STOCK-BASED COMPENSATION

Dividends

On July 31, 2019, the Board of Directors declared a cash dividend on the Company's common stock of $0.09 per share. The dividend was payable to stockholders of record as of September 26, 2019 and was paid on October 17, 2019. The Company's current intent is to pay a continuing dividend on a quarterly basis. However, future declarations of dividends are subject to the final determination of the Company's Board of Directors.

Stock-Based Compensation

The Company's stock option activity for the nine months ended September 30, 2019 is as follows:

Stock Options	Shares (in thousands)	Weighted Average Exercise Price
Outstanding at December 31, 2018	3,323	$ 19.05
Granted	977	24.43
Exercised	(52)	17.58
Canceled or expired	(411)	21.74
Outstanding at September 30, 2019	3,837	$ 20.15

The Company had $11.7 million of total unrecognized compensation costs related to stock options at September 30, 2019 that are expected to be recognized over a weighted-average period of 2.54 years.

The Company's restricted share activity for the nine months ended September 30, 2019 is as follows:

Restricted Stock Awards (RSAs)	Shares (in thousands)	Weighted Average Grant Price
Non-vested at December 31, 2018	724	$ 20.27
Granted	402	24.19
Vested	(261)	19.66
Cancelled or expired	(49)	21.76
Non-vested at September 30, 2019	816	$ 22.30

Restricted Stock Units (RSUs)	Shares (in thousands)
Non-vested at December 31, 2018	468
Granted	128
Vested	(45)
Cancelled or expired	(20)
Non-vested at September 30, 2019	531

As of September 30, 2019, there were $16.4 million and $3.3 million of unrecognized compensation costs related to RSAs and RSUs, respectively. These costs are expected to be recognized over a weighted average-period of 2.62 years for the RSAs and 2.06 years for the RSUs. The Company issues a small number of cash-settled RSUs pursuant to the Company's equity incentive plan in certain foreign countries. These grants do not result in the issuance of common stock and are considered immaterial by the Company.

The following are the stock-based compensation costs recognized in the Company's Condensed Consolidated Statements of Comprehensive Income (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Cost of revenue	$ 528	$ 437	$ 1,489	$ 1,253
Research and development	549	571	1,055	771
Selling, general and administrative	2,509	2,644	7,172	6,436
Stock-based compensation costs reflected in net income	$ 3,586	$ 3,652	$ 9,716	$ 8,460

NOTE 10 — ACCRUED LIABILITIES

Accrued liabilities consisted of the following (in thousands):

	September 30, 2019	December 31, 2018
Compensation and employee benefits	$ 14,955	$ 18,086
Dividends payable	4,097	2,703
Income and other taxes	2,080	1,014
Warranty costs	1,481	1,901
Royalties payable	1,099	1,373
Current operating lease liabilities	5,023	—
Other	1,205	1,695
	$ 29,940	$ 26,772

The following table summarizes the changes in the warranty accrual (in thousands):

Accrued warranty costs as of December 31, 2018	$ 1,901
Warranty adjustments/settlements	1,632
Accrual for warranty costs	(2,052)
Accrued warranty costs as of September 30, 2019	$ 1,481

NOTE 11 — REVENUE RECOGNITION

On January 1, 2018, the Company adopted the new standard on revenue recognition, ASC 606 (the Standard), using the modified retrospective transition method consistent with the guidance issued by the Financial Accounting Standards Board (FASB) in May 2014. Under this method, the Company applied the guidance retrospectively, only to those contracts which were not completed as of the date of initial application, and recognized the cumulative effect of initially applying the Standard as an adjustment to the opening balance of retained earnings as of January 1, 2018.

The Standard applies to all contracts with customers, except for contracts that are within the scope of other standards, such as leases, insurance, collaboration arrangements and financial instruments. Under the Standard, the Company recognizes revenue when its customer obtains control of promised goods or services, in an amount that reflects the consideration which the Company expects to receive in exchange for those goods or services. To determine revenue recognition for arrangements that the Company determines are within the scope of the Standard, the Company performs the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when the Company satisfies a performance obligation. The Company only applies the five-step model to contracts when it is probable that the Company will collect the consideration it is entitled to in exchange for the goods or services it transfers to the customer. At contract inception, once the contract is determined to be within the scope of the Standard, the Company assesses the goods or services promised within each contract, identifies the performance obligations and assesses whether each promised good or service is distinct. The Company allocates the total transaction price to each performance obligation in an amount based on the estimated relative standalone selling price of the promised good or service underlying each performance obligation and recognizes this as revenue when such performance obligation is satisfied.

Contract assets are included within accounts receivables, net and contract liabilities are included in deferred revenue on the Company's Balance Sheet. The following table presents the opening and closing balances of the Company's contract assets and liabilities as of September 30, 2019 (in thousands):

	Balance at December 31, 2018	Balance at September 30, 2019
Contract assets:		
Unbilled receivables - Royalties	$ 10,805	$ 12,085
Contract liabilities - Short-term:		
Deferred revenue - Service	$ 9,476	$ 7,510
Deferred revenue - Licenses	227	212
Deferred revenue - Instruments	—	88
Deferred revenue - Other	396	243
Total contract liabilities - Short-term	$ 10,099	$ 8,053
Contract liabilities - Long-term:		
Deferred revenue - Service	$ 207	$ 1,500
Deferred revenue - Licenses	872	715
Total contract liabilities - Long-term	$ 1,079	$ 2,215

During the nine months ended September 30, 2019, the Company recognized the following revenues as a result of changes in the contract asset and contract liability balances in the period (in thousands):

	Nine Months Ended September 30, 2019
Revenue recognized in the period:	
Amounts included as contract liabilities at the beginning of the period	$ 4,815
Performance obligations satisfied in previous periods	-

NOTE 12 — INCOME TAXES

At the end of each interim reporting period, an estimate is made of the effective tax rate expected to be applicable for the full year. The estimated full year's effective tax rate is used to determine the income tax rate for each applicable interim reporting period. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in the results of operations in the period of the enactment date. The effective tax rate for the nine months ended September 30, 2019 was a benefit of 52%, including amounts recorded for discrete events. This differs from the statutory rate of 21% primarily as a result of a reduction in unrecognized tax benefit liability and the effect of foreign operations. The Company's tax expense reflects the full federal, various state, and foreign blended statutory rates. The Company currently expects a 2019 full year effective tax rate of 10% to 20%, excluding amounts recorded for discrete events. The Company will be subject to provisions regarding U.S. federal taxation of foreign intangible income and has included in its estimate of income tax the effects of this tax. The Company is utilizing its net operating losses (NOLs) and tax credits in the U.S., Canada and the Netherlands and, therefore, cash taxes to be paid are expected to be less than 10% of book tax expense.

In the first quarter of 2019, U.S. tax legislation was enacted which provided guidance on the U.S. federal transition tax on earnings of foreign subsidiaries and as a result, the Company revised its Earnings and Profits (E&P) calculations for its Canadian subsidiary and discrete income tax expense of $414,000 for the U.S. transition tax has been recorded for the nine month period ended September 30, 2019.

The Company or one of its subsidiaries files income tax returns in the U.S. federal jurisdiction, Australia, Canada, China, France, Germany, Hong Kong, Japan, the Netherlands, the U.K., and various U.S. states. Due to net operating losses, the U.S., Canadian and Netherlands tax returns dating back to 2016, 2007, and 2013, respectively, can still be reviewed by the taxing authorities. In the first quarter of 2019, the Company recorded a reduction in unrecognized tax benefit liability related to the U.S. transition tax and a related income tax benefit of $6.6 million as a result of a ruling for certain aspects of the E&P calculation of its Canadian subsidiary. The Company does not expect any material changes to the unrecognized tax benefit liability within the next twelve months. The Company recognizes interest and penalties related to uncertain tax positions in the provision for income taxes.

NOTE 13 — COMMITMENTS AND CONTINGENCIES

In the normal course of business, the Company is subject to claims, lawsuits and legal proceedings. When it appears probable in management's judgment, and based upon consultation with outside counsel, that we will incur monetary damages or other costs in connection with any claims or proceedings, and such costs can be reasonably estimated, we record the estimated liability in the financial statements. If only a range of estimated losses can be estimated, we record an amount within the range that, in management's judgment, reflects the most likely outcome; if none of the estimates within that range is a better estimate than any other amount, we record the liability at the low end of the range of estimates. Any such accrual would be charged to expense in the appropriate period. We disclose significant contingencies when the loss is not probable and/or the amount of the loss is not estimable, when we believe there is at least a reasonable possibility that a loss has been incurred. We recognize costs associated with legal proceedings in the period in which the services were provided.

Leases

We have leased all of our research, manufacturing and office space and have entered into various other agreements in conducting our business. Our leases have remaining lease terms of 1 year to 6 years, and some of our leases include options to extend the leases for up to 10 years, tenant improvement allowances, rent holidays and rent escalation clauses. At inception, we determine whether an agreement represents a lease and at commencement we evaluate each lease agreement to determine whether the lease is an operating or financing lease. As described below under "Note 14 - Recent Accounting Pronouncements - Recently adopted accounting guidance," the Company adopted the new lease guidance as of January 1, 2019.

Pursuant to the new lease guidance, all of the Company's leases outstanding on January 1, 2019 continued to be classified as operating leases. With the adoption of the new lease guidance, the Company recorded an operating lease right-of-use asset and an operating lease liability on its balance sheet. Right-of-use lease assets represent the Company's right to use the underlying asset for the lease term and the lease obligation represents the Company's commitment to make the lease payments arising from the lease. Right-of-use lease assets and obligations are recognized at the commencement date based on the present value of remaining lease payments over the lease term. As the Company's leases do not provide an implicit rate, we have used an estimated incremental borrowing rate of 5.75%, based on the information available at the commencement date in determining the present value of lease payments. The right-of-use lease asset includes any lease payments made prior to commencement and excludes any lease incentives. The lease term may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option. Operating lease expense is recognized on a straight-line basis over the lease term, subject to any changes in the lease or expectations regarding the terms. Variable lease costs such as common area costs and property taxes are expensed as incurred. For all lease agreements we combine lease and non-lease components. Leases with an initial term of twelve months or less are not recorded on the balance sheet.

