

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

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2022

or

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

For the transition period from to
Commission file number 001-35409

Merrimack Pharmaceuticals, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

04-3210530
(I.R.S. Employer
Identification No.)

One Broadway, 14th Floor
Cambridge, MA
(Address of principal executive offices)

02142
(Zip Code)

Registrant's telephone number, including area code: (617) 720-8606

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

<u>Title of each class</u>	<u>Trading Symbol(s)</u>	<u>Name of each exchange on which registered</u>
Common Stock, \$0.01 par value	MACK	Nasdaq Global Market

Securities registered pursuant to Section 12(g) of the Act: Preferred Stock Purchase Rights

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

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	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements.

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to § 240.10D-1(b).

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

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant, based on the last sale price for such stock on June 30, 2022, was \$57,237,893.

As of March 7, 2023, there were 14,255,104 shares of Common Stock, \$0.01 par value per share, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

The registrant intends to file a definitive proxy statement pursuant to Regulation 14A in connection with its 2022 Annual Meeting of Stockholders. Portions of such proxy statement are incorporated by reference into Part III of this Annual Report on Form 10-K.

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FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements that involve substantial risks and uncertainties. All statements, other than statements of historical facts, contained in this Annual Report on Form 10-K, 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,” “should,” “continue” and 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 Annual Report on Form 10-K include, among other things, statements about:

- our rights to receive payments related to the accomplishment, if at all, of additional milestone events under the asset purchase and sale agreement with Ipsen S.A.;
- our rights to receive payments related to the milestone events under the asset purchase agreement with Elevation Oncology, Inc. (formerly known as 14ner Oncology, Inc.), when expected or at all;
- our cash runway and the sufficiency of our financial resources to fund our operations;
- our estimates regarding expenses; and
- our plans to seek to divest our few remaining product candidates.

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 Annual Report on Form 10-K, particularly in Part I, 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 Annual Report on Form 10-K and the documents that we have filed as exhibits to this Annual Report on Form 10-K 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 registered trademark of Ipsen S.A. Any other trademarks, trade names and service marks referred to in this Annual Report on Form 10-K are the property of their respective owners.

PART I

Item 1. Business

Overview

We are a biopharmaceutical company based in Cambridge, Massachusetts that is entitled to receive up to \$450.0 million in contingent milestone payments related to our sale of ONIVYDE® to Ipsen S.A., or Ipsen, in April 2017 and up to \$54.5 million in contingent milestone payments related to our sale of MM-121 and MM-111 to Elevation Oncology, Inc. (formerly known as 14ner Oncology, Inc.), or Elevation, in July 2019. We do not have any ongoing research or development activities and are seeking potential acquirers for our remaining preclinical and clinical assets. We do not have any employees and instead use external consultants for the operation of our company.

On April 3, 2017, we completed the sale of ONIVYDE and MM-436 (the “commercial business”) to Ipsen (the “Ipsen sale”). At the time of the sale ONIVYDE was approved in the United States for the second line treatment of metastatic adenocarcinoma of the pancreas. In connection with the Ipsen sale, we are eligible to receive up to \$450.0 million in additional regulatory approval-based milestone payments.

The remaining up to \$450.0 million in potential milestone payments resulting from the Ipsen sale consist of:

- \$225.0 million upon approval by the U.S. Food and Drug Administration, or FDA, of ONIVYDE for the first-line treatment of metastatic adenocarcinoma of the pancreas (“mPDAC”), subject to certain conditions;
- \$150.0 million upon approval by the FDA of ONIVYDE for the treatment of small-cell lung cancer after failure of first-line chemotherapy; and
- \$75.0 million upon approval by the FDA of ONIVYDE for an additional indication unrelated to those described above.

Ipsen has recently stated that it intends to file a supplemental New Drug Application with the U.S. Food and Drug Administration for Onivyde in combination with oxaliplatin plus 5-fluorouracil/leucovorin for the treatment of patients with previously untreated mPDAC following the Fast Track Designation granted in 2020.

Our remaining non-commercial assets, including our clinical and preclinical development programs, were not included in the Ipsen sale and all material other clinical and pre-clinical development programs have been sold, as described below.

On May 30, 2019, we announced the completion of our review of strategic alternatives, following which our board of directors implemented a series of measures designed to extend our cash runway into 2027 and preserve our ability to capture the potential milestone payments resulting from the Ipsen sale. We have based this estimate on assumptions that may prove to be wrong, and we could use our financial resources sooner than we currently expect. In connection with that announcement, we discontinued the discovery efforts on our remaining preclinical programs: 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.

The termination of our executive management team and all other employees was substantially completed by June 28, 2019 and fully completed by July 12, 2019. As of July 12, 2019, we no longer had any employees. We have engaged external consultants to run our day-to-day operations.

On July 12, 2019, we completed the sale to Elevation, or the Elevation sale, of our anti-HER3 antibody programs, MM-121 (seribantumab) and MM-111 for potential use for patients with solid tumors of any origin that have an NRG1 fusion. In connection with the Elevation sale, we are eligible to receive up to \$54.5 million in additional potential development, regulatory approval and commercial-based milestone payments, consisting of:

- \$3.0 million for achievement of the primary endpoint in the first registrational clinical study of either MM-121 or MM-111;
- up to \$16.5 million in total payments for the achievement of various regulatory approval and reimbursement-based milestones in the United States, Europe and Japan; and
- up to \$35.0 million in total payments for achieving various cumulative worldwide net sales targets between \$100.0 million and \$300.0 million for MM-121 and MM-111.

In January 2023, Elevation announced it is pausing further investment in the clinical development of seribantumab and intends to pursue further development only in collaboration with a partner. Elevation also announced that it intends to present additional interim data from its study of seribantumab in the first half of 2023.

On March 27, 2020, we entered into an Asset Purchase Agreement (the “Celator Asset Purchase Agreement”) with Celator Pharmaceuticals, Inc. (the “Buyer”), pursuant to which the Buyer agreed to purchase certain assets (the “Transferred Assets”) relating to certain of our preclinical nanoliposome programs (the “Transaction”). We completed the Transaction simultaneously with the execution of the Celator Asset Purchase Agreement for net proceeds of \$2.1 million, which was recognized in fiscal 2020.

On September 15, 2021, we entered into an Asset Purchase Option Agreement (the “Assets Purchase Option Agreement”) with a third party, pursuant to which the third party agreed to obtain an exclusive option, to purchase one of our preclinical programs with a consideration of \$0.5 million. Under the terms of the Assets Purchase Option Agreement, the third party paid to us the option fee of \$0.1 million. The third party had the right to exercise the option within 24 months from September 15, 2021. We recognized a gain of \$0.1 million related to the option fee payment for the year ended December 31, 2021. On January 18, 2022, the third party provided written notice to us of its intent to exercise such option and on March 1, 2022, we entered the Asset Purchase Option Agreement with the third party. The consideration of \$0.5 million was paid to us and a gain of \$0.5 million was recognized in March 2022.

On January 23, 2023, we entered into an Asset Purchase Option Agreement (the “Option Agreement”) with a third party (the “Purchaser”), pursuant to which the Purchaser agreed to obtain an exclusive option (the “Option”) to purchase one of the Company’s preclinical programs for total potential consideration of \$0.7 million. Under the terms of the Option Agreement, the Purchaser paid to us the Option fee of \$0.2 million in January 2023. The Purchaser may exercise the Option by July 23, 2023.

We previously 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 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 Ipsen sale.

As of December 31, 2022, we had unrestricted cash and cash equivalents of \$19.4 million. We expect that our cash and cash equivalents as of December 31, 2022 will be sufficient to continue our operations beyond 2027, which we estimate is beyond the latest date when the longest term potential milestones might be achieved.

We have a history of losses from our operations. We do not expect to be profitable from our operations in the future unless we receive potential future milestone payments, if any. As of December 31, 2022, we had an accumulated deficit of \$547.6 million. Our net loss was \$1.5 million and \$2.5 million for the years ended December 31, 2022 and 2021, respectively. We do not expect to incur any research and development expenses going forward.

Asset Purchase Agreements

We are party to certain asset purchase agreements which provide for potentially significant milestone payments. We consider the following agreements to be material to our business.

Ipsen

On April 3, 2017, we completed the Ipsen sale. Pursuant to the Asset Purchase and Sale Agreement, dated as of January 7, 2017, (the “Ipsen Sale Agreement”), between us and Ipsen, Ipsen acquired our right, title and interest in the commercial business. Pursuant to the Ipsen Sale Agreement, we received \$575.0 million in cash, plus a working capital adjustment of \$5.7 million, and are eligible to receive up to \$450.0 million in additional regulatory approval-based milestone payments. Ipsen has agreed pursuant to the Ipsen Sale Agreement to use commercially reasonable efforts to develop ONIVYDE in connection with obtaining the regulatory approval by the FDA of ONIVYDE for certain indications.

- In November 2022, Ipsen announced the Phase III NAPOLI 3 trial of Onivyde® (irinotecan liposome injection) plus 5 fluorouracil/leucovorin and oxaliplatin (the “NALIRIFOX regimen”) met its primary endpoint demonstrating clinically meaningful and statistically significant improvement in overall survival compared to nab-paclitaxel plus gemcitabine in 770 previously untreated patients with mPDAC and key secondary efficacy outcome of progression-free survival (PFS) also showed significant improvement over the comparator arm. Ipsen also announced that the safety profile of Onivyde in the NAPOLI 3 trial was consistent with those observed in the previous phase I/II mPDAC study. Ipsen also stated that it intends to file a supplemental New Drug Application with the U.S. Food and Drug Administration for Onivyde in combination with oxaliplatin plus 5-fluorouracil/leucovorin for the treatment of patients with previously untreated mPDAC following the Fast Track Designation granted in 2020. In January 2023, Ipsen presented clinical trial results at

the 2023 American Society of Clinical Oncology (ASCO) Gastrointestinal Cancers Symposium. In February 2023 Ipsen provided guidance to investors that it intends to file a supplemental New Drug Application with the U.S. Food and Drug Administration during the first half of 2023 following the Fast Track Designation granted in 2020 for the use of Onivyde in combination with oxaliplatin plus 5-fluorouracil/leucovorin for the treatment of patients with previously untreated mPDAC.

- In August 2022, Ipsen announced that the Phase III RESILIENT trial did not meet its primary endpoint of overall survival compared to topotecan. The trial is evaluating Onivyde® (irinotecan liposomal injection) versus topotecan in patients with small cell lung cancer, who have progressed on or after platinum-based first-line therapy treatment. RESILIENT is a Phase III trial conducted in two parts; the first part read out in 2020 confirming the safety, dosing and efficacy of Onivyde; part two is evaluating the efficacy of Onivyde versus topotecan. In the announcement, Ipsen indicated that detailed results from the RESILIENT trial will be presented at an upcoming medical conference. The analysis concluded that the primary endpoint overall survival was not met in patients treated with Onivyde versus topotecan. However, a doubling of the secondary endpoint of objective response rate in favor of Onivyde was observed. The safety and tolerability of Onivyde was consistent with its already-known safety profile, and no new safety concerns emerged. In the August 2022 announcement, Ipsen reported that the clinical study results will be communicated with the regulatory agency. Ipsen indicated that while the results from the analysis of the RESILIENT trial have not demonstrated an overall survival benefit with Onivyde in patients in second-line small cell lung cancer, it intends to analyze the data further before decisions regarding next steps are made. To date, there have been no further public announcements by Ipsen regarding these matters and it remains unclear as to whether Ipsen will continue to seek approval for the use of ONIVYDE in the small cell lung cancer application. If Ipsen elects not to proceed with seeking regulatory approval, or if regulatory approval is not obtained, we would not be entitled to the \$150 million milestone payment tied to approval of Onivyde for treating small cell lung cancer.

Elevation

On July 12, 2019, we completed the sale to Elevation, or the Elevation sale, of our anti-HER3 antibody programs, MM-121 (seribantumab) and MM-111. In connection with the Elevation sale, we received an upfront cash payment of \$3.5 million and are eligible to receive up to \$54.5 million in additional potential development, regulatory approval and commercial-based milestone payments, consisting of:

- \$3.0 million for achievement of the primary endpoint in the first registrational clinical study of either MM-121 or MM-111;
- up to \$16.5 million in total payments for the achievement of various regulatory approval and reimbursement-based milestones in the United States, Europe and Japan; and
- up to \$35.0 million in total payments for achieving various cumulative worldwide net sales targets between \$100.0 million and \$300.0 million for MM-121 and MM-111.

In January 2023, Elevation announced it is pausing further investment in the clinical development of seribantumab and intends to pursue further development only in collaboration with a partner. Elevation also announced that it intends to present additional interim data from its study of seribantumab in the first half of 2023.

Intellectual Property

We own or control a very limited number of U.S. patents and patent applications and several corresponding foreign patents and patent applications. This intellectual property relates to several early stage programs that we are no longer advancing on our own, but that may be of value to one or more potential buyer or licensees. During 2023, we will continue to evaluate the usefulness of maintaining the current patent portfolio to our business.

Government Regulation

Government authorities in the United States, at the federal, state and local level, and in other countries extensively regulate, among other things, the research, development, testing, manufacture, including any manufacturing changes, packaging, storage, record keeping, labeling, advertising, promotion, distribution, marketing, post-approval monitoring and reporting, import and export of pharmaceutical products, biological products and medical devices, which does not relate directly to us, however could have an impact on Ipsen and Elevation.

Data Protection

We are subject to data protection laws and regulations (i.e., laws and regulations that address privacy and data security). The legislative and regulatory landscape for data protection continues to evolve, and in recent years there has been an increasing focus on privacy and data security issues. In the United States, numerous federal and state laws and regulations, including state data breach notification laws, state health information privacy laws and federal and state consumer protection laws govern the collection, use, disclosure and protection of health-related and other personal information. Failure to comply with data protection laws and regulations could result in government enforcement actions (which could include civil or criminal penalties), private litigation and/or adverse publicity and could negatively affect our operating results and business. In addition, we may obtain health information from third parties (e.g., healthcare providers who prescribe our products) that are subject to privacy and security requirements under the federal Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act. We could be subject to criminal penalties if we knowingly obtain or disclose individually identifiable health information in a manner that is not authorized or permitted.

Employees

The termination of our executive management team and all other employees was substantially completed by June 28, 2019 and fully completed by July 12, 2019. Since July 12, 2019, we no longer have any employees. We have engaged external consultants to run our day-to-day operations.

Financial Information

Financial information is provided in our consolidated financial statements included in this Annual Report on Form 10-K and in Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

Information about our dependence on limited amounts of customers is provided in Note 1, "Nature of the Business and Summary of Significant Accounting Policies – Concentration of Credit Risk" in the accompanying notes to the consolidated financial statements.

Our Corporate Information

We were originally incorporated in the Commonwealth of Massachusetts in 1993 and reincorporated under the laws of the State of Delaware in October 2010. Our principal executive offices are located at One Broadway, 14th Floor, Cambridge, MA 02142, and our telephone number is (617) 720-8606.

Information Available on the Internet

We maintain a website with the address www.merrimack.com. We are not including the information contained on our website as a part of, or incorporating it by reference into, this Annual Report on Form 10-K. Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and all amendments to those reports, are available to you free of charge through the "SEC Filings" link in the "Investors" section of our website as soon as reasonably practicable after those materials have been electronically filed with, or furnished to, the Securities and Exchange Commission, or the SEC. We also make available on our website our corporate governance guidelines, the charters for our audit committee, corporate governance and nominating committee, and organization and compensation committee, and our code of business conduct and ethics, which applies to our directors, officers and employees, and such information is available in print and free of charge to any of our stockholders who requests it. In addition, we intend to disclose on our website any amendments to, or waivers from, our code of business conduct and ethics that are required to be publicly disclosed pursuant to rules of the SEC.

