MERRIMACK PHARMACEUTICALS INC
Form 10-Q
November 07, 2018

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q

(Mark One)

QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the quarterly period ended September 30, 2018

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from to

Commission file number: 001-35409

Merrimack Pharmaceuticals, Inc.

(Exact name of registrant as specified in its charter)

Delaware	04-3210530
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification Number)
One Kendall Square, Suite B7201	02139

Cambridge, MA
(Address of principal executive offices) (Zip Code)

(617) 441-1000

(Registrant's telephone number, including area code)

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

Indicate by check mark whether the registrant has submitted electronically 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

As of November 1, 2018, there were 13,342,784 shares of Common Stock, $0.01 par value per share, outstanding.

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FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains forward-looking statements that involve substantial risks and uncertainties. All statements, other than statements of historical facts, contained in this Quarterly Report on Form 10-Q, including statements regarding our strategy, future operations, future financial position, future revenues, projected costs, prospects, plans and objectives of management, are forward-looking statements. The words “anticipate,” “believe,” “estimate,” “expect,” “intend,” “may,” “plan,” “predict,” “project,” “target,” “potential,” “will,” “would,” “could,” “ similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words.

The forward-looking statements in this Quarterly Report on Form 10-Q include, among other things, statements about:

- our plans to develop and commercialize our clinical stage product candidates and diagnostics;
- our ongoing and planned discovery programs, preclinical studies and clinical trials;
- the timing of the completion of our clinical trials and the availability of results from such trials;
- the anticipated cost savings in connection with our restructuring efforts;
- our ability to establish and maintain collaborations for our product candidates;
- our receipt of payments related to the milestone events under the asset purchase and sale agreement with Ipsen S.A. or under the license and collaboration agreement between Ipsen S.A. and Les Laboratoires Servier SAS (as assignee from Shire plc), when expected or at all;
- the timing of and our ability to obtain and maintain regulatory approvals for our product candidates;
- the rate and degree of market acceptance and clinical utility of our product candidates;
- our intellectual property position;
- our commercialization, marketing and manufacturing capabilities and strategy;
- the potential advantages of our approach to drug research and development; and
- our estimates regarding expenses, future revenues, capital requirements and needs for additional financing.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the cautionary statements included in this Quarterly Report on Form 10-Q, particularly in Part II, Item 1A. Risk Factors, that could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures, collaborations or investments that we may make.

You should read this Quarterly Report on Form 10-Q and the documents that we have filed as exhibits to this Quarterly Report on Form 10-Q completely and with the understanding that our actual future results may be materially different from what we expect. We do not assume any obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

NOTE REGARDING TRADEMARKS

ONIVYDE® is a trademark of Ipsen S.A. Any other trademarks, trade names and service marks referred to in this Quarterly Report on Form 10-Q are the property of their respective owners.

PART I

FINANCIAL INFORMATION

Item 1.Financial Statements.

Merrimack Pharmaceuticals, Inc.
Condensed Consolidated Balance Sheets

(unaudited)

(in thousands, except per share amounts)	September 30, 2018	December 31, 2017
Assets		
Current assets:		
Cash and cash equivalents	$ 49,794	$ 93,441
Marketable securities	35,052	—
Restricted cash	584	—
Prepaid expenses and other current assets	1,837	1,605
Total current assets	87,267	95,046
Restricted cash	—	674
Property and equipment, net	3,188	6,467
Equity method investment	8,893	10,551
Other assets	4,568	4,588
Total assets	$ 103,916	$ 117,326
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable, accrued expenses and other	$ 19,049	$ 17,606
Accrued intraperiod tax allocation	1,340	—
Deferred rent	1,676	2,171
Total current liabilities	22,065	19,777
Deferred rent, net of current portion	—	1,209
Notes payable, net of discount	14,752	—
Other long-term liabilities	56	56
Total liabilities	36,873	21,042
Commitments and contingencies (Note 5)		
Stockholders' equity:		
Preferred stock, $0.01 par value: 10,000 shares authorized at September 30, 2018 and December 31, 2017; no shares issued or outstanding at September 30, 2018 or December 31, 2017	—	—
Common stock, $0.01 par value: 30,000 shares authorized at September 30, 2018 and 20,000 shares authorized at December 31, 2017; 13,343 shares issued and outstanding	1,334	1,334

at September 30, 2018 and December 31, 2017		
Additional paid-in capital	580,047	577,721
Accumulated deficit	(514,333)	(482,771)
Accumulated other comprehensive loss	(5)	—
Total stockholders' equity	67,043	96,284
Total liabilities and stockholders' equity	$ 103,916	$ 117,326

The accompanying notes are an integral part of these condensed consolidated financial statements.

Merrimack Pharmaceuticals, Inc.
Condensed Consolidated Statements of Operations and Comprehensive Income (Loss)

(unaudited)

	Three Months Ended		Nine Months Ended	
(in thousands, except per share amounts)	September 30, 2018	2017	September 30, 2018	2017
Operating expenses:				
Research and development expenses	$12,959	$13,598	$39,743	$54,954
General and administrative expenses	3,777	3,366	11,560	23,798
Total operating expenses	16,736	16,964	51,303	78,752
Loss from continuing operations	(16,736)	(16,964)	(51,303)	(78,752)
Other income and expenses:				
Interest income	306	250	863	646
Interest expense	(472)	(1,659)	(472)	(30,400)
Gain on deconsolidation of Silver Creek Pharmaceuticals, Inc.	—	10,848	—	10,848
Gain on sale of asset	—	—	—	1,703
Other income (expense), net	(237)	69	(1,778)	(592)
Total other income and expenses	(403)	9,508	(1,387)	(17,795)
Net loss from continuing operations before income tax benefit	(17,139)	(7,456)	(52,690)	(96,547)
Income tax benefit	4,798	2,133	4,798	32,372
Net loss from continuing operations	(12,341)	(5,323)	(47,892)	(64,175)
Discontinued operations:				
Income from discontinued operations, net of tax	16,330	8,456	16,330	547,994
Net income (loss)	3,989	3,133	(31,562)	483,819
Net income (loss) attributable to non-controlling interest	—	31	—	(1,160)
Net income (loss) attributable to Merrimack Pharmaceuticals, Inc.	$3,989	$3,102	$(31,562)	$484,979
Other comprehensive income (loss):				
Unrealized loss on marketable securities	(4)	—	(5)	—
Other comprehensive income (loss)	(4)	—	(5)	—
Comprehensive income (loss)	$3,985	$3,102	$(31,567)	$484,979
Amounts attributable to Merrimack Pharmaceuticals, Inc.:				
Net loss from continuing operations	$(12,341)	$(5,354)	$(47,892)	$(63,015)
Income from discontinued operations, net of tax	16,330	8,456	16,330	547,994
Income (loss) attributable to Merrimack Pharmaceuticals, Inc.	$3,989	$3,102	$(31,562)	$484,979
Basic and dilutive net income (loss) per common share				
Net loss from continuing operations	$(0.92)	$(0.40)	$(3.59)	$(4.77)
Net income from discontinued operations, net of tax	1.22	0.64	1.22	41.52
Net income (loss) per share	$0.30	$0.24	$(2.37)	$36.75
Weighted-average common shares used per share calculations—basic and	13,343	13,282	13,343	13,197

diluted				
Cash dividend paid per common share	$—	$—	$—	$10.55

The accompanying notes are an integral part of these condensed consolidated financial statements.

Merrimack Pharmaceuticals, Inc.

Condensed Consolidated Statements of Cash Flows

(unaudited)

	Nine Months Ended September 30,	
(in thousands)	2018	2017
Cash flows from operating activities		
Net (loss) income	$(31,562)	$483,819
Less:		
Gain from discontinued operations	16,330	547,994
Loss from continuing operations	(47,892)	(64,175)
Adjustments to reconcile net (loss) income to net cash used in operating activities		
Non-cash interest expense	121	3,352
Loss on extinguishment of debt	—	25,011
Benefit from intraperiod tax allocation	(4,798)	(32,372)
Depreciation and amortization expense	3,211	2,813
Non-cash activity related to discontinued operations	(532)	10,241
Gain on deconsolidation of Silver Creek Pharmaceuticals, Inc.	—	(10,848)
Loss (gain) on sale of property and equipment	184	(439)
Premiums paid on marketable securities	(2)	—
Amortization and accretion on marketable securities	(398)	—
Stock-based compensation expense	2,326	11,110
Loss on equity method investment	1,658	—
Changes in operating assets and liabilities:		
Prepaid expenses and other assets	(314)	(6,120)
Income taxes payable	361	1,844
Accounts payable, accrued expenses and other	1,083	(3,140)
Deferred rent	(1,704)	(334)
Net cash used in continuing operations for operating activities	(46,696)	(63,057)
Net cash used in discontinuing operations for operating activities	—	(37,964)
Net cash used in operating activities	(46,696)	(101,021)
Cash flows from investing activities		
Purchase of property and equipment	(118)	(729)
Deconsolidation of Silver Creek Pharmaceuticals, Inc.	—	(4,002)
Proceeds on sale of property and equipment	—	1,094
Proceeds from sale of business	23,000	575,000
Proceeds from maturities and sales of marketable securities	42,200	—
Purchases of marketable securities	(76,857)	—
Net cash (used in) provided by investing activities	(11,775)	571,363
Cash flows from financing activities		
Payment of debt extinguishment costs	—	(20,124)
Proceeds from issuance of notes payable, net of issuance costs	14,632	—
Proceeds from exercise of options to purchase common stock	—	6,517

Proceeds from issuance of Series C preferred stock by Silver Creek Pharmaceuticals, Inc., net of issuance costs	—	3,994
Repayment of debt	—	(175,000)
Payment of dividend	—	(140,000)
Net cash provided by (used in) financing activities	14,632	(324,613)
Net (decrease) increase in cash, cash equivalents and restricted cash	(43,839)	145,729
Cash, cash equivalents and restricted cash, beginning of period	94,217	22,300
Cash, cash equivalents and restricted cash, end of period	$50,378	$168,029
Non-cash investing and financing activities		
Purchases of property and equipment in accounts payable, accrued expenses and other	$—	$159
Receivables related to property and equipment sale in other current assets	—	145
Supplemental disclosure of cash flows		
Cash paid for income taxes	—	6,122
Cash paid for interest	235	30,250

The accompanying notes are an integral part of these condensed consolidated financial statements.

Merrimack Pharmaceuticals, Inc.

Notes to Condensed Consolidated Financial Statements

(unaudited)

1. Nature of the Business

Merrimack Pharmaceuticals, Inc. (the "Company") is a clinical stage biopharmaceutical company based in Cambridge, Massachusetts that is outthinking cancer by targeting biomarker-defined cancers. The Company's vision is to ensure that cancer patients and their families live fulfilling lives. The Company's mission is to transform cancer care through the smart design and development of targeted solutions based on a deep understanding of cancer pathways and biological markers. All of the Company's development programs fit into the Company's strategy of (1) understanding the biological problems it is trying to solve, (2) designing specific solutions against the problems it is trying to solve and (3) developing those solutions for biomarker-selected patients. This three-pronged strategy seeks to ensure optimal patient outcomes. The Company owns worldwide development and commercial rights to all of its clinical and preclinical programs.

The Company is subject to risks and uncertainties common to companies in the biopharmaceutical industry, including, among other things, its ability to secure additional capital to fund operations, success of clinical trials, development by competitors of new technological innovations, dependence on collaborative arrangements, protection of proprietary technology, compliance with government regulations and dependence on key personnel. Product candidates currently under development will require significant additional research and development efforts, including extensive preclinical and clinical testing and regulatory approval prior to commercialization. These efforts require significant amounts of capital, adequate personnel, infrastructure and extensive compliance reporting capabilities.

The Company's product candidates are in development, and none are approved for any indication by the U.S. Food and Drug Administration ("FDA") or any other regulatory agency. There can be no assurance that the Company's research and development will be successfully completed, that adequate protection for the Company's intellectual property will be obtained or maintained, that any products developed will obtain necessary government regulatory approval or that any approved products will be commercially viable. Even if the Company's product development efforts are successful, it is uncertain when, if ever, the Company will generate significant revenue from product sales. The Company operates in an environment of rapid change in technology and substantial competition from pharmaceutical and biotechnology companies, among others. In addition, the Company is dependent upon the services of its employees and consultants.