The components of the lease expense were as follows (in thousands):

		Nine Months Ended September 30, 2019
Operating lease cost	$	7,036

Supplemental cash flow information related to leases was as follows (in thousands):

		Nine Months Ended September 30, 2019
Lease liabilities arising from obtaining right to use assets		
Operating leases recorded upon lease standard adoption	$	24,922

Supplemental balance sheet information related to leases was as follows (in thousands):

		September 30, 2019
Operating leases:		
Operating lease right-of-use assets	$	21,554
Operating lease liabilities	$	23,403
Weighted Average Remaining Lease Term		4.57 years
Weighted Average Discount Rate		5.75%

Maturities of lease liabilities for the next five fiscal years and thereafter are as follows (in thousands):

		Operating Leases
2019 (three months)	$	1,672
2020		6,378
2021		6,176
2022		4,627
2023		3,965
Thereafter		3,891
Total lease payments		26,709
Less: imputed interest		(3,662)
Lease liabilities at September 30, 2019	$	23,047

NOTE 14 — RECENT ACCOUNTING PRONOUNCEMENTS

Recently adopted accounting guidance

In May 2014, the FASB issued a new standard on revenue recognition, which outlines a single comprehensive model to use in accounting for revenue arising from contracts with customers and supersedes most current revenue recognition guidance, including industry-specific guidance. The core principle of the revenue model is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The Company adopted the Standard effective January 1, 2018, using the modified retrospective approach. Under this method, the Company recorded a cumulative adjustment increasing retained earnings of $10.6 million before related tax impacts or $8.1 million net of related tax impacts. See Note 11, “Revenue Recognition” for additional discussion related to the Company’s adoption of the Standard. Under the Standard, estimated royalty revenue will be recorded each quarter on an accrual basis to more closely coincide with the timing of the end user sale by the strategic partner; with reconciliation made upon submission of the royalty report by the partner indicating actual royalties owed in the following quarter. In addition, the Company began recording the portion of reagent rental revenue associated with the recovery of the cost of providing the system and other hardware in reagent rental agreements as system revenue rather than assay revenue effective January 1, 2018. This change has not and is not expected to have any impact on top line revenue and the Company does not anticipate any material effects to its revenue categorization.

In February 2016, the FASB issued guidance requiring lessees to recognize a right-of-use asset and a lease liability on the balance sheet for all leases, with the exception of short-term leases. On January 1, 2019, the Company elected to adopt this new lease guidance using a simplified transition option that allows companies to initially apply the new lease standard at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption.

The Company also elected to adopt the package of practical expedients permitted in the new lease guidance. Accordingly, the Company is continuing to account for its existing operating leases as operating leases under the new lease guidance, without reassessing whether the contracts contain a lease under the new lease guidance or whether classification of the operating leases would be different under the new lease guidance. All of our leases at the adoption date were operating leases, primarily for facilities, and did not include any non-lease components.

With the implementation of the new lease standard, the Company recognized right-to-use assets of $24.9 million, lease liabilities for operating leases of approximately $26.8 million, and eliminated deferred rent of $1.9 million. The Company did not have a cumulative adjustment impacting retained earnings. There are no changes to our previously reported results prior to January 1, 2019. Lease expense is not expected to change materially as a result of the adoption of the new lease standard.

Recent accounting guidance not yet adopted

In June 2016, the FASB issued guidance on financial instruments and related credit losses. The guidance requires that financial assets measured at amortized cost be presented at the net amount expected to be collected. The allowance for credit losses is a valuation account that is deducted from the amortized cost basis. The statement of comprehensive income reflects the measurement of credit losses for newly recognized financial assets, as well as the expected credit losses during the period. The measurement of expected credit losses is based upon historical experience, current conditions, and reasonable and supportable forecasts that affect the collectability of the reported amount. Credit losses relating to available-for-sale debt securities will be recorded through an allowance for credit losses rather than as a direct write-down to the security. The updated guidance is effective for annual periods beginning after December 15, 2019, and is applicable to the Company in fiscal 2020. Early adoption is permitted. The Company does not anticipate that this guidance will have a material impact on its consolidated financial statements.

NOTE 15 — SUBSEQUENT EVENTS

On October 1, 2019, the Company made an additional $7.0 million investment in a private company. After this investment, the Company owns approximately 28.2% of the voting interest of the private company as an equity method investment. Effective October 1, 2019, the Company has significant influence over the investee due to its larger ownership percentage and its seat on the Board of Directors. The Company does not have unilateral decision making power, and therefore will not consolidate the investee. In the fourth quarter of 2019, we will remeasure the existing, minority interest investment based on the fair value prior to the additional investment and record the gain of approximately $3.2 million in Other income, net in the Consolidated Statements of Comprehensive Income.

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

The following information should be read in conjunction with the condensed consolidated financial statements and the accompanying notes included in Part I, Item 1 of this Report, and the "Risk Factors" included in Part I, Item 1A of our Annual Report on Form 10-K for the year ended December 31, 2018 (the 2018 10-K).

SAFE HARBOR CAUTIONARY STATEMENT

This quarterly report on Form 10-Q contains statements that are forward-looking statements under the Private Securities Litigation Reform Act of 1995. Forward-looking statements provide our current expectations of forecasts of future events. All statements other than statements of current or historical fact contained in this quarterly report, including statements regarding our future financial position, business strategy, impact of the reimbursement landscape, products including ARIES®, VERIGENE®, NxTAG®, Muse®, Guava®, easyCyte™, InCyte™, Amnis®, ImageStream®, FlowSight® and CellStream®, assay sales, consumable sales patterns and bulk purchases, budgets, system sales, anticipated gross margins, liquidity, cash flows, projected costs and expenses, taxes, deferred tax assets, regulatory approvals or the impact of laws or regulations applicable to us, plans and objectives of management for future operations, and impact of prior acquisitions or future acquisitions, integration and the expected benefit of our acquisitions are all forward-looking statements. The words "anticipate," "believe," "continue," "should," "estimate," "expect," "intend," "may," "plan," "projects," "will" and similar expressions as they relate to us, are intended to identify forward-looking statements. These statements are based on our current plans and actual future activities, and our financial condition and results of operations may be materially different from those set forth in the forward-looking statements as a result of known or unknown risks and uncertainties, including, among other things:

- concentration of our revenue in a limited number of direct customers and strategic partners, some of whom may experience decreased demand for their products utilizing or incorporating our technology, budget or finance constraints in the current economic environment, or periodic variability in their purchasing patterns or practices as a result of internal resource planning challenges;
- risks and uncertainties relating to market demand and acceptance of our products and technologies, including ARIES®, MultiCode®, NxTAG®, xMAP®, VERIGENE®, Muse®, Guava®, and Amnis® products;
- our ability to scale manufacturing operations and manage operating expenses, gross margins and inventory levels;

- our ability to obtain and enforce intellectual property protections on our products and technologies;
- the impact on our growth and future results of operations with respect to the loss of the LabCorp women's health business;
- our ability to successfully develop and launch new products in a timely manner;
- dependence on strategic partners for development, commercialization and distribution of products;
- risks and uncertainties associated with implementing our acquisition strategy, and our challenge to identify acquisition targets, including our ability to obtain financing on acceptable terms;
- our ability to integrate acquired companies or selected assets, including the flow cytometry assets recently acquired from EMD Millipore, into our consolidated business operations, and the ability to fully realize the benefits of our acquisitions;
- timing of and process for regulatory approvals;
- competition and competitive technologies utilized by our competitors;
- fluctuations in quarterly results due to a lengthy and unpredictable sales cycle, fluctuations in bulk purchases of consumables, fluctuations in product mix and the seasonal nature of some of our assays;
- our ability to comply with applicable laws, regulations, policies and procedures;
- the impact of the ongoing uncertainty in global finance markets and changes in government and government agency funding, including its effects on the capital spending policies of our partners and end users and their ability to finance purchases of our products;
- changes in principal members of our management staff;
- potential shortages, or increases in costs, of components or other disruptions to our manufacturing operations;
- our increasing dependency on information technology to enable us to improve the effectiveness of our operations and to monitor financial accuracy and efficiency;
- implementation, including any modification, of our strategic operating plans;
- uncertainty regarding the outcome or expense of any litigation brought against or initiated by us;
- risks relating to our foreign operations, including fluctuations in exchange rates, tariffs, customs and other barriers to importing/exporting materials and products in a cost-effective and timely manner; difficulties in accounts receivable collections; our ability to monitor and comply with foreign and international laws and treaties; and our ability to comply with changes in international taxation policies;
- budget or finance constraints in the current economic environment, or periodic variability in customer purchasing patterns or practices as a result of material resource planning challenges; and
- reliance on third party distributors for distribution of specific Luminex-developed and manufactured assay products.

Many of these risks, uncertainties and other factors are beyond our control and are difficult to predict. Any or all of our forward-looking statements in this quarterly report may turn out to be inaccurate. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our financial condition, results of operations, business strategy and financial needs. New factors could also emerge from time to time that could adversely affect our business. The forward-looking statements herein can be affected by inaccurate assumptions we might make or by known or unknown risks, uncertainties and assumptions, including the risks, uncertainties and assumptions outlined above and described in the 2018 10-K. In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances discussed in this quarterly report may not occur and actual results could differ materially from those anticipated or implied in the forward-looking statements. When you consider these forward-looking statements, you should keep in mind these risk factors and other cautionary statements in this quarterly report including in this "Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations" and in our other annual and periodic reports.