Item 1A. Risk Factors

The following risk factors and other information included in this Annual Report on Form 10-K 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 2 of this Annual Report on Form 10-K 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 Our Business Strategy

Our business strategy depends substantially upon our ability to receive future contingent milestone payments.

Our business strategy depends substantially upon our ability to receive future milestone payments from Ipsen and Elevation. On May 30, 2019, we announced the completion of our review of strategic alternatives. Following this review, our board of directors implemented a series of measures designed to extend our cash runway into 2027 and preserve our ability to capture the potential milestone payments resulting from the Ipsen sale. We are entitled to receive up to \$450.0 million in contingent milestone payments related to our sale of ONIVYDE to Ipsen and up to \$54.5 million in contingent milestone payments related to our sale of MM-121 and MM-111 to Elevation. We do not have any ongoing research or development activities. Any failure to achieve such milestones or a perception that the milestones may not be achieved will materially and adversely affect the company and the value of the common stock.

In August 2022, Ipsen announced that the Phase III RESILIENT trial did not meet its primary overall survival endpoint compared to topotecan. The trial is evaluating Onivyde® (irinotecan liposomal injection) versus topotecan in patients with small cell lung cancer, who have progressed on or after platinum-based first-line therapy treatment. The analysis concluded that the primary overall survival endpoint was not met in patients treated with Onivyde versus topotecan. However, a doubling of the secondary endpoint of objective response rate in favor of Onivyde was observed. The safety and tolerability of Onivyde was consistent with its already-known safety profile, and no new safety concerns emerged. In the August 2022 announcement, Ipsen reported that the clinical study results will be communicated with the regulatory agency. Ipsen indicated that while the results from the analysis of the RESILIENT trial have not demonstrated an overall survival benefit with Onivyde in patients in second-line small cell lung cancer, Ipsen indicated that it intends to analyze the data further before decisions regarding next steps are made. To date, there have been no further public announcement by Ipsen regarding these matters and it remains unclear as to whether Ipsen will continue to seek approval for the use of ONIVYDE in the small cell lung cancer application. If Ipsen elects not to proceed with seeking regulatory approval, or regulatory approval is not obtained, we would not be entitled to the \$150 million milestone payment tied to approval of Onivyde for small cell lung cancer.

In January 2023, Elevation announced it is pausing further investment in the clinical development of seribantumab and intends to pursue further development only in collaboration with a partner. Elevation also announced that it intends to present additional interim data from its study of seribantumab in the first half of 2023. If Elevation elects not to proceed with further investment in serbantumab, it is possible that Elevation may not achieve any further milestones and we would receive no milestone payments. If Elevation elects not to proceed with seeking regulatory approval, or regulatory approval is not obtained, we would not be entitled to the \$54.5 million milestone payments tied to approval of seribantumab for patients with solid tumors of any origin that have an NRG1 fusion.

Even if some or all of the milestones set forth in the Ipsen sale agreement and Elevation agreement are achieved, it may take significantly longer than we anticipate and could require us to raise additional funding in order to maintain our ability to receive payment for such milestones.

Achievement of the milestones set forth in the Ipsen sale agreement and the Elevation agreement are not guaranteed and there is significant risk that some or all of such milestones will not be achieved when anticipated, if at all. If achievement of the milestones is delayed beyond what we currently anticipate, it could require us to raise additional funds in order to maintain our ability to receive payment for the potential future achievement of such milestones. Sources of funds may not be available or, if available, may not be available on terms satisfactory to us. Raising additional funds could be dilutive or otherwise disadvantageous to our stockholders. Any delay in receipt of the potential benefit to the company or our stockholders resulting from achievement of such milestones, in addition to any additional uncertainty as to whether such milestones will be achieved at all, would materially and adversely affect the company and the value of the common stock.

We may be treated as a "public shell" company which could have negative consequences, including potential Nasdaq delisting of our common stock.

Our common stock is currently listed on the Nasdaq Global Market. We have no current plans to delist our common stock from Nasdaq. However, following our cessation of normal business operations, we may be treated as a "public shell" company under the Nasdaq rules and the Securities Act of 1933, as amended, or the Securities Act, or the Exchange Act. Although Nasdaq evaluates whether a listed company is a public shell company based on a facts and circumstances determination, a Nasdaq-listed company with no or nominal operations and either no or nominal assets, assets consisting solely of cash and cash equivalents, or assets consisting of any amount of cash and cash equivalents and nominal other assets is generally considered to be a public shell company. Listed companies determined to be public shell companies by Nasdaq may be subject to delisting proceedings or additional and more stringent listing criteria.

If our common stock is delisted from Nasdaq, or if in the future we determine to delist our common stock, we would expect that such securities would qualify for trading over-the-counter, or OTC, in the United States on a market colloquially referred to as the "Pink Sheets." Securities quoted OTC are generally subject to lesser requirements than securities listed for trading on a U.S. national stock exchange, such as Nasdaq, including reduced corporate governance and public reporting standards.

If Nasdaq should delist our common stock from trading, or if in the future we determine to delist our common stock, a reduction in some or all of the following may occur, each of which could have a material adverse effect on holders of our common stock: the liquidity of our common stock; the market price of the common stock; the number of institutional and general investors that will consider investing in the common stock; the number of investors in general that will consider investing in the common stock; the number of market makers in our common stock; the availability of information concerning the trading prices and volume of the common stock; and the number of broker-dealers willing to execute trades in our common stock. In addition to the foregoing, there are certain consequences under the Securities Act of being a public shell company, including the unavailability of Rule 144 thereunder for the resale of restricted securities and the inability to utilize Form S-8 for the registration of employee benefit plan securities.

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.

Actions of activist stockholders against us could be disruptive and potentially costly and the possibility that activist stockholders may seek changes that contest, or conflict with, our strategic direction could cause uncertainty about the strategic direction of our business.

Activist stockholders may from time to time attempt to effect changes in our strategic direction and, in furtherance thereof, may seek changes in how we are governed. While our board of directors and management strive to maintain constructive, ongoing communications with all of our stockholders, including activist stockholders, and welcomes their views and opinions with the goal of working together constructively to enhance value for all stockholders, activist campaigns that contest, or conflict with, our strategic direction could have an adverse effect on us because:

- responding to proxy contests and other actions by activist stockholders can disrupt our operations, be costly and time-consuming, and divert the attention of our board of directors and management from the pursuit of business strategies, which could adversely affect our results of operations and financial condition;
- perceived uncertainties as to our future direction as a result of changes to the composition of our board of directors may lead to the perception of a change in the direction of the business, instability or lack of continuity which may be exploited by our competitors, may result in the loss of potential business opportunities and make it more difficult to attract and retain qualified personnel and business partners;
- these types of actions could cause significant fluctuations in our stock price based on temporary or speculative market perceptions or other factors that do not necessarily reflect the underlying fundamentals and prospects of our business; and
- if individuals are elected to our board of directors with a specific agenda, it may adversely affect our ability to effectively implement our business strategy and create additional value for our stockholders.

In connection with our 2019 Annual Meeting of Stockholders, an activist investor initially proposed its own slate of director candidates. That activist investor ultimately withdrew its slate of director candidates prior to the 2019 Annual Meeting of Stockholders and all of our director nominees were elected at the 2019 Annual Meeting of Stockholders. In connection with our 2020 Annual Meeting of Stockholders, an activist investor submitted a shareholder proposal requiring the board of directors to amend our company charter and/or bylaws, as necessary, to require the chair of our board of directors, whenever possible, to be a non-management,

independent member of the board and if the board determined that a chair who was independent when selected is no longer independent, the board would be required to select a new chair who satisfies the requirements of the policy within a reasonable amount of time. The shareholder proposal was not approved by our shareholders. That activist investor continues to have a Schedule 13D filed with respect to us and it remains a possibility that such activist investor may still, from time to time, attempt to effect changes in our strategic direction and, in furtherance thereof, may seek changes in how we are governed.

Risks Related to the Sale and Divestiture of Assets

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 Ipsen sale 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. There is no guarantee that Ipsen will undertake such development however, or that any of its efforts will lead to the successful approval of ONIVYDE for such additional indications or lead to achievement of the milestones set forth in the Ipsen sale agreement. We also do not have any right to receive updates on the progress of Ipsen's development of ONIVYDE beyond what Ipsen chooses to disclose publicly. The milestones set forth in the Ipsen sale agreement may not be achieved and we may not receive any future contingent payments. As a result, material information about the progress, if any, on the milestones will not be made publicly available unless Ipsen publicly discloses such information.

Our business strategy depends substantially upon our ability to receive future milestone payments from Ipsen. Any failure to achieve such milestones or a perception that the milestones may not be achieved will materially and adversely affect the company and the value of the common stock.

There can be no guarantee that Elevation will comply with its obligation to use commercially reasonable efforts in connection with the development of MM-121 and MM-111 or that the milestones set forth in the asset purchase agreement with Elevation will be achieved.

Elevation has agreed to use commercially reasonable efforts to develop MM-121 and MM-111. However, there is no guarantee that Elevation will take the steps set forth in the Elevation agreement or that any of its efforts will lead to the successful approval of MM-121 or MM-111 by the FDA or other regulatory bodies. The milestones set forth in the Elevation agreement may not be achieved and we may not receive any future contingent payments. Because our business strategy depends substantially upon our ability to receive future milestone payments, including from Elevation, any failure to achieve such milestones or a perception that the milestones may not be achieved will materially and adversely affect the company and the value of the common stock.

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

Pursuant to the Ipsen sale agreement, Ipsen assumed only certain specified liabilities set forth in the Ipsen 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, we could incur additional expenditures in resolving any such liabilities. If we become subject to liability based upon such contractual obligations or otherwise and we are required to indemnify the counterparties, it could have a material adverse effect on our financial position.

Elevation did not assume any of the excluded liabilities under the Elevation agreement.

Pursuant to the Elevation agreement, Elevation assumed only certain specified liabilities set forth in the Elevation agreement and did not assume all of the liabilities associated with MM-121 or MM-111. 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, we could incur additional expenditures in resolving any such liabilities. If we become subject to liability based upon such contractual obligations or otherwise and we are required to indemnify the counterparties, it could have a material adverse effect on our financial position.

The Ipsen 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 Ipsen 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. Indemnification claims by Ipsen could further materially and adversely affect our financial condition and/or significantly reduce any future contingent payments.

The Elevation agreement may expose us to contingent liabilities.

We have agreed to indemnify Elevation for certain breaches of representations, warranties or covenants made by us in the Elevation agreement. We have agreed that Elevation will have set-off rights against any future contingent payments. Indemnification claims by Elevation could 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 was \$1.5 million and \$2.5 million for the years ended December 31, 2022 and 2021, respectively. As of December 31, 2022, we had an accumulated deficit of \$547.6 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 Ipsen sale. We had devoted substantially all of our efforts to research and development, including clinical trials and 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.

Although we are not actively developing product candidates and do not have any current plans to do so, to become and remain profitable, we would need to succeed in realizing milestone payments from either or both of the Ipsen and Elevation agreements. We are not developing and commercializing products. We expect to dividend out to our stockholders all or substantially all of any milestone payments and we do not anticipate seeking to develop any new products with any of our existing cash or any future milestone payments we may receive. Our failure to achieve these potential milestone payments would depress the value of our company. A decline in the value of our company could also cause our stockholders to lose all or part of their investment.

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

As of December 31, 2022, we had net operating loss carryforwards for federal and state income tax purposes of \$215.0 million and \$300.4 million, respectively. Our existing federal and state net operating loss carryforwards begin to expire in 2033. We also had available research and development credits for federal and state income tax purposes of approximately \$28.7 million and \$20.3 million, respectively. The federal and state research and development credits will begin to expire in 2022 and 2025, respectively. We also had federal Orphan Drug Credits of approximately \$122.7 million that begin to expire in 2031. These net operating loss and tax credit carryforwards could expire unused or could be unavailable to offset our future income tax liabilities. Under 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 this change in federal tax laws. 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. In addition, the Ipsen sale was an installment sale given the potential milestone payments that could be received by us in future years. If we receive milestone payments in future years pursuant to the Ipsen sale, we will be liable for interest to the federal government pursuant to Internal Revenue Code section 453A and state governments pursuant to similar state tax provisions because it was an installment sale. The interest is compounding and is calculated based on the number of years between 2017 and the year the milestone payment is received by us. Any interest charges cannot be offset by net operating loss carryforwards or tax credits.

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.

Risks Related to Our Intellectual Property

We may become involved in lawsuits to protect or enforce our patents, which could be expensive, time-consuming and unsuccessful.

Competitors may infringe on our patents. To counter infringement or unauthorized use, we may be required to initiate infringement lawsuits, which can be expensive and time-consuming. In addition, in an infringement proceeding, a court may decide that a patent of ours is invalid or unenforceable, or may refuse to stop the other party from using the technology at issue on the grounds that our patents do not cover the technology in question. An adverse result in any litigation proceeding could put one or more of our patents at risk of being invalidated or interpreted narrowly. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation.

Third parties may initiate legal proceedings alleging that we are infringing their intellectual property rights, the outcome of which would be uncertain and could have a material adverse effect on the success of our business.

Our commercial success depends upon our ability and the ability of our collaborators to develop, manufacture, market and sell our products and product candidates and use our proprietary technologies without infringing the enforceable proprietary rights of third parties. We may become party to, or threatened with, future adversarial proceedings or litigation regarding intellectual property rights with respect to our products and technology, including interference or derivation proceedings before the U.S. Patent and Trademark Office. Third parties may assert infringement claims against us based on existing patents or patents that may be granted in the future. If we are found to infringe a third party's intellectual property rights, we could be required to obtain a license from such third party to continue developing and marketing our products and technology. However, we may not be able to obtain any required license on commercially reasonable terms or at all. Even if we were able to obtain a license, it could be non-exclusive, thereby giving our competitors access to the same technologies licensed to us. We could be forced, including by court order, to cease commercializing the infringing technology or product. In addition, we could be found liable for monetary damages. A finding of infringement could prevent us from commercializing our product candidates, prevent us from divesting certain assets or force us to cease some of our business operations, which could materially harm our business. Claims that we have misappropriated the confidential information or trade secrets of third parties can have a similar negative impact on our business.

We may be subject to claims that our employees have wrongfully used or disclosed alleged trade secrets of their former employers.

Many of our former employees were previously employed at universities or other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although we try to ensure that our employees do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that we or these employees have used or disclosed intellectual property, including trade secrets or other proprietary information, of any such employee's former employer. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management.

Intellectual property litigation could cause us to spend substantial resources and distract our personnel from their normal responsibilities.

Even if resolved in our favor, litigation or other legal proceedings relating to intellectual property claims may cause us to incur significant expenses, and could distract our personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Such litigation or proceedings could substantially increase our operating losses and reduce our resources available for development or other activities. We may not have sufficient financial or other resources to adequately conduct such litigation or proceedings. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their substantially greater financial resources. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace and operate our business.

Risks Related to Data Protection and Cybersecurity

Significant disruptions of information technology systems or security breaches could adversely affect our business.