In accordance with Accounting Standards Codification ("ASC") 205-40, Going Concern, the Company has evaluated whether there are conditions and events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern within one year after the date that the condensed consolidated financial statements are issued. As of September 30, 2018, the Company had an accumulated deficit of $514.3 million. During the nine months ended September 30, 2018, the Company incurred a net loss from continuing operations before income tax benefit of $52.7 million and used $46.7 million of cash in continuing operations for operating activities. The Company expects to continue to generate operating losses in the foreseeable future. The Company expects that its cash, cash equivalents and marketable securities of $84.8 million at September 30, 2018, in addition to a $5.0 million ONIVYDE milestone payment received in October 2018 (see Note 12, "Subsequent Events"), will be

sufficient to fund its operating expenses, debt service obligations and capital expenditure requirements for at least the next 12 months from issuance of the financial statements. The future viability of the Company beyond that point is dependent on its ability to raise additional capital to finance its operations. The Company may receive additional milestone payments under existing agreements and will ultimately need to seek additional funding through public or private financings, debt financing, collaboration agreements or government grants. The inability to obtain funding, as and when needed, would have a negative impact on the Company's financial condition and ability to pursue its business strategies.

2. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying condensed consolidated financial statements reflect the operations of Merrimack Pharmaceuticals, Inc. and its wholly owned subsidiary. All intercompany accounts and transactions have been eliminated.

The condensed consolidated financial statements are unaudited and have been prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP").

The accounting policies followed in the preparation of the interim condensed consolidated financial statements are consistent in all material respects with those presented in Note 1 to the financial statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2017.

Certain reclassifications have been made to the prior year's condensed consolidated balance sheet and condensed consolidated statement of cash flows to enhance comparability with the current year's condensed consolidated financial statements presentation.

These reclassifications had no effect on previously reported net income within the condensed consolidated statement of operations and comprehensive (loss) income.

Consolidation

The accompanying condensed consolidated financial statements reflect Merrimack Pharmaceuticals, Inc. and its wholly owned subsidiary. For the three and six months ended June 30, 2017, the condensed consolidated financial statements also include the accounts of Silver Creek Pharmaceuticals, Inc. (“Silver Creek”). For the three and six months ended June 30, 2017, Silver Creek represented a variable interest entity that the Company consolidated as the primary beneficiary. In the third quarter of 2017, the Company deconsolidated Silver Creek from its financial statements since the Company was no longer the primary beneficiary of Silver Creek. The Company’s ownership percentage decreased to less than 50% and the Company no longer controlled Silver Creek’s board of directors or directed the activities that had the most significant impact on Silver Creek’s economic performance. The Company accounts for its investment in Silver Creek under the equity method of accounting.

On April 3, 2017, the Company completed the sale of its right, title and interest in the non-cash assets, equipment, inventory, contracts and intellectual property primarily related to developing, manufacturing and commercializing ONIVYDE and MM-436 (the “Commercial Business”). As of March 31, 2017, the Commercial Business met all the conditions to be classified as a discontinued operation since the disposal of the Commercial Business represented a strategic shift that had a major effect on the Company’s operations and financial results. Therefore, the operating results of the Commercial Business are reported as a loss from discontinued operations, net of tax in the condensed consolidated statements of operations and comprehensive loss for the three and nine months ended September 30, 2018 and 2017.

Unaudited Interim Financial Information

The condensed consolidated balance sheet as of December 31, 2017 was derived from audited financial statements, but does not include all disclosures required by GAAP. The condensed consolidated balance sheet as of September 30, 2018, the condensed consolidated statements of operations and comprehensive income (loss) for the three and nine months ended September 30, 2018 and 2017 and the condensed consolidated statements of cash flows for the nine months ended September 30, 2018 and 2017 are unaudited. The unaudited interim condensed consolidated financial statements have been prepared on the same basis as the audited annual financial statements and, in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary for the fair statement of the Company’s financial position as of September 30, 2018, the results of its operations for the three and nine months ended September 30, 2018 and 2017, and its statements of cash flows for the nine months ended September 30, 2018 and 2017. The financial data and other information disclosed in the notes related to the three and nine months ended September 30, 2018 and 2017 are unaudited. The results for the three and nine months ended September 30, 2018 and 2017 are not necessarily indicative of results to be expected for the year ending December 31, 2018, any other interim periods, or any future year or period.

The unaudited interim financial statements of the Company included herein have been prepared pursuant to the rules and regulations of the Securities and Exchange Commission (the “SEC”). Certain information and footnote disclosures normally included in financial statements prepared in accordance with GAAP have been condensed or omitted from this report, as is permitted by such rules and regulations. These unaudited condensed consolidated financial statements should be read in conjunction with the audited financial statements and the notes thereto contained in the Company’s Annual Report on Form 10-K for the year ended December 31, 2017 filed with the SEC on March 12, 2018.

Condensed Consolidated Statements of Cash Flows

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the statement of financial position that sum to the total of the same such amounts shown in the statement of cash flows:

(in thousands)	September 30, 2018	September 30, 2017
Cash and cash equivalents	$ 49,794	$ 107,245
Restricted cash (short-term)	584	102
Restricted cash (long-term)	—	60,682
Total cash, cash equivalents and restricted cash shown in the condensed consolidated statement of cash flows	$ 50,378	$ 168,029

Restricted cash on the statement of financial position for 2018 represents amounts pledged as collateral for operating lease obligations as contractually required. Restricted cash long-term on the statement of financial position for 2017 represents amounts

pledged for the settlement of the Company's 4.50% convertible notes due 2020 (the "Convertible Notes") as well as collateral for operating lease obligations as contractually required. These restrictions will lapse when the arrangements expire.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates, assumptions and judgments that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the condensed consolidated financial statements and the reported amounts of revenue and expenses during the reporting periods. Significant estimates, assumptions and judgments reflected in these condensed consolidated financial statements include, but are not limited to, the accrual of research and development expenses and the valuation of stock-based awards. Estimates are periodically reviewed in light of changes in circumstances, facts and experience. Actual results could differ from the Company's estimates.

Marketable Securities

Marketable securities consist of investments with original maturities greater than ninety days. The Company has classified its investments with maturities beyond one year as short term based on their highly liquid nature and because such marketable securities represent the investment of cash that is available for current operations. The Company considers its investment portfolio of marketable debt securities as available-for-sale. Accordingly, these marketable debt securities are recorded at fair value and unrealized gains and losses are reported as a component of accumulated other comprehensive loss in stockholders' equity. Realized gains and losses and declines in value judged to be other than temporary are included as a component of other income (expense), net based on the specific identification method. When determining whether a decline in value is other than temporary, the Company considers various factors, including whether the Company has the intent to sell the security, and whether it is more likely than not that the Company will be required to sell the security prior to recovery of its amortized cost basis.

3. Fair Value of Financial Instruments

Fair value is an exit price, representing the amount that would be received from the sale of an asset or paid to transfer a liability in an orderly transaction between market participants. Fair value is determined based on observable and unobservable inputs. Observable inputs reflect readily obtainable data from independent sources, while unobservable inputs reflect certain market assumptions. As a basis for considering such assumptions, GAAP establishes a three-tier value hierarchy, which prioritizes the inputs used to develop the assumptions and for measuring fair value as follows: Level 1 observable inputs such as quoted prices in active markets for identical assets; Level 2 inputs other than the quoted prices in active markets that are observable either directly or indirectly; and Level 3 unobservable inputs in which there is little or no market data, which requires the Company to develop its own assumptions. This hierarchy requires the Company to use observable market data, when available, and to minimize the use of unobservable inputs when determining fair value.

The following tables show assets measured at fair value on a recurring basis as of September 30, 2018 and December 31, 2017:

	September 30, 2018	
(in thousands)	Level 1	Level 2

			Level 3
Cash equivalents:			
Money market funds	$37,708	$—	$ —
Commercial paper	—	1,299	—
Totals	$37,708	$1,299	$ —
Marketable securities:			
Corporate debt securities	$—	$3,986	$ —
Commercial paper	—	19,151	—
Government securities	—	11,915	—
Totals	$—	$35,052	$ —

	December 31, 2017		
(in thousands)	Level 1	Level 2	Level 3
Cash equivalents:			
Money market funds	$89,310	$ —	$ —
Totals	$89,310	$ —	$ —

During the nine months ended September 30, 2018 and the year ended December 31, 2017, there were no transfers between Level 1 and Level 2. The fair value of Level 2 instruments classified as cash equivalents and marketable debt securities were determined through third-party pricing services.

The carrying amounts reflected in the condensed consolidated balance sheets for accounts payable, accrued expenses and other liabilities approximate fair value due to their short-term maturities. The carrying value of the Company's outstanding notes payable approximates fair value (a level 2 fair value measurement), reflecting interest rates currently available to the Company.

4. Marketable Securities and Cash Equivalents

The following table summarizes the Company's marketable securities and cash equivalents as of September 30, 2018. The Company did not hold any marketable securities as of December 31, 2017.

	September 30, 2018			
(in thousands)	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Cash equivalents:				
Money market funds	$37,708	$ —	$ —	$37,708
Commercial paper	1,299	—	—	1,299
Total cash equivalents	$39,007	$ —	$ —	$39,007
Marketable securities:				
Corporate debt securities	$3,987	$ —	$ (1)	$3,986
Commercial paper	19,151	—	—	19,151
Government securities	11,919	—	(4)	11,915
Total marketable securities	$35,057	$ —	$ (5)	$35,052
Total cash equivalents and marketable securities	$74,064	$ —	$ (5)	$74,059

5. Notes Payable

On July 2, 2018, the Company entered into a Loan and Security Agreement (the "Loan Agreement") by and among the Company, certain subsidiaries of the Company from time to time party thereto, the several banks and other financial institutions or entities from time to time parties thereto (collectively referred to as "Lender") and Hercules Capital, Inc., in its capacity as administrative agent and collateral agent for itself and Lender (in such capacity, "Agent") pursuant to which a term loan of up to an aggregate principal amount of $25.0 million is available to the Company. The Loan Agreement provides for an initial term loan advance of $15.0 million, which closed on July 2, 2018, and, at the Company's option, two additional term loan advances of $5.0 million each upon the occurrence of certain funding conditions prior to December 31, 2018 and December 31, 2019, respectively (see Note 12, "Subsequent Events").

The term loan bears interest at an annual rate equal to the greater of 9.25% and 9.25% plus the prime rate of interest minus 5.25%. The Loan Agreement provides for interest-only payments for eighteen months and repayment of the aggregate outstanding principal balance of the term loan in monthly installments starting on February 1, 2020 and continuing through August 1, 2021 (the “Maturity Date”). In addition, the Company paid a fee of $0.3 million upon closing and is required to pay a fee of 5.55% of the aggregate amount of advances under the Loan Agreement at maturity. At the Company’s option, the Company may elect to prepay all, but not less than all, of the outstanding term loan by paying the entire principal balance and all accrued and unpaid interest thereon plus a prepayment charge equal to the following percentage of the principal amount being prepaid: 3% if the term loan is prepaid during the first 12 months following the initial closing and 1% if the term loan is prepaid any time thereafter but prior to the Maturity Date.

In connection with the Loan Agreement, the Company granted Agent a security interest in all of the Company’s personal property now owned or hereafter acquired, excluding intellectual property but including licenses of and the proceeds from the sale, if any, of intellectual property, and a negative pledge on intellectual property. The Loan Agreement also contains certain events of default, representations, warranties and non-financial covenants of the Company. In addition, the Loan Agreement grants Lender an option to purchase up to an aggregate of $1.0 million of the Company’s equity securities, or instruments exercisable for or convertible into equity securities, sold to investors in any private financing within one year after the initial closing under the Loan Agreement upon the same terms and conditions afforded to such other investors.