Our forward-looking statements speak only as of the date made. We undertake no obligation to publicly update or revise forward-looking statements, whether as a result of new information, future events or otherwise. All subsequent written and oral forward-looking statements attributable to us or persons acting on our behalf are expressly qualified in their entirety by the cautionary statements contained in this quarterly report.

Unless the context requires otherwise, references in this Quarterly Report on Form 10-Q to "Luminex," the "Company," "we," "us" and "our" refer to Luminex Corporation and its subsidiaries.

OVERVIEW

We develop, manufacture and sell proprietary biological testing technologies and products with applications throughout the life sciences industries, including diagnostics, pharmaceutical and research. These industries depend on a broad range of tests, called assays, to perform diagnostic testing and conduct life science research. We have established a position in several segments of the life sciences industries by developing and delivering products that satisfy a variety of customer needs in specific market segments, including multiplexing, accuracy, precision, sensitivity, specificity, reduction of labor and ability to test for proteins and nucleic acids. These needs are addressed by our proprietary technologies.

Multiplexing, the foundation of our Company, allows the end user in a laboratory to generate multiple laboratory results from a single sample with a single assay. This is important because our end user customers, which include laboratory professionals performing discovery and research, and clinical laboratories performing tests on patients as ordered by physicians and other laboratories, have a fundamental need to perform high quality testing as efficiently as possible. Until the availability of multiplexing technology, the laboratory professional had to perform one assay at a time in a sequential manner, and if additional testing was required on a sample, a second assay would be performed to generate the second result, and so on until all the necessary tests were performed.

Our xMAP Technology

Our xMAP technology is an open architecture, multiplexing technology that combines existing biological testing techniques with illumination, advanced digital signal processing, detection and proprietary software. With our technology, discrete assays are performed on the surface of color-coded microspheres. These microspheres are read in a compact analyzer that utilizes lasers or light emitting diodes (LEDs), detectors, charge-coupled device imaging and high-speed digital signal processing to simultaneously identify the assay and measure the individual assay results. The key features of xMAP technology include the following:

- Multi-analyte/multi-format

  xMAP technology has been designed to simultaneously perform up to 500 distinct assays in a single tube or well of a microtiter plate using only a small amount of sample. Moreover, unlike most existing technologies that are dedicated to only one type of assay, xMAP can perform multiple types of assays including enzymatic, genetic and immunologic tests on the same instrument platform.

- Flexibility/scalability

  xMAP technology allows for flexibility in customizing test panels. Panels can be modified to include new assays in the same tube by adding additional microsphere sets. It is also scalable, meaning that there is no change in the manufacturing process and only minimal changes to the labor required to produce a small or large number of microsphere-based tests.

- Both protein and nucleic acid applications on a single platform

  xMAP technology has an advantage due to its ability to analyze both proteins and nucleic acids. This allows customers to utilize a single platform to evaluate samples across more biological parameters and generate a more complete assessment of these samples. Alternative technologies are typically restricted to either proteins or nucleic acid, requiring customers to use two or more technologies from other vendors to get the same information.

- High throughput

  Our technology can perform up to 500 tests in a single well, permitting up to 96,000 tests to be detected in approximately one hour with only a small amount of sample. Rapid sample analysis permits efficient use for high-throughput applications.

- Ease of use

  Most xMAP-based assays are simple to perform. A test sample is added to a solution containing microspheres that have been coated with reagents. The solution is then processed through one of our xMAP Systems, which incorporate proprietary software to automate data acquisition and analysis in real-time.

- Cost-effective

  By performing multiple assays at one time, xMAP technology is designed to be cost-effective for customers compared to competitive techniques such as ELISA and real-time PCR. By analyzing only those assays in which a customer is interested, xMAP is also more cost-effective than most competing microarray technologies. In addition, microsphere-based assays are inexpensive compared to other technologies, such as chip-based microarrays.

Two types of microspheres, polystyrene microspheres and polystyrene magnetic microspheres, are both fundamental components of our xMAP technology. We purchase and manufacture microspheres and, in a proprietary process, dye them with varying intensities of proprietary dyes to achieve up to 500 distinct colors. The specific dye proportions permit each color-coded microsphere to be readily identified based on its distinctive fluorescent signature. Our customers create assays by attaching different biochemical reactants to each distinctly colored microsphere set. These unique reactants bind, or capture, specific substances present in the test sample. The microsphere sets can then be combined in test panels as required by the user, with a maximum of 500 tests per panel. Customers can order either standard microspheres or magnetic microspheres.

To perform an assay using xMAP technology on our systems, a researcher attaches biomarker detectors such as antibodies or nucleic acid oligos to one or more sets of color-coded microspheres, which are then mixed with a test sample. This mixture is injected into the xMAP analyzer, such as the Luminex 200 instrument, where the microspheres pass single-file in a fluid stream through two laser beams. The first laser excites the internal dyes that are used to identify the color of the microsphere and the test being performed on the surface of the microsphere. The second laser excites a fluorescent dye captured on the surface of the microspheres that is used to detect the result of the assay taking place. Our proprietary optics, digital signal processors and software record the fluorescent signature of each microsphere and compare the results to the known identity of that color-coded microsphere set. The results are analyzed and displayed in real-time with data stored on the computer database for reference, evaluation and analysis.

Our xMAP technology is currently being used within various segments of the life sciences industries, including the fields of drug discovery and development, and for clinical diagnostics, bio-defense, food safety and biomedical research.

We have a full range of instruments using our xMAP Technology: our LUMINEX® 100/200™ Systems offer 100-plex testing; our FLEXMAP 3D® System is our high-throughput, 500-plex testing system; and our MAGPIX® System provides 50-plex testing at a lower cost using imaging rather than flow cytometry. By using our xMAP technology, end users are able to be more efficient by generating multiple simultaneous results per sample. We believe that this technology may also offer advantages in other industries, such as in food safety, animal health and bio-defense/bio-threat markets. Using the xMAP products Luminex has available today, up to 500 simultaneous analyte results can be determined from a single sample.

Our Amnis/Guava® Technologies

We acquired EMD Millipore Corporation's flow cytometry portfolio (the Acquisition) on December 31, 2018, including the Amnis® and Guava® Technologies. Amnis Systems are a family of imaging flow cytometry products for cell-based analysis. With the proprietary Amnis ® charge-coupled device detection and time-delayed integration (CCD-TDI) technology, the CellStream® System provides fluorescence and small particle sensitivity in a highly customizable flow cytometer. FlowSight® and ImageStream® imaging flow cytometers combine the speed and sensitivity of flow cytometry with the functional detail and spatial information of microscopy. The Guava® portfolio of products, which are versatile, easy-to-use cytometry systems based on microcapillary fluidics technology, include the Muse® Cell Analyzer, a simple, compact, and affordable system for absolute cell counting, viability, and basic cell health analyses, and the Guava easyCyte™ System, a versatile benchtop platform for additional, multi-dimensional cell health and biological assessments.

The Acquisition expanded Luminex's existing offering of flow-based detection systems, which is centered around our innovative xMAP® multiplexing technology, with approximately 16,700 xMAP Systems sold worldwide (some of which may be retired or otherwise not in use). The results of operations for the Acquisition have been included in Luminex's consolidated financial statements beginning January 1, 2019.

Our Non-Automated Technologies

Our xTAG technology consists of several components, including multiplexed polymerase chain reaction (PCR) or target identification primers, DNA Tags, xMAP microspheres and data analysis software. xTAG technology permits the development of molecular diagnostic assays for clinical use by hospital and reference laboratories. xTAG technology has also been applied to human genetic assays, pharmacogenetic assays and infectious disease assays.

Our MultiCode technology is based upon a unique assay chemistry that is a flexible platform for both real-time PCR and multiplex PCR-based applications. MultiCode-based PCR assays are primarily used for the detection of infectious diseases and genetic-based conditions. We have multiple molecular diagnostic (MDx) assays based on the MultiCode chemistry. MultiCode products are based upon the unique MultiCode bases, isoC and isoG. The synthetic isoC:isoG DNA base pair differs from the naturally occurring base pairs in its hydrogen bonding pattern. As a result, the MultiCode bases, isoC and isoG, can only pair with each other, but can co-exist with naturally occurring nucleotide pairs. This property enables site-specific incorporation of the isobases during amplification. The MultiCode base pair is recognized by naturally occurring enzymes and can be used for the specific placement of reporter molecules and to increase the molecular recognition capabilities of hybridization-based assays. The MultiCode base pair enables solutions to complex molecular challenges that were previously not possible with natural nucleic acid alone.

We have multiple assay development activities ongoing and these activities are focused in the areas of infectious disease, human genetics and pharmacogenomics.

Our ARIES® Technology

The ARIES® System is our sample to answer platform for our MultiCode®-RTx technology, including In Vitro Diagnostic (IVD) assays. The ARIES® System is a clinical test system which automates and integrates extraction of nucleic acid from a clinical sample, performs real-time PCR, and detects multiple signals generated by target-specific probes. The ARIES® System is used with specific assays to measure multiple analytes indicative of infectious disease. The ARIES® System uses internal barcode scanning and other advanced features to minimize operator errors. Each independent module supports from one to six cassettes, allowing for both STAT and batch testing. The ARIES ® System can run both IVD and MultiCode® Analyte Specific Reagents (ASRs) simultaneously with a common Universal Assay Protocol.