We are increasingly dependent upon information technology systems, infrastructure and data to operate our business. In the ordinary course of business, we collect, store and transmit large amounts of confidential information (including, among other things, trade secrets or other intellectual property, proprietary business information and personal information). It is critical that we do so in a secure manner to maintain the confidentiality and integrity of such confidential information. We also have outsourced significant

elements of our operations to third parties, and as a result we manage a number of third-party vendors who have or could have access to our confidential information. Our information technology systems, and those of third-party vendors with whom we contract, and the large amounts of confidential information stored on those systems, make such systems vulnerable to service interruptions or to security breaches from inadvertent or intentional actions by our consultants, third-party vendors, and/or business partners, or from cyber-attacks by malicious third parties. Because we outsource our information technology systems, we are subject to risks that the activities of our third-party vendors may adversely affect our business even if an attack or breach does not directly target our systems. Cyber-attacks are increasing in their frequency, sophistication and intensity, and have become increasingly difficult to detect. Cyber-attacks could include the deployment of harmful malware, ransomware, denial-of-service attacks, social engineering and other means to affect service reliability and threaten the confidentiality, integrity and availability of information. Cyber-attacks could also include phishing attempts or e-mail fraud to cause payments or information to be transmitted to an unintended recipient.

Significant disruptions of our information technology systems, or those of our third-party vendors, or security breaches could adversely affect our business operations and/or result in the loss, misappropriation and/or unauthorized access, use or disclosure of, or the prevention of access to, confidential information, including, among other things, trade secrets or other intellectual property, proprietary business information and personal information, and could result in financial, legal, business and reputational harm to us. For example, any such event that leads to unauthorized access, use or disclosure of personal information, including personal information regarding our patients or employees, could harm our reputation, require us to comply with federal and/or state breach notification laws and foreign law equivalents, and otherwise subject us to liability under laws and regulations that protect the privacy and security of personal information. Security breaches and other inappropriate access can be difficult to detect, and any delay in identifying them may lead to increased harm of the type described above. While we have implemented security measures to protect our information technology systems and infrastructure, there can be no assurance that such measures will prevent service interruptions or security breaches that could adversely affect our business.

Risks Related to Personnel Matters

Our future success depends on our ability to retain qualified personnel.

We do not have any employees and instead use a limited number of external consultants for the operation of our company, any of whom may terminate their consultancy with us at any time. We may not be able to attract and retain consultants on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for similar personnel. Our consultants and advisors may be employed by employers other than us and may have commitments under consulting or advisory contracts with other entities that may limit their availability to us. We do not maintain “key person” insurance.

Our corporate compliance efforts cannot guarantee that we are in compliance with all potentially applicable regulations.

We are subject to extensive regulation by federal, state and other authorities within the United States and numerous entities outside of the United States. We cannot provide any assurance that governmental authorities will find that our business practices comply with current or future administrative or judicial interpretations of potentially applicable laws and regulations. If we fail to comply with any of these laws and regulations, we could be subject to a range of regulatory actions, including suspension or termination of clinical trials, the failure to approve a product candidate, restrictions on our products or manufacturing processes, withdrawal of products from the market, significant fines, disqualification or debarment from participation in federally-funded healthcare programs or other sanctions or litigation, any of which events may have a significant adverse impact on our business.

Risks Related to Our Common Stock

Our directors and principal stockholders maintain the ability to significantly influence all matters submitted to stockholders for approval.

Our directors and stockholders who own more than 5% of our outstanding common stock, in the aggregate, own 36.8% of our capital stock, which includes shares held through funds managed by two of our directors. As a result, if these stockholders were to choose to act together, they would be able to significantly influence all matters submitted to our stockholders for approval, as well as our management and affairs. For example, these persons, if they choose to act together, would significantly influence the election of directors and approval of any merger, consolidation or sale of all or substantially all of our assets. This concentration of voting power could discourage, delay or prevent an acquisition of our company on terms that other stockholders may desire.

Provisions in our corporate charter documents and under Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our corporate charter and our bylaws may discourage, delay or prevent a merger, acquisition or other change in control of us that stockholders may consider favorable, including transactions in which our stockholders might otherwise receive a

premium for their shares. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock, thereby depressing the market price of our common stock. In addition, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors. Because our board of directors is responsible for appointing the members of our management team, these provisions could in turn affect any attempt by our stockholders to replace current members of our management team. Among others, these provisions:

- allow the authorized number of our directors to be changed only by resolution of our board of directors;
- establish advance notice requirements for stockholder proposals that can be acted on at stockholder meetings and nominations to our board of directors;
- require that stockholder actions must be effected at a duly called stockholder meeting and prohibit actions by our stockholders by written consent;
- limit who may call stockholder meetings;
- authorize our board of directors to issue preferred stock without stockholder approval, which could be used to institute a “poison pill” that would work to dilute the stock ownership of a potential hostile acquirer, effectively preventing acquisitions that have not been approved by our board of directors; and
- require the approval of the holders of at least 75% of the votes that all our stockholders would be entitled to cast to amend or repeal certain provisions of our charter or bylaws.

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which prohibits a person who owns in excess of 15% of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired in excess of 15% of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner.

We have entered into a Section 382 Rights Agreement, and if the share purchase rights issued pursuant to such agreement are exercised, it could materially and adversely affect the market price of our common stock.

We entered into a Section 382 Rights Agreement (the “Rights Agreement”), on December 3, 2019, with Computershare Trust Company, N.A., a federally chartered trust company, as Rights Agent. The Rights Agreement was amended on December 2, 2022 to extend the term of the Rights Agreement through December 2, 2025. The Rights Agreement is intended to discourage acquisitions of our common stock which could result in a cumulative “ownership change” as defined under Section 382, thereby preserving our current ability to utilize net operating loss carryforwards to offset future income tax obligations, which would become subject to limitations if we were to experience an “ownership change,” as defined under Section 382. While this Rights Agreement is intended to preserve our current ability to utilize net operating loss carryforwards, it effectively deters current and future purchasers from accumulating 4.9% or more of our common stock, which could delay or discourage takeover attempts that our stockholders may consider favorable. In addition, if the share purchase rights issued pursuant to the Rights Agreement are exercised, it could materially and adversely affect the market price of our common stock.

Our stock price has been and may in the future be volatile, which could cause holders of our common stock to incur substantial losses.

Our stock price has been and in the future may be subject to substantial price volatility. The stock market in general and the market for biotechnology companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. As a result of this volatility, our stockholders could incur substantial losses. The market price for our common stock may be influenced by many factors, including:

- the timing and amount of potential milestone payments that we may receive from Ipsen and/or Elevation;
- public disclosures by Ipsen and Elevation of the status and results of their clinical trials and Elevation’s ability to raise capital;
- the success of competitive products or technologies;
- results of clinical trials of competitors to Ipsen and Elevation;
- regulatory or legal developments in the United States and other countries;
- developments or disputes concerning patents or other proprietary rights;

- the recruitment or departure of key personnel;
- variations in our financial results or those of companies that are perceived to be similar to us;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors and issuance of new or changed securities analysts' reports or recommendations;
- activism by any single large stockholder or combination of stockholders;
- general economic, industry and market conditions; and
- the other factors described in this "Risk Factors" section.

Because we do not anticipate paying regular cash dividends on our common stock in the foreseeable future, capital appreciation, if any, will be the sole source of gain for holders of our common stock.

We have not historically declared or paid regular cash dividends on our common stock. Although our board of directors declared special cash dividends of \$6.7 million, \$20.0 million and \$140.0 million, which were payable on December 23, 2019, September 5, 2019 and May 26, 2017, respectively, to stockholders of record as of the close of business on December 16, 2019, August 28, 2019 and May 17, 2017, respectively, we do not currently intend to pay any regular cash dividends in the foreseeable future unless we receive milestone payments from Ipsen or Elevation. In addition, the terms of any future debt agreements may in the future preclude us from paying dividends. As a result, capital appreciation, if any, of our common stock will be the sole source of gain for holders of our common stock for the foreseeable future.

Future sales of shares of our common stock, including by us or our directors, or shares issued upon the exercise of currently outstanding options could cause the market price of our common stock to drop significantly, even if our business is doing well.

A substantial portion of our outstanding common stock can be traded without restriction at any time. In addition, a portion of our outstanding common stock is currently restricted as a result of federal securities laws, but can be sold at any time subject to applicable volume limitations. As such, sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares intend to sell shares, by us or others, could reduce the market price of our common stock. In addition, we have a significant number of shares that are subject to outstanding options. The exercise of these options and the subsequent sale of the underlying common stock could cause a further decline in our stock price.

The ongoing COVID-19 pandemic may delay or otherwise adversely impact our ability to realize potential milestone payments from the Ipsen sale and the Elevation sale and create other additional risks which could have material and adverse impacts on our business, financial condition, liquidity and results of operations.

We are unable to accurately predict the full impact that the ongoing coronavirus ("COVID-19") pandemic will have on our financial condition due to numerous factors that are not within our control, including the duration and severity of the outbreak. Specifically, stay-at-home orders, business closures, travel restrictions, supply chain disruptions and employee and clinical trial participant illness or quarantines could result in disruptions to Ipsen and Elevation's ability to conduct research, preclinical, clinical and/or regulatory activities that are required to trigger potential milestone payments to us. If these activities are significantly delayed, the attainment of any milestone payments we might receive would also likely be delayed. The COVID-19 pandemic may also significantly affect our ability to sell any remaining preclinical assets due to the inability of potential partners to obtain capital or otherwise complete a transaction. In addition, the COVID-19 pandemic has resulted in ongoing volatility in financial markets. If our access to capital is restricted or associated borrowing costs increase as a result of developments in financial markets relating to the COVID-19 pandemic, our financial condition could be adversely impacted if we seek to raise equity and/or debt financing. At this time, we do not believe that the COVID-19 pandemic will have a significant impact on our current day-to-day operations or our near-term financial condition.

To the extent the COVID-19 pandemic adversely affects our business and financial results, it may also have the effect of heightening many of the other risks described in the "Risk Factors" sections.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

We do not currently own or lease any facilities or property that are material to our business.

Item 3. Legal Proceedings

We are not currently a party to any material legal proceedings.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Our common stock is publicly traded on the Nasdaq Global Market under the symbol "MACK".

Holders

As of February 28, 2023, there were approximately 91 holders of record of our common stock. This number does not include beneficial owners whose shares are held by nominees in street name. During the fourth quarter of 2022, officers, consultants and former employees and consultants exercised outstanding stock options to purchase 804,860 shares of our Class A common stock for net proceeds to us of \$6.5 million.

Dividends

We do not currently intend to pay any regular cash dividends in the foreseeable future unless and until we receive any milestone payments from Ipsen or Elevation.

Item 6. Selected Financial Data

Not Applicable.

Item 7. 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 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 I, Item 1A. Risk Factors of this Annual Report on Form 10-K, which are incorporated herein by reference, our actual results may differ materially from those anticipated in these forward-looking statements.

Overview

We are a biopharmaceutical company based in Cambridge, Massachusetts that is entitled to receive up to \$450.0 million in contingent milestone payments related to our sale of ONIVYDE® to Ipsen S.A., or Ipsen, in April 2017 and up to \$54.5 million in contingent milestone payments related to our sale of MM-121 and MM-111 to Elevation Oncology, Inc. (formerly known as 14ner Oncology, Inc.), or Elevation, in July 2019. We do not have any ongoing research or development activities and are seeking potential acquirers for our remaining preclinical and clinical assets. We do not have any employees and instead use external consultants for the operation of our company.

On April 3, 2017, we completed the sale of ONIVYDE and MM-436 (the “commercial business”) to Ipsen (the “Ipsen sale”). In connection with the Ipsen sale, we are eligible to receive up to \$450.0 million in additional regulatory approval-based milestone payments. We entered into a license and collaboration agreement, or the Servier agreement, between Ipsen and Les Laboratoires Servier SAS, or Servier (as assignee from Shire plc) in 2014, and on April 3, 2017, the Servier agreement was assigned to Ipsen in connection with the completion of the Ipsen sale. We have received all \$33.0 million in milestone payments under the Servier agreement.

The remaining up to \$450.0 million in potential milestone payments resulting from the Ipsen sale consist of:

- \$225.0 million upon approval by the U.S. Food and Drug Administration, or FDA, of ONIVYDE for the first-line treatment of metastatic adenocarcinoma of the pancreas, subject to certain conditions;
- \$150.0 million upon approval by the FDA of ONIVYDE for the treatment of small-cell lung cancer after failure of first-line chemotherapy; and
- \$75.0 million upon approval by the FDA of ONIVYDE for an additional indication unrelated to those described above.

Our non-commercial assets, including our clinical and preclinical development programs, were not included in the Ipsen sale and remain assets of ours.

- In November 2022, Ipsen announced the Phase III NAPOLI 3 trial of Onivyde® (irinotecan liposome injection) plus 5-fluorouracil/leucovorin and oxaliplatin (the “NALIRIFOX regimen”) met its primary endpoint demonstrating clinically meaningful and statistically significant improvement in overall survival compared to nab-paclitaxel plus gemcitabine in 770 previously untreated patients with metastatic pancreatic ductal adenocarcinoma (“mPDAC”) and key secondary efficacy outcome of progression-free survival (PFS) also showed significant improvement over the comparator arm. Ipsen also announced that the safety profile of Onivyde in the NAPOLI 3 trial was consistent with those observed in the previous phase I/II mPDAC study. Ipsen also stated that it intends to file a supplemental New Drug Application with the U.S. Food and Drug Administration for Onivyde in combination with oxaliplatin plus 5-fluorouracil/leucovorin for the treatment of patients with previously untreated mPDAC following the Fast Track Designation granted in 2020. In January 2023, Ipsen presented clinical trial results at the 2023 American Society of Clinical Oncology (ASCO) Gastrointestinal Cancers Symposium. In February 2023 Ipsen provided guidance to investors that it intends to file a supplemental New Drug Application with the U.S. Food and Drug Administration during the first half of 2023 following the Fast Track Designation granted in 2020 for the use of Onivyde in combination with oxaliplatin plus 5-fluorouracil/leucovorin for the treatment of patients with previously untreated mPDAC.
- In August 2022, Ipsen announced that the Phase III RESILIENT trial did not meet its primary endpoint of overall survival compared to topotecan. The trial is evaluating Onivyde® (irinotecan liposomal injection) versus topotecan in patients with small cell lung cancer, who have progressed on or after platinum-based first-line therapy treatment. RESILIENT is a Phase III trial conducted in two parts; the first part read out in 2020 confirming the safety, dosing and efficacy of Onivyde; part two is evaluating the efficacy of Onivyde versus topotecan. The analysis concluded that the primary endpoint overall survival was not met in patients treated with Onivyde versus topotecan. However, a doubling of the secondary endpoint of objective response rate in favor of Onivyde was observed. The safety and tolerability of Onivyde was consistent with its already-known safety profile, and no new safety concerns emerged. The clinical study results will be communicated with the regulatory agency. Ipsen indicated that while the results from the analysis of the RESILIENT

trial have not demonstrated an overall survival benefit with Onivyde in patients in second-line small cell lung cancer, Ipsen intends to analyze the data further before decisions regarding next steps are made. To date, there have been no further public announcements by Ipsen regarding these matters and it remains unclear as to whether Ipsen will continue to seek approval for the use of ONIVYDE in the small cell lung cancer application. If Ipsen elects not to proceed with seeking regulatory approval, or if regulatory approval is not obtained, we would not be entitled to the \$150 million milestone payment tied to approval of Onivyde for treating small cell lung cancer.