Through September 30, 2018, the Company borrowed $15.0 million under the Loan Agreement and incurred $0.4 million of related debt discount and issuance costs, inclusive of the $0.3 million fee paid upon closing. The debt discount and issuance costs are being accreted to the principal amount of debt and being amortized from the date of issuance through the Maturity Date to interest expense using the effective-interest method. In addition, the Company accrues the related 5.55% final fee payment of $0.8 million due at maturity to outstanding debt by charges to interest expense using the effective-interest method over the same period. The effective interest rate of the outstanding debt under the Loan Agreement is approximately 12.5%.

As of September 30, 2018 notes payable consist of the following:

(in thousands)	September 30, 2018
Notes payable	$ 15,000
Less: current portion	—
Notes payable, net of current portion	15,000
Debt discount, net of accretion	(331)
Accretion related to final payment	83
Notes payable net of discount, long-term	$ 14,752

During the three and nine months ended September 30, 2018, the Company recognized $0.5 million of interest expense related to the Loan Agreement. No interest expense was associated with the Loan Agreement for the three and nine months ended September 30, 2017.

Estimated future principal payments due under the Loan Agreement are as follows as of September 30, 2018:

(in thousands)	Note Principal Payments
Remainder of 2018	$ —
2019	—
2020	8,402
2021	6,598
Total minimum note principal payments	$ 15,000

6. Accounts Payable, Accrued Expenses and Other

Accounts payable, accrued expenses and other as of September 30, 2018 and December 31, 2017 consisted of the following:

(in thousands)	September 30, 2018	December 31, 2017
Accounts payable	$ 953	$ 2,887
Accrued goods and services	2,404	5,682
Accrued clinical trial costs	3,093	3,901
Accrued drug purchase costs	8,185	222
Accrued payroll and related benefits	2,651	2,884
Accrued restructuring expenses	—	628
Income taxes payable, discontinued operations	361	—
Deferred tax incentives	1,402	1,402
Total accounts payable, accrued expenses and other	$ 19,049	$ 17,606

7. Stock-Based Compensation

The Company's 2011 Stock Incentive Plan (the "2011 Plan") is administered by the Company's Board of Directors and permits the Company to grant incentive and non-qualified stock options, stock appreciation rights, restricted stock, restricted stock units and other stock-based awards.

At September 30, 2018, there were 0.7 million shares remaining available for grant under the 2011 Plan.

During the nine months ended September 30, 2018 and 2017, the Company issued options to purchase 0.7 million and 2.1 million shares of common stock, respectively. Stock options granted to employees vest over a three-year period. Stock options granted to non-employee directors prior to 2018 generally vested immediately. Stock options granted to non-employee directors in 2018 vest

over a one-year period, ending on the earlier of the one-year anniversary of the grant date or the day prior to the Company's next annual meeting of stockholders after the grant date.

The fair value of stock options granted to employees during the nine months ended September 30, 2018 and 2017 was estimated at the date of grant using the following assumptions:

	Nine Months Ended September 30,	
	2018	2017
Risk-free interest rate	2.3 – 2.9%	1.7 – 2.1%
Expected dividend yield	0%	0%
Expected term	5.3 – 5.8 years	5.0 – 6.1 years
Expected volatility	62 – 64%	64 – 68%

The Company uses the simplified method to calculate the expected term, as it does not have sufficient historical exercise data to provide a reasonable basis upon which to estimate expected term. The computation of expected volatility is based on the historical volatility of comparable companies from a representative peer group selected based on industry and market capitalization. The risk-free interest rate is based on a treasury instrument whose term is consistent with the expected life of the stock options. Management's assumptions do not include an estimated forfeiture rate.

The Company recognized stock-based compensation expense during the three and nine months ended September 30, 2018 and 2017 as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
(in thousands)	2018	2017	2018	2017
Employee awards:				
Research and development expense	$256	$734	$870	$6,118
General and administrative expense	526	846	1,456	4,992
Total stock-based compensation expense	$782	$1,580	$2,326	$11,110

The following table summarizes stock option activity during the nine months ended September 30, 2018:

(in thousands, except per share amounts)	Options	Weighted-Average	Weighted-Average Remaining Contractual Term	Aggregate Intrinsic

		Exercise Price	(in years)	Value
Outstanding at December 31, 2017	1,616	$ 22.07	6.65	$ 60,031
Granted	667	$ 10.31		
Exercised	—	$ —		
Forfeited	(477)	$ 21.58		
Outstanding at September 30, 2018	1,806	$ 17.86	7.24	$ —
Vested and expected to vest at September 30, 2018	1,806	$ 17.86	7.24	$ —
Exercisable at September 30, 2018	966	$ 23.01	5.81	$ —

The weighted-average grant date fair value per share of stock options granted during the nine months ended September 30, 2018 and 2017 was $6.18 and $4.06, respectively.

The aggregate intrinsic value is calculated as the difference between the exercise price of the stock options and the fair value of the underlying common stock. The aggregate intrinsic value of stock options exercised during the three and nine months ended September 30, 2017 was $0.0 million and $2.3 million, respectively. There were no options exercised during the three and nine months ended September 30, 2018.

As of September 30, 2018, there was $5.5 million of total unrecognized stock-based compensation expense related to unvested employee stock awards. The Company expects to recognize this expense over a weighted-average period of approximately 2.38 years.

8. Net Income (Loss) Per Common Share

Basic net income (loss) per share is calculated by dividing the net income (loss) attributable to Merrimack Pharmaceuticals, Inc. 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) attributable to Merrimack Pharmaceuticals, Inc. by the weighted-average number of dilutive common shares outstanding during the period. Dilutive shares outstanding is calculated by adding to the weighted shares outstanding any potential (unissued) shares of common stock from outstanding stock options based on the treasury stock method. In a period when a net loss is reported, all common stock equivalents are excluded from the calculation because they would have an anti-dilutive effect, meaning the loss per share would be reduced. Therefore, in periods where a loss is reported, there is no difference in basic and dilutive loss per share.

The Company follows the two-class method when computing net income (loss) per share when it has issued shares that meet the definition of participating securities. The two-class method determines net income (loss) per share for each class of common and participating securities according to dividends declared or accumulated and participating rights in undistributed earnings. The two-class method requires income available to common stockholders for the period to be allocated between common and participating securities based on their respective rights to receive dividends, as if all income for the period has been distributed or losses to be allocated if they are contractually required to fund losses. There were no amounts allocated to participating securities for the three and nine months ended September 30, 2018 and 2017, as the Company was in a loss position and had no shares that met the definition of participating securities outstanding as of September 30, 2018 and 2017.

The stock options and conversion premium on the Convertible Notes are excluded from the calculation of diluted loss per share because the net loss for the three and nine months ended September 30, 2017 causes such securities to be anti-dilutive. Outstanding securities excluded from the calculation of diluted loss per share for the three and nine months ended September 30, 2018 and 2017 are shown in the chart below:

	Three Months Ended		Nine Months Ended	
	September 30,		September 30,	
(in thousands)	2018	2017	2018	2017
Outstanding options to purchase common stock	1,806	1,824	1,806	1,824
Conversion of the Convertible Notes	—	1,216	—	1,216

9. Discontinued Operations

On April 3, 2017, the Company completed the sale of the Commercial Business. As of March 31, 2017, the Commercial Business met all the conditions to be classified as a discontinued operation since the disposal of the Commercial Business represented a strategic shift that had a major effect on the Company’s operations and financial results.

The condensed consolidated financial statements for the three and nine months ended September 30, 2018 and 2017 reflect the operations of the Commercial Business as a discontinued operation. Discontinued operations for the three and nine months ended September 30, 2018 and 2017 includes the following:

	Three Months Ended		Nine Months Ended	
(in thousands)	September 30,		September 30,	
	2018	2017	2018	2017
Revenues:				
Product revenues, net	$—	$—	$—	$16,135
License and collaboration revenues	—	—	—	7,797
Other revenues	—	—	—	1,973
Total revenues	—	—	—	25,905
Costs and expenses:				
Cost of revenues	—	—	—	3,890
Research and development expenses	171	—	171	3,730
Selling, general and administrative expenses	—	—	—	8,732
Restructuring expenses	—	—	—	9,535
Total costs and expenses	171	—	171	25,887
Other income and expenses:				
Other income	—	—	—	—
Interest expense	—	—	—	(6,743)
Gain on sale of commercial business	23,000	3,497	23,000	601,670
Income from discontinued operations	$22,829	$3,497	$22,829	$594,945
Income tax (expense) benefit	(6,499)	4,959	(6,499)	(46,951)
Total income from discontinued operations	$16,330	$8,456	$16,330	$547,994

On January 8, 2017, the Company announced a reduction in headcount by approximately 30% in connection with the sale of the Commercial Business and the completion of its strategic pipeline review.

Under this corporate restructuring, for the three and nine months ended September 30, 2017, the Company recognized total restructuring expenses of $0.0 million and $9.5 million, respectively, which in the nine month period was related to contractual termination benefits for employees with pre-existing severance arrangements. These one-time employee termination benefits are comprised of severance, benefits and related costs, all of which resulted in cash expenditures. The expense of $9.5 million was included in discontinued operations, as the costs are directly associated with the sale of the Commercial Business.

In connection with the sale of the Commercial Business, the Company retained the right to receive net milestone payments that may become payable related to the development and commercialization of ONIVYDE for up to $33.0 million pursuant to a license and collaboration agreement (the “Baxalta Agreement”) between Baxalta Incorporated, Baxalta US Inc., Baxalta GmbH and Ipsen S.A. (“Ipsen”). Shire plc was the parent entity of the Baxalta entities and assigned the Baxalta Agreement to Les Laboratoires Servier SAS (“Servier”).

During the three and nine months ended September 30, 2018, the Company received $23.0 million of the potential $33.0 million in milestone payments related to the development and commercialization of ONIVYDE under the Baxalta Agreement. The Company included the $23.0 million in discontinued operations because the amounts directly relate to the Commercial Business, which was classified as a discontinued operation. The disposal of the Commercial Business represented a strategic shift that had a major effect on the Company's operations and financial results. The Company also recorded $0.2 million of research and development expense in discontinued operations in the three and nine months ended September 30, 2018, as this expense is directly associated with the $23.0 million in milestones.

Intraperiod tax allocation rules require the Company to allocate the provision for income taxes between continuing operations and other categories of earnings, such as discontinued operations. In periods in which there is a pre-tax loss from continuing operations and pre-tax income in other categories of earnings, such as discontinued operations, the Company must allocate to continuing operations a tax benefit for the loss in continuing operations with an offsetting tax expense to discontinued operations. For the three and nine months ended September 30, 2018, the Company recognized an income tax benefit of $4.8 million in continuing operations and income tax expense in discontinued operations of $6.5 million.

10. Investment in Silver Creek

On August 20, 2010, the Company acquired a controlling financial interest in Silver Creek. At such time, the Company had the ability to direct the activities of Silver Creek that most significantly impacted Silver Creek's economic performance through its ownership percentage and through the board of director seats controlled by the Company. As such, Silver Creek was consolidated by the Company.

Since the Company acquired its financial interest, Silver Creek has raised funding through the issuance of preferred stock and convertible promissory notes. The Company has not participated in any Silver Creek financings nor has it provided any funding.

During the third quarter of 2017, Silver Creek completed its Series C preferred stock financing, reducing the Company's ownership percentage in Silver Creek below 50% and resulting in the Company no longer controlling the Silver Creek board of directors. Accordingly, the Company determined that it was no longer the primary beneficiary of Silver Creek and deconsolidated Silver Creek from its financial statements on July 13, 2017. Starting on July 14, 2017, the Company accounted for its investment in Silver Creek under the equity method of accounting since the Company has the ability to exercise significant influence over Silver Creek. Under the equity method of accounting, the Company has recorded its proportionate share of Silver Creek's losses in its results of operations with a corresponding decrease in the carrying value of the investment. As of September 30, 2018, the carrying value of the Company's investment in Silver Creek was $8.9 million. There can be no guarantee that the value of the Company's investment in Silver Creek will not realize a substantial future loss or complete loss of value. The Company reviews the investment for impairment whenever events or changes in circumstances indicate that the carrying amount of the investment might not be recoverable. These circumstances can include, but are not limited to, negative current events or long-term outlooks impacting Silver Creek and/or its programs, planned or announced delays in the clinical development process to advance its programs, a current fair value of investment at a lower value than the Company's investment and/or investors no longer providing financial support or reducing their financial commitment to Silver Creek.