Our VERIGENE Technology

Our offering in the molecular diagnostic market segment includes proprietary diagnostic tools that enable rapid and accurate detection of respiratory, gastrointestinal and bloodstream infections. Our U.S. Food and Drug Administration (FDA) cleared VERIGENE® Gram-Positive Blood Culture (BC-GP) and Gram-Negative Blood Culture (BC-GN) test panels for the early detection of pathogens associated with bloodstream infections are leading products in the high-growth bloodstream infection testing segment. In addition to detecting bacteria, these panels also detect yeast and identify antibiotic resistance markers. In contrast to traditional methodologies, which can take several days, these assays enable physicians to identify pathogens, including any associated resistance markers, and prescribe the most appropriate antibiotic regimen, all within 2.5 hours after identification of a positive blood culture. The ability for clinicians to make earlier, better informed therapeutic decisions results in improved patient outcomes and lower healthcare costs. Our VERIGENE product offering also includes FDA-cleared products for the detection of gastrointestinal and respiratory infections. These consist of a targeted product for the detection of *C. difficile*, as well as highly multiplexed molecular enteric, blood and respiratory pathogen panels which test for a wide spectrum of microorganisms often associated with these types of infections. With the combination of the ARIES® and VERIGENE platforms, Luminex offers customers automated molecular platforms for both syndromic and targeted molecular diagnostic testing.

The VERIGENE System is an automated multiplex-capable system that rapidly and accurately detects infectious pathogens and drug resistance markers. The VERIGENE System consists of: (i) VERIGENE Test Cartridges, which are single-use, self-contained test units, and (ii) VERIGENE instrumentation, including the VERIGENE Processor SP, which is a modular bench-top analyzer that combines automated nucleic acid extraction, purification, amplification (if needed), and hybridization in each module, as well as the VERIGENE Reader, which manages sample information and reads results from processed cartridges. Tests that run on the VERIGENE System are primarily designed to identify infections in the bloodstream, respiratory tract, and gastrointestinal tract.

The VERIGENE System utilizes advanced automation and proprietary chemistry to enable rapid sample to result detection of nucleic acid and protein targets. NanoGrid Technology, a unique gold nanoparticle probe chemistry, is the driving force behind all VERIGENE tests, providing a foundation for the VERIGENE System's menu of clinically meaningful diagnostics.

In addition to our menu of infectious disease tests, we are currently developing a next generation VERIGENE System, VERIGENE II, that we expect to deliver an improved user experience. This next generation system is designed to provide a reduced time to result, an improved user interface and a room temperature cartridge, all in a fully automated sample to result system with an optimized footprint. In addition, customers using this system will have the ability to select both individual and groups of targets on assays using *Flex* pricing. This approach to target selection allows customers to save money by only paying for the targets they wish to see, which will often align with healthcare standard of care guidelines, when available. If these results do not provide a conclusive diagnosis, additional targets that were tested for but not released can immediately be viewed for an incremental charge.

Our Market Approach

We primarily serve the life sciences industries by marketing products, including our specific testing equipment and assays, to various types of testing laboratories. We have a large base of installed systems that has grown primarily from the following:

- Placements made by customers within our Licensed Technologies Group (LTG) in which customers either:
  - license our xMAP technology and develop products that incorporate our xMAP technology into products that they then sell to end users, or
  - purchase our proprietary xMAP laboratory instrumentation and our proprietary xMAP microspheres and sell xMAP-based assays and/or xMAP-based testing services, which run on the xMAP instrumentation, and pay a royalty to us; and
- A direct sales force that focuses on the sale of molecular diagnostic assays that run on our systems.

As of September 30, 2019, Luminex had 81 strategic partners, of which 52 have released commercialized reagent-based products utilizing our technology. Our remaining partners are in various stages of development and commercialization of products that incorporate our technology. Luminex and these partners have sold approximately 16,700 xMAP-based instruments in laboratories worldwide as of September 30, 2019 (some of which may be retired or otherwise not in use). Our remaining LTG customers are in various stages of development and commercialization of products incorporating our technology.

A primary focus for our growth is the development and sale of molecular diagnostic assays utilizing our proprietary MultiCode® and VERIGENE technologies for use on our installed base of systems. We utilize a direct sales model for sales of these products, which is intended to take advantage of our increasing installed base of instruments. Our assays are primarily focused on multiplexed applications for the human molecular clinical diagnostics market. Our assays are also currently focused on three segments of the molecular diagnostic testing market: human genetics, personalized medicine and infectious diseases.

The following systems and assays are available on the market as of September 30, 2019:

	FDA		CE-IVD MARK	
	Clearance	Commercial Launch	Declaration	Commercial Launch
ARIES® HSV 1&2 Assay	☑	2015 - Q4	☑	2016 - Q1
ARIES® Flu A/B & RSV Assay	☑	2016 - Q2	☑	2016 - Q2
ARIES® Group B Streptococcus (GBS) Assay	☑	2017 - Q1	☑	2016 - Q4
ARIES® Bordetella Assay	☑	2017 - Q2	☑	2017 - Q3
ARIES® Norovirus Assay			☑	2017 - Q2
ARIES® C. Difficile Assay	☑	2017 - Q3	☑	2017 - Q3
ARIES® Group A Strep Assay	☑	2017 - Q4	☑	2017 - Q4
ARIES® MRSA Assay	☑	2019 - Q3		
NxTAG® Respiratory Pathogen Panel (RPP)	☑	2016 - Q1	☑	2015 - Q4
VERIGENE® Clostridium Difficile Test (CDF)	☑	2012 - Q4	☑	2013 - Q2
VERIGENE® Enteric Pathogens Test (EP)	☑	2014 - Q4	☑	2015 - Q4
VERIGENE® Respiratory Pathogens Flex Test (RP Flex)	☑	2015 - Q4	☑	2015 - Q2
VERIGENE® Gram-Negative Blood Culture Test (BC-GN)	☑	2014 - Q2	☑	2013 - Q1
VERIGENE® Gram-Positive Blood Culture Test (BC-GP)	☑	2012 - Q4	☑	2012 - Q1
xTAG® CYP2C19 Kit v3	☑	2013 - Q4	☑	2013 - Q4
xTAG® CYP2D6 Kit v3	☑	2011 - Q2	☑	2013 - Q2
xTAG® Cystic Fibrosis (CFTR) 39 Kit v2	☑	2009 - Q4	☑	2012 - Q1
xTAG® Cystic Fibrosis (CFTR) 60 Kit v2	☑	2010 - Q1		
xTAG® Cystic Fibrosis (CFTR) 71 Kit v2			☑	2009 - Q3
xTAG® Gastrointestinal Pathogen Panel (GPP)	☑	2013 - Q1	☑	2011 - Q2
xTAG® Respiratory Viral Panel (RVP)	☑	2008 - Q1	☑	2007 - Q4
xTAG® Respiratory Viral Panel (RVP) FAST v2			☑	2011 - Q4
Muse® Auto CD4/CD4% Reagent Kit			☑	2018 - Q4

We plan to submit additional assays to regulatory authorities in 2019, including the FDA and foreign equivalents, for market authorization in order to comply with established guidelines across the jurisdictions in which we participate.

Third Quarter 2019 Highlights

- Total sample to answer revenue growth increased 26% for the quarter ended September 30, 2019 over the third quarter of 2018.

- Royalty bearing sales on base end user sales increased approximately 12% over the third quarter of 2018 to more than $149 million for the quarter ended September 30, 2019.

- Royalty revenue was $13.0 million for the quarter ended September 30, 2019, representing an 8% increase over royalty revenue for the third quarter of 2018.

- Integration of the Acquisition was substantially completed.

- Received U.S. Food and Drug Administration (FDA) 510(k) clearance for the ARIES® MRSA Assay on September 25, 2019.

2018 Acquisition of EMD Millipore Corporation's flow cytometry portfolio

On December 31, 2018, we completed our acquisition of EMD Millipore Corporation's flow cytometry portfolio. The Acquisition expands our existing offering of flow-based detection systems, which is centered around our innovative xMAP® multiplexing technology, with approximately 16,700 xMAP Systems sold worldwide (some of which may be retired or otherwise not in use). MilliporeSigma's flow cytometry portfolio includes Amnis, a family of imaging flow cytometry products for cell-based analysis, as well as the Guava and Muse portfolio of products, which are economical systems based on microcapillary technologies. The results of operations for the Acquisition have been included in Luminex's consolidated financial statements beginning January 1, 2019.

We expect the gross margins on the acquired portfolio to negatively impact our consolidated gross margins; however, we expect synergies realized from the Acquisition, increased sales volumes and commercialization of the next generation Guava System to increase these gross margins in the long-term.

Material Customer Activity

As previously stated in our recent annual and quarterly filings, LabCorp has elected to develop the next iteration of its women's health products with another party and has indicated its ultimate intention to cease purchasing our Cystic Fibrosis (CF) products. While LabCorp extended its CF purchase commitment through 2021, we have already experienced the loss of the women's health portfolio and the loss or significant reduction of certain other products traditionally sold to LabCorp. These losses could have a material adverse effect on our growth and future results of operations if we are unable to effectively attract new customers, increase our sales with existing customers and/or add new products to our existing portfolio. During 2019, we expect an aggregate reduction of revenue from LabCorp of approximately $33 to $35 million as compared to fiscal 2018, of which $31 million has already been realized in the nine months ended September 30, 2019. We expect an additional revenue reduction of up to $7 million in 2020 as compared to 2019.

Consumables Sales and Royalty Revenue Trends

We have experienced significant fluctuations in consumable revenue over the past several years. Overall, the fluctuations were partially due to periodic changes in volume from our largest purchasing customers. On a quarterly basis, our largest customers account for approximately 70% of our total consumable sales volume. We expect these fluctuations to continue as the ordering patterns and inventory levels of our largest bulk purchasing partners remain variable. Additionally, even though we experience variability in consumable revenue, the key indicator of the success of our partners' commercialization efforts is the rising level of royalties and reported royalty-bearing sales.