On May 30, 2019, we announced the completion of our review of strategic alternatives, following which our board of directors implemented a series of measures designed to extend our cash runway into 2027 and preserve our ability to capture the potential milestone payments resulting from the Ipsen sale. We have based this estimate on assumptions that may prove to be wrong, and we could use our financial resources sooner than we currently expect. In connection with that announcement, we discontinued the discovery efforts on our remaining preclinical programs: 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. We are seeking potential acquirers for our remaining preclinical and clinical assets.

The termination of our executive management team and all other employees was substantially completed by June 28, 2019 and fully completed by July 12, 2019. As of July 12, 2019, we did not have any employees. We have engaged external consultants to run our day-to-day operations. We have also entered into consulting agreements with certain former members of our executive management team who are supporting our relationship with current partners, assisting with the potential sale of remaining preclinical and clinical assets, and assisting with certain legal and regulatory matters and the continued wind-down of operations.

On July 12, 2019, we completed the sale to Elevation, or the Elevation sale, of our anti-HER3 antibody programs, MM-121 (seribantumab) and MM-111. In connection with the Elevation sale, we received an upfront cash payment of \$3.5 million and are eligible to receive up to \$54.5 million in additional potential development, regulatory approval and commercial-based milestone payments, consisting of:

- \$3.0 million for achievement of the primary endpoint in the first registrational clinical study of either MM-121 or MM-111;
- Up to \$16.5 million in total payments for the achievement of various regulatory approval and reimbursement-based milestones in the United States, Europe and Japan; and
- Up to \$35.0 million in total payments for achieving various cumulative worldwide net sales targets between \$100.0 million and \$300.0 million for MM-121 and MM-111.

In January 2023, Elevation announced it is pausing further investment in the clinical development of seribantumab and intends to pursue further development only in collaboration with a partner. Elevation also announced that it intends to present additional interim data from its study of seribantumab in the first half of 2023.

On March 27, 2020, we entered into an Asset Purchase Agreement (the “Celator Asset Purchase Agreement”) with Celator Pharmaceuticals, Inc. (the “Buyer”), pursuant to which the Buyer agreed to purchase certain assets (the “Transferred Assets”) relating to certain of our preclinical nanoliposome programs (the “Transaction”). We completed the Transaction simultaneously with the execution of the Celator Asset Purchase Agreement. Under the terms of the Celator Asset Purchase Agreement, the Buyer paid to us a cash payment of \$2.3 million and reimbursed us for \$0.2 million related to certain specified expenses and to assume certain liabilities with respect to the Transferred Assets. We incurred \$0.4 million expenses related to the Transaction.

On September 15, 2021, we entered into an Asset Purchase Option Agreement (the “Asset Purchase Option Agreement”) with a third party, pursuant to which the third party agreed to obtain an exclusive option, to purchase one of our preclinical programs with a consideration of \$0.5 million. Under the terms of the Asset Purchase Option Agreement, the third party paid to us the option fee of \$0.1 million. The third party had the right to exercise the option within 24 months from September 15, 2021. We recognized a gain of \$0.1 million related to the option fee payment for the year ended December 31, 2021. On January 18, 2022, the third party provided written notice to us of its intent to exercise such option. On March 1, 2022, we entered the Asset Purchase Option Agreement with the third party. The consideration of \$0.5 million was paid to us and a gain of \$0.5 million was recognized in March 2022.

On January 23, 2023, we entered into an Asset Purchase Option Agreement (the “Option Agreement”) with a third party (the “Purchaser”), pursuant to which the Purchaser agreed to obtain an exclusive option (the “Option”) to purchase one of the Company’s preclinical programs with a consideration of \$0.7 million. Under the terms of the Option Agreement, the Purchaser paid to us the Option fee of \$0.2 million in January 2023. The Purchaser may exercise the Option prior to July 23, 2023.

We previously 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 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 Ipsen sale.

As of December 31, 2022, we had unrestricted cash and cash equivalents of \$19.4 million. We expect that our cash and cash equivalents as of December 31, 2022 will be sufficient to continue our operations beyond 2027, which we estimate is beyond the latest date when the longest-term potential Ipsen milestone may be achieved.

We have a history of losses from our operations. We do not expect to be profitable from our operations in the future unless we receive potential future milestone payments, if any. As of December 31, 2022, we had an accumulated deficit of \$547.6 million. Our net loss was \$1.5 million and \$2.5 million for years ended December 31, 2022 and 2021, respectively. We do not expect to incur any research and development expenses going forward.

Financial Operations Overview

General and administrative expenses

General and administrative expenses consist primarily of stock-based compensation expenses, legal, intellectual property, business development, finance, information technology, corporate communications and investor relations. Other general and administrative expenses include costs for board of director's costs, insurance expenses, legal and professional fees, and accounting and information technology services fees.

Interest income

Interest income consists primarily of interest income associated with our money market fund.

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 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 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.

While our significant accounting policies are more fully described in Note 1, "Nature of the Business and Summary of Significant Accounting Policies," in the accompanying notes to the consolidated financial statements appearing at the end of this Annual Report on Form 10-K, we believe that the following accounting policies are the most critical to aid in fully understanding and evaluating our financial condition and results of operations.

Accrued expenses

As part of the process of preparing financial statements, we are required to estimate accrued expenses. This process involves identifying services that have been performed on our behalf and estimating the level of services performed and the associated costs incurred for such services where we have not yet been invoiced or otherwise notified of actual cost. We record these estimates in our consolidated financial statements as of each balance sheet date.

In accruing service fees, we estimate the time period over which services will be provided and the level of effort in each period. If the actual timing of the provision of services or the level of effort varies from the estimate, we will adjust the accrual accordingly. In the event that we do not identify costs that have been incurred or we under or overestimate the level of services performed or the costs of such services, our actual expenses could differ from such estimates. The date on which some services commence, the level of services performed on or before a given date and the cost of such services are often subjective determinations. We make estimates based on the facts and circumstances known to us at the time and in accordance with GAAP. There have been no material changes in estimates for the periods presented.

Stock-based compensation expense

We account for our stock-based compensation awards in accordance with Accounting Standards Codification, or ASC, 718, *Compensation – Stock Compensation*. ASC 718 requires all share-based payments to employees, including grants of employee stock options, to be recognized in the consolidated statements of operations and comprehensive loss based on their grant date fair values. For stock options granted to employees and to members of our board of directors for their service on the board of directors, we estimate the grant date fair value of each option award using the Black-Scholes option pricing model. The use of the Black-Scholes option pricing model requires us to make assumptions with respect to the expected term of the option, the expected volatility of our common stock consistent with the expected term of the option, the risk-free interest rate consistent with the expected term of the option and the expected dividend yield of our common stock. Stock-based compensation expense related to employee stock options is measured using the fair value of the award at the grant date and is adjusted quarterly to reflect actual forfeitures. Stock-based compensation expense is then recognized on a straight-line basis over the vesting period, which is also the requisite service period.

Results of Operations

Comparison of the years ended December 31, 2022 and 2021

(in thousands)	Years Ended December 31,	
	2022	2021
Operating expenses:		
General and administrative expenses	\$ 2,174	\$ 2,616
Gain on sales of assets	(445)	(144)
Total operating expenses	1,729	2,472
Loss from operations	(1,729)	(2,472)
Interest income	188	20
Loss before income tax expense	(1,541)	(2,452)
Income tax expense	(3)	(3)
Net loss	\$ (1,544)	\$ (2,455)

General and administrative expenses

General and administrative expenses were \$2.2 million for the year ended December 31, 2022 compared to \$2.6 million for the year ended December 31, 2021, a decrease of \$0.4 million, or 15%. This decrease was primarily attributable to the decrease in both share-based compensation expense and patent costs.

Gain on sales of assets

Gain on sale of assets was \$0.5 million for the year ended December 31, 2022, primarily attributable to the fee to purchase one of our preclinical programs paid by a third party pursuant to the Asset Purchase Option Agreement. Gain on sale of assets was \$0.1 million for the year ended December 31, 2021, attributable to the sale of certain of our preclinical programs to a third party.

Interest income

Interest income was \$0.2 million for the year ended December 31, 2022 and less than \$0.1 million for the year ended December 31, 2021, primarily attributable to the increase in our interest rate associated with our money market fund.

Liquidity and Capital Resources

Sources of liquidity

We have financed our operations from inception through December 31, 2022 primarily through private placements of convertible preferred stock, collaborations, public offerings of our securities, secured debt financings, sales of ONIVYDE and the Ipsen sale. Through December 31, 2022, we have received \$580.7 million from the Ipsen 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 underwritten public offering, \$38.6 million of net proceeds from our 2015 “at the market offering” program, or the ATM offering, \$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 underwritten 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, \$33.0 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. In 2022, we also received cash proceeds of \$6.5 million from the exercise of stock options. As of December 31, 2022, we had unrestricted cash and cash equivalents of \$19.4 million.

Cash flows

The following table provides information regarding our cash flows for the years ended December 31, 2022 and 2021:

(in thousands)	Years Ended December 31,	
	2022	2021
Net cash used in operating activities	\$ (1,742)	\$ (218)
Net cash provided by investing activities	445	144
Net cash provided by financing activities	6,533	239
Net increase in cash and cash equivalents	\$ 5,236	\$ 165

Operating activities

Cash used in operating activities was \$1.7 million during the year ended December 31, 2022. The cash used in operating activities was primarily a result of our \$1.5 million net loss and net decrease in assets and liabilities of \$0.2 million. The net loss was adjusted by a net decrease in assets and liabilities of \$0.2 million, which was primarily driven by decreases in prepaid expenses and other assets of \$0.2 million. This decrease included non-cash adjustments of \$0.4 million gain on the sale of in-process research and development assets, offset by \$0.1 million of stock-based compensation expense.

Cash used in operating activities was \$0.2 million during the year ended December 31, 2021. The cash used in operating activities was primarily a result of our \$2.5 million net loss and net decrease in assets and liabilities of \$0.2 million. The net loss was adjusted by a net decrease in assets and liabilities of \$2.0 million, which was primarily driven by decreases in prepaid expenses and other assets of \$2.2 million, partially offset by a decrease in accounts payable, accrued expenses and other of \$0.2 million. This decrease included non-cash adjustments of \$0.1 million gain on the sale of in-process research and development assets, offset by \$0.4 million of stock-based compensation expense.

Investing activities

Cash provided by investing activities of \$0.4 million and \$0.1 million during the years ended December 31, 2022 and 2021, respectively, was due to proceeds from the sale of in-process research and development.

Financing activities

Cash provided by financing activities of \$6.5 million and \$0.2 million during the years ended December 31, 2022 and 2021, respectively, was due to proceeds from the exercise of stock options.

Funding requirements

We have incurred significant expenses and operating losses to date. On May 30, 2019, we announced the completion of our review of strategic alternatives, following which our board of directors implemented a series of measures designed to extend our cash runway into 2027 and preserve our ability to capture the potential milestone payments resulting from the Ipsen sale. In connection with that announcement, we discontinued the discovery efforts on our remaining preclinical programs and implemented a reduction in headcount resulting in the termination of all remaining employees as of July 12, 2019. Our future capital requirements will depend on many factors, including:

- the timing and amount of potential milestone payments related to ONIVYDE that we may receive from Ipsen;
- the timing and amount of potential milestone payments that we may receive from Elevation;
- the timing and amount of any special dividend to our stockholders that our board of directors may declare;
- the timing and amount of general and administrative expenses required to continue to operate our company;
- the extent to which we owe any taxes for current, future or prior periods, including as a result of any audits by taxing authorities;
- the extent to which we invest in any future research or development activities of our product candidates;

- the costs of preparing, filing and prosecuting patent applications and maintaining, enforcing and defending intellectual property-related claims;
- the extent to which we acquire or invest in businesses, products and technologies; and
- the costs associated with operating as a public company and maintaining compliance with exchange listing and SEC requirements.

We do not believe that we will be able to raise a material amount of capital through the sale of our equity securities or debt financing. Rather, our goal is to judiciously expend our remaining cash until such time, if ever, as we receive additional milestone payments from Ipsen and Elevation. There can be no assurance as to the timing, terms or consummation of any financing or divestiture of our few remaining intellectual property assets. We do not have any committed external sources of funds. In the unlikely event 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. If we raise additional funds through arrangements with third parties, we may have to relinquish valuable rights to our future revenue streams or product candidates.

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.

Tax Loss Carryforwards

At December 31, 2022, we had net operating loss carryforwards for federal and state income tax purposes of \$215.0 million and \$300.4 million, respectively. Our existing federal and state net operating loss carryforwards begin to expire in 2033. We also had available research and development credits for federal and state income tax purposes of approximately \$28.7 million and \$20.3 million, respectively. The federal and state research and development credits will begin to expire in 2022 and 2025, respectively. As of December 31, 2022, we also had available investment tax credits for state income tax purposes of less than \$0.1 million which do not expire. We have orphan drug credits of \$122.7 million, which begin to expire in 2031.

We have evaluated the positive and negative evidence bearing upon the realizability of our deferred tax assets, which are comprised principally of net operating loss carryforwards and research and development credits. Under the applicable accounting standards, we have considered our history of losses and concluded that it is more likely than not that we will not recognize the benefits of federal and state deferred tax assets. Accordingly, a full valuation allowance has been established against the deferred tax assets.

Utilization of the net operating loss and tax credit carryforwards may be subject to a substantial annual limitation under Section 382 of the Internal Revenue Code due to ownership change limitations that have occurred previously or that could occur in the future. These ownership changes may limit the amount of net operating loss and tax credit carryforwards that can be utilized annually to offset future taxable income and tax. We completed an evaluation of ownership changes through November 16, 2022 to assess whether utilization of our net operating loss or tax credit carryforwards would be subject to an annual limitation under Section 382 of the Internal Revenue Code. We believe we can utilize our tax attributes generated through November 16, 2022 as a result of the analysis. To the extent an ownership change has occurred after November 16, 2022 or occurs in the future, the net operating loss and tax credit carryforwards may be subject to limitation.

We have not, as of yet, conducted a study of our domestic research and development credit carryforwards and Orphan Drug Credits. This study may result in an increase or decrease to our credit carryforwards; however, until a study is completed and any adjustment is known, no amounts are being presented as an uncertain tax position. A full valuation allowance has been provided against our credits, and if an adjustment is required, this adjustment would be offset by an adjustment to the valuation allowance. As a result, there would be no impact to the statement of operations and comprehensive loss, balance sheet or cash flows if an adjustment were required.

382 Rights Agreement

On December 3, 2019, we entered into a Section 382 Rights Agreement, or the Rights Agreement, with Computershare Trust Company, N.A., a federally chartered trust company, as Rights Agent. Pursuant to the Rights Agreement, on December 13, 2019, we issued a dividend of one preferred share purchase right, or a Right, for each share of our common stock to the stockholders of record

on that date. Each Right entitles the registered holder to purchase from us one one-thousandth of a share of Series Z Junior Preferred Stock, par value \$0.01 per share, or the Preferred Shares, at a price of \$18.00 per one one-thousandth of a Preferred Share represented by a Right, subject to adjustment. The description and terms of the Rights are set forth in the Rights Agreement. In December 2022, we extended the term of the Rights Plan through December 2, 2025.