Silver Creek continues to be a related party to the Company after deconsolidation.

11. Recent Accounting Pronouncements

The Financial Accounting Standards Board ("FASB") issued the following new Accounting Standards Updates ("ASU"), which the Company adopted on January 1, 2018:

- ASU 2014-09, "Revenue from Contracts with Customers (Topic 606)" and related amendments;
- ASU 2016-01, "Financial Instruments – Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Liabilities";
- ASU 2016-15, "Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments";
- ASU 2016-18, "Statement of Cash Flows - Restricted Cash (a consensus of the FASB Emerging Issues Task Force)"; and
- ASU 2017-09, "Compensation - Stock Compensation (Topic 718): Scope of Modification Accounting."

The adoption of these standards did not have a material impact on the Company's financial position, results of operations or statement of cash flows; however, the adoption of ASU 2016-18 resulted in the reclassification of certain prior year amounts in the Company's condensed consolidated statements of cash flows to conform to the

current year presentation.

In February 2016, the FASB issued ASU 2016-02, “Leases (Topic 842),” which supersedes all existing lease accounting guidance within ASC 840, Leases. The new standard requires that lease assets and lease liabilities be recognized by lessees for those leases previously classified as operating leases under ASC 840, with limited exceptions. This update also creates a new definition of a lease and provides guidance as to whether a contract is or contains a lease. This guidance will be effective for annual reporting periods beginning after December 15, 2018, including interim periods within those annual reporting periods, and early adoption is permitted. In July 2018, the FASB issued ASU 2018-10, “Codification Improvements to Topic 842, Leases.” The amendments in ASU 2018-10 affect narrow aspects of the guidance issued in ASU 2016-02. The Company plans to adopt the standard using the modified retrospective approach. The Company is currently in the process of evaluating the impact of the guidance on its consolidated financial statements and is undertaking an assessment on its lease population that it expects to complete during the fourth quarter of 2018. The Company anticipates material adjustments to its consolidated balance sheet for the recognition of a lease liability and a right of use asset for its operating leases, which primarily represents the lease of its principal research and office space located at One Kendall Square in Cambridge, Massachusetts.

In June 2016, the FASB issued ASU 2016-13, “Financial Instruments – Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments,” which represents a new credit loss standard that will change the impairment model for most financial assets and certain other financial instruments. Specifically, this guidance will require entities to utilize a new “expected loss” model as it relates to trade and other receivables. In addition, entities will be required to recognize an allowance for estimated credit losses on available-for-sale debt securities, regardless of the length of time that a security has been in an unrealized loss position. This guidance will be effective for annual reporting periods beginning after December 15, 2019, including interim periods within those annual reporting periods, and early adoption is permitted. The Company is currently evaluating the potential impact that the adoption of this guidance may have on the condensed consolidated financial statements.

In February 2018, the FASB issued ASU 2018-02, “Income Statement - Reporting Comprehensive Income (Topic 220).” ASU 2018-02 addresses the effect of the change in the U.S. federal corporate tax rate due to the enactment of the December 22, 2017 Tax Cuts and Jobs Act (the “Tax Act”) on items within accumulated other comprehensive loss. The guidance will be effective for the Company in the first quarter of fiscal 2020 with early adoption permitted. The Company is currently assessing the impact that adopting this new accounting standard will have on the condensed consolidated financial statements.

In July 2018, the FASB issued ASU 2018-09, “Codification Improvements.” The amendments in ASU 2018-09 affect a wide variety of topics in the FASB Accounting Standards Codification and XBRL Taxonomy. The transition and effective date guidance is based on the facts and circumstances of each amendment. Some of the amendments in ASU 2018-09 do not require transition guidance and will be effective upon issuance of the update. However, many of the amendments in ASU 2018-09 do have transition guidance with effective dates for annual periods beginning after December 15, 2018 for public business entities. The Company is currently assessing the impact that adopting this new accounting standard will have on the condensed consolidated financial statements.

From time to time, new accounting pronouncements are issued by the FASB or other standard setting bodies that the Company adopts as of the specified effective date. Unless otherwise discussed above, the Company does not believe that the adoption of recently issued standards has or may have a material impact on the Company’s condensed consolidated financial statements or disclosures.

12. Subsequent Events

In connection with the sale of the Commercial Business, the Company retained the right to receive net milestone payments that may become payable related to the development and commercialization of ONIVYDE for up to $33.0 million pursuant to the Baxalta Agreement. In October 2018, the Company received a payment of $5.0 million from Ipsen against the milestone related to the first patient dosed in a pivotal clinical trial of ONIVYDE in an indication other than pancreatic cancer as a result of the commencement of a multi-part study that Ipsen and Servier are conducting in patients with small-cell lung cancer. The Company expects to receive the remaining $5.0 million for such milestone if and when a decision is made to progress to the randomized part of the study focused on efficacy. To date, the Company has received $28.0 million of the potential $33.0 million in milestone payments under the Baxalta Agreement.

On October 19, 2018, the Company announced the termination of its global, open-label, biomarker-selected, Phase 2 randomized SHERLOC clinical trial evaluating MM-121 (seribantumab) in combination with docetaxel in patients with heregulin positive non-small cell lung cancer. The decision to terminate the SHERLOC clinical trial was made based on an interim analysis triggered by the occurrence of 75% of events required for trial completion, which demonstrated that the addition of MM-121 to docetaxel did not improve progression free survival over docetaxel

alone in this patient population.

As a result of the decision to terminate the SHERLOC clinical trial, the Company does not meet the prerequisite funding conditions for drawing the two additional term loan advances under the Loan Agreement (see Note 5, “Notes Payable”), which provided for, at the Company’s option, two additional term loan advances of $5.0 million each upon the occurrence of certain funding conditions prior to December 31, 2018 and December 31, 2019, respectively.

On November 7, 2018, based on the results of the interim analysis of its randomized Phase 2 SHERLOC study that were announced on October 19, 2018, the Company announced it is discontinuing development of all ongoing MM-121 programs, including terminating its global, double-blinded, placebo-controlled, biomarker-selected, Phase 2 randomized SHERBOC clinical trial evaluating MM-121 in combination with fulvestrant in patients with heregulin positive, hormone receptor positive, ErbB2 (HER2) negative, metastatic breast cancer.

On November 7, 2018, the Company announced that it was implementing a reduction in headcount as part of a corporate restructuring, after which the Company expects to have approximately 27 employees. The corporate restructuring follows a comprehensive review of the Company’s drug candidate pipeline. The Company estimates it will incur expenses for one-time termination benefits in connection with this corporate restructuring of approximately $1.5 million to $1.8 million for employee severance, benefits and related costs. The reduction in headcount is expected to be completed by February 2019.

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

The following discussion of our financial condition and results of operations should be read in conjunction with our financial statements and the notes to those financial statements appearing elsewhere in this Quarterly Report on Form 10-Q and the audited consolidated financial statements and notes thereto and management's discussion and analysis of financial condition and results of operations for the year ended December 31, 2017 included in our Annual Report on Form 10-K. This discussion contains forward-looking statements that involve significant risks and uncertainties. As a result of many factors, such as those set forth in Part II, Item 1A. Risk Factors of this Quarterly Report on Form 10-Q, which are incorporated herein by reference, our actual results may differ materially from those anticipated in these forward-looking statements.

Overview

We are a clinical stage biopharmaceutical company based in Cambridge, Massachusetts that is outthinking cancer by targeting biomarker-defined cancers. Our vision is to ensure that cancer patients and their families live fulfilling lives. Our mission is to transform cancer care through the smart design and development of targeted solutions based on a deep understanding of cancer pathways and biological markers. All of our development programs fit into our strategy of (1) understanding the biological problems we are trying to solve, (2) designing specific solutions against the problems we are trying to solve and (3) developing those solutions for biomarker-selected patients. This three-pronged strategy seeks to ensure optimal patient outcomes. We own worldwide development and commercial rights to all of our clinical and preclinical programs.

Our most advanced clinical stage asset is MM-310. MM-310 is an antibody-directed nanotherapeutic that targets the ephrin receptor A2, or EphA2, receptor and contains a novel cytotoxic taxane. The EphA2 receptor is highly expressed in most solid tumor types, such as prostate, ovarian, bladder, gastric, pancreatic and lung cancers. We are conducting a Phase 1 clinical trial to evaluate safety and preliminary activity of MM-310 in patients with solid tumors and to identify the maximum tolerated dose.

Our preclinical efforts are focused on our two most promising programs, which are MM-401, an agonistic antibody targeting a novel immuno-oncology target, TNFR2, and MM-201, a highly stabilized agonist-Fc fusion protein targeting death receptors 4 and 5.

On June 25, 2018, we announced top-line results from our global, double-blinded, placebo-controlled, Phase 2 randomized CARRIE clinical trial evaluating the addition of MM-141 (istiratumab) to standard-of-care treatment in patients with previously untreated metastatic pancreatic cancer and high serum levels of the insulin-like growth factor 1, or IGF-1. The CARRIE clinical trial did not meet its primary or secondary efficacy endpoints in patients who received MM-141 in combination with nab-paclitaxel and gemcitabine, compared to nab-paclitaxel and gemcitabine alone. These results were consistent in all subgroups analyzed. Based on these results, we will not devote additional resources to and have ceased all of our development activities for MM-141.

On October 19, 2018, we announced the termination of our global, open-label, biomarker-selected, Phase 2 randomized SHERLOC clinical trial evaluating MM-121 (seribantumab) in combination with docetaxel in patients with heregulin positive non-small cell lung cancer, or NSCLC. The decision to terminate the SHERLOC clinical trial was made based on an interim analysis triggered by the occurrence of 75% of events required for trial completion, which demonstrated that the addition of MM-121 to docetaxel did not improve progression free survival over docetaxel alone in this patient population (see Note 12, "Subsequent Events," in the accompanying notes to the condensed consolidated financial statements).

On November 7, 2018, based on the results of the interim analysis of the randomized Phase 2 SHERLOC study that were announced on October 19, 2018, we announced that we are discontinuing development of all ongoing MM-121 programs, including terminating the global, double-blinded, placebo-controlled, biomarker-selected, Phase 2 randomized SHERBOC clinical trial evaluating MM-121 in combination with fulvestrant in patients with heregulin positive, hormone receptor positive, ErbB2 (HER2) negative, metastatic breast cancer (see Note 12, “Subsequent Events,” in the accompanying notes to the condensed consolidated financial statements).

On November 7, 2018, we announced that we are implementing a reduction in headcount as part of a corporate restructuring, after which we expect to have approximately 27 employees. The corporate restructuring follows a comprehensive review of our drug candidate pipeline. We estimate that we will incur charges for one-time termination benefits in connection with this corporate restructuring of approximately $1.5 million to $1.8 million for employee severance, benefits and related costs. The reduction in headcount is expected to be completed by February 2019 (see Note 12, “Subsequent Events,” in the accompanying notes to the condensed consolidated financial statements).

On April 3, 2017, we completed the sale, or the asset sale, to Ipsen S.A., or Ipsen, of our right, title and interest in the non-cash assets, equipment, inventory, contracts and intellectual property primarily related to or used in our business operations and activities involving or relating to developing, manufacturing and commercializing ONIVYDE, our first commercial product, and MM-436, or the commercial business, for $580.7 million. Pursuant to the Asset Purchase and Sale Agreement, dated as of January 7, 2017, or the

asset sale agreement, between us and Ipsen, we are eligible to receive up to $450.0 million in additional regulatory approval-based milestone payments. We also retained the right to receive net milestone payments that may become payable for the development and commercialization of ONIVYDE for up to $33.0 million pursuant to a license and collaboration agreement, which we refer to as the Baxalta agreement, with Baxalta Incorporated, Baxalta US Inc. and Baxalta GmbH, collectively Baxalta. Shire plc was the parent entity of Baxalta and assigned the Baxalta agreement to Les Laboratoires Servier SAS, or Servier. We assigned the Baxalta agreement to Ipsen in connection with the completion of the asset sale. As of March 31, 2017, the commercial business met all the conditions to be classified as a discontinued operation since the disposal of the commercial business represented a strategic shift that had a major effect on our operations and financial results. Therefore, the operating results of the commercial business are reported in discontinued operations, net of tax in the condensed consolidated statements of operations and comprehensive loss for the three and nine months ended September 30, 2017.