Future Operations

We expect our areas of focus over the next twelve months to be:

- delivering on our revenue growth goals;

- accelerating development and commercialization of the assays on our sample to answer diagnostic systems;

- increasing the growth of our LTG revenue through enrichment of our existing partner relationships and the addition of new partners;

- completing development and commercialization of the next generation sample to answer system, VERIGENE II, our next generation xMAP System, SENSIPLEX, and our next generation Guava instrument, Guava Next Gen;

- improvement of ARIES® and VERIGENE gross margins;
- placements of our VERIGENE and ARIES® Systems, our sample to answer platforms and assays;
- maintenance and improvement of our existing products and the timely development, completion and successful commercial launch of our pipeline products;
- adoption and use of our platforms and consumables by our customers for their testing services;
- expansion and enhancement of our installed base of systems and our market position within our identified target market segments; and
- monitoring and mitigating the effect of the ongoing uncertainty in global finance markets and changes in government funding on planned purchases by end users.

We anticipate continued revenue concentration in our higher margin items (assays, consumables and royalties). Additionally, we believe that a sustained investment in research and development is necessary in order to meet the needs of our marketplace and provide a sustainable new product pipeline. We may experience volatility in research and development expenses as a percentage of revenue on a quarterly basis as a result of the timing of development expenses, clinical validation and clinical trials in advance of the commercial launch of our new products.

CRITICAL ACCOUNTING POLICIES

The discussion and analysis of our financial condition and results of operations are based upon our condensed consolidated financial statements, which have been prepared in accordance with United States generally accepted accounting principles for interim financial statements. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. We base our 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 sources. Estimates and assumptions are reviewed periodically. Actual results may differ from these estimates under different assumptions or conditions.

Management believes there have been no significant changes during the quarter ended September 30, 2019 to the items that we disclosed as our critical accounting policies and estimates in Management's Discussion and Analysis of Financial Condition and Results of Operations in the 2018 10-K, with the exception of the adoption of the new lease standard in the first quarter of 2019, which is described in Note 13 - Commitments and Contingencies and Note 14 - Recent Accounting Pronouncements.

RESULTS OF OPERATIONS

THREE MONTHS ENDED SEPTEMBER 30, 2019 COMPARED TO THREE MONTHS ENDED SEPTEMBER 30, 2018

Selected consolidated financial data for the three months ended September 30, 2019 and 2018 is as follows:

	Three Months Ended September 30,			
	2019	2018	Variance	Variance (%)
	(dollars in thousands)			
Revenue	$ 78,673	$ 72,445	$ 6,228	9 %
Gross profit	$ 41,840	$ 44,256	$ (2,416)	(5)%
Gross margin percentage	53%	61%	(8)%	N/A
Operating expenses	$ 47,562	$ 40,502	$ 7,060	17 %
Income from operations	$ (5,722)	$ 3,754	$ (9,476)	(252)%
Net income (loss)	$ (5,250)	$ 1,737	$ (6,987)	(402)%

Total revenue increased by 9% to $78.7 million for the three months ended September 30, 2019 from $72.4 million for the comparable period in 2018. The Company experienced increases in system sales, consumable sales, royalty revenue and service revenue, mainly attributable to the addition of our newly acquired flow cytometry business, which comprised 11% of total revenue in the third quarter of 2019. Excluding the impact of the Acquisition, revenue decreased 3% from the prior year quarter, primarily attributable to the decrease in LabCorp sales in non-automated assays. Assay revenue overall declined 13%, driven by decreases in our non-automated assay revenue, partially offset by increases in our automated assay revenue. Non-automated assay revenue comprised 46% of total assay revenue for the three months ended September 30, 2019 compared to 64% for the comparable period in 2018. Automated assay revenue, which consists of VERIGENE and ARIES® assays, grew 26% to $15.5 million for the three months ended September 30, 2019 from the comparable period in 2018.

The following table presents our revenues disaggregated by revenue source for the three months ended September 30, 2019 and 2018 as follows:

	Three Months Ended September 30,			
	2019	2018	Variance	Variance (%)
	(dollars in thousands)			
System sales	$ 15,239	$ 10,026	$ 5,213	52 %
Consumable sales	13,359	11,627	1,732	15 %
Royalty revenue	12,993	12,081	912	8 %
Assay revenue	29,468	33,747	(4,279)	(13)%
Service revenue	5,349	3,015	2,334	77 %
Other revenue	2,265	1,949	316	16 %
	$ 78,673	$ 72,445	$ 6,228	9 %

We continue to have revenue concentration in a limited number of customers. Five customers accounted for 32% of total revenue in the third quarter of 2019, down from 43% in the third quarter of 2018. In particular, our two largest customers by revenue accounted for 20% of revenue in the third quarter of 2019 (13% and 7%, respectively), a decrease from 28% of revenue from the third quarter of 2018 (14% and 14%, respectively). This decrease is mainly attributable to the reduction of LabCorp sales and we anticipate this trend to continue as discussed above under “Material Customer Activity.” No other customer accounted for more than 7% of third quarter total revenue in 2019 or 2018.

Revenue from the sale of systems and peripheral components increased 52% to $15.2 million for the three months ended September 30, 2019, from $10.0 million for the three months ended September 30, 2018, primarily resulting from the Acquisition, which contributed $5.5 million of system revenue in the three months ended September 30, 2019. This was partially offset by lower system placements in the current quarter as compared to the prior year quarter. We sold 255 multiplexing analyzers in the three months ended September 30, 2019, as compared to 284 multiplexing analyzers sold in the comparable period in 2018. This decrease was primarily driven by large purchase orders by our partners in the prior year quarter, which did not repeat at the same level in the current year quarter. As of September 30, 2019, total multiplexing analyzer shipments since inception is approximately 16,700, some of which may be retired or otherwise not in use. For the three months ended September 30, 2019, our five highest selling partners accounted for 222 systems, or 87%, of total multiplexing analyzers sold, whereas, our five highest selling partners in the comparable period in 2018 accounted for 216, or 76%, of total multiplexing analyzers sold.

Consumable sales, comprised of microspheres and sheath fluid, increased 15%, or $1.7 million, to $13.4 million in the three months ended September 30, 2019 from $11.6 million in the comparable period in 2018. During the third quarter of 2019, we had 19 bulk purchases of consumables totaling approximately $10.2 million (76% of total consumable revenue), ranging from $2.5 million to $0.1 million, as compared with 16 bulk purchases totaling approximately $8.9 million (77% of total consumable revenue) in the comparable period in 2018. The increase in revenue from bulk purchases in the third quarter of 2019 was the primary driver of the increase in consumable revenue from the prior year quarter. We expect fluctuations in consumable sales on an ongoing basis. Partners who reported royalty-bearing sales accounted for $7.8 million, or 58%, of consumable sales for the three months ended September 30, 2019 compared to $7.3 million, or 63%, of the total consumable sales for the three months ended September 30, 2018.

Royalty revenue, which results from our partners selling products or testing services that incorporate our technology, increased 8% to $13.0 million for the three months ended September 30, 2019, from $12.1 million for the three months ended September 30, 2018. This increase was primarily the result of higher base royalties of $1.4 million, partially offset by lower minimums and royalty audit findings of $0.5 million. We believe this increase was mainly the result of menu expansion and increased utilization of our partners' assays on our technology. We expect modest fluctuations in the royalties submitted quarter to quarter, based upon the varying contractual terms, differing reporting and payment requirements, and the addition of new partners. Our partners' end user sales may reflect volatility from quarter to quarter and, therefore, that same volatility is reflected in our reported royalty revenues on a quarterly basis.

Assay revenue decreased 13% to $29.5 million for the three months ended September 30, 2019, from $33.7 million for the three months ended September 30, 2018, primarily attributable to the decline in LabCorp sales. Excluding this impact, assay revenue increased 1% for the three months ended September 30, 2019 from the comparable period in 2018, and included a modest increase in the third quarter of 2019 resulting from the Acquisition. Our sample to answer assay revenue, which consists of VERIGENE and ARIES® assay sales, grew 26% to $15.5 million for the three months ended September 30, 2019, from $12.3 million on September 30, 2018. These increases were offset by a reduction in our non-automated testing assays, which decreased by 38%, driven mainly by the reduction in LabCorp's sales of approximately $6.9 million to $2.7 million in the three months ended September 30, 2019, from $9.6 million in the three months ended September 30, 2018. LabCorp, our largest assay customer by revenue, accounted for 9% of total assay revenue for the three months ended September 30, 2019 compared to 28% for the three months ended September 30, 2018. No other customer accounted for more than 5% of total assay revenue during those periods. As discussed above under "Material Customer Activity" and previously disclosed in our prior annual and quarterly reports, our largest assay customer, LabCorp, has developed the next iteration of their women's health portfolio with another party, which negatively impacted our assay revenue in 2018 through the third quarter of 2019.

Service revenue, comprised of extended warranty contracts earned ratably over the term of a contract and time and materials for billable service work not under an extended warranty contract, increased 77% to $5.3 million during the three months ended September 30, 2019, from $3.0 million in the three months ended September 30, 2018. This increase was primarily driven by the Acquisition, which contributed more than $2.0 million of service revenue in the third quarter of 2019. Absent the impact of the Acquisition, service revenue increased 11% for the three months ended September 30, 2019 from the comparable period in 2018, primarily driven by an increase in the number of systems covered under extended service agreements. On September 30, 2019, we had more than 2,500 Luminex systems covered under extended service agreements and $6.1 million in deferred revenue related to those contracts. On September 30, 2018, we had approximately 2,300 Luminex systems covered under extended service agreements and $5.4 million in deferred revenue related to those contracts. On a consolidated basis, total deferred revenue was $9.0 million for the three months ended September 30, 2019, including approximately 517 flow cytometry systems covered under extended service agreements gained through the Acquisition.