Recent Accounting Pronouncements

See Note 1, “Nature of the Business and Summary of Significant Accounting Policies,” in the accompanying notes to the consolidated financial statements for a description of recent accounting pronouncements applicable to our business.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We invest in money market funds. 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 and cash equivalents 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.

Item 8. Financial Statements and Supplementary Data

Our consolidated financial statements, together with the report of our independent registered public accounting firm, appear on pages F-1 through F-16 of this Annual Report on Form 10-K.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our principal executive and financial officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2022. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under 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 December 31, 2022, our principal executive and financial officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Internal Control Over Financial Reporting

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting for the company. Internal control over financial reporting is defined in Rule 13a-15(f) or 15d-15(f) promulgated under the Exchange Act as a process designed by, or under the supervision of, the company's principal executive and principal financial officers and effected by the company's board of directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP and includes those policies and procedures that:

- pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the company;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2022. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control-Integrated Framework (2013). Based on its assessment, management concluded that, as of December 31, 2022, our internal control over financial reporting is effective based on those criteria.

This annual report does not include an attestation report of our registered public accounting firm regarding internal control over financial reporting. Management's report was not subject to attestation by our registered public accounting firm pursuant to rules of the Securities and Exchange Commission that permit us to provide only management's report in this annual report.

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 year ended December 31, 2022 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions That Prevent Inspections

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this Item 10 will be included in our definitive proxy statement to be filed with the SEC with respect to our 2023 Annual Meeting of Stockholders and is incorporated herein by reference.

Item 11. Executive Compensation

The information required by this Item 11 will be included in our definitive proxy statement to be filed with the SEC with respect to our 2023 Annual Meeting of Stockholders and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this Item 12 will be included in our definitive proxy statement to be filed with the SEC with respect to our 2023 Annual Meeting of Stockholders and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this Item 13 will be included in our definitive proxy statement to be filed with the SEC with respect to our 2023 Annual Meeting of Stockholders and is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services

The information required by this Item 14 will be included in our definitive proxy statement to be filed with the SEC with respect to our 2023 Annual Meeting of Stockholders and is incorporated herein by reference.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(1) Financial Statements

Our consolidated financial statements are set forth on pages F-1 through F-16 of this Annual Report on Form 10-K and are incorporated herein by reference.

(2) Financial Statement Schedules

Schedules have been omitted since they are either not required or not applicable or the information is otherwise included herein.

(3) Exhibits

Exhibit Number	Description of Exhibit
2.1	Asset Purchase and Sale Agreement, dated as of January 7, 2017, by and between the Registrant and Ipsen S.A. (incorporated by reference to Exhibit 2.1 to the Registrant's Current Report on Form 8-K filed on January 9, 2017)
3.1	Restated Certificate of Incorporation of the Registrant, as amended (incorporated by reference to Exhibit 3.1 to the Registrant's Quarterly Report on Form 10-Q filed on August 7, 2018)
3.2	Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.5 to the Registrant's Registration Statement on Form S-1, as amended, filed on January 13, 2012)
3.3	Certificate of Designation of Series Z Junior Preferred Stock of the Registrant, as filed with the Secretary of State of the State of Delaware on December 3, 2019 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed on December 3, 2019)
4.1	Specimen certificate evidencing shares of common stock (incorporated by reference to Exhibit 4.1 to the Registrant's Annual Report on Form 10-K filed on March 12, 2018)
4.4	Section 382 Rights Agreement, dated as of December 3, 2019, between the Registrant and Computershare Trust Company, N.A., as Rights Agent (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K filed on December 3, 2019)
4.5*	Description of the Registrant's Securities Registered under Section 12 of the Exchange Act
4.5.1*	First Amendment to Section 382 Rights Agreement
10.1#	2008 Stock Incentive Plan (incorporated by reference to Exhibit 10.2 to the Registrant's Registration Statement on Form S-1, as amended, filed on July 8, 2011)
10.2#	2011 Stock Incentive Plan (incorporated by reference to Exhibit 10.3 to the Registrant's Registration Statement on Form S-1, as amended, filed on January 13, 2012)
10.3#	2021 Incentive Award Plan (as set forth on Annex A in the Company's Definitive Proxy Statement for the 2021 Annual Meeting of Stockholders, filed on April 22, 2021)
10.4#	Form of Incentive Stock Option Agreement under 2011 Stock Incentive Plan (incorporated by reference to Exhibit 10.4 to the Registrant's Registration Statement on Form S-1, as amended, filed on January 13, 2012)
10.5#	Form of Non-Qualified Stock Option Agreement under 2011 Stock Incentive Plan (incorporated by reference to Exhibit 10.5 to the Registrant's Registration Statement on Form S-1, as amended, filed on January 13, 2012)
10.12#	Form of Indemnification Agreement between the Registrant and each director and executive officer (incorporated by reference to Exhibit 10.12 to the Registrant's Registration Statement on Form S-1, as amended, filed on August 19, 2011)
10.31†	Asset Purchase Agreement, dated as of May 28, 2019, by and between the Registrant and 14ner Oncology, Inc. (incorporated by reference to Exhibit 2.1 to the Registrant's Current Report on Form 8-K filed on May 30, 2019)
10.32	Amendment No. 1 to Asset Purchase Agreement, dated as of June 24, 2019, by and between the Registrant and 14ner Oncology, Inc. (incorporated by reference to Exhibit 2.1 to the Registrant's Current Report on Form 8-K filed on June 24, 2019)

Exhibit Number	Description of Exhibit
10.33	Amendment No. 2 to Asset Purchase Agreement, dated as of June 28, 2019, by and between the Registrant and 14ner Oncology, Inc. (incorporated by reference to Exhibit 2.1 to the Registrant's Current Report on Form 8-K filed on July 1, 2019)
10.39	Cooperation Agreement, dated as of September 18, 2019, by and among the Registrant, Newtyn Management, LLC, Newtyn Partners, LP, Newtyn TE Partners, LP, Noah G. Levy, Newtyn Capital Partners, LP, Ledo Capital, LLC, Western Standard, LLC, Western Standard Partners, LP, Western Standard Partners QP, LP and Eric D. Andersen (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on September 20, 2019)
10.40	Asset Purchase Agreement, dated as of March 27, 2020, by and between the Registrant and Celator Pharmaceuticals, Inc. (incorporated by reference to Exhibit 2.1 to the Registrant's Current Report on Form 8-K filed on March 30, 2020)
21.1*	Subsidiaries of the Registrant
23.1*	Consent of Marcum LLP, an independent registered public accounting firm
31.1*	Certification of Principal Executive Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Certification of Principal Financial Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1+	Certification of Principal Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
32.2+	Certification of Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS*	Inline XBRL Instance Document - The instance document does not appear in the interactive data file because its XBRL tags are embedded within the inline XBRL document.
101.SCH*	Inline XBRL Taxonomy Extension Schema Document
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase Database
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

* Filed herewith.

+ Furnished herewith.

Management contract or compensatory plan, contract or agreement.

† Confidential treatment granted as to portions of the exhibit. Confidential materials omitted and filed separately with the Securities and Exchange Commission.

Item 16. Form 10-K Summary

Not applicable.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

MERRIMACK PHARMACEUTICALS, INC.

Date: March 9, 2023

By: /s/ Gary L. Crocker

Gary L. Crocker
President

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Gary L. Crocker</u> Gary L. Crocker	President and Chairman of the Board (Principal Executive, Financial and Accounting Officer)	March 9, 2023
<u>/s/ Eric D. Andersen</u> Eric D. Andersen	Director	March 9, 2023
<u>/s/ Noah G. Levy</u> Noah G. Levy	Director	March 9, 2023
<u>/s/ Ulrik B. Nielsen, Ph.D.</u> Ulrik B. Nielsen, Ph.D.	Director	March 9, 2023
<u>/s/ Ana Radeljevic</u> Ana Radeljevic	Director	March 9, 2023

MERRIMACK PHARMACEUTICALS, INC.
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Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors of
Merrimack Pharmaceuticals, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Merrimack Pharmaceuticals, Inc. (the "Company") as of December 31, 2022 and 2021, the related consolidated statements of operations and comprehensive loss, stockholders' equity and cash flows for each of the two years in the period ended December 31, 2022, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2022, in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

Critical audit matters are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. We determined that there are no critical audit matters.

/s/ Marcum LLP

Marcum LLP

We have served as the Company's auditor since 2019.

Boston, MA
March 9, 2023

Merrimack Pharmaceuticals, Inc.

Consolidated Balance Sheets

(in thousands, except per share amounts)	December 31,	
	2022	2021
Assets		
Current assets:		
Cash and cash equivalents	\$ 19,439	\$ 14,203
Prepaid expenses and other current assets	389	480
Total current assets	19,828	14,683
Other assets	8	66
Total assets	<u>\$ 19,836</u>	<u>\$ 14,749</u>
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable, accrued expenses and other	\$ 589	\$ 562
Total current liabilities	589	562
Total liabilities	589	562
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, \$0.01 par value: 10,000 shares authorized at December 31, 2022 and 2021 no shares issued or outstanding at December 31, 2022 or 2021	—	—
Common stock, \$0.01 par value: 30,000 shares authorized at December 31, 2022 and 2021; 14,215 and 13,410 shares issued and outstanding at December 31, 2022 and 2021	1,342	1,334
Additional paid-in capital	565,541	558,945
Accumulated deficit	(547,636)	(546,092)
Total stockholders' equity	19,247	14,187
Total liabilities and stockholders' equity	<u>\$ 19,836</u>	<u>\$ 14,749</u>

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

Merrimack Pharmaceuticals, Inc.

Consolidated Statements of Operations and Comprehensive Loss

(in thousands, except per share amounts)	Years Ended December 31,	
	2022	2021
Operating expenses:		
General and administrative expenses	\$ 2,174	\$ 2,616
Gain on sales of assets	(445)	(144)
Total operating expenses	1,729	2,472
Loss from operations	(1,729)	(2,472)
Other income and expenses:		
Interest income	188	20
Loss before income tax expense	(1,541)	(2,452)
Income tax expense	(3)	(3)
Net loss and comprehensive loss	(1,544)	(2,455)
Net loss per common share - basic and diluted	\$ (0.11)	\$ (0.18)
Weighted-average common shares used to compute basic and diluted net loss per common share	13,524	13,407

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

Merrimack Pharmaceuticals, Inc.
Consolidated Statements of Stockholders' Equity

(in thousands)	Common Stock		Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount			
Balance at January 1, 2021	13,380	\$ 1,334	\$ 558,309	\$ (543,637)	\$ 16,006
Exercise of stock options	30	—	239	—	239
Stock-based compensation	—	—	397	—	397
Net loss	—	—	—	(2,455)	(2,455)
Balance at December 31, 2021	13,410	\$ 1,334	\$ 558,945	\$ (546,092)	\$ 14,187
Exercise of stock options	805	8	6,525	—	6,533
Stock-based compensation	—	—	71	—	71
Net loss	—	—	—	(1,544)	(1,544)
Balance at December 31, 2022	14,215	\$ 1,342	\$ 565,541	\$ (547,636)	\$ 19,247

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

Merrimack Pharmaceuticals, Inc.
Consolidated Statements of Cash Flows

(in thousands)	Years Ended December 31,	
	2022	2021
Cash flows from operating activities		
Net loss	\$ (1,544)	\$ (2,455)
Adjustments to reconcile net loss to net cash used in operating activities		
Gain on sales of in-process research and development	(445)	(144)
Stock-based compensation expense	71	397
Changes in operating assets and liabilities:		
Prepaid expenses and other assets	149	2,192
Accounts payable, accrued expenses and other	27	(208)
Net cash used in operating activities	<u>(1,742)</u>	<u>(218)</u>
Cash flows from investing activities		
Proceeds from sale of in-process research and development assets	445	144
Net cash provided by investing activities	<u>445</u>	<u>144</u>
Cash flows from financing activities		
Proceeds from exercise of options	6,533	239
Net cash provided by financing activities	<u>6,533</u>	<u>239</u>
Net increase in cash and cash equivalents	5,236	165
Cash and cash equivalents, beginning of period	14,203	14,038
Cash and cash equivalents, end of period	<u>\$ 19,439</u>	<u>\$ 14,203</u>

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

Notes to Consolidated Financial Statements

1. Nature of the Business and Summary of Significant Accounting Policies

Nature of the Business

Merrimack Pharmaceuticals, Inc. (the “Company”) is a biopharmaceutical company based in Cambridge, Massachusetts that is entitled to receive up to \$450.0 million in contingent milestone payments related to its sale of ONIVYDE[®] and MM-436 (the “Commercial Business”) to Ipsen S.A. (“Ipsen”) in April 2017 (the “Ipsen Sale”). The Company does not have any ongoing research or development activities and is seeking potential acquirers for its few remaining preclinical and clinical assets. The Company does not have any employees and instead uses external consultants for the operation of the Company.

The \$450.0 million in potential milestone payments resulting from the Ipsen Sale consist of:

- \$225.0 million upon approval by the U.S. Food and Drug Administration (“FDA”) of ONIVYDE for the first-line treatment of metastatic adenocarcinoma of the pancreas, subject to certain conditions;
- \$150.0 million upon approval by the FDA of ONIVYDE for the treatment of small-cell lung cancer after failure of first-line chemotherapy; and
- \$75.0 million upon approval by the FDA of ONIVYDE for an additional indication unrelated to those described above.

On May 30, 2019, the Company announced the completion of its review of strategic alternatives, following which the Company’s board of directors (the “Board”) implemented a series of measures designed to extend the Company’s cash runway and preserve its ability to capture the potential milestone payments resulting from the Ipsen Sale. In connection with that announcement, the Company discontinued the discovery efforts on its remaining preclinical programs: 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. The Company is seeking potential acquirers for its remaining preclinical and clinical assets.

The Company’s termination of its executive management team and all other employees was substantially completed by June 28, 2019 and fully completed by July 12, 2019. As of July 12, 2019, the Company no longer had any employees. The Company has engaged external consultants to run the day-to-day operations of the Company. The Company has also entered into consulting agreements with certain former members of its executive management team who are supporting the Company’s relationship with current partners, assisting with the potential sale of remaining preclinical and clinical assets, and assisting with certain legal and regulatory matters and the continued wind-down of operations.

On July 12, 2019, the Company completed the sale to Elevation Oncology, Inc. (formerly known as 14ner Oncology, Inc.) (“Elevation”) of its anti-HER3 antibody programs, MM-121 (seribantumab) and MM-111 (the “Elevation Sale”). In connection with the Elevation Sale, the Company received an upfront cash payment of \$3.5 million. The Company is also eligible to receive up to \$54.5 million in additional potential development, regulatory approval and commercial-based milestone payments, consisting of:

- \$3.0 million for achievement of the primary endpoint in the first registrational clinical study of either MM-121 or MM-111;
- Up to \$16.5 million in total payments for the achievement of various regulatory approval and reimbursement-based milestones in the United States, Europe and Japan; and
- Up to \$35.0 million in total payments for achieving various cumulative worldwide net sales targets between \$100.0 million and \$300.0 million for MM-121 and MM-111.

On September 15, 2021, the Company entered into an Asset Purchase Option Agreement (the “Asset Purchase Option Agreement”) with a third party, pursuant to which the third party agreed to obtain an exclusive option, to purchase one of the Company’s preclinical programs with a consideration of \$0.5 million. Under the terms of the Asset Purchase Option Agreement, the third party paid to the Company the option fee of \$0.1 million. The third party may exercise the option within 24 months from September 15, 2021. The Company recognized a gain of \$0.1 million related to the option fee payment for the year ended December 31, 2021. On January 18, 2022, the third party provided written notice to the Company of its intent to exercise such option. On March 1, 2022 the Company and the third party entered into the Asset Purchase Option Agreement. The consideration of \$0.5 million was paid to the Company and a gain of \$0.5 million was recognized in March 2022.