We have devoted substantially all of our resources to our drug discovery and development efforts, including conducting clinical trials for our product candidates, protecting our intellectual property and providing general and administrative support for these operations. We currently have no products approved for sale. We have financed our operations primarily through private placements of convertible preferred stock, collaborations, public offerings of our securities, secured debt financings, sales of ONIVYDE and the asset sale.

As of September 30, 2018, we had unrestricted cash and cash equivalents and marketable securities of $84.8 million. We believe that our financial resources as of September 30, 2018, in addition to a milestone payment of $5.0 million received in October 2018 pursuant to the Baxalta agreement, and as a result of the corporate restructuring announced on November 7, 2018 (see Note 12, “Subsequent Events,” in the accompanying notes to the condensed consolidated financial statements), together with other restructuring and cost cutting measures that we could implement in the future, provide us with the potential to fund our operations, including debt service obligations and capital expenditure requirements, into at least the second half of 2022.

We have never been profitable and, as of September 30, 2018, we had an accumulated deficit of $514.3 million. Our net loss from continuing operations before income tax benefit was $52.7 million and $96.5 million for the nine months ended September 30, 2018 and 2017, respectively. We expect to continue to incur significant expenses and operating losses for at least the next several years as we continue the research and development of our product candidates, including conducting clinical trials for certain product candidates. Until such time, if ever, as we can generate sufficient product revenues, we expect to finance our cash needs through a combination of equity offerings, debt financings, collaborations, licensing arrangements and other marketing and distribution arrangements. We also could engage in discussions with third parties regarding partnerships, joint ventures, combinations or divestitures of one or more of our product candidates as we seek to further the development of our research programs, improve our cash position and maximize stockholder value. There can be no assurance as to the timing, terms or consummation of any financing, collaboration, licensing arrangement or other marketing and distribution arrangement, partnership, joint venture, combination or divestiture. We may be unable to raise capital when needed or on attractive terms, which would force us to delay, limit, reduce or terminate our research and development programs. We will need to generate significant revenues to achieve profitability, and we may never do so.

Financial Operations Overview

Revenues

In the future, we may generate revenue from a combination of research and development payments, license fees and other upfront payments, milestone payments, product sales and royalties in connection with any future collaborations and licenses. We expect that any revenue we generate will fluctuate in future periods as a result of the timing of our or a collaborator's achievement of preclinical, clinical, regulatory and commercialization milestones, if at all, the timing and amount of any payments to us relating to such milestones and the extent to which any of our product candidates are approved and successfully commercialized by us or a collaborator. If we fail, or any future collaborator fails, to develop product candidates in a timely manner or to obtain regulatory approval for them, our ability to generate future revenue, and our results of operations and financial position, would be materially adversely affected.

Research and development expenses

Research and development expenses consist of the costs associated with our preclinical research activities, conduct of clinical trials, manufacturing development efforts and activities related to regulatory filings. Our research and development expenses consist of:

- employee salaries and related expenses, which include stock-based compensation and benefits for the personnel involved in our drug discovery and development activities;
- external research and development expenses incurred under agreements with third-party contract research organizations and investigative sites;
- manufacturing material expense for third-party manufacturing organizations and consultants, including costs associated with manufacturing product prior to product approval;
- license fees for and milestone payments related to in-licensed products and technologies; and
- facilities, depreciation and other allocated expenses, which include direct and allocated expenses for rent and maintenance of facilities, depreciation of leasehold improvements and equipment, and laboratory and other supplies.

We expense research and development costs as incurred. Conducting a significant amount of research and development is central to our business model. Product candidates in late stages of clinical development generally have higher development costs than those in earlier stages of clinical development, primarily due to the increased size and duration of late stage clinical trials. We expect to maintain or increase our research and development expenses for the foreseeable future as we continue to develop our clinical stage product candidates and further advance our preclinical products and earlier stage research and development projects.

We use our employee and infrastructure resources across multiple research and development programs. We track expenses related to our most advanced product candidates on a per project basis. Accordingly, we allocate internal employee-related and infrastructure costs, as well as third-party costs, to each of these programs. We do not allocate to specific development programs either stock-based compensation expense or expenses related to preclinical programs. Costs that are not directly attributable to specific clinical programs, such as wages related to shared laboratory services, travel and employee training and development, are not allocated and are considered general research and discovery expenses.

The following table summarizes our principal product development programs, including the research and development expenses allocated to each clinical product candidate, for the three and nine months ended September 30, 2018 and 2017:

(in thousands)	Three Months Ended September 30, 2018	2017	Nine Months Ended September 30, 2018	2017
MM-121	$7,898	$3,520	$22,496	$10,427
MM-141	—	2,456	3,895	8,874
MM-310	1,102	2,553	2,460	4,836
Preclinical, general research and discovery	3,553	4,053	9,689	19,152
Legacy programs	150	282	333	5,547
Stock-based compensation	256	734	870	6,118
Total research and development expenses	$12,959	$13,598	$39,743	$54,954

The successful development of our product candidates is highly uncertain. At this time, other than as discussed below, we cannot reasonably estimate the nature, timing or costs of the efforts that will be necessary to complete the remainder of the development of any of our product candidates or the period, if any, in which material net cash flows from these product candidates may commence. This is due to the numerous risks and uncertainties associated with developing drugs, including the uncertainty of:

- the scope, rate of progress and expense of our ongoing, as well as any additional, clinical trials and other research and development activities;
- the potential benefits of our product candidates over other therapies;
- our ability to market, commercialize and achieve market acceptance for any of our product candidates that we are developing or may develop in the future;
- future clinical trial results;
- the terms and timing of regulatory approvals; and
- the expense of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights.

A change in the outcome of any of these variables with respect to the development of a product candidate could mean a significant change in the costs and timing associated with the development of that product candidate. For example, if the U.S. Food and Drug Administration, or FDA, or another regulatory authority were to require us to conduct clinical trials beyond those which we currently anticipate will be required for the completion of clinical development of a product candidate or if we experience significant delays in enrollment in any of our clinical trials, we could be required to expend significant additional financial resources and time on the completion of clinical development.

MM-121 (seribantumab)

In February 2015, we initiated the global, open-label, biomarker-selected, Phase 2 randomized SHERLOC clinical trial evaluating MM-121 in combination with docetaxel, versus docetaxel alone, in patients with heregulin positive NSCLC. On October 19, 2018, we announced the termination of the SHERLOC clinical trial based on an interim analysis triggered by the occurrence of 75% of events required for trial completion, which demonstrated that the addition of MM-121 to docetaxel did not improve progression free survival over docetaxel alone in this patient population.

In February 2018, we dosed the first patient in our global, double-blinded, placebo-controlled, biomarker-selected Phase 2 randomized SHERBOC clinical trial evaluating MM-121 in combination with fulvestrant, versus fulvestrant alone, in patients with heregulin positive, hormone receptor positive, ErbB2 (HER2) negative, metastatic breast cancer. On November 7, 2018, we announced that we are discontinuing development of all ongoing MM-121 programs, including terminating the SHERBOC clinical trial based on the results of the interim analysis of the SHERLOC clinical trial.

MM-141 (istiratumab)

In May 2015, we initiated the global, double-blinded, placebo-controlled, Phase 2 randomized CARRIE clinical trial evaluating MM-141 in combination with nab-paclitaxel and gemcitabine, versus nab-paclitaxel and gemcitabine alone, in patients with previously untreated metastatic pancreatic cancer with high serum levels of free insulin-like growth factor 1, or IGF-1. In June 2018, we announced top-line results from the CARRIE clinical trial, showing that the trial did not meet its primary or secondary efficacy endpoints in patients who received MM-141 in combination with nab-paclitaxel and gemcitabine, compared to nab-paclitaxel and gemcitabine alone. These results were consistent in all subgroups analyzed. Based on these results, we will not devote additional resources to and have ceased all of our development activities for MM-141. As of June 30, 2018, we no longer expected to receive any future economic benefit from the CARRIE clinical trial and accrued $1.0 million for the estimated CARRIE wind down commitments and obligations we expect to incur in 2018.

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MM-310

In March 2017, we initiated a Phase 1 clinical trial of MM-310 to evaluate its safety and preliminary activity in patients with solid tumors and to identify the maximum tolerated dose. On November 7, 2018, we announced an amendment to the clinical trial to extend the dosing interval of MM-310 from every three weeks to every four weeks. Although early data from the clinical trial from the every three week dosing schedule regimen showed signs of encouraging antitumor activity in four patients, emerging cumulative grade 3 peripheral neuropathy following multiple cycles of treatment was observed in three patients. Pharmacokinetic and preclinical data indicate that lengthening the time between dosing may improve the tolerability of MM-310. We plan to provide a safety update from the clinical trial in the first quarter of 2019.

General and administrative expenses

General and administrative expenses consist primarily of salaries and other related costs for personnel, including stock-based compensation expenses and benefits, in our legal, intellectual property, business development, finance, information technology, corporate communications, investor relations and human resources departments. Other general and administrative expenses include costs for employee training and development, board of directors costs, depreciation, insurance expenses, facility-related costs not otherwise included in research and development expenses and professional fees for legal, accounting and information technology services. We expect to maintain general and administrative expenses at similar levels in future periods as we continue to support the further research and development and commercialization of our product candidates.

Interest income

Interest income for the three and nine months ended September 30, 2018 consisted primarily of interest income associated with our marketable securities. Interest income for the three and nine months ended September 30, 2017 consisted primarily of interest income associated with our interest bearing cash and cash equivalent accounts.

Interest expense

Interest expense for the three and nine months ended September 30, 2017 consisted primarily of cash and non-cash interest related to our 4.50% convertible notes due 2020, or convertible notes, and our 11.50% senior secured notes due 2022, or 2022 notes, both of which were extinguished in 2017. Interest expense for the three and nine months ended September 30, 2018 consisted primarily of cash and non-cash interest related to the Loan and Security Agreement, or Loan Agreement, with Hercules Capital, Inc., or Hercules.

Other income (expense), net

Other income (expense), net consists primarily of our proportionate share of losses from our equity method investment in Silver Creek Pharmaceuticals, Inc., or Silver Creek.

Critical Accounting Policies and Significant Judgments and Estimates

Our management’s discussion and analysis of our financial condition and results of operations is based on our condensed consolidated financial statements, which we have prepared in accordance with the rules and regulations of the Securities and Exchange Commission, or the SEC, and generally accepted accounting principles in the United States, or GAAP. The preparation of these condensed consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported expenses during the reporting periods. We

evaluate our estimates and judgments on an ongoing basis. We base our estimates on historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Our actual results may differ from these estimates under different assumptions or conditions.

Our critical accounting policies and the methodologies and assumptions we apply under them have not materially changed since March 12, 2018, the date we filed our Annual Report on Form 10-K for the year ended December 31, 2017. For more information on our critical accounting policies, refer to our Annual Report on Form 10-K for the year ended December 31, 2017.