Other revenue, which includes training revenue, shipping revenue, miscellaneous part sales, amortized license fees, milestone payments and revenue from agreements with U.S. government agencies, increased to $2.3 million for the three months ended September 30, 2019 compared to $1.9 million for the three months ended September 30, 2018, primarily driven by the Acquisition.

Gross Profit. Gross profit decreased 5% to $41.8 million for the three months ended September 30, 2019, as compared to $44.3 million for the three months ended September 30, 2018. Gross margin (gross profit as a percentage of total revenue) decreased to 53% for the three months ended September 30, 2019, from 61% for the three months ended September 30, 2018. This decrease in gross margin was primarily attributable to: (i) the decline in LabCorp's assay purchases, which typically carry a higher gross margin, (ii) the absorption of higher manufacturing costs across our legacy products, and (iii) the increase in sample to answer assay revenue, which historically carries a lower gross margin. We anticipate continued fluctuation in gross margin and related gross profit primarily as a result of variability in consumable and system purchases and seasonality effects inherent in our assay revenue. For the three months ended September 30, 2019, our acquired flow cytometry margins improved a few percentage points over the prior quarter.

Research and Development Expense. Research and development expense increased to $13.3 million, or 17% of total revenue, for the three months ended September 30, 2019, from $12.0 million, or 17% of total revenue, in the comparable period in 2018. The increase in research and development expenses reflects the addition of the acquired flow cytometry personnel and related expenses, partially offset by lower direct material expenses stemming primarily from VERIGENE II development. Research and development headcount as of September 30, 2019 was 230, including 34 flow cytometry employees, as compared to 195 as of September 30, 2018. The focus of our research and development activities is the development and commercialization of the VERIGENE II System, and associated assays, the development of the SENSIPLEX System, and the development of the Guava Next Gen System.

Selling, General and Administrative Expense. Selling, general and administrative expenses, excluding the amortization of acquired intangible assets, increased to $31.4 million for the three months ended September 30, 2019, from $26.3 million for the comparable period in 2018. The increase over the prior year quarter was primarily attributable to the addition of the acquired flow cytometry expenses, in addition to higher personnel costs. Selling, general and administrative headcount at September 30, 2019 was 486, including 86 flow cytometry employees, as compared to 368 on September 30, 2018. As a percentage of revenue, selling, general and administrative expense, excluding the amortization of acquired intangible assets, was 40% for the three months ended September 30, 2019, up from 36% in the comparable period in 2018.

Income taxes. Our effective tax rate for the three months ended September 30, 2019 was 8%, reflecting a $0.5 million benefit, as compared to an expense of 54%, or $2.0 million, for the three months ended September 30, 2018. Absent significant discrete items, we expect our consolidated full year effective tax rate to be between 10% to 20%. We continue to assess our business model and its impact in various tax jurisdictions.

NINE MONTHS ENDED SEPTEMBER 30, 2019 COMPARED TO NINE MONTHS ENDED SEPTEMBER 30, 2018

Selected consolidated financial data for the nine months ended September 30, 2019 and 2018 is as follows:

	Nine Months Ended September 30,			
	2019	2018	Variance	Variance (%)
	(dollars in thousands)			
Revenue	$ 244,137	$ 234,685	$ 9,452	4 %
Gross profit	$ 132,874	$ 147,150	$ (14,276)	(10)%
Gross margin percentage	54%	63%	(9)%	N/A
Operating expenses	$ 147,936	$ 120,272	$ 27,664	23 %
Income from operations	$ (15,062)	$ 26,878	$ (41,940)	(156)%
Net income	$ (7,221)	$ 20,803	$ (28,024)	(135)%

Total revenue increased by 4% to $244.1 million for the nine months ended September 30, 2019 from $234.7 million for the comparable period in 2018. The Company experienced increases in system sales, consumable sales, royalty revenue and service revenue primarily attributable to the addition of our newly acquired flow cytometry business, which comprised 14% of total revenue in the first nine months of 2019, as well as increases in our automated assay revenue. These increases were partially offset by a decrease in our non-automated assay revenue, mainly attributable to the decrease in LabCorp sales. Non-automated assay revenue comprised 46% of total assay revenue for the nine months ended September 30, 2019 compared to 67% for the comparable period in 2018. Automated assay revenue, which consists of VERIGENE and ARIES® assays, grew 23% to $49.1 million for the nine months ended September 30, 2019 from the comparable period in 2018.

The following table presents our revenues disaggregated by revenue source for the nine months ended September 30, 2019 and 2018 as follows:

	Nine Months Ended September 30,			
	2019	2018	Variance	Variance (%)
	(dollars in thousands)			
System sales	$ 49,503	$ 29,777	$ 19,726	66 %
Consumable sales	36,819	34,466	2,353	7 %
Royalty revenue	39,997	35,887	4,110	11 %
Assay revenue	95,654	119,762	(24,108)	(20)%
Service revenue	16,762	8,934	7,828	88 %
Other revenue	5,402	5,859	(457)	(8)%
	$ 244,137	$ 234,685	$ 9,452	4 %

We continue to have revenue concentration in a limited number of customers. Five customers accounted for 30% of total revenue in the first nine months of 2019, down from 44% in the first nine months of 2018. In particular, our two largest customers by revenue accounted for approximately 18% of 2019 revenue (12% and approximately 6%, respectively), a decrease from 31% of 2018 revenue (18% and 13%, respectively). This decrease is mainly attributable to the reduction of LabCorp sales and we anticipate this trend to continue as discussed above under "Material Customer Activity." No other customer accounted for more than 7% of total revenue in the first nine months of 2019 or 2018.

Revenue from the sale of systems and peripheral components increased 66% to $49.5 million for the nine months ended September 30, 2019, from $29.8 million for the nine months ended September 30, 2018, primarily as a result of the Acquisition, which contributed approximately $23.5 million of system revenue in the nine months ended September 30, 2019. This increase was partially offset by lower system placements of multiplexing analyzers in the nine months ended September 30, 2019. We sold 684 multiplexing analyzers in the nine months ended September 30, 2019, as compared to 863 multiplexing analyzers sold in the comparable period in 2018. This decrease was primarily driven by large purchase orders by our partners in the prior year, which did not repeat at the same level in 2019. As of September 30, 2019, total multiplexing analyzer shipments since inception is approximately 16,700, some of which may be retired or otherwise not in use. For the nine months ended September 30, 2019, our five highest selling partners accounted for 572 systems, or 84%, of total multiplexing analyzers sold, whereas, our five highest selling partners in the comparable period in 2018 accounted for 669, or 78%, of total multiplexing analyzers sold.

Consumable sales, comprised of microspheres and sheath fluid, increased $2.4 million to $36.8 million in the nine months ended September 30, 2019 from $34.5 million for the nine months ended September 30, 2018. During the first nine months of 2019, we had 51 bulk purchases of consumables totaling approximately $27.3 million (74% of total consumable revenue), ranging from $3.0 million to $0.1 million, as compared with 50 bulk purchases totaling approximately $25.8 million (75% of total consumable revenue) in the comparable period in 2018. The increase in revenue from bulk purchases in the nine months ended September 30, 2019 was the primary driver of the increase in consumable revenue from the prior year period. We expect fluctuations in consumable sales on an ongoing basis. Partners who reported royalty-bearing sales accounted for $24.5 million, or 67%, of consumable sales for the nine months ended September 30, 2019 compared to $23.0 million, or 67%, of the total consumable sales for the nine months ended September 30, 2018.

Royalty revenue, which results from our partners selling products or testing services that incorporate our technology, increased 11% to $40.0 million for the nine months ended September 30, 2019, from $35.9 million for the nine months ended September 30, 2018. This increase was primarily the result of higher base royalties of $4.0 million, which we believe was primarily the result of menu expansion and increased utilization of our partners' assays on our technology. We expect modest fluctuations in the royalties submitted quarter to quarter based upon the varying contractual terms, differing reporting and payment requirements, and the addition of new partners. Our partners' end user sales may reflect volatility from quarter to quarter and, therefore, that same volatility is reflected in our reported royalty revenues on a quarterly basis.

Assay revenue decreased 20% to $95.7 million for the nine months ended September 30, 2019, from $119.8 million for the nine months ended September 30, 2018, primarily attributable to the decline in LabCorp sales. Excluding this impact, assay revenue increased 9% for the nine months ended September 30, 2019 compared to the same prior year period, driven in part by the Acquisition which made up 31% of this increase. Our sample to answer assay revenue, which consists of VERIGENE and ARIES® assay sales, grew 23%, to $49.1 million for the nine months ended September 30, 2019, from $39.8 million for the nine months ended September 30, 2018. These increases were offset by reductions in our non-automated testing assays, which decreased by 45%, driven mainly by the reduction in LabCorp's sales of $31.2 million to $9.5 million in the nine months ended September 30, 2019, from $40.7 million in the nine months ended September 30, 2018. LabCorp, our largest assay customer by revenue, accounted for 10% of total assay revenue for the nine months ended September 30, 2019 compared to 34% for the nine months ended September 30, 2018. No other customer accounted for more than 5% of total assay revenue during these periods. As discussed above under "Material Customer Activity" and previously disclosed in our prior annual and quarterly reports, our largest assay customer, LabCorp, has developed the next iteration of their women's health portfolio with another party, which negatively impacted our assay revenue in 2018 and through the first nine months of 2019.