On January 23, 2023, the Company entered into an Asset Purchase Option Agreement (the “Option Agreement”) with a third party (the “Purchaser”), pursuant to which the Purchaser agreed to obtain an exclusive option (the “Option”) to purchase one of the Company’s preclinical programs with a consideration of \$0.7 million. Under the terms of the Option Agreement, the Purchaser paid to the Company the Option fee of \$0.2 million in January 2023. The Purchaser may exercise the Option prior to July 23, 2023.

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, development by competitors of new technological innovations, protection of proprietary technology and compliance with government regulations. None of the Company’s product candidates sold to others or retained by the Company are approved for any indication by the FDA or any other regulatory agency. 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 external consultants for the operation of the Company. The Company’s business strategy depends substantially upon its ability to receive future milestone payments from Ipsen. Any failure to achieve such milestones or a perception that the milestones may not be achieved will materially and adversely affect the Company and the value of its common stock.

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 consolidated financial statements are issued. As of December 31, 2022, the Company had an accumulated deficit of \$547.6 million. During the year ended December 31, 2022, the Company incurred a net loss of \$1.5 million and used \$1.7 million of cash in operating activities. The Company expects to continue to generate operating losses in the foreseeable future. Based on current projections, the Company expects that its cash and cash equivalents of \$19.4 million at December 31, 2022 will allow the Company to continue its operations beyond 2027, which the Company estimates is beyond the latest date that the longest-term potential Ipsen milestone may be achieved. The continued viability of the Company beyond that point is dependent on its ability to raise additional capital to finance its operations or to reduce operating expenses. There can be no assurance that the Company will be able to obtain sufficient capital to cover its costs on acceptable terms, if at all.

The Company expects that it would finance any future cash needs through a combination of divestitures of its product candidates or other assets, equity offerings and debt financings. There can be no assurance as to the timing, terms or consummation of any divestiture or financing, and the terms of any such financing may adversely affect the holdings or the rights of the Company’s stockholders or require the Company to relinquish rights to certain of its revenue streams or product candidates.

Summary of Significant Accounting Policies

Segment Information

Operating segments are defined as components of an enterprise engaging in business activities for which discrete financial information is available and regularly reviewed by the chief operating decision maker in deciding how to allocate resources and in assessing performance. The Company views its operations and manages its business as one operating segment and the Company operates in only one geographic region (the United States).

Basis of Presentation and Consolidation

The accompanying consolidated financial statements have been prepared under U.S. generally accepted accounting principles (“GAAP”) and include the accounts of the Company and its wholly owned subsidiaries, all intercompany accounts and transactions have been eliminated.

Use of Estimates

GAAP requires the Company’s management to make estimates and judgments that may affect the reported amounts of assets, liabilities, revenues, expenses and related disclosures. The Company bases estimates and judgments on historical experience and on various other factors that it believes to be reasonable under the circumstances. The most significant estimates in these consolidated financial statements include, but may not be limited to, accounting for stock-based compensation and the accrual of remaining clinical trial expenses and professional service expenses. The Company’s actual results may differ from these estimates under different assumptions or conditions. The Company evaluates its estimates on an ongoing basis. Changes in estimates are reflected in reported results in the period in which they become known by the Company’s management.

Cash and Cash Equivalents

Cash and cash equivalents are short-term, highly liquid investments with original maturities of three months or less at the date of purchase. Investments qualifying as cash equivalents primarily consist of money market funds.

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.

Accrued Expenses

As part of the process of preparing financial statements, the Company is required to estimate accrued expenses. This process involves identifying services that have been performed on the Company's behalf and estimating the level of services performed and the associated costs incurred for such services where the Company has not yet been invoiced or otherwise notified of actual cost. The Company records these estimates in its consolidated financial statements as of each balance sheet date. Examples of estimated accrued expenses include:

- fees due to contract research organizations in connection with preclinical and toxicology studies and clinical trials;
- fees paid to investigative sites in connection with clinical trials; and
- professional service fees.

In accruing service fees, the Company estimates the time period over which services will be provided and the level of effort in each period. If the actual timing of the provision of services or the level of effort varies from the estimate, the Company adjusts the accrual accordingly. In the event that the Company does not identify costs that have been incurred or it under or overestimates the level of services performed or the costs of such services, its actual expenses could differ from such estimates. The date on which some services commence, the level of services performed on or before a given date and the cost of such services are often subjective determinations. The Company prepares its estimates based on the facts and circumstances known to it at the time and in accordance with GAAP. There have been no material changes in estimates for the periods presented.

General and Administrative Expenses

General and administrative expenses are comprised of consulting fees and other related costs for personnel, including stock-based compensation expenses and benefits, in the Company's commercial, 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, professional fees for legal services, including patent-related expenses, and accounting and information technology services.

Stock-Based Compensation Expense

The Company accounts for all stock-based payments to non-employees, including grants of stock options, to be recognized in the consolidated statements of operations and comprehensive loss based on their grant date fair values. For stock options granted to members of the Board for their service on the Board, the Company estimates the grant date fair value of each option award using the Black-Scholes option pricing model. The use of the Black-Scholes option pricing model requires the Company to make assumptions with respect to the expected term of the option, the expected volatility of the Company's common stock consistent with the expected term of the option, the risk-free interest rate consistent with the expected term of the option and the expected dividend yield of the Company's common stock. Stock-based compensation expense related to employee stock options is measured using the fair value of the award at the grant date and is adjusted quarterly to reflect actual forfeitures. Stock-based compensation expense is then recognized on a straight-line basis over the vesting period, which is also the requisite service period.

Net Loss Per Common Share

Basic net loss per share is calculated by dividing the net loss attributable to Merrimack Pharmaceuticals, Inc. by the weighted-average number of common shares outstanding during the period.

Diluted net loss per share is computed by dividing the net 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 loss per share, when it has issued shares that meet the definition of participating securities. The two-class method determines net 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 years ended December 31, 2022 and 2021, as the Company was in a loss position and had no shares that met the definition of participating securities outstanding as of December 31, 2022 and 2021.

Income Taxes

The Company accounts for income taxes under the asset and liability method. Under this method, deferred tax assets and liabilities are recognized for the estimated future tax consequences attributable to differences between financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted rates in effect for the year in which these temporary differences are expected to be recovered or settled. Valuation allowances are provided if based on the weight of available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized.

The Company provides reserves for potential payments of tax to various tax authorities related to uncertain tax positions and other issues. Reserves are based on a determination of whether and how much of a tax benefit taken by the Company in its tax filing is more likely than not to be realized following resolution of any potential contingencies present related to the tax benefit. Potential interest and penalties associated with such uncertain tax positions are recorded as components of income tax expense. To date, the Company has not taken any uncertain tax positions or recorded any reserves, interest or penalties.

Concentration of Credit Risk

Financial instruments that subject the Company to credit risk consist primarily of cash and cash equivalents. The Company places its cash deposits in accredited financial institutions and, therefore, the Company's management believes these funds are subject to minimal credit risk. The Company invests cash equivalents in money market funds. The Company has no significant off-balance sheet concentrations of credit risk such as foreign currency exchange contracts, option contracts or other hedging arrangements.

Recently Adopted Accounting Pronouncements

In December 2019, the FASB issued ASU 2019-12, "Income Taxes—Simplifying the Accounting for Income Taxes (Topic 740)" ("ASU 2019-12"), which simplifies the accounting for income taxes. The new guidance removes certain exceptions to the general principles in ASC 740 such as recognizing deferred taxes for equity investments, the incremental approach to performing intra-period tax allocation and calculating income taxes in interim periods. The standard also simplifies accounting for income taxes under U.S. GAAP by clarifying and amending existing guidance, including the recognition of deferred taxes for goodwill, the allocation of taxes to members of a consolidated group and requiring that an entity reflect the effect of enacted changes in tax laws or rates in the annual effective tax rate computation in the interim period that includes the enactment date. This guidance is effective for annual periods beginning after December 15, 2020, and interim periods thereafter; however, early adoption is permitted. The new guidance was adopted on January 1, 2021 and it did not have a material impact on the Company's consolidated financial statements and related disclosures.

From time to time, new accounting pronouncements are issued by the Financial Accounting Standards Board 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 consolidated financial statements or disclosures.

2. Net Loss Per Common Share

The stock options are excluded from the calculation of diluted loss per share because the net loss for the years ended December 31, 2022 and 2021 causes such securities to be anti-dilutive. Securities excluded from the calculation of diluted loss per share are shown in the chart below:

(in thousands)	Years Ended December 31,	
	2022	2021
Outstanding options to purchase common stock	824	1,778

3. Fair Value of Financial Instruments

The Company's cash and cash equivalents, accounts receivable, prepaid expenses, and other current assets, accounts payable, accrued expenses and variable interest rate note payable are recorded at cost, which approximates fair value due to their short-term nature.

The following tables summarize assets measured at fair value on a recurring basis as of December 31, 2022 and 2021 and the input categories associated with those assets:

(in thousands)	December 31, 2022		
	Level 1	Level 2	Level 3
Cash equivalents:			
Money market funds	\$ 18,148	\$ —	\$ —
Totals	<u>\$ 18,148</u>	<u>\$ —</u>	<u>\$ —</u>

(in thousands)	December 31, 2021		
	Level 1	Level 2	Level 3
Cash equivalents:			
Money market funds	\$ 12,934	\$ —	\$ —
Totals	<u>\$ 12,934</u>	<u>\$ —</u>	<u>\$ —</u>

There were no liabilities measured at fair value on a recurring basis as of December 31, 2022 and 2021.

4. Accounts Payable, Accrued Expenses and Other

Accounts payable, accrued expenses and other as of December 31, 2022 and 2021 consisted of the following:

(in thousands)	December 31,	
	2022	2021
Accounts payable	\$ 188	\$ 120
Accrued goods and services	139	167
Accrued clinical trial costs	71	84
Others	191	191
Total accounts payable, accrued expenses and other	<u>\$ 589</u>	<u>\$ 562</u>

5. Common Stock

As of December 31, 2022 and 2021, the Company had 30.0 million shares of \$0.01 par value common stock authorized. There were approximately 14.2 million and 13.4 million shares of common stock issued and outstanding as of December 31, 2022 and 2021, respectively.

Stockholder Rights Agreement

On November 22, 2019, the Board created, as of and contingent with the Section 382 Rights Agreement with Computershare Trust Company, N.A., as Rights Agent (the "Rights Agreement") being signed, a series of junior participating preferred stock of the Company to be designated "Series Z Junior Participating Preferred Stock" with a par value of \$0.01 per share, and stated the designation and number of shares:

Designation and Amount. The shares of this series are designated as Series Z Junior Participating Preferred Stock (the "Series Z Junior Preferred Stock"), and the number of shares constituting the Series Z Junior Preferred Stock shall be 30,000. Such number of shares may be increased or decreased by resolution of the Board; provided, that no decrease shall reduce the number of shares of Series Z Junior Preferred Stock to a number less than the number of shares then outstanding plus the number of shares reserved for issuance upon the exercise of outstanding options, rights or warrants or upon the conversion of any outstanding securities issued by the Company convertible into Series Z Junior Preferred Stock.

On December 3, 2019, the Company entered into the Rights Agreement in an effort to protect stockholder value by attempting to diminish the risk that the Company's ability to use its net operating losses ("NOLs") to reduce potential future federal income tax obligations may become substantially limited. The Company's ability to utilize its NOLs may be substantially limited if the Company experiences an "ownership change" within the meaning of Section 382 of the Internal Revenue Code of 1986, as amended (the "Internal Revenue Code"). The Rights Agreement is intended to act as a deterrent to any person acquiring beneficial ownership of 4.9% or more of the Company's outstanding common stock without the approval of the Board.

The Board authorized the issuance of one Right for each outstanding share of common stock, par value \$0.01 per share, of the Company, payable to stockholders of record date of the close of business on December 13, 2019 (the "Record Date"). Subject to the terms, provisions and conditions of the Rights Agreement, if the Rights become exercisable, each Right would initially represent the right to purchase from the Company one one-thousandth of a share of Series Z Junior Preferred Stock, par value \$0.01 per share, of the Company (the "Preferred Shares") for a purchase price of \$18.00 (the "Purchase Price"). Until a Right is exercised, the holder thereof, as such, will have no rights as a stockholder of the Company, including, without limitation, the right to vote or to receive dividends.

The Rights will not be exercisable until the earlier of (i) ten business days after a public announcement that a person has become an "Acquiring Person" by acquiring beneficial ownership of 4.9% or more of outstanding common stock has become such (or, in the event an exchange is effected in accordance with Section 24 of the Rights Agreement and the Board determines that a later date is advisable, then such later date), and (ii) ten business days (or such later date as may be specified by the Board prior to such time as any person becomes an Acquiring Person) after the commencement of a tender or exchange offer by or on behalf of a person that, if completed, would result in such person becoming an Acquiring Person (the "Distribution Date").

Until the Distribution Date, the Rights will be transferred with and only with the common stock, and (unless the Rights are redeemed or expire) the surrender or transfer of any common stock outstanding on or after the Record Date will constitute the transfer of the Rights associated with such common stock. Upon the Distribution Date, the Rights may be transferred separately from the common stock, and each Right, other than Rights held by an Acquiring Person, will entitle its holder to purchase from the Company one one-thousandth of a Preferred Share in exchange for the Purchase Price. The Rights will be evidenced, with respect to any of the common stock certificates outstanding as of the Record Date, by such common stock certificate with a copy of the Summary of Rights to Purchase Preferred Shares.

If any person becomes an Acquiring Person, proper provision shall be made so that each holder of a Rights, other than rights beneficially owned by an Acquiring Person, an associate or affiliate of the Acquiring Person or any person with whom such person is acting in concert (all of which will thereafter be void), will thereafter have the right to receive, upon exercise thereof, that number of common stock having a market value equal to two times the Purchase Price of the Right. If the Board so elects, the Company shall deliver, upon payment of the Purchase Price, an amount of cash or securities equivalent in value to the number of common stock issuable upon exercise of a Right.

If, at any time after a person becomes an Acquiring Person, the Company is acquired in a merger or other business combination transaction or 50% or more of its consolidated assets or earning power are sold, proper provision will be made so that each holder of a Right will thereafter have the right to receive, upon the exercise thereof at the then current Purchase Price, that number of shares of common stock of the acquiring company which at the time of such transaction will have a market value of two times the Purchase Price.

At any time prior to the time any person becomes an Acquiring Person, the Board may redeem the Rights in whole, but not in part, at a price of \$0.0001 per Right (the "Redemption Price"). The redemption of the Rights may be made effective at such time, on such basis and with such conditions as the Board in its sole discretion may establish. Immediately upon any redemption of the Rights, the right to exercise the Rights will terminate and the only right of the holders of Rights will be to receive the Redemption Price.

At any time after any person becomes an Acquiring Person and prior to the acquisition by any person or group of a majority of the outstanding common stock, the Board may exchange the Rights (other than Rights owned by an Acquiring Person, which shall have become void), in whole or in part, at an exchange ratio of one common stock per Right (subject to adjustment). The exchange of the Rights by the Board may be made effective at such time, on such basis and with such conditions as the Board in its sole discretion may establish.