Results of Operations

Comparison of the three months ended September 30, 2018 and 2017

	Three Months Ended September 30,	
(in thousands)	2018	2017
Operating expenses:		
Research and development expenses	$12,959	$13,598
General and administrative expenses	3,777	3,366
Total operating expenses	16,736	16,964
Loss from continuing operations	(16,736)	(16,964)
Interest income	306	250
Interest expense	(472)	(1,659)
Gain on deconsolidation of Silver Creek Pharmaceuticals, Inc.	—	10,848
Gain on sale of assets	—	—
Other income (expense), net	(237)	69
Net loss from continuing operations	$(17,139)	$(7,456)

Research and development expenses

Research and development expenses were $13.0 million for the three months ended September 30, 2018 compared to $13.6 million for the three months ended September 30, 2017, a decrease of $0.6 million, or 4%. This decrease was primarily attributable to:

- $2.5 million decrease in expense related to MM-141 clinical trial expenses due to the discontinuation of the trial;
- $1.4 million decrease in expense related to MM-310 clinical trial expenses based on the timing of manufacturing runs;
- $0.6 million decrease in expenses related to our preclinical, general research and discovery, and legacy programs related to the refocus of our early stage development spend and prioritization of our most advanced programs; and
- $0.5 million decrease in stock-based compensation related to reduction in headcount; offset by
- $4.4 million increase in expenses related to the progression of the MM-121 clinical trials and timing of manufacturing expenses due to the nature of when runs are performed.

General and administrative expenses

General and administrative expenses were $3.8 million for the three months ended September 30, 2018 compared to $3.4 million for the three months ended September 30, 2017, an increase of $0.4 million, or 12%, mainly attributable to the timing of corporate expenses.

Interest income

Interest income was $0.3 million for the three months ended September 30, 2018 compared to $0.3 million for the three months ended September 30, 2017, primarily attributable to the interest income associated with our marketable securities and interest bearing cash and cash equivalents accounts.

Interest expense

Interest expense was $0.5 million for the three months ended September 30, 2018, primarily attributable to the Loan Agreement with Hercules. Interest expense was $1.7 million for the three months ended September 30, 2017, primarily attributable to the convertible notes.

Other income (expense), net

Other income (expense), net was $0.2 million of expense for the three months ended September 30, 2018, primarily attributable to our proportionate share of losses from our equity method investment in Silver Creek. Other income (expense), net was $0.1 million of income for the three months ended September 30, 2017, primarily attributable to the change in our accounting of Silver Creek from a variable interest entity to an equity method investment.

Comparison of the nine months ended September 30, 2018 and 2017

	Nine Months Ended September 30,	
(in thousands)	2018	2017
Operating expenses:		
Research and development expenses	$39,743	$54,954
General and administrative expenses	11,560	23,798
Total operating expenses	51,303	78,752
Loss from continuing operations	(51,303)	(78,752)
Interest income	863	646
Interest expense	(472)	(30,400)
Gain on deconsolidation of Silver Creek Pharmaceuticals, Inc.	—	10,848
Gain on sale of assets	—	1,703
Other income (expense), net	(1,778)	(592)
Net loss from continuing operations	$(52,690)	$(96,547)

Research and development expenses

Research and development expenses were $39.7 million for the nine months ended September 30, 2018 compared to $55.0 million for the nine months ended September 30, 2017, a decrease of $15.3 million, or 28%. This decrease was primarily attributable to:

- $5.0 million decrease in expense related to MM-141 clinical trial expenses due to the discontinuation of the trial;
- $2.4 million decrease in expense related to MM-310 clinical trial expenses;
- $14.7 million decrease in expenses related to our preclinical, general research and discovery, and legacy programs related to the refocus of our early stage development spend and prioritization of our most advanced programs; and
- $5.3 million decrease in stock-based compensation related to reduction in headcount; offset by
- $12.1 million increase in expenses related to the progression of the MM-121 clinical trials and timing of manufacturing expenses due to the nature of when runs are performed.

General and administrative expenses

General and administrative expenses were $11.6 million for the nine months ended September 30, 2018 compared to $23.8 million for the nine months ended September 30, 2017, a decrease of $12.2 million, or 51%. This decrease was primarily attributable to a decrease in corporate expenses related to headcount and stock-based compensation.

Interest income

Interest income was $0.9 million for the nine months ended September 30, 2018, primarily attributable to interest income associated with our marketable securities. Interest income was $0.6 million for the nine months ended September 30, 2017, primarily attributable to the interest income associated with our interest bearing cash and cash equivalents accounts.

Interest expense

Interest expense was $0.5 million for the nine months ended September 30, 2018, primarily attributable to the Loan Agreement with Hercules. Interest expense was $30.4 million for the nine months ended September 30, 2017, primarily attributable to the 2022 notes and convertible notes.

Other income (expense), net

Other income (expense), net was $1.8 million of expense for the nine months ended September 30, 2018, primarily attributable to our proportionate share of losses from our equity method investment in Silver Creek. Other income (expense), net was $0.6 million of expense for the nine months ended September 30, 2017, primarily attributable to our proportionate share of losses from our equity method investment in Silver Creek.

Liquidity and Capital Resources

Sources of liquidity

We have financed our operations through September 30, 2018 primarily through private placements of convertible preferred stock, collaborations, public offerings of our securities, secured debt financings, sales of ONIVYDE and the asset sale. Through September 30, 2018, we have received $580.7 million from the asset sale, $268.2 million from the sale of convertible preferred stock and warrants, $126.7 million of net proceeds from the sale of common stock in our initial public offering and a July 2013 follow-on public offering, $38.6 million of net proceeds from our 2015 “at the market offering” program, $39.6 million of net proceeds from a secured debt financing, $120.6 million of net proceeds from the issuance of the convertible notes in our July 2013 public offering, $168.5 million of net proceeds from the issuance of the 2022 notes, $492.5 million of upfront license fees, milestone payments, reimbursement of research and development costs and manufacturing services and other payments from our collaborations, $68.9 million of cash receipts related to ONIVYDE sales, $23.0 million in milestone payments related to the development and commercialization of ONIVYDE and $14.7 million in net borrowings pursuant to the Loan Agreement with Hercules. As of September 30, 2018, we had unrestricted cash and cash equivalents and marketable securities of $84.8 million. In addition, we received a milestone payment of $5.0 million in October 2018 pursuant to the Baxalta agreement (see Note 12, “Subsequent Events,” in the accompanying notes to the condensed consolidated financial statements).

Cash flows

The following table provides information regarding our cash flows for the nine months ended September 30, 2018 and 2017:

	Nine Months Ended September 30,	
(in thousands)	2018	2017
Net cash used in operating activities	$(46,696)	$(101,021)
Net cash (used in) provided by investing activities	(11,775)	571,363
Net cash provided by (used in) financing activities	14,632	(324,613)
Net (decrease) increase in cash, cash equivalents and restricted cash	$(43,839)	$145,729

Operating activities

Cash used in operating activities of $46.7 million during the nine months ended September 30, 2018 was primarily a result of our $47.9 million net loss from operations and a net decrease in assets and liabilities of $0.6 million. The net decrease in operating assets and liabilities during the nine months ended September 30, 2018 was primarily driven by increases in accounts payable, accrued expenses and other and income taxes payable offset by decreases to prepaid expenses and other current assets and deferred rent. This decrease was offset by non-cash items, including $3.2 million in depreciation and amortization, $2.3 million of stock-based compensation expense, $1.7 million in loss on equity method investment, $4.8 million benefit from intraperiod tax allocation and $0.5 million non-cash activity related to discontinued operations. Cash used in operating activities was $101.0 million during the nine months ended September 30, 2017, of which $63.1 million was used in continuing operations and $38.0 million was used in discontinued operations. The cash used in operating activities was primarily a result of our $64.2 million net loss from continuing operations and changes in assets and liabilities of $7.8 million. The net change in operating assets and liabilities during the nine months ended September 30, 2017 was primarily driven by the increase in accounts receivable related to the working capital adjustment and decrease in accounts payable. This increase was offset by

non-cash items, including $11.1 million of stock-based compensation expense, $3.4 million in non-cash interest expense, $32.4 million income tax benefit, $10.2 million of non-cash activity related to discontinued operations and a $25.0 million loss on extinguishment.

Investing activities

Cash used in investing activities of $11.8 million during the nine months ended September 30, 2018 was primarily due to purchases of marketable securities totaling $76.9 million offset by proceeds from maturities and sales of marketable securities totaling $42.2 million and milestone payments relating to the sale of the commercial business totaling $23.0 million. Cash provided by investing activities of $571.4 million during the nine months ended September 30, 2017 was primarily due to cash received from the sale of the commercial business of $575.0 million, offset by $4.0 million deconsolidation of Silver Creek cash.

Financing activities

Cash provided by financing activities of $14.6 million during the nine months ended September 30, 2018 was due to proceeds from issuance of notes payable related to the Loan Agreement with Hercules. Cash used in financing activities of $324.6 million during the nine months ended September 30, 2017 was primarily due to the $175.0 million used to settle the principle balance of the

2022 notes, the $140.0 million dividend paid and $20.1 million payment of debt extinguishment costs offset by $6.5 million in proceeds from the exercise of options to purchase common stock and $4.0 million in proceeds from issuance of Series C preferred stock by Silver Creek, net of issuance costs.

Funding requirements

We have incurred significant expenses and operating losses to date, and we expect to continue to incur significant expenses and operating losses for at least the next several years. We anticipate that we will continue to incur significant expenses as we:

- initiate or continue clinical trials of our most advanced product candidates;
- continue the research and development of our other product candidates;
- seek to discover additional product candidates;
- seek regulatory approvals for our product candidates that successfully complete clinical trials; and
- continue to provide the operational, financial and management information systems and personnel to support our product development.

We believe that our financial resources as of September 30, 2018, in addition to a milestone payment of $5.0 million received in October 2018 pursuant to the Baxalta agreement, and as a result of the corporate restructuring announced on November 7, 2018 (see Note 12, “Subsequent Events,” in the accompanying notes to the condensed consolidated financial statements), together with other restructuring and cost cutting measures that we could implement in the future, provide us with the potential to fund our operations, including debt service obligations and capital expenditure requirements, into at least the second half of 2022. We have based this estimate on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect. Because of the numerous risks and uncertainties associated with the development and commercialization of our product candidates and the extent to which we utilize collaborations with third parties to participate in their development and commercialization, we are unable to estimate the amounts of increased capital outlays and operating expenditures associated with our current and anticipated clinical trials. Our future capital requirements will depend on many factors, including:

- the progress and results of the clinical trials of our most advanced product candidates;
- our ability to establish and maintain additional collaborations on favorable terms, and the success of any such future collaborations;
- the timing and amount of potential milestone payments related to ONIVYDE that we may receive from Ipsen and Baxalta;
- the scope, progress, results and costs of preclinical development, laboratory testing and clinical trials for our other product candidates;
- the costs, timing and outcome of regulatory review of our current and future product candidates;
    - the costs of preparing, filing and prosecuting patent applications and maintaining, enforcing and defending intellectual property-related claims; and
- the extent to which we acquire or invest in businesses, products and technologies.

Until such time, if ever, as we can generate sufficient product revenues, we expect to finance our cash needs through a combination of equity offerings, debt financings, collaborations, licensing arrangements and other marketing and distribution arrangements. We also could engage in discussions with third parties regarding partnerships, joint ventures, combinations or divestitures of one or more of our product candidates as we seek to further the development of our research programs, improve our cash position and maximize stockholder value. There can be no assurance as to the timing, terms or consummation of any financing, collaboration, licensing arrangement or other marketing and distribution arrangement, partnership, joint venture, combination or divestiture. We do not have any committed external sources of funds. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interest of our stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our stockholders. Debt financing, if available, may

involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. For example, if we raise additional funds through marketing and distribution arrangements or other collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates or to grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Contractual Obligations and Commitments

On July 2, 2018, we entered into the Loan Agreement with Hercules pursuant to which a term loan of up to an aggregate principal amount of $25.0 million is available to us. The Loan Agreement provides for an initial term loan advance of $15.0 million, which closed on July 2, 2018, and, at our option, two additional term loan advances of $5.0 million each upon the occurrence of certain funding conditions prior to December 31, 2018 and December 31, 2019, respectively. As a result of the decision to terminate the SHERLOC clinical trial, we do not meet the prerequisite funding conditions for drawing the two additional term loan advances under the Loan Agreement. The term loan bears interest at an annual rate equal to the greater of 9.25% and 9.25% plus the prime rate of interest minus 5.25%. The Loan Agreement provides for interest-only payments for eighteen months and repayment of the aggregate outstanding principal balance of the term loan in monthly installments starting on February 1, 2020 and continuing through August 1, 2021. In addition, we paid a fee of $0.3 million upon closing and are required to pay a fee of 5.55% of the aggregate amount of advances under the Loan Agreement at maturity.