Service revenue, comprised of extended warranty contracts earned ratably over the term of a contract and time and materials for billable service work not under an extended warranty contract, increased 88% to $16.8 million during the nine months ended September 30, 2019, from $8.9 million in the nine months ended September 30, 2018. This increase was primarily driven by the Acquisition, which contributed more than $6.9 million of service revenue in the first nine months of 2019. Absent the impact of the Acquisition, service revenue increased 10% for the nine months ended September 30, 2019 from the comparable period in 2018, primarily driven by an increase in the number of systems covered under extended service agreements. On September 30, 2019, we had more than 2,500 Luminex systems covered under extended service agreements and $6.1 million in deferred revenue related to those contracts. On September 30, 2018, we had approximately 2,300 Luminex systems covered under extended service agreements and $5.4 million in deferred revenue related to those contracts. On a consolidated basis, total deferred revenue was $9.0 million for the nine months ended September 30, 2019, including approximately 517 flow cytometry systems covered under extended service agreements gained through the Acquisition.

Other revenue, which includes training revenue, shipping revenue, miscellaneous part sales, amortized license fees, milestone payments and revenue from agreements with U.S. government agencies, decreased to $5.4 million for the nine months ended September 30, 2019 compared to $5.9 million for the nine months ended September 30, 2018, primarily driven by lower parts sales and an increase in amounts paid towards global purchasing organizations, which are accounted for as a reduction in revenue.

Gross Profit. Gross profit decreased to $132.9 million for the nine months ended September 30, 2019, as compared to $147.2 million for the nine months ended September 30, 2018. Gross margin (gross profit as a percentage of total revenue) decreased to 54% for the nine months ended September 30, 2019, from 63% for the nine months ended September 30, 2018. This decrease in gross margin was primarily attributable to: (i) the decline in LabCorp's assay purchases, which typically carry a higher gross margin, (ii) the absorption of higher manufacturing costs across our legacy products, (iii) the absorption of the Acquisition and the related acquisition accounting adjustments, which included expenses of $1.1 million for the step-up in inventory to fair value, and $0.7 million in other acquisition-related accounting adjustments associated with the acquired deferred service revenue in the nine months ended September 30, 2019, and (iv) the increase in sample to answer assay revenue, which historically carries a lower gross margin. These impacts were partially offset by a favorable change in sales mix from higher royalty revenue and consumable sales, which typically carry a higher gross margin. We anticipate continued fluctuation in gross margin and related gross profit primarily as a result of variability in consumable and system purchases and seasonality effects inherent in our assay revenue. Our acquired flow cytometry margins were approximately 42% for the nine months ended September 30, 2019. However, we expect these margins to improve in the balance of the year, as the related acquisition accounting adjustments mentioned above and one-time integration costs will not recur.

Research and Development Expense. Research and development expense increased to $43.3 million, or 18% of total revenue, for the nine months ended September 30, 2019, from $34.0 million, or 14% of total revenue, in the comparable period in 2018. The increase in research and development expenses reflects the addition of the acquired flow cytometry personnel and related expenses, higher direct material expenses driven primarily by the VERIGENE II assay development, and development of the SENSIPLEX and the Guava Next Gen Systems, and higher personnel related expenses (mainly driven by annual merit increases). Research and development headcount as of September 30, 2019 was 230, including 34 flow cytometry employees, as compared to 195 as of September 30, 2018. The focus of our research and developments activities is the development and commercialization of the VERIGENE II, and associated assays, the development of the SENSIPLEX, and the development of the Guava Next Gen System.

Selling, General and Administrative Expense. Selling, general and administrative expenses, excluding the amortization of acquired intangible assets, increased to $96.1 million for the nine months ended September 30, 2019, from $79.8 million for the comparable period in 2018. The increase was primarily attributable to the addition of the acquired flow cytometry expenses, in addition to higher personnel costs, and stock compensation expense in the current year. Selling, general and administrative headcount at September 30, 2019 was 486, including 86 flow cytometry employees, as compared to 368 on September 30, 2018. As a percentage of revenue, selling, general and administrative expense, excluding the amortization of acquired intangible assets, was 39% for the nine months ended September 30, 2019, up from 34% in the comparable period in 2018.

Other income, net. Other income, net, decreased $0.6 million for the nine months ended September 30, 2019, from the comparable period in 2018, primarily from (i) a nonrecurring dividend payment of $0.4 million from one of our minority interest investments in the nine months ended September 30, 2018 that did not recur in 2019, and (ii) a $0.2 million impairment of one of our cost-method investments which was recorded in the nine months ended September 30, 2019.

Income taxes. Our effective tax rate for the nine months ended September 30, 2019 was a benefit of 52%, or $7.9 million, as compared to an expense of 24%, or $6.5 million, for the nine months ended September 30, 2018. The 52% benefit includes a $6.6 million discrete item from the first half of 2019, for a reduction in unrecognized tax benefits related to the U.S. transition tax as a result of an IRS ruling for certain aspects of the calculation of our Canadian subsidiary's earnings. Absent significant discrete items, we expect our consolidated full year effective tax rate to be between 10% to 20%. We continue to assess our business model and its impact in various tax jurisdictions.

LIQUIDITY AND CAPITAL RESOURCES

	September 30, 2019	December 31, 2018
	(in thousands)	
Cash and cash equivalents	$ 66,051	$ 76,441

On September 30, 2019, we held cash and cash equivalents of $66.1 million and had working capital of $142.4 million. On December 31, 2018, we held cash and cash equivalents of $76.4 million and had working capital of $151.4 million. Cash and cash equivalents decreased by $10.4 million during the nine months ended September 30, 2019. The decrease in cash and cash equivalents from December 31, 2018 is primarily attributable to purchases of property, plant and equipment of $13.1 million and dividends of $8.1 million offset by net cash provided by operating activities of $8.2 million and proceeds from the issuance of common stock of $2.5 million.

We have funded our operations to date primarily through cash generated from operations and the issuance of equity securities (in conjunction with an initial public offering in 2000, subsequent option exercises, and our follow-on public offering in 2008). Our cash reserves are held directly or indirectly in a variety of short-term, interest-bearing instruments, including non-government sponsored debt securities. We do not have any investments in asset-backed commercial paper, auction rate securities, or mortgage-backed or sub-prime style investments.

Cash provided by (used in) operations, investing and financing activities was $8.2 million, $(11.2) million and $(7.7) million, respectively for the nine months ended September 30, 2019.

Our future capital requirements will depend on a number of factors, including our success in developing and expanding markets for our products, payments under possible future strategic arrangements, continued progress of our research and development of potential products, the timing and outcome of regulatory approvals, the need to acquire licenses to new technology, costs associated with strategic acquisitions including acquisition and integration costs and assumed liabilities, the status of competitive products and potential costs associated with both protecting and defending our intellectual property. Additionally, actions taken as a result of the ongoing internal evaluation of our business could result in expenditures not currently contemplated in our estimates for 2020.

On December 31, 2018, the Company committed to purchasing the remaining inventory relating to the Acquisition from MilliporeSigma at the end of the Manufacturing and Supply Agreement and Transitional Service Agreement related to the Acquisition. We completed the committed inventory purchases in the third quarter of 2019.

Our short-term projects that are expected to require significant capital to complete include (i) our current in-process research and development of the next generation VERIGENE System, VERIGENE II, on which we began clinical trials in May 2018, (ii) the next generation xMAP System, SENSIPLEX and (iii) our in-process research and development of the Guava Next Gen System. We believe VERIGENE II, SENSIPLEX and Guava Next Gen will all launch commercially in 2020. The estimated aggregate cost to complete these projects, including completion of development of the systems, cartridge, software and the initial assays, validation, verification, clinical trials and regulatory submission, is approximately $2.5 million and is included in our research and development budget for 2019 and 2020. We believe that our existing cash and cash equivalents are sufficient to fund our operating expenses, capital equipment requirements and other expected liquidity requirements for the coming twelve months. Factors that could affect our capital requirements, in addition to those listed above, include, without limitation: (i) continued collections of accounts receivable consistent with our historical experience; (ii) our ability to manage our inventory levels consistent with past practices; (iii) volatility in our key partners' consumable purchasing patterns; (iv) execution of partnership agreements that include significant up-front license fees; (v) execution of our stock repurchase and dividend programs from time to time and (vi) executing strategic investment or acquisition agreements requiring significant cash consideration. See also the "Safe Harbor Cautionary Statement" included in this report and the risk factors in the 2018 10-K and our other filings with the SEC.

In February 2017, the Board of Directors initiated a cash dividend program to pay a regular quarterly cash dividend. The timing and amount of future dividends and stock repurchases will vary based on a number of factors, including future capital requirements for strategic transactions, the availability of financing on acceptable terms, debt service requirements, changes to applicable tax laws and corporate laws, changes to our business model and periodic determination by our Board of Directors that cash dividends are in the best interests of stockholders and are in compliance with applicable laws and agreements of the Company. On February 8, 2019, we announced that our Board of Directors declared a quarterly cash dividend of $0.06 per share of common stock which was paid to shareholders of record as of the close of business on March 21, 2019 on April 11, 2019. On May 21, 2019, we announced for the tenth consecutive quarter that our Board of Directors declared a quarterly cash dividend of $0.06 per share of common stock, which was paid to shareholders of record as of the close of business on June 20, 2019 on July 11, 2019. On July 31, 2019, we announced that our Board of Directors declared an increased quarterly cash dividend of $0.09 per share of common stock, which was paid to shareholders of record as of the close of business on September 26, 2019 on October 17, 2019.

As previously stated in our recent annual and quarterly filings, LabCorp has elected to develop the next iteration of its women's health products with another party and has indicated its ultimate intention to cease purchasing our CF products. While LabCorp extended its CF purchases through 2021, we have already experienced the loss of the women's health portfolio and the loss or significant reduction of certain other products traditionally sold to LabCorp. These losses could have a material adverse effect on our growth and future results of operations if we are unable to effectively attract new customers, increase our sales with existing customers and/or add new products to our existing portfolio. During 2019, we expect an aggregate reduction of revenue from LabCorp of approximately $33 to $35 million as compared to fiscal 2018, of which $31 million has already been realized in the nine months ended September 30, 2019.