The Rights were due to expire on the earlier of (i) the close of business on December 2, 2022, (ii) the close of business on the date that the Board determines that (A) the Rights Agreement is no longer necessary or desirable for the preservation of the Tax Benefits or (B) the Tax Benefits have been fully utilized and may no longer be carried forward, (iii) the time at which the Rights are redeemed, (iv) the time at which the Rights are exchanged, and (v) if the Rights Agreement has not been approved by the stockholders prior to the conclusion of the Company's 2020 annual meeting, the close of business on such date. On December 2, 2022, the Rights Agreement was extended and will expire on December 2, 2025, but would terminate at the time of the Company's 2023 annual meeting if the extension is not approved by the Company's shareholders at that annual meeting.

The Purchase Price payable, and the number of Preferred Shares or other securities or property issuable, upon exercise of the Rights is subject to adjustment from time to time to prevent dilution (i) in the event of a stock dividend on the Preferred Shares payable in Preferred Shares or a subdivision or combination of the Preferred Shares, (ii) upon the grant to holders of the Preferred Shares of certain rights or warrants to subscribe for or purchase Preferred Shares at a price, or securities convertible into Preferred Shares with a conversion price, less than the then current market price of the Preferred Shares, or (iii) upon the distribution to holders of the Preferred Shares of evidences of indebtedness or assets (excluding regular periodic cash dividends paid out of earnings or retained earnings or dividends payable in Preferred Shares) or of subscription rights or warrants (other than those referred to above). The number of outstanding Rights and the number of Preferred Shares issuable upon exercise of each Right are also subject to adjustment in the event of a stock split of the Common Shares or a stock dividend on the Common Shares payable in Common Shares or subdivisions, consolidations or combinations of the Common Shares occurring, in any such case, prior to the Distribution Date.

With certain exceptions, no adjustment in the Purchase Price will be required until cumulative adjustments require an adjustment of at least 1% in such Purchase Price. No fractional Preferred Shares will be issued (other than fractions which are integral multiples of one one-thousandth of a Preferred Share, which may, at the election of the Company, be evidenced by depositary receipts), and in lieu thereof, an adjustment in cash will be made based on the market price of the Preferred Shares on the last trading day prior to the date of exercise.

6. Stock-Based Compensation

On April 15, 2021, the Company's Board of Directors adopted the 2021 Incentive Award Plan (the "2021 Plan") to replace the 2011 Stock Incentive Plan (the "2011 Plan"). The 2021 Plan was approved by the Company's stockholders at the Company's Annual Meeting of Stockholders held on June 10, 2021. The 2021 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.

The Company initially reserved 275,000 of its common stock for the issuance of awards under the 2021 Plan. There were 22,000 options granted during each of the years ended December 31, 2022 and 2021 under the 2021 Plan. The weighted-average grant date fair value per share of stock options granted during the year ended December 31, 2022 and 2021 was \$3.11 and \$3.68, respectively. At December 31, 2022, there were 231,000 shares remaining available for grant under the 2021 Plan.

Stock options granted to non-employee directors in 2022 and 2021 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 years ended December 31, 2022 and 2021 was estimated at the date of grant using the following assumptions:

	Years Ended December 31,	
	2022	2021
Risk-free interest rate	3.03%	0.73%
Expected dividend yield	0%	0%
Expected term	5.2 years	5.2 years
Expected volatility	68.02%	68.48%

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 the expected term of its stock options. Under this approach, the expected term is calculated to be the average of the ten-year contractual term of the option and the weighted-average vesting term of the option, taking into consideration multiple vesting tranches. The computation of expected volatility is based on the historical volatility of the Company. The risk-free interest rate is based on a treasury instrument whose term is consistent with the expected life of the stock options. Stock-based compensation expense related to employee stock options is measured using the fair value of the award at the grant date and is adjusted quarterly to reflect actual forfeitures. Stock-based compensation expense is then recognized on a straight-line basis over the vesting period, which is also the requisite service period. The Company recognized stock-based compensation expense of \$0.1 million and \$0.4 million during the years ended December 31, 2022 and 2021, respectively.

The following table summarizes stock option activity during the year ended December 31, 2022:

(in thousands, except per share amounts)	Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Outstanding at December 31, 2021	1,778	\$ 11.46	5.32	\$ 148
Granted	22	\$ 5.20		
Exercised	(805)	\$ 8.12		
Forfeited	(171)	\$ 23.18		
Outstanding at December 31, 2022	<u>824</u>	\$ 12.38	4.28	\$ 2,498
Vested and expected to vest at December 31, 2022	824	\$ 12.38	4.28	\$ 2,498
Exercisable at December 31, 2022	813	\$ 12.48	4.21	\$ 2,429

The aggregate intrinsic value was 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 options exercised during the year ended December 31, 2022 and 2021 was \$3.0 million and less than \$0.1 million, respectively.

As of December 31, 2022, there was less than \$0.1 million of total unrecognized stock-based compensation expense related to unvested employee stock options. The Company expects to recognize this expense over a weighted-average period of approximately 0.3 years.

7. Income Taxes

Intraperiod tax allocation rules require the Company to allocate the provision for income taxes between operations and other categories of earnings, such as discontinued operations. In periods in which there is pre-tax loss from operations and pre-tax income in other categories of earnings, such as discontinued operations, the Company must allocate to operations an income tax benefit for the loss in operations with an offsetting income tax expense to discontinued operations.

For the years ended December 31, 2022 and 2021, the Company recognized an income tax expense less than \$0.1 million.

A reconciliation of the Company's effective tax rate to the statutory federal income tax rate is as follows:

	Years Ended December 31,	
	2022	2021
Federal income tax at statutory federal rate	21.0%	21.0%
State taxes	6.1	4.9
Permanent differences	—	0.3
Stock-based compensation	(2.8)	0.1
Tax credits	(6.5)	0.1
Recapture of tax credits	0.0	0.0
Other	(0.1)	1.3
Change in valuation allowance	(17.9)	(27.8)
Total	<u>(0.2)%</u>	<u>(0.1)%</u>

The reconciliation of the Company's effective tax rate to the statutory tax rate includes a reduction to the deferred tax asset for stock options that have been forfeited. The Company will no longer receive a tax deduction for these options in the future and as such the deferred tax asset has been reversed into income tax expense. An offsetting reduction to the valuation allowance has also been recorded.

Temporary differences that give rise to significant net deferred tax assets as of December 31, 2022 and 2021 are as follows:

(in thousands)	December 31,	
	2022	2021
Deferred tax assets:		
Net operating losses	\$ 64,135	\$ 62,619
Capitalized research and development expenses	141	282
Credit carryforwards	167,397	167,498
Deferred compensation	1,181	1,993
Election out of installment method	820	956
Accrued expenses	44	44
Other temporary differences	621	672
Installment sale tax basis	15,869	15,869
Total gross deferred tax assets	250,208	249,933
Valuation allowance	(250,208)	(249,933)
Net deferred tax assets	\$ —	\$ —

At December 31, 2022, the Company had net operating loss carryforwards for federal and state income tax purposes of \$215.0 million and \$300.4 million, respectively. The Company's existing federal and state net operating loss carryforwards begin to expire in 2034 and 2033, respectively. The Company also had available research and development credits for federal and state income tax purposes of approximately \$28.7 million and \$20.3 million, respectively. The federal and state research and development credits will begin to expire in 2022 and 2025, respectively. As of December 31, 2022, the Company also had available investment tax credits for state income tax purposes of less than \$0.1 million which do not expire. The Company has orphan drug credits of \$122.7 million, which begin to expire in 2031.

Utilization of the net operating loss and tax credit carryforwards may be subject to a substantial annual limitation under Section 382 of the Internal Revenue Code due to ownership change limitations that have occurred previously or that could occur in the future. These ownership changes may limit the amount of net operating loss and tax credit carryforwards that can be utilized annually to offset future taxable income and tax. The Company completed an evaluation of ownership changes through November 16, 2022 to assess whether utilization of the Company's net operating loss or tax credit carryforwards would be subject to an annual limitation under Section 382 of the Internal Revenue Code. The Company believes it can utilize its tax attributes generated through November 16, 2022 as a result of the analysis. To the extent an ownership change has occurred after November 16, 2022 or occurs in the future, the net operating loss and tax credit carryforwards may be subject to limitation.

The Company has not, as of yet, conducted a study of its domestic research and development credit carryforwards and orphan drug credits. This study may result in an increase or decrease to the Company's credit carryforwards; however, until a study is completed and any adjustment is known, no amounts are being presented as an uncertain tax position. A full valuation allowance has been provided against the Company's credits, and if an adjustment is required, this adjustment would be offset by an adjustment to the valuation allowance. As a result, there would be no impact to the statement of operations and comprehensive loss, balance sheet or cash flows if an adjustment were required.

As of December 31, 2022, the Company has evaluated the positive and negative evidence bearing upon the realizability of its remaining deferred tax assets, which are comprised principally of net operating loss carryforwards and research and development credits. Under the applicable accounting standards, management has considered the Company's history of losses and concluded that it is more likely than not that the Company will not recognize the benefits of its deferred tax assets. Accordingly, a full valuation allowance has been established against the deferred tax assets. The change in the valuation allowance against the deferred tax assets in the years ended December 31, 2022 and 2021 was as follows:

(in thousands)	Balance at Beginning of Period	Additions	Deductions	Balance at End of Period
December 31, 2021	\$ 249,252	\$ 681	\$ —	\$ 249,933
December 31, 2022	249,933	275	—	250,208

The change in the valuation allowance in the year ended December 31, 2022 primarily relates to the net operating loss deferred tax assets generated for the current year.

8. Subsequent Events

The Company and Purchaser entered into the Option Agreement dated January 23, 2023 (see Note 1 for further details), pursuant to which the Company granted to Purchaser an exclusive option during a fixed period of time to negotiate a definitive asset purchase agreement to acquire one of the Company's preclinical programs. In January 2023, the Company received payment of the Option fee from the Purchaser.

DESCRIPTION OF SECURITIES REGISTERED UNDER SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED

The following description of the securities of Merrimack Pharmaceuticals, Inc. (“us,” “our,” “we” or the “Company”) registered under Section 12 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), is intended as a summary only and therefore is not a complete description. This description is based upon, and is qualified by reference to, our certificate of incorporation, our bylaws and applicable provisions of the Delaware General Corporation Law (the “DGCL”). You should read our certificate of incorporation and bylaws, which are incorporated by reference as Exhibit 3.1 and Exhibit 3.2, respectively, to the Annual Report on Form 10-K of which this Exhibit is a part, for the provisions that are important to you.

Authorized Capital Stock

Our authorized capital stock consists of 30,000,000 shares of common stock and 10,000,000 shares of preferred stock, of which 30,000 shares are designated as series Z junior participating preferred stock. Our common stock is registered under Section 12(b) of the Exchange Act, and we have preferred stock purchase rights registered under Section 12(g) of the Exchange Act.

Common Stock

Voting Rights. Holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders and do not have cumulative voting rights. Each election of directors by our stockholders will be determined by a plurality of the votes cast by the stockholders entitled to vote on the election. In general, except (1) for the election of directors, (2) as described below under “—Provisions of Our Certificate of Incorporation and Bylaws and Delaware Law That May Have Anti-Takeover Effects—Super-Majority Voting,” (3) in the future to the extent that we have two or more classes or series of stock outstanding with separate voting rights and (4) as otherwise required by law, any matter to be voted on by our stockholders at any meeting is decided by the vote of the holders of a majority in voting power of the votes cast by the holders of shares of our stock present or represented at the meeting and voting affirmatively or negatively on such matter.

Dividends. Holders of common stock are entitled to receive proportionately any dividends as may be declared by our board of directors, subject to any preferential dividend rights of outstanding preferred stock.

Liquidation and Dissolution. In the event of our liquidation or dissolution, the holders of our common stock are entitled to receive proportionately all assets available for distribution to stockholders after the payment of all debts and other liabilities and subject to the prior rights of any of our outstanding preferred stock.

Other Rights. Holders of our common stock have no preemptive, subscription, redemption or conversion rights. The rights, preferences and privileges of holders of our common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of our preferred stock that we may designate and issue in the future.

Preferred Stock

Under the terms of our certificate of incorporation, our board of directors is authorized to issue shares of preferred stock in one or more series without stockholder approval. Our board of directors has the discretion to determine the rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of preferred stock. The purpose of authorizing our board of directors to issue preferred stock and determine its rights and preferences is to eliminate delays associated with a stockholder vote on specific issuances. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions, future financings and other corporate purposes, could have the effect of making it more difficult for a third party to acquire, or could discourage a third party from seeking to acquire, a majority of our outstanding voting stock.

Effects of Authorized but Unissued Stock

We have shares of common stock and preferred stock available for future issuance without stockholder approval, subject to any limitations imposed by the listing standards of The Nasdaq Global Market. We may utilize these additional shares for a variety of corporate purposes, including for future public offerings to raise additional capital or facilitate corporate acquisitions or for payment as a dividend on our capital stock. The existence of unissued and unreserved common stock and preferred stock may enable our board of directors to issue shares to persons friendly to current management or to issue preferred stock with terms that could have the effect of making it more difficult for a third party to acquire, or could discourage a third party from seeking to acquire, a controlling interest in our company by means of a merger, tender offer, proxy contest or otherwise. In addition, if we issue preferred stock, the issuance could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments upon liquidation.

Provisions of Our Certificate of Incorporation and Bylaws and Delaware Law That May Have Anti-Takeover Effects

Delaware Law. We are subject to Section 203 of the DGCL. Subject to certain exceptions, Section 203 prevents a publicly held Delaware corporation from engaging in a “business combination” with any “interested stockholder” for three years following the date that the person became an interested stockholder, unless the interested stockholder attained such status with the approval of our board of directors, the business combination is approved by our board of directors and stockholders in a prescribed manner, or the interested stockholder acquired at least 85% of our outstanding voting stock in the transaction in which it became an interested stockholder. A “business combination” includes, among other things, a merger or consolidation involving us and the “interested stockholder” and the sale of more than 10% of our assets. In general, an “interested stockholder” is any entity or person beneficially owning 15% or more of our outstanding voting stock and any entity or person affiliated with or controlling or controlled by such entity or person.

Stockholder Action; Special Meeting of Stockholders; Advance Notice Requirements for Stockholder Proposals and Director Nominations. Our certificate of incorporation and our bylaws provide that any action required or permitted to be taken by our stockholders at an annual meeting or special meeting of stockholders may only be taken if it is properly brought before such meeting and may not be taken by written action in lieu of a meeting. Our certificate of incorporation and our bylaws also provide that, except as otherwise required by law, special meetings of the stockholders can only be called by our chairman of the board, our chief executive officer or our board of directors. In addition, our bylaws establish an advance notice procedure for stockholder proposals to be brought before an annual meeting of stockholders, including proposed nominations of candidates for election to our board of directors. Stockholders at an annual meeting may only consider proposals or nominations specified in the notice of meeting or brought before the meeting by or at the direction of our board of directors, or by a stockholder of record on the record date for the meeting, who is entitled to vote at the meeting and who has delivered timely written notice in proper form to our secretary of the stockholder’s intention to bring such business before the meeting. These provisions could have the effect of delaying until the next stockholder meeting stockholder actions that are favored by the holders of a majority of our outstanding voting securities. These provisions also could discourage a third party from making a tender offer for our common stock, because even if it acquired a majority of our outstanding voting stock, it would be able to take action as a stockholder, such as electing new directors or approving a merger, only at a duly called stockholders meeting and not by written consent.