Other than the above, there were no material changes to our contractual obligations and commitments described under Management’s Discussion and Analysis of Financial Condition and Results of Operations in our Annual Report on Form 10-K for the year ended December 31, 2017, as filed with the SEC on March 12, 2018.

Off-Balance Sheet Arrangements

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements, as defined under SEC rules.

Recent Accounting Pronouncements

See Note 11, “Recent Accounting Pronouncements,” in the accompanying notes to the condensed consolidated financial statements for a full description of recent accounting pronouncements.

Item 3.Quantitative and Qualitative Disclosures About Market Risk.

We invest in a variety of financial instruments, principally cash deposits, money market funds, securities issued by the U.S. government and its agencies and corporate debt securities. The goals of our investment policy are preservation of capital, fulfillment of liquidity needs and fiduciary control of cash and investments. We also seek to maximize income from our investments without assuming significant risk.

Our primary exposure to market risk is interest income sensitivity, which is affected by changes in the general level of interest rates, particularly because our investments are in short-term marketable securities. Due to the short-term duration of our investment portfolio and the low risk profile of our investments, an immediate 10% change in interest rates would not have a material effect on the fair market value of our portfolio. We have the ability and intention to hold our investments until maturity, and therefore, we would not expect our operating results or cash flows to be affected to any significant degree by the effect of a sudden change in market interest rates on our investment portfolio.

We do not currently have any auction rate or mortgage-backed securities. We do not believe our cash, cash equivalents and marketable securities have significant risk of default or illiquidity, however we cannot provide absolute assurance that in the future our investments will not be subject to adverse changes in market value.

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Item 4.Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer (our principal executive officer and principal financial officer, respectively), evaluated the effectiveness of our disclosure controls and procedures as of September 30, 2018. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company’s management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of September 30, 2018, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control Over Financial Reporting

No change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) occurred during the three months ended September 30, 2018 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II

OTHER INFORMATION

Item 1A.Risk Factors.

The following risk factors and other information included in this Quarterly Report on Form 10-Q should be carefully considered. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties not presently known to us or that we presently deem less significant may also impair our business operations. Please see page 1 of this Quarterly Report on Form 10-Q for a discussion of some of the forward-looking statements that are qualified by these risk factors. If any of the following risks occur, our business, financial condition, results of operations and future growth prospects could be materially and adversely affected.

Risks Related to the Sale of the Commercial Business to Ipsen

Because the commercial business represented all of our revenues for fiscal year 2016 and the three months ended March 31, 2017, our business following the sale of the commercial business is substantially different than it was prior to such sale.

As a result of the completion of the asset sale with Ipsen, Ipsen acquired our right, title and interest in the commercial business. The commercial business represented all of our revenues for the fiscal year 2016 and the three months ended March 31, 2017. Following the asset sale, we retained only non-commercial assets, including our clinical and preclinical development programs, or the pipeline business. Our results of operations and financial condition may be materially affected if we fail to grow the remaining pipeline business, if we are unable to raise additional capital when needed to run the remaining pipeline business, if we must incur significant costs in order to raise additional capital to run the remaining pipeline business or if we are unable to successfully develop and commercialize our remaining product candidates.

We have been, and in the future may be, subject to securities litigation, which is expensive and could divert our attention.

We have been, and may in the future be, subject to securities class action litigation. Securities litigation against us could result in substantial costs and divert our management’s attention, which could seriously harm our business. For instance, a putative stockholder class action suit was filed by a purported stockholder of ours in the Superior Court of Massachusetts for the County of Middlesex against us and our directors. The case was captioned Robert Garfield v. Merrimack Pharmaceuticals Inc., et al., or the Garfield Action. The Garfield Action complaint alleged that our directors breached their fiduciary duties by entering into the asset sale agreement and that the definitive proxy statement relating to the asset sale contained inadequate disclosures and omissions. Although we believed that the Garfield Action was without merit, to avoid the risk of the litigation delaying or adversely affecting the asset sale and to minimize the expense of defending the litigation related to the asset sale, we agreed to make supplemental disclosures related to the asset sale and to pay the plaintiff’s counsel $375,000 in attorney’s fees in connection with the resolution of the Garfield Action. As a result, the plaintiff concluded that the claims in the Garfield Action were mooted, and the Garfield Action was dismissed with prejudice. Nonetheless, there can be no guarantee that there will not be additional securities class action litigation in connection with the asset sale.

There can be no guarantee that Ipsen will comply with its obligation to use commercially reasonable efforts in connection with the development of ONIVYDE or that the milestones set forth in the Baxalta agreement will be achieved.

Ipsen has agreed to use commercially reasonable efforts to develop ONIVYDE in connection with obtaining the regulatory approval by the FDA of ONIVYDE for certain indications. Although the results of this approval process may enable Ipsen to achieve the milestones necessary for us to receive the contingent payments under the asset sale agreement, there is no guarantee that Ipsen will take the steps set forth in the asset sale agreement and that such development will lead to the successful approval of ONIVYDE for such additional indications. Therefore, there can be no guarantees that any of the milestones set forth in the asset sale agreement will be achieved and that we will receive any future contingent payments.

Additionally, although the asset sale agreement entitles us to receive certain net milestone payments of up to $33.0 million that may become payable under the Baxalta agreement, to date we have received only $28.0 million of such net milestone payments. Payment of the remaining $5.0 million is not guaranteed for the milestone related to the first patient dosed in a pivotal clinical trial of ONIVYDE in an indication other than pancreatic cancer, as the satisfaction of such milestone is based on a clinical trial being conducted by Ipsen and Servier and is therefore out of our control.

Ipsen did not assume any of the excluded liabilities under the asset sale agreement.

Pursuant to the asset sale agreement, Ipsen assumed only certain specified liabilities set forth in the asset sale agreement and did not assume all of the liabilities associated with the commercial business. Certain liabilities remain with us post-closing. While we believe that we have adequately accrued for these liabilities or are adequately insured against certain of the risks associated with such excluded liabilities, there can be no assurances that additional expenditures will not be incurred in resolving any such liabilities.

The asset sale agreement may expose us to contingent liabilities.

We have agreed to indemnify Ipsen for certain breaches of representations, warranties or covenants made by us in the asset sale agreement and for certain specified existing litigation. We have agreed that if we cannot pay our indemnification obligations, Ipsen will have set-off rights against any future contingent payments. Significant indemnification claims by Ipsen could further materially and adversely affect our financial condition and/or significantly reduce any future contingent payments.

Risks Related to Our Financial Position and Need for Additional Capital

We have incurred significant losses since our inception. We expect to incur operating losses for the foreseeable future and may never achieve or maintain profitability.

Since inception, we have incurred significant operating losses. Our net loss from continuing operations before income tax benefit was $52.7 million for the nine months ended September 30, 2018. Our net loss from continuing operations before income tax benefit was $118.4 million for the year ended December 31, 2017, $169.5 million for the year ended December 31, 2016 and $162.8 million for the year ended December 31, 2015. As of September 30, 2018, we had an accumulated deficit of $514.3 million. To date, we have financed our operations primarily through private placements of convertible preferred stock, collaborations, public offerings of our securities, secured debt financings, sales of ONIVYDE and the asset sale. We have devoted substantially all of our efforts to research and development, including clinical trials and recently to commercialization of our first product, ONIVYDE, which was sold to Ipsen. We have not completed development of or commercialized any other product candidates or diagnostics other than ONIVYDE. We expect to continue to incur significant expenses and increasing operating losses for at least the next several years. We anticipate that our expenses will increase substantially as we:

- initiate or continue clinical trials of our most advanced product candidates;
- continue the research and development of our other product candidates;
- seek to discover additional product candidates;
- seek regulatory approvals for our product candidates that successfully complete clinical trials; and
- continue to provide the operational, financial and management information systems and personnel to support our product development.

To become and remain profitable, we must succeed in developing and commercializing products with significant market potential. This will require us to be successful in a range of challenging activities, including discovering product candidates, completing preclinical testing and clinical trials of our product candidates, obtaining regulatory approval for these product candidates and manufacturing, marketing and selling or partnering those products for which we may seek and receive regulatory approval. We may never succeed in these activities and may never generate revenues that are significant or large enough to achieve profitability. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable would depress the value of our company and could impair our ability to raise capital, expand our business, diversify our product offerings or continue our operations. A decline in the value of our company could also cause our stockholders to lose all or part of their investment.

We will need substantial additional funding. If we are unable to raise capital when needed, we would be forced to delay, reduce or eliminate our product development programs or commercialization efforts.

We will need substantial additional funding in connection with our continuing operations. We expect to continue to incur significant research and development expenses in connection with our ongoing activities, particularly as we continue the research, development and clinical trials of, and seek regulatory approval for, our product candidates. If we are unable to raise capital when needed or on attractive terms, we would be forced to delay, reduce or eliminate our research and development programs or commercialization efforts.

We believe that our financial resources as of September 30, 2018, in addition to a milestone payment of $5.0 million received in October 2018 pursuant to the Baxalta agreement, and as a result of the corporate restructuring announced on November 7, 2018, together with other restructuring and cost cutting measures that we could implement in the future, provide us with the potential to fund our operations, including debt service obligations and capital expenditure requirements, into at least the second half of 2022. We have based this estimate on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect. Because of the numerous risks and uncertainties associated with the development and commercialization of our product candidates, and the extent to which we may utilize collaborations with third parties to participate in their development and commercialization, we are unable to estimate the amounts of increased capital outlays and operating expenditures associated with our current and anticipated clinical trials. Our future capital requirements will depend on many factors, including:

- the progress and results of the clinical trials of our most advanced product candidates;
- our ability to establish and maintain additional collaborations on favorable terms, and the success of any such future collaborations;
- the timing and amount of potential milestone payments related to ONIVYDE that we may receive from Ipsen and Servier;
- the scope, progress, results and costs of preclinical development, laboratory testing and clinical trials for our product candidates;
- the costs, timing and outcome of regulatory review of our current and future product candidates;
    - the costs of preparing, filing and prosecuting patent applications and maintaining, enforcing and defending intellectual property-related claims; and
- the extent to which we acquire or invest in businesses, products and technologies.

Conducting preclinical testing and clinical trials is a time-consuming, expensive and uncertain process that takes years to complete, and we may never generate the necessary data required to obtain regulatory approval and, even if regulatory approval is obtained, achieve product sales of any of our product candidates. In addition, any of our product candidates, even if approved, may not achieve commercial success. If we fail to generate sufficient revenues from collaborations or the commercialization of any of our product candidates, we will need to continue to rely on additional financing to achieve our business objectives.

Raising additional capital may cause dilution to our existing stockholders, restrict our operations or require us to relinquish rights to our technologies or product candidates.

We do not have any committed external source of funds. Sources of funds may not be available or, if available, may not be available on terms satisfactory to us and could result in significant stockholder dilution.

Until such time, if ever, as we can generate sufficient product revenues, we expect to finance our cash needs through a combination of equity offerings, debt financings, collaborations, licensing arrangements and other marketing and distribution arrangements. We also could engage in discussions with third parties regarding partnerships, joint ventures, combinations or divestitures of one or more of our product candidates as we seek to further the development of our research programs, improve our cash position and maximize stockholder value. There can be no assurance as to the timing, terms or consummation of any financing, collaboration, licensing arrangement or other marketing and distribution arrangement, partnership, joint venture, combination or divestiture.

On December 15, 2017, we filed a registration statement on Form S-3 with the SEC to allow the issuance of our securities from time to time in one or more offerings of up to $150,000,000 in aggregate dollar amount. This registration statement was declared effective by the SEC on January 5, 2018. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interest of our existing common stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that

adversely affect the rights of our stockholders. Debt financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends, and these covenants may also require us to attain certain levels of financial performance and we may not be able to do so; any such failure may result in the acceleration of such debt and the foreclosure by our creditors on the collateral we used to secure the debt. The debt issued in a debt financing would also be senior to our outstanding shares of capital stock upon our liquidation. Significant indebtedness and the pledge of our assets as collateral in the future could limit our ability to obtain additional debt financing. If we raise additional funds through marketing and distribution arrangements or other collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates or to grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or

terminate our product development or commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Our substantial indebtedness may limit cash flow available to invest in the ongoing needs of our business.