We hold cash and cash equivalents at various foreign subsidiaries. As a result of reductions to the U.S. taxation of dividends from foreign subsidiaries under the Tax Cuts and Jobs Act of 2017 and continued profitability of our Canadian subsidiary, in future years we may repatriate earnings of our Canadian subsidiary. The cash and cash equivalents held by this subsidiary may be more readily available to meet domestic cash requirements in the next year, but will continue to be subject to foreign withholding tax that would be incurred upon repatriation. We anticipate that cash and cash equivalents held by all other foreign subsidiaries will continue to be permanently reinvested and may not be readily available to meet domestic cash requirements.

To the extent our capital resources are insufficient to meet future capital requirements, we will have to raise additional funds to continue the development and deployment of our technologies, or to supplement our position through strategic acquisitions. There can be no assurance that debt or equity funds will be available on favorable terms, if at all. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of those securities could result in dilution to our stockholders. Moreover, incurring debt financing could result in a substantial portion of our operating cash flow being dedicated to the payment of principal and interest on such indebtedness, could render us more vulnerable to competitive pressures and economic downturns and could impose restrictions on our operations. If adequate funds are not available, we may be required to curtail operations significantly or to obtain funds through entering into agreements on unattractive terms.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Interest Rate Risk. Our interest income is sensitive to changes in the general level of domestic interest rates. A 50 basis point fluctuation from average investment returns at September 30, 2019 would yield a less than0.5% variance in overall investment return, which would not have a material adverse effect on our financial condition.

Foreign Currency Risk. Our international business is subject to risks, including, but not limited to: foreign exchange rate volatility, differing tax structures, unique economic conditions, other regulations and restrictions and changes in political climate. Accordingly, our future results could be materially and adversely impacted by changes in these and other factors.

As of September 30, 2019, as a result of our foreign operations, we have costs, assets and liabilities that are denominated in foreign currencies, primarily Canadian dollars and to a lesser extent the Euro, Renminbi and Yen. For example, some fixed asset purchases and certain expenses are denominated in Canadian dollars while sales of products are primarily denominated in U.S. dollars. All transactions in our Netherlands and Japanese subsidiaries are denominated in Euros and Yen, respectively. All transactions, with the exception of our initial capital investment, in our Chinese subsidiary are denominated in Renminbi. As a consequence, movements in exchange rates could cause our foreign currency denominated expenses to fluctuate as a percentage of net revenue, affecting our profitability and cash flows. A significant majority of our revenues are denominated in U.S. dollars. The impact of foreign exchange on foreign denominated balances will vary in relation to changes between the U.S. dollar, Canadian dollar, Euro, Yen and Renminbi exchange rates. A 10% change in all of these exchange rates in relation to the U.S. dollar would result in a statement of comprehensive income impact of approximately $1.3 million on foreign currency denominated asset and liability balances as of September 30, 2019. As a result of our efforts to expand globally, in the future we will be exposed to additional foreign currency risk in multiple currencies; however, at this time, our exposure to foreign currency fluctuations is not material. We regularly assess the market to determine if additional strategies are appropriate to mitigate future risks.

In addition, the indirect effect of fluctuations in interest rates and foreign currency exchange rates could have a material adverse effect on our business financial condition and results of operations. For example, currency exchange rate fluctuations could affect international demand for our products. In addition, interest rate fluctuations could affect our customers' buying patterns. Furthermore, interest rate and currency exchange rate fluctuations may broadly influence the United States and foreign economies resulting in a material adverse effect on our business, financial condition and results of operations. As a result, we cannot give any assurance as to the effect that future changes in foreign currency rates will have on our consolidated financial position, results of operations or cash flows. Our aggregate foreign currency transaction loss was approximately $59,000 for the quarter ended September 30, 2019.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

We maintain disclosure controls and procedures, as defined in Rule 13a-15(e) promulgated under the Securities Exchange Act of 1934, as amended (Exchange Act), which are designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms and that such information is accumulated and communicated to the Company's management, including the Company's Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. We carried out an evaluation, under the supervision and with the participation of the Company's management, including the Company's Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of the Company's disclosure controls and procedures as of the end of the period covered by this quarterly report. Based on the evaluation and criteria of these disclosure controls and procedures, the Chief Executive Officer and Chief Financial Officer concluded that the Company's disclosure controls and procedures were effective at a reasonable assurance level and designed to ensure that material information relating to the Company and its subsidiaries would be made known to such officers on a timely basis.

Changes in Internal Control Over Financial Reporting

We have finalized the integration of the Acquisition into our system of internal controls over financial reporting. Other than the foregoing, there have been no changes in our internal control over financial reporting identified in connection with the evaluation required by Exchange Act Rule 13a-15(d) during the quarter ended September 30, 2019 that have materially affected or are reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

When and if it appears probable in management's judgment, and based upon consultation with outside counsel, that we will incur monetary damages or other costs in connection with any claims or proceedings, and such costs can be reasonably estimated, we record the estimated liability in the financial statements. If only a range of estimated losses can be estimated, we record an amount within the range that, in management's judgment, reflects the most likely outcome; if none of the estimates within that range is a better estimate than any other amount, we record the liability at the low end of the range of estimates. Any such accrual would be charged to expense in the appropriate period. We disclose significant contingencies when the loss is not probable and/or the amount of the loss is not estimable, when we believe there is at least a reasonable possibility that a loss has been incurred. We recognize costs associated with legal proceedings in the period in which the services were provided. No material legal proceedings are known to be pending as of September 30, 2019.

ITEM 1A. RISK FACTORS

Reference is made to the factors set forth under the caption "Safe Harbor Cautionary Statement" in Part I, Item 2 of this report and other risk factors described in Part I, Item 1A of the 2018 10-K. There have been no material changes from the risk factors previously disclosed in the2018 10-K.

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

The stock repurchase activity for the third quarter of2019 was as follows:

ISSUER PURCHASES OF EQUITY SECURITIES

Period	Total Number of Shares Purchased[1]	Average Price Paid per Share ($)	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs
7/1/2019 - 7/31/2019	616	$ 20.96	—	$ —
8/1/2019 - 8/31/2019	142	21.51	—	—
9/1/2019 - 9/30/2019	—	—	—	—
Total Third Quarter	758	$ 21.06	—	$ —

[1] Total shares purchased includes shares attributable to the withholding of shares by Luminex to satisfy the payment of tax obligations related to the vesting of restricted shares.

ITEM 6. EXHIBITS

The following exhibits are filed herewith:

EXHIBIT NUMBER	DESCRIPTION OF DOCUMENT
31.1	Certification by CEO pursuant to Securities and Exchange Act Rules 13a-14(a) and 15d - 14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification by CFO pursuant to Securities and Exchange Act Rules 13a-14(a) and 15d - 14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1	Certification by CEO pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2	Certification by CFO pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101	The following materials from Luminex Corporation's Quarterly Report on Form 10-Q for the three and nine months ended September 30, 2019, formatted in Inline XBRL: (i) Condensed Consolidated Balance Sheets; (ii) Condensed Consolidated Statements of Comprehensive Income; (iii) Condensed Consolidated Statement of Cash Flows; (iv) Condensed Consolidated Statements of Changes in Stockholders' Equity; and (v) Notes to Condensed Consolidated Financial Statements.
104	The cover page from the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2019, formatted in Inline XBRL (included in Exhibit 101).

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, thereunto duly authorized.

Date: November 5, 2019

LUMINEX CORPORATION
By: /s/ Harriss T. Currie
Harriss T. Currie
Chief Financial Officer, Senior Vice President of Finance
(Principal Financial Officer)

Exhibit 31.1

CERTIFICATION

I, Nachum Shamir, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Luminex Corporation;

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

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

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

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

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

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

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

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

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

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

Date: November 5, 2019

By: /s/ Nachum Shamir

Nachum Shamir

President and Chief Executive Officer

Exhibit 31.2

CERTIFICATION

I, Harriss T. Currie, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Luminex Corporation;

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

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

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

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

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

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

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

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

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

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

Date: November 5, 2019

By: /s/ Harriss T. Currie

Harriss T. Currie

Chief Financial Officer, Senior Vice President of Finance

Exhibit 32.1

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 Luminex Corporation (the "Company") on Form 10-Q for the period ended September 30, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Nachum Shamir, President and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) 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 indicated.

/s/ Nachum Shamir
Nachum Shamir
President and Chief Executive Officer
November 5, 2019

A SIGNED ORIGINAL OF THIS WRITTEN STATEMENT REQUIRED BY SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002 HAS BEEN PROVIDED TO LUMINEX CORPORATION AND WILL BE RETAINED BY LUMINEX CORPORATION AND FURNISHED TO THE SECURITIES AND EXCHANGE COMMISSION OR ITS STAFF UPON REQUEST.

Exhibit 32.2

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 Luminex Corporation (the "Company") on Form 10-Q for the period ended September 30, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Harriss T. Currie, Chief Financial Officer, Senior Vice President of Finance of the Company, certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) 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 indicated.

/s/ Harriss T. Currie
Harriss T. Currie
Chief Financial Officer, Senior Vice President of Finance
November 5, 2019

A SIGNED ORIGINAL OF THIS WRITTEN STATEMENT REQUIRED BY SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002 HAS BEEN PROVIDED TO LUMINEX CORPORATION AND WILL BE RETAINED BY LUMINEX CORPORATION AND FURNISHED TO THE SECURITIES AND EXCHANGE COMMISSION OR ITS STAFF UPON REQUEST.