Super-Majority Voting. The DGCL provides generally that the affirmative vote of a majority of the shares entitled to vote on any matter is required to amend a corporation’s certificate of incorporation or bylaws, unless a corporation’s certificate of incorporation or bylaws, as the case may be, requires a greater percentage. Our bylaws may be amended or repealed by a majority vote of our board of directors or the affirmative vote of the holders of at least 75% of the votes that all our stockholders would be entitled to cast in any annual election of directors. In addition, the affirmative vote of the holders of at least 75% of the votes that all our stockholders would be entitled to cast in any election of directors is required to amend or repeal or to adopt any provisions inconsistent with any of the provisions of our certificate of incorporation described above.

Removal of Directors by Stockholders. Our bylaws provide that members of our board of directors may be removed, with or without cause, by a majority in voting power of the shares of capital stock of our company issued and outstanding and entitled to vote in any annual election of directors, subject to any rights of any series of preferred stock.

Preferred Stock Purchase Rights

Pursuant to a Section 382 Rights Agreement (the “Rights Agreement”), dated December 3, 2019, between us and Computershare Trust Company, N.A., as Rights Agent, the Company issued a dividend of one preferred share purchase right (a “Right”) for each share of common stock, payable on December 13, 2019 (the “Record Date”) to the stockholders of record on that date. Each Right entitles the registered holder to purchase from the Company one one-thousandth of a share of Series Z Junior Preferred Stock (the “Preferred Shares”) of the Company, at a price of \$18.00 per one one-thousandth of a Preferred Share represented by a Right (the “Purchase Price”), subject to adjustment.

This description of the Rights is based upon, and qualified by reference to, the Rights Agreement. You should read the Rights Agreement which is incorporated by reference as an exhibit to the Annual Report on Form 10-K of which this Exhibit is a part, for the provisions that are important to you. The Certificate of Designation of Series Z Junior Preferred Participating Stock is also incorporated by reference as an exhibit to the Annual Report on Form 10-K of which this Exhibit is a part. Capitalized terms used but not defined in this section are defined in the Rights Agreement.

The Rights

The Rights are not exercisable until the Distribution Date. The Distribution Date will be the earlier of (i) the Close of Business on the tenth day following a public announcement that an Acquiring Person (as defined below) has become such (or, in the event an exchange is effected in accordance with Section 24 of the Rights Agreement and the board determines that a later date is advisable, then such later date) or (ii) the Close of Business on the tenth Business Day (or such later date as may be determined by action of the board prior to such time as any Person becomes an Acquiring Person) following the commencement of a tender offer or exchange offer, the consummation of which would result in the Beneficial Ownership by a Person or group of 4.9% or more of the then outstanding common stock.

Until the Distribution Date, the Rights will be transferred with and only with the common stock, and (unless the Rights are redeemed or expire) the surrender or transfer of any common stock outstanding on or after the Record Date will constitute the transfer of the Rights associated with such common stock. Upon the Distribution Date, the Rights may be transferred separately from the common stock, and each Right, other than Rights held by an Acquiring Person, will entitle its holder to purchase from the Company one one-thousandth of a Preferred Share in exchange for the Purchase Price.

The Rights will be evidenced, with respect to any of the common stock certificates outstanding as of the Record Date, by such common stock certificate with a copy of the Summary of Rights to Purchase Preferred Shares substantially in the form attached as Exhibit C to the Rights Agreement (unless such Rights are recorded in book entry).

Acquiring Person

An “Acquiring Person” is any Person or group of Affiliated or Associated Persons that has acquired Beneficial Ownership (as defined below) of 4.9% or more of the common stock then outstanding. However, a Person shall not be deemed to be an Acquiring Person if such Person, at the time of the first public announcement of the Rights Agreement, is a Beneficial Owner of 4.9% or more of the common stock then outstanding (a “Grandfathered Stockholder”); provided, however, that if a Grandfathered Stockholder increases its Beneficial Ownership of the common stock of the Company as of any date on or after the date of the public announcement of this Agreement, then such Grandfathered Stockholder shall no longer be deemed to be a Grandfathered Stockholder unless, upon such acquisition of Beneficial Ownership of additional common stock of the Company, such Person is not then the Beneficial Owner of 4.9% or more of the common stock of the Company then outstanding; provided, further, that upon the first decrease of a Grandfathered Stockholder’s Beneficial Ownership below 4.9% of the common stock of the Company then outstanding, such Grandfathered Stockholder shall no longer be deemed to be a Grandfathered Stockholder and this proviso shall have no further force or effect with respect to such Person.

In general, “Beneficial Ownership” shall include any securities such Person, or any of such Person’s Affiliates or Associates (i) would be deemed to actually or constructively own for purposes of Section 382 of the Code and the regulations promulgated thereunder, (to the extent ownership of such securities would be attributed to such Persons under Section 382 of the Code and the regulations promulgated thereunder), or (ii) which are directly or indirectly beneficially owned by any other Person with whom such Person has any agreement, arrangement or understanding, whether or not in writing, for the purpose of acquiring, holding, voting or disposing of any securities of the Company or cooperating in obtaining, changing or influencing the control of the Company; provided, that the effect of such agreement, arrangement or understanding is to treat such Person as an “entity” under Section 1.382-3(a)(1) of the Department of Treasury regulations.

From and after the time any Person becomes an Acquiring Person, if the Rights evidenced by a Right Certificate are or were acquired or Beneficially Owned by an Acquiring Person, an Associate or Affiliate of an Acquiring Person or any Person with whom such Person is Acting in Concert, such Rights shall become void, and any holder of such Rights shall thereafter have no right to exercise such Rights.

Flip-in Event

If any Person becomes an Acquiring Person, proper provision shall be made so that each holder of a Rights, other than Rights Beneficially Owned by an Acquiring Person, an Associate or Affiliate of the Acquiring Person or any Person with whom such Person is Acting in Concert (all of which will thereafter be void), will thereafter have the right to receive, upon exercise thereof, that number of shares of common stock having a market value equal to two times the Purchase Price of the Right. If the board so elects, the Company shall deliver, upon payment of the Purchase Price, an amount of cash or securities equivalent in value to the number of shares of common stock issuable upon exercise of a Right.

Flip-over Event

If, at any time after a Person becomes an Acquiring Person, the Company is acquired in a merger or other business combination transaction or 50% or more of its consolidated assets or earning power are sold, proper provision will be made so that each holder of a Right will thereafter have the right to receive, upon the exercise thereof at the then current Purchase Price, that number of shares of common stock of the acquiring company which at the time of such transaction will have a market value of two times the Purchase Price.

Exchange

At any time after any Person becomes an Acquiring Person and prior to the acquisition by any Person or group of a majority of the outstanding common stock, the board may exchange the Rights (other than Rights owned by an Acquiring Person, which shall have become void), in whole or in part, at an exchange ratio of one share of common stock per Right (subject to adjustment). The exchange of the Rights by the Board may be made effective at such time, on such basis and with such conditions as the board in its sole discretion may establish.

Preferred Shares

Preferred Shares purchasable upon exercise of the Rights will not be redeemable. Each Preferred Share will be entitled to a quarterly dividend payment of 1,000 multiplied by the dividend declared per share of common stock. In the event of liquidation, the holders of the Preferred Shares will be entitled to a payment per share equal to 1,000 multiplied by the aggregate payment made per share of common stock. Each Preferred Share will have 1,000 votes, voting together with the common stock. In the event of any merger, consolidation or other transaction in which common stock is exchanged, each Preferred Share will be entitled to receive 1,000 multiplied by the amount received per share of common stock. Because of the nature of the dividend, liquidation and voting rights of the Preferred Shares, the value of the one one-thousandth of a Preferred Share purchasable upon exercise of each Right should approximate the value of one share of common stock.

Purchase Price Adjustments

The Purchase Price payable, and the number of Preferred Shares or other securities or property issuable, upon exercise of the Rights is subject to adjustment from time to time to prevent dilution (i) in the event of a stock dividend on the Preferred Shares payable in Preferred Shares or a subdivision or combination of the Preferred Shares, (ii) upon the grant to holders of the Preferred Shares of certain rights or warrants to subscribe for or purchase Preferred Shares at a price, or securities convertible into Preferred Shares with a conversion price, less than the then current market price of the Preferred Shares, or (iii) upon the distribution to holders of the Preferred Shares of evidences of indebtedness or assets (excluding regular periodic cash dividends paid out of earnings or retained earnings or dividends payable in Preferred Shares) or of subscription rights or warrants (other than those referred to above). The number of outstanding Rights and the number of Preferred Shares issuable upon exercise of each Right are also subject to adjustment in the event of a stock split of the common stock or a stock dividend on the common stock payable in shares of common stock or subdivisions, consolidations or combinations of the common stock occurring, in any such case, prior to the Distribution Date.

With certain exceptions, no adjustment in the Purchase Price will be required until cumulative adjustments require an adjustment of at least 1% in such Purchase Price. No fractional Preferred Shares will be issued (other than fractions which are integral multiples of one one-thousandth of a Preferred Share, which may, at the election of the Company, be evidenced by depositary receipts), and in lieu thereof, an adjustment in cash will be made based on the market price of the Preferred Shares on the last trading day prior to the date of exercise.

Expiration

The Rights will expire on the earlier of (i) the Close of Business on December 2, 2022, (ii) the close of business on the date that the board determines that (A) the Rights Agreement is no longer necessary or desirable for the preservation of the Tax Benefits or (B) the Tax Benefits have been fully utilized and may no longer be carried forward, (iii) the time at which the Rights are redeemed, (iv) the time at which the Rights are exchanged, and (v) if the Rights Agreement has not been approved by the stockholders prior to the conclusion of the Company's 2020 annual meeting, the Close of Business on such date.

Redemption

At any time prior to the time any Person becomes an Acquiring Person, the board may redeem the Rights in whole, but not in part, at a price of \$0.0001 per Right (the "Redemption Price"). The redemption of the Rights may be made effective at such time, on such basis and with such conditions as the board in its sole discretion may establish. Immediately upon any redemption of the Rights, the right to exercise the Rights will terminate and the only right of the holders of Rights will be to receive the Redemption Price.

Amendment

The terms of the Rights may be amended by the board without the consent of the holders of the Rights. However, from and after such time as any Person becomes an Acquiring Person, the Rights Agreement shall not be amended or supplemented in any manner which would adversely affect the interests of the holders of Rights (other than Rights owned by an Acquiring Person, which shall have become void).

Rights of Holders

Until a Right is exercised, the holder thereof, as such, will have no rights as a stockholder of the Company, including, without limitation, the right to vote or to receive dividends.

Process to Seek Exemption

Any person who desires to effect any acquisition of securities that would, if consummated, result in such person becoming an Acquiring Person may, prior to such time and in accordance with Section 36 of the Rights Agreement, request that the board grant an exemption with respect to such acquisition under the Rights Agreement so that such Person would be deemed to be an “Exempt Person” under the Rights Agreement.

FIRST AMENDMENT TO SECTION 382 RIGHTS AGREEMENT

This First Amendment to Section 382 Rights Agreement (the “**First Amendment**”) is made as of December 2, 2022 by and between MERRIMACK PHARMACEUTICALS, INC. (the “**Company**” and COMPUTERSHARE TRUST COMPANY, N.A. as Rights Agent (the “**Rights Agent**”), amending the Section 382 Rights Agreement by and between the Company and the Rights Agent dated December 3, 2022 (the “**Original Rights Agreement**”). Except as set forth herein, any defined terms contained herein have the meaning set forth in the Original Rights Agreement.

WHEREAS (a) the Company and certain of its Subsidiaries have generated certain Tax Benefits for United States federal and state income tax purposes, (b) the Company desires to avoid an “ownership change” within the meaning of Section 382 of the Code and the Treasury Regulations promulgated thereunder and similar state tax laws, and thereby preserve its ability to utilize such Tax Benefits, and (c) in furtherance of such objective, the Company and the Rights Agent entered into the Original Rights Agreement; and

WHEREAS the Company and the Rights Agent wish to amend the Original Rights Agreement to extend the term of the Original Rights Agreement through December 2, 2025;

NOW, THEREFORE, the Company and the Rights Agent agree as follows:

1. The definition of “Final Expiration Date” is hereby amended to read as follows:
“(u) **Final Expiration Date**” means the earlier of (i) the Close of Business on December 2, 2025 or (ii) the Close of Business on the date that the Board determines that (A) this Agreement is no longer necessary or desirable for the preservation of the Tax Benefits or (B) the Tax Benefits have been fully utilized and may no longer be carried forward.
 2. The definition of “Early Termination Date” is hereby amended to read as follows:
(o) “**Early Expiration Date**” means, if Stockholder Approval has not been obtained by the Close of Business on the date on which the Company’s 2023 annual meeting of stockholders is concluded (or, if later, the date on which the votes of the stockholders of the Company with respect to such meeting are certified), the Close of Business on such date. For the avoidance of doubt, if Stockholder Approval is obtained then there shall be no Early Expiration Date.
 3. Except as modified herein, all other terms and conditions set forth in the Original Rights Agreement are hereby ratified and confirmed in all respects.
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SUBSIDIARIES OF THE REGISTRANT

<u>Name</u>	<u>Jurisdiction of Incorporation</u>
Merrimack Pharmaceuticals UK Limited*	UK
Merrimack Securities Corporation*	Massachusetts

* wholly owned

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statement of Merrimack Pharmaceuticals, Inc. on Form S-3 (No. 333-222093) and Form S-8 (Nos. 333-180996, 333-186370, 333-194313, 333-202346, 333-209745, 333-223577, 333-230084, 333-237155 and 333- 268609) of our report dated March 9, 2023 with respect to our audits of the consolidated financial statements of Merrimack Pharmaceuticals, Inc. as of December 31, 2022 and 2021 and for the years then ended, which report is included in this Annual Report on Form 10-K of Merrimack Pharmaceuticals, Inc. for the year ended December 31, 2022.

/s/ Marcum LLP

Marcum LLP
Boston, Massachusetts

March 9, 2023

CERTIFICATIONS

I, Gary L. Crocker, certify that:

1. I have reviewed this Annual Report on Form 10-K of Merrimack Pharmaceuticals, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 9, 2023

/s/ Gary L. Crocker

Gary L. Crocker

President

(Principal Executive Officer)

CERTIFICATIONS

I, Gary L. Crocker, certify that:

1. I have reviewed this Annual Report on Form 10-K of Merrimack Pharmaceuticals, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 9, 2023

/s/ Gary L. Crocker

Gary L. Crocker

President

(Principal Financial Officer)

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

In connection with the Annual Report on Form 10-K of Merrimack Pharmaceuticals, Inc. (the “Company”) for the period ended December 31, 2022 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), the undersigned, Gary L. Crocker, President of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, that to his knowledge:

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

Date: March 9, 2023

/s/ Gary L. Crocker

Gary L. Crocker

President

(Principal Executive Officer)

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

In connection with the Annual Report on Form 10-K of Merrimack Pharmaceuticals, Inc. (the “Company”) for the period ended December 31, 2022 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), the undersigned, Gary L. Crocker, President of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, that to his knowledge:

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

Date: March 9, 2023

/s/ Gary L. Crocker

Gary L. Crocker

President

(Principal Financial Officer)