On July 2, 2018, we entered into the Loan Agreement with Hercules. The Loan Agreement provided for a term loan advance of $15.0 million, which closed on July 2, 2018. The Loan Agreement contains certain events of default, including nonpayment, breach of covenants, representations and warranties, material adverse effect (not including clinical trial failures), insolvency and bankruptcy, judgments, cross default to other indebtedness, and suspension of trading.

In addition to the debt under the Loan Agreement, we have had in the past, and may in the future have, a significant amount of indebtedness. In July 2013, we issued $125.0 million aggregate principal amount of convertible notes. In December 2015, we issued $175.0 million aggregate principal amount of 2022 notes. Although we used a portion of the proceeds from the asset sale to fully extinguish the 2022 notes, and we have extinguished all but $56,000 of the aggregate remaining principal amount of the convertible notes, we could in the future incur additional indebtedness.

Substantial debt combined with our other financial obligations and contractual commitments could have significant adverse consequences, including:

- requiring us to dedicate a substantial portion of cash flow from operations to the payment of interest on, and principal of, our debt, which will reduce the amounts available to fund working capital, capital expenditures, product development efforts and other general corporate purposes;
- increasing our vulnerability to adverse changes in general economic, industry and market conditions;
- obligating us to restrictive covenants that may reduce our ability to take certain corporate actions or obtain further debt or equity financing;
- limiting our flexibility in planning for, or reacting to, changes in our business and the industry in which we compete; and
- placing us at a competitive disadvantage compared to our competitors that have less debt or better debt servicing options.

In addition, we are vulnerable to increases in the market rate of interest because our currently outstanding secured debt bears interest at a variable rate. If the market rate of interest increases, we will have to pay additional interest on our outstanding debt, which would reduce cash available for our other business needs.

We intend to satisfy our current and future debt service obligations with our existing cash and cash equivalents and funds from external sources, if any. However, we may not have sufficient funds or may be unable to arrange for additional financing to pay the amounts due under our existing debt. To the extent we seek funds from external sources in the future, such funds may not be available on acceptable terms, if at all. In addition, a failure to comply with the covenants under our existing debt instrument or any future debt instruments could result in an event of default under those instruments. In the event of an acceleration of amounts due under our debt instruments as a result of an event of default, including upon the occurrence of an event that would reasonably be expected to have a material adverse effect on our business, operations, properties, assets or condition or a failure to pay any amount due, we may not have sufficient funds or may be unable to arrange for additional financing to repay our indebtedness or to make any accelerated payments, and the lenders could seek to enforce security interests in the collateral securing such indebtedness. In addition, the covenants under our existing debt instrument and the pledge of our assets as collateral limit our ability to obtain additional debt financing.

The recently passed comprehensive tax reform bill could adversely affect our business and financial condition.

On December 22, 2017, President Trump signed into law new legislation that significantly revises the Internal Revenue Code of 1986, as amended. The newly enacted federal income tax law, among other things, contains significant changes to corporate taxation, including reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%, limitation of the tax deduction for net interest expense to 30% of adjusted earnings (except for certain small businesses), limitation of the deduction for net operating losses to 80% of current year taxable income and elimination of net operating loss carrybacks, in each case, for losses arising in taxable years beginning after December 31, 2017 (though any such net operating losses may be carried forward indefinitely), one time taxation of offshore earnings at reduced rates regardless of whether they are repatriated, elimination of U.S. tax on foreign earnings (subject to certain important exceptions), immediate deductions for certain new investments instead of deductions for depreciation expense over time, and modifying or repealing many business deductions and credits. Notwithstanding the reduction in the corporate income tax rate, the overall impact of the new federal tax law is uncertain and our business and financial condition could be adversely affected. In addition, it is uncertain how various states will respond to the newly enacted federal tax law. The impact of this tax reform

on holders of our common stock is also uncertain and could be adverse. We urge our stockholders to consult with their legal and tax advisors with respect to this legislation and the potential tax consequences of investing in or holding our common stock.

We might not be able to utilize a significant portion of our net operating loss carryforwards and research and development tax credit carryforwards.

As of December 31, 2017, we had federal net operating loss carryforwards of $138.1 million, which begin to expire in 2034, and state net operating loss carryforwards of $223.4 million, which begin to expire in 2028. As of December 31, 2017, we also had federal research and development tax credit carryforwards of $28.8 million and state research and development tax credit carryforwards $18.7 million, which begin to expire in 2022 and 2026, respectively. These net operating loss and tax credit carryforwards could expire unused and be unavailable to offset our future income tax liabilities. Under the newly enacted federal income tax law, federal net operating losses incurred in 2018 and in future years may be carried forward indefinitely, but the deductibility of such federal net operating losses is limited. It is uncertain how various states will respond to the newly enacted federal tax law. If our ability to use our historical net operating loss and tax credit carryforwards is materially limited, it would harm our future operating results by effectively increasing our future tax obligations.

Our investments are subject to risks that could result in losses.

We have invested and plan to continue to invest our cash in a variety of financial instruments, principally securities issued by the U.S. government and its agencies, investment grade corporate bonds, including commercial paper, and money market instruments. All of these investments are subject to credit, liquidity, market and interest rate risk. Such risks, including the failure or severe financial distress of the financial institutions that hold our cash, cash equivalents and investments, may result in a loss of liquidity, impairment to our investments, realization of substantial future losses, or a complete loss of the investments in the long-term, which may have a material adverse effect on our business, results of operations, liquidity and financial condition. In order to manage the risk to our investments, we maintain an investment policy that, among other things, limits the amount that we may invest in any one issue or any single issuer and requires us to only invest in high credit quality securities, but there can be no guarantee that our investments will not result in losses.

A decrease in the carrying value of our equity holdings in Silver Creek could adversely affect our balance sheet.

In August 2010, we acquired 12,000,000 shares of Series A preferred stock of Silver Creek in exchange for our grant to Silver Creek of technology licenses. As these shares represented a controlling financial interest, we consolidated Silver Creek in our consolidated financial statements. In the third quarter of 2017, Silver Creek completed its Series C preferred stock financing, which reduced our ownership percentage of Silver Creek below 50% and resulted in us deconsolidating Silver Creek from our consolidated financial statements. As a result of the deconsolidation, we now account for our investment in Silver Creek under the equity method of accounting. The carrying value of our shares of Series A preferred stock of Silver Creek was $8.9 million at September 30, 2018. There can be no guarantee that the value of our investment in Silver Creek will not realize a substantial future loss or complete loss of value, which would in turn adversely affect our balance sheet. On a quarterly basis, we review the investment for impairment whenever events or changes in circumstances indicate that the carrying amount of the investment might not be recoverable. These circumstances can include, but are not limited to, negative current events or long-term outlooks impacting Silver Creek and/or its programs, planned or announced delays in the clinical development process to advance its programs, a current fair value of investment at a lower value than our investment and/or investors no longer providing financial support or reducing their financial commitment to Silver Creek.

Risks Related to the Development and Commercialization of Our Product Candidates

We depend heavily on the success of our clinical stage product candidates. All of our product candidates are in preclinical and clinical development. Clinical trials of our product candidates may not be successful. If we are unable to successfully commercialize our product candidates, or experience significant delays in doing so, our business will be materially harmed.

We invest a significant portion of our efforts and financial resources in the development of our clinical stage product candidates for the treatment of various types of cancer. All of our product candidates are still in preclinical and clinical development. Our ability to generate meaningful product revenues will depend heavily on the successful development of our product candidates. The success of our product candidates, which include both our product candidates and companion diagnostic candidates, will depend on several factors, including the following:

- successful enrollment in, and completion of, preclinical studies and clinical trials;
- receipt of marketing approvals from the FDA and similar regulatory authorities outside the United States for our product candidates, including our diagnostics;

- establishing commercial manufacturing capabilities, which we anticipate doing primarily through arrangements with third-party manufacturers;
- launching commercial sales of any approved products, whether alone or in collaboration with others;
- acceptance of any approved products by patients, the medical community and third-party payors;
- effectively competing with other therapies;
- a continued acceptable safety profile of any products following approval; and
- qualifying for, maintaining, enforcing and defending intellectual property rights and claims.

If we do not achieve one or more of these factors in a timely manner or at all, we could experience significant delays or an inability to successfully develop our product candidates, which would materially harm our business.

For example, in November 2018, we announced that we are discontinuing development of all ongoing MM-121 programs based on the results of the interim analysis of the SHERLOC clinical trial that were announced on October 19, 2018, including terminating the SHERBOC clinical trial. The decision to terminate the SHERLOC clinical trial was made based on an interim analysis triggered by the occurrence of 75% of events required for trial completion, which demonstrated that the addition of MM-121 to docetaxel did not improve progression free survival over docetaxel alone in this patient population.

Also, in November 2018, we announced an amendment to our Phase 1 clinical trial of MM-310 to extend the dosing interval of MM-310 from every three weeks to every four weeks.

Also, in June 2018, we announced top-line results from the CARRIE clinical trial, showing that the trial did not meet its primary or secondary efficacy endpoints in patients who received MM-141 in combination with nab-paclitaxel and gemcitabine, compared to nab-paclitaxel and gemcitabine alone. These results were consistent in all subgroups analyzed. Based on these results, we will not devote additional resources to and have ceased all of our development activities for MM-141.

In addition, in connection with our strategic review of our pipeline which was completed in January 2017, we discontinued several trials, including our Phase 2 clinical trial of MM-302.

If clinical trials of our product candidates fail to demonstrate safety and efficacy to the satisfaction of the FDA or similar regulatory authorities outside the United States or do not otherwise produce positive results, we may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development and commercialization of our product candidates.

We may never receive approval to commercialize our product candidates in the United States or other jurisdictions. Before obtaining regulatory approval for the sale of our product candidates, we must conduct extensive clinical trials to demonstrate the safety and efficacy of our product candidates in humans. Clinical testing is expensive, difficult to design and implement, can take many years to complete and is uncertain as to outcome. A failure of one or more of our clinical trials can occur at any stage of testing. The outcome of preclinical testing and early clinical trials may not be predictive of the success of later clinical trials, and successful interim results of a clinical trial do not necessarily predict successful final results.

We may experience numerous unexpected events during, or as a result of, clinical trials that could delay or prevent our ability to receive regulatory approval or commercialize our product candidates, including:

- regulators or institutional review boards may not authorize us or our investigators to commence a clinical trial or conduct a clinical trial at a prospective trial site;
- clinical trials of our product candidates may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical trials or abandon product development programs;

- the number of patients required for clinical trials of our product candidates may be larger than we anticipate, enrollment in these clinical trials may be insufficient or slower than we anticipate or patients may drop out of these clinical trials at a higher rate than we anticipate;
- our third-party contractors may fail to comply with regulatory requirements or meet their contractual obligations to us in a timely manner, or at all;
- we might have to suspend or terminate clinical trials of our product candidates for various reasons, including a finding of a lack of clinical response or a finding that the patients are being exposed to unacceptable health risks;

- regulators or institutional review boards may require that we or our investigators suspend or terminate clinical research for various reasons, including noncompliance with regulatory requirements;
- the cost of clinical trials of our product candidates may be greater than we anticipate;
- the supply or quality of our product candidates, companion diagnostics or other materials necessary to conduct clinical trials of our product candidates may be insufficient or inadequate or prohibitively expensive; and
- our product candidates may have undesirable side effects or other unexpected characteristics, causing us or our investigators to suspend or terminate the trials.

For example, in November 2018, we announced that we are discontinuing development of all ongoing MM-121 programs based on the results of the interim analysis of the SHERLOC clinical trial that were announced on October 19, 2018, including terminating the SHERBOC clinical trial. The decision to terminate the SHERLOC clinical trial was made based on an interim analysis triggered by the occurrence of 75% of